FluentControl

Revision History

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1 FluentControl 1.1 (V1.1.0.35110)

Initial Version

2. FluentControl 1.2 (V1.2.0.36876)

2.1 Bug Fixes

ID	Title
69345	"Storage" custom attribute "true" and "false" are doing the same
68668	[ExpressionSolver] Floating point values with 0 in decimal place should be interpreted as Integer values
68666	[FCA][ContextCeck] cLLD Self Test: It is not possible to have more than one cLLD Self Test command in a script where each command has another DiTi type
70092	[Import Export] loss of liquidclasses and import failed for external Files.
71867	[Reliability Arrow1] - Script aborted with Win32Exception"Not enough storage is available to process this command".
68950	[Script Commands] Motion Executer timeout due to duplicated Labware in Worktable merge
71225	[TransferTool] GetDiTi of 8 Tips with only 4 remaining Tips in the 350nested tray will not work
71763	[Worklist] [FixedTips-configuration] Load Worklist Command with FixedTips-configuration shows no Context Check Error but cannot be executed successfully
71179	[Worklist] R after a Sequence with F shows context check error caused by an already mounted Tip.
67099	[Worklist]T Command with TubeRunner causes context check error
68843	[Worklist] Duplicated/custom DiTis don't work well with Worklisting and can make it inoperable
67654	A change made to a carrier on the worktable is not reflected in the template
70662	About the LGE two groups are processed simultaneously. When saving all entries will not be accepted.
70072	Application crashes after execution of FCA Smart Command
68669	Application does not recognise wrong/incomplete execution of Dispense System Liquid script command
70793	Application intermittently hangs after start of run
56368	Aspirate from 300ml trough on site gives a context check error
68789	AuditArchServer stops
69083	Auto Context Check menu item in SI mode not working properly
60021	Carrier Editor: Application crashes if instrument doesn't have an RGA
68954	Centrifuge Driver should not be included
71474	Checkbox “Ignore GWL file content until run” in Load Worklist Command doesn't work
70096	Configuration Builder: FCA options are gone
47386	Configure System - TouchTools Driver: Checkbox for I/O-state is ignored.
70943	Context Check changes Worktable based on transfer labware in subroutine
69347	Custom Attribute "Server" has no function

68667	Detect Liquid Script Command does not take any well offset parameters from Variable Pipetting Loop
63074	Device 'jumps' back to grid 1 if grip mode is changed
65568	Direct Commands: "Too many editors are open, closing the application is recommended."
66820	DiTi 350ul After the last Transfer Tool has been picked up the software hangs without message to the user
65895	Duplicated DitiType Labeware definition cannot be used
58760	Initial temperature for shaker doesn't work
68798	Error Dialog: Send Mail button not working

67742	FCA : When a diluter error is provoked and a script is executed sometimes the channel number and Result is not shown and the fields are empty.
63954	FCA DiTi Nest Bounding Box Too Small
68857	FCA GetDiti calculates unexpected Positions
71713	FCA: Aspirate with container switch (Use next when empty) aborts with exception
71731	FCA: Aspirate with container switch (Use next when empty) aborts with exception
70980	FCA: Aspirate: Exception during pipetting: Parameter volumeFulcrums out of range
66725	FCA: Iterate via negative Well Offset is not working well
38633	FCA: Pressure events from PMP cause fast stop instead of stopping only affected dilutor
71636	Fix creation of incorrect Execution String when Object Parameter is not set.
71765	Four Smart commands Reagent Distribution DiTi box empty
62833	Help should not need ActiveX permissions every time
67557	Labware placed on 'PCR Adapter 96 Well' is not on correct height
71724	Liquid Class parameter changes when moving pipetting commands in the script editor
70603	log files: all log files on hard drive are not zipped
68610	MCA 384, selected wells change while expanding and collapsing command parameters
59767	MCA384 : A context check error appears in the Drop Tips command, if the SW does not know that DiTIs are mounted on the head adapter
67735	MCA384 : It is not possible to pick MCA384 50ul DiTis placed on an Active carrier with the 96 MCA384 Adapter
60176	MCA384 : Trailing Airgap after Dispense is executed even though switched off
55833	MCA384 Empty Wash Station Direct Command is not executed
69879	MCA384 Get Tips Fails with Software Crash
66771	MCA384 parameterization: Share value adapter plate is not set correct if the previous script command is a "Drop Head Adapter"
55420	MCA96 DiTis can only be selected in MCA384 GetTips command when they are placed on a DiTi Base
64372	MIO: Group Editor instead of Placement after device drop onto the worktable
69434	Multi Dispense: Dispense Acceleration, Deceleration and Speed are calculated wrong for the Conditioning Dispense
68605	No display name for SiLA driver in configure screen
69876	Non recoverable errors during microscript execution are not shown to the user

28090	Opening the front door during movement does not provide an understandable error message
71177	Prepare Method directly starts run.
70855	Raise Error script command does not work as expected
71076	RetryAfterFastStop moves are automatically aborted when an error is thrown
69874	RGA Barcode Reader: Scanning does not work with FluentControl when attribute "BarcodeReaderMounting" is set to "ReadsInOppositedirection" with FluentSetup
71154	Run fails with context check error when started from the script editor.
71152	Runtime Controller sometimes does not have Back To Edit Mode button.
71667	Rich User Prompt Wizard will not Stop when Stop Button is clicked
66788	Sample Tracking does not create a report file for a plate with barcode 913/000214
71850	Sample Tracking: Generate Report fails with error message
60218	On rare occasions, script gets corrupted during variable declaration and cannot be opened anymore (can be recovered from change history)
71210	Script scope variable not found during runtime
69169	Smart Commands, Tip Access & Well Offset must both be calculated when evaluating context check
71333	Smart Commands: Sample Transfer: Aspirate Vol. in generated temp script is not as expected
67734	Stacker: When transering a microplate from a full stacker and placing it back, an error shows that there is no free space
66051	Standby : When the Fluent Control SW is closed, the MCA -Z and RGA-Z axes are in Zero-G and do not go into Standby mode
67722	Te-shake error message: Parameters invalid! for SetTemperature script command
71548	The SampleTransfer command does not create a valid subscript if "Max Tip Reuse" is greater one.
67088	The UV lights are not switched off when the Cabinet door sensors are opened and door lock is disabled.
65618	Touch Tools : Touch Tools does not log the script executions and user interactions of rich user prompts
71155	Touch Tools displays wrong information in second run.
71835	Tube runner not filled completely causes index out of range
67602	Two parallel Wait commands do not work in asynchronous subroutines
69050	Undo not undoing worktable actions
65630	Worklist: "Too much liquid in tip" runtime error when executing an R command.
72100	Worklist: Runtime Error when using R and T record with empty liquid class field
55525	Worktable in open script is not updated after labware template is modified.

2.2 New Features

- Air FCA Commands
- Active Stop & Resume
- Robotic Gripper Arm mounted Barcode Scanner
- Method Approval
- Interior Light control
- Individual Channel Accuracy Adjustment function
- Te-VacS

3. FluentControl 1.3 (V1.3.0.38526)

3.1 Bug Fixes

36952	Worktable visualization error when cut pasting vertically stacked labware
43868	After renaming a labware the undo operation affects other fields
48769	CNS: Command name mismatch
48770	Tpyo [sic] in word "Message" in channel Tecan/Myrius/CNS/Client
51182	Doorlock problem during Active Stop when User Prompt Command will be performed
54326	Play sound in a loop after run does not stop
54883	Editor: "LLD Error Handling" command, selected "Error Handling Action" is not visible if the command doesn not have the focus
55336	Import script: Importing with a WT 780 to an instrument with WT 1080 does not update the worktable
56410	Unit [mm] missing from Z offset field – Liquid Class editor Dispense [detection positioning]
57900	MCA 384 : The Ignore option is not available as Error Handling options when an Tips Not Fetched error occurs
59302	Set Location Function: No context check errors for out of range parameters
59427	Not possible to define an Aspirate with 8 FCA tips from tube carrier
60126	Connector Problems when MCA Adapter Nest will be copied on Nest Base Segment
60910	MCA moving with 'Move Tool' into a collision with another Arm, FluentControl freezes.
62821	Worktable Editor: Context Menu "Template" option saves new carrier with current input if the mouse is moved
63566	Carrier Editor: site rotation not visible on the worktable
64813	Device driver commands show error but context check of script is ok

66054	"CGA" shows up in an error message
66258	Incubator driver crashes when exiting FluentControl
66765	Worklist: Sample Transfer - uninformative error message
66841	User Input uses wrong max limit on Touch Screen
66876	MCA384 automatic parametrisation: in the Get Tips script command is the adapterplate not corect set.
67603	User can start method eventhough it has no permission for the method
68305	A hotel site previously used as lid station is not used to store the plate with lid on upon return
70403	Carrier Cut and Paste does not paste nests with the base plate
70406	Sound settings in configure have no or incorrect impact
70850	Software Crashes if selected Method has no scripts
71153	FCA: It is not possible to select tips 1-4 to aspirate from 24-well plate
71178	Carrier cannot be edited - VX_CARR_001_001 given key was not present in the dictionary
71476	Editor Save & Close Button does not save changes
71568	A collection of typo and wording issues

71716	Well offset with changing labware orientation causes wrong wellOffset
71866	Set Location, KeyenceBarcode, etc. script commands does not accept Labware with counter variable (i.e. MyPlate[i]) and no variable at all.
71967	Transfer Labware not possible for stacks of plates with lid
72182	Long run stopped after 4 days after user intervention, PC became frozen.
72736	Empty Tips fails in runtime with disabled Channel
72738	Vertical Tab Groups are missing
72804	FluentControl crashes when changing tip selection in 12-well plate
72809	FCA Dispense context error incorrectly calculating, 0.000 missing in tip
72914	Worklist records throws Exception when Position field is empty and TubeBarcode field is set with a correct value
72915	Sample Transfer: system incorrectly calculates needed labware
72916	Convert CSV to GWL using Tube ID also needs Position
72917	Smartcommands do not parse variable as Labware name
72997	FluentControl does nothing when pressing resume after hardware problem
73074	Error message "Sequence contains no elements" when running direct commands with activated method approval
73129	Unable to print scripts out of FluentControl
73130	Execute Worklist command cannot be executed when one channel is set to broken
73208	Wrong warning dialog when when entry of missing barcode is aborted
73209	Variable Rich User Prompt Combo Box does not accept integers
73285	Load Worklist command Invalid parameter
73364	worktable simulation wrong: lid shown on plate when it should be in hotel
73367	Transfer Labware command doesn't save the selected Tool-on-the-Fly
73370	Running a suspect method or script is not logged, when user has no right to run unapproved methods
73373	CNS Webserver does not show user interaction required status
73424	FCA fails to advance to next trough when detected trough as empty
73430	y-spacing of tips switches between -9 and +9mm when teaching trough with FCA
73432	If an error occurs during lid transportation the lid information is lost.
73487	When Options are connected, the power-on order of instrument, options and software should not be relevant

73538	External legacy driver interface does not allow saving labware parameter if it is the only parameter of the command
73925	Execution of the transition failed (leads to software hang)
73936	Expression solver parses 'Round' of '96 Well Round' plate as round() function
73938	3D Simulator, Create Instrument Configuration, Dropdown menu to select Tip type is empty
74020	Transfer Labware: MCA125ul DiTi box from Carousel to Active DiTi carrier results in Context Check error 'no suitable labware connector'

74025	RGA gripping error status not reset after releasing gripped lid
74162	DiTis from MCA96, 200 Nested, Stack8 cannot be picked up - stack is too high (Worktable Data)
74180	Carousel sends collision errors upon BC read command
74672	Nested Ditis are not reported to pathfinder, when running a script with stored DiTi positions
74810	Carrier with Custom attribute 'Lid'=false cannot be used as Lid Location
75096	Fluentcontrol import variable command does not accept "comma" as delimiter
75098	Context check not working for labware moved with "set location" command
75171	Script command "On empty tray": Method execution hangs after pressing STOP button on User Prompt in Subroutine
75204	FluentControl collision error won't allow to abort and go back to edit mode (Stop button invisible)
75532	Rotate Menu Options need to be 0 & 180
75534	GetAttribute should be able to handle labware index as integer
75827	[SiLA][ODTC]: Error from external driver is not shown by FluentControl
75829	When importing a script with different script name but same GUID the context menu in the Control Bar does not show the correct script name
75894	FluentControl crashes after re-naming of carrier site
75896	Subversion service failure
75922	If (AirFCA) "Pressure out of range" appears the status light is not blinking
75941	Labware Group Editor: Lids can't be edited; apply buttons disabled despite changes; labware lost when saving and closing
75942	Init failed because "instrument is not initializable", afterwards FC freezes.
75954	the KeyenceCGA "Scan Barcode" command has lost its icon.
75955	Zero G teaching accepts values outside of the arm range
75960	Tube fingers lead to worktable sim errors
75961	Software crashed when scrolling in a script and trying to open a loop command while the script is running
75987	Ziath: MacroExecution ZiathREad2DTubeCodes failed 'LabwareName'
75998	No context check errors for 'Sample Transfer' command are displayed when values for labware and volume are missing
75999	After Retry from "Fetch DiTis" error handling dialog the Stop button is pressed: Fatal error or software hang
76078	3D Simulator, creating new configuration sets wrong X Ranges
76244	Occasional deadlock between MCA & RGA during Automatic DiTi Handling
76247	Errorhandling did not appear for already gripped Labware
76558	Software crash error during MCA nested DiTi pick up
76768	ActiveStop during DeadLock leads to hang
76966	ActiveStop during execute vector with Gripped Labware drops the Labware
77081	Leading airgap is calculated against the tip capacity

77109	Te-Shake sporadically doesn't initialize
77150	Stop button is sometimes not displayed
77321	Touch Tools does is inactive after user interaction at start of script
77346	Stop On error handling cycle comes into an endless loop when TeMotion Overcurrent Error is thrown.
77471	Worktable alterations do not trigger context checks
77613	RGA Transfer Labware does not work when handling stacks of labware in a storage device, e.g. Carousel.
77688	Editing custom carrier: 'the given key was not present in the dictionary'
77803	Operator User unable to run Method with Subroutines without also having edit rights
77985	Liquid Handling Commands sometimes are not resumeable after ActiveStop

3.2 New Features

- Method Recovery
- Dual FCA
- Finger Exchange System (FES)
- Reset DiTi workflow in TouchTools, so Operators can decide to use leftover tips from the last run or use all new tips
- New Liquid Classes:
  - Ethanol Free Single (FCA)
  - Ethanol Free Multi
  - Mastermix Free Single
  - Mastermix Free Multi
  - Serum Free Multi
  - Water Contact Multi
  - Mix LC

3.3 Changes or Improvement

- Manual entry of coordinates for “non-grid” Carrier Placement enabled
- New Option “Vertical Tab Group” in editors to allow side-by-side viewing
- Edit Tabs differentiated by icons
- Usability improvements on Touch Screen, e.g. first touch selects the option
- Optimized Conditioning Volume handling
- Enabling of multiple execution of single sub-routines without wait for sub-routine necessary
- Enhancements in Smart Commands, e.g. Reagent Distribution has a new parameter Sample Direction
- Significant performance improvements in Context Check
- Liquid Class Improvements:
  - General goal of making microscripts similar between LCs
  - MCA all single pipetting classes, implement backlash compensation
  - MCA: Increase the maximum allowed acceleration (config change)
  - Align all LC Microscripts, including unused features like pulse formula
  - Remove Mix from all “pipetting” LCs
  - Conditioning Volume default made “Back to Source”
  - cLLD changed from z_Disp to Z_Start
  - Removed “default” tip type as it had no run time impact

- Introduce 1 Dispense Adjustment Formulas
- Simplified Z Max move expressions
- Added TAG after dispense in Single LCs
- Removed unnecessary “hard coded” parameters, replace with variables

4. FluentControl 1.3.4 (V1.3.4.39565)

4.1 Bug Fixes

ID	Title
78215	FluentControl may become slow if the MCA384 drops of the adapter with tips attached multiple times in a give run. If this workflow is critical to your needs, contact your local support.
79583	When all 8 tips are used and a liquid class is defined in the gwl, the liquid class from the load worklist command is used instead.
79625	In TouchTools, "Method Cannot Be Started" message appears when running two methods with different worktables one after the other.
80023	Unlocking the interface via TouchTools while a userpromt is displayed in the background freezes FluentControl

4.2 Changes or Improvement

ID	Title
80048	Keyance Barcode Scanner manual barcode entry must be possible to enter via TouchTools

5. FluentControl 1.4 (V1.4.0.40209)

5.1 Bug Fixes

ID	Title
81919	Worklist:AADW with decimal points lead to run blocking context error
81907	Dual TeVacs drivers in combination with other devices lead to a software crash on startup
81897	Certain "stop on error" scenarios do not lead to the run aborting as expected
81816	Stacker not defineable as waste.
81803	Method could not be recovered after run aborted due to path finder error
81795	In certain FCA error handling sequences a System.NullReferenceException appears in the Sample Tracking Log cause the run to "finish with errors"
81787	Importing methods may have the wrong values for Preserve Disposable Tips and trigger save button
81740	FCA Dilution command generates invalid temporary script is the target volume is 0
81238	'Negating the minimum value of two complement numbers is invalid' in FCA Aspirate Liquid micro command
81234	FluentControl freezes when clicking 'stop' behind a warning message popup
81187	Intermittent fatal error due to rendering the Method Recovery worktable image in the background
81149	FCA pipetting may be interrupted by sporatic invalid movement profile calculation leading to "collision or hardware" errors at run time, when no physical collision has occurred
81049	Retry option of LLD error dialogue does not reposition arm before retrying
80976	In the second iteration of a loop "Cannot move to colliding position" error ends the run due to worktable simulation problem
80945	FCA Not Enough Liquid error handling option "Aspirate available" leads to "Too much in plunger" error
80936	'Data export' report has wrong source positions of tube rack (number iterated by total number of tubes in the runner instead of by 1)

80935	Using a centrifuge in subroutine leads to ''object is not located on device carrier' contextcheck error
80657	FluentControl freezes after pause a pause and resumes when trying to close via Windows Task Manager Application Tab. After "Run is executing" message is acknowledged, the run continues

80511	With MCA wash stations and complex scripts, execution stops sporadically with error 'WRC is not configured'
80176	FluentControl uses 100% CPU and becomes slow
80175	FCA pipetting with multiple tips in a single tube without using channel 1 leads to a positioning issue in Y
80174	FCA Sample Transfer with sample count and offset shows context check error and unhandled exception
80077	FluentControl freezes when clicking 'Next' after successful completion of direct command
80023	Unlocking the interface via TouchTools while a userpromt is displayed in the background freezes FluentControl
79813	Intermittently, Save not active after parameter change, running without saving will use the former value of the parameter
79711	Plates intermittently disappear from simulated edit-time worktable
79268	Collection Labware and Carrier Data issues (e.g. part numbers and typos)
79129	FCA aspirate command fails with 'tip[1-8], line 11. Duration must not be zero'
79025	FluentControl displayed 'Preparing Run' for an hour
78968	FCA Errors may occurs during dispense when Error handling is set to Aspirate available or Aspirate anyway
78706	Typo / Wording improvements (collection of minor changes)
78628	Sample Transfer commands fails in semi-access scenario where logically the tips should have access. Note: not all semi-access scenarios are expected to work with Sample Tracking.
78627	It is not possible to disable mixing in the FCA Dilution Command
78591	Short Name is shown instead of Full Name after a while
78390	During Automatic DiTi Handling, if there is no free position for the rack to remove, FluentControl may hang.
78331	Well Attribute Volume set during a run before a method recovery was started are set to 0
78326	Software does not check if head adapter is mounted on MCA before executing command.
78214	"Method cannot be started" due to context check problems has poor visibility in TouchTools
78178	Using On Empty Tray asynchronously on stacked MCA96 tips doesn't work
78055	Well Attribute Volume set during a run before a method recovery was started are set to 0.
77980	"Method cannot be started" due to context check problems has poor visibility in TouchTools.
77979	FCA Pipetting in tube runner with well offset not possible if tube runner is not completely filled.
77978	If more than one script line is selected, Context Check only verifies the selection. This is true if a group/loop is selected but collapsed. All the grouped commands are selected and Context Check only runs on these.

77901	FluentControl does not start up when installing and executing happened by different Windows user
77868	Labware has been lost even the labware is at target site and message not shown in trace view and is stated as info not as error in log file
77788	Running methods with many sub-routines for a long time may lead to high memory usage and in the worst case, FluentControl may crash.
77762	FluentControl crashes when the users assigns the same barcode to two labwares via the worktable context menu.
77701	Search and Replace Liquid Class does not trigger Save button.
77700	If setting query at startup variables in the Method Editor, they may not be visible at runtime. Fixed in 1.4
77614	If a user prompt is cancelled after stop has been pressed in the run-time controller, FluentControl may hang

77540	If arms are not in Zero G before starting method recovery, they remain unmoveable by hand during the recovery user prompts.
77514	FES 'Drop location needs to have fingers placed on it' or it leads to an auto-context check errormessage when fingers are mounted while editing script.
77499	When Prepare Method is used from Script Editor, and then Save As Method is used, the newly created method is not recoverable.
77498	Labware Name in FCA Smart Commands is not adjusted when renaming labware on the worktable.
77385	Array variables in subroutine and main script interfere with each other even though they have scope 'script' and are not shared.
77384	Move Arm Command intermittently disappears from Control Bar. No impact on existing scripts. Workaround: Copying & Pasting an existing script command.
77381	Well Attribute Volume set during a run before a method recovery was started are set to 0.
77322	"Method cannot be started" due to context check problems has poor visibility in TouchTools.
77264	Using On Empty Tray asynchronously on stacked MCA96 tips doesn't work.
77236	On the "The run was aborted. Do you want to return to edit-mode?" prompt, if the user presses Yes and the immediately clicks next, FluentControl may hang.
77229	Sample Transfer Well Offset & Sample Count do not work in combination.
77165	Pipetting in tube runner with well offset not possible if tube runner is not completely filled.
76965	Simulation mode does not work for async subroutines on dual FCA instruments.
76962	FluentControl crashes when the users assigns the same barcode to two labwares via the worktable context menu.
76666	Search and Replace Liquid Class does not trigger Save button.
76624	Worktable Batch error during saving labware group changes. Fixed in 1.4
76452	Incubator - Changing the temperature in the "Set Temperature" command does not activate the Save button.
76449	During transfer labware regrip, Labware attribute offset is only applied after first moving to end position without offset.
76331	Adapter Nest for 1.5ml Tubes not accessible with Application Software.

76325	MCA 384 Get Head After Drop Error Handling uses incorrect moves at run time.
75989	Script Editor does not update commands by changing the orientation of labware from labware group editor.
75940	Cancelling instead of logging in causes FluentControl to crash.
74024	FluentControl basic Script Function "ScriptName()" returns nothing when writing to a variable
73485	Pick Up Tips followed by Set Tips Back is not possible for 350 µl Nested Tips.
73371	Approve on import does not lead to method having the approved initial status
72433	Possibility to change the micro script of a Default Liquid Class by using Save As and saving as the same name
71934	Move Arm Relative moves full distance from current position upon resume after ActiveStop
71931	Liquid Classes Editor: Dispense Easy Control shows in Aspirate section upon creating a new liquid class. Closing & Opening the editor solves the issue.
71630	Graphical display of 384 well labware is inconsistent.
68925	Syntax error during runtime even when command is disabled
67740	Software halts in the middle of the script run with Replace Used DiTi command if nested tip layer is not removed before next Get DiTi
66093	If sample tracking server is stopped during a running script no error message is shown.
66055	Periodic Wash: no context error for unreachable waste station.
65276	Switching between Rich User Prompts in display and continue mode many times increases memory usage and may lead to application freezing.
58636	WRC: Prime Micro Script Command, Duration parameter not as specified
55576	Retract supervision: The detection results after a successful detection are not logged
55570	Barcode reader: Driver with switched off I/O state is used
52703	Incubator or Shaker do not start shaking again after RGA has placed a plate
47755	RGA: counter clockwise rotation not possible when executing ExecuteSingleVector command

5.2 New Features

- Liquid FCA Mixed Tip support
- 5000ul Syringe Support
- 5000ul Disposable Tip Support
- Restore Entire Database to a given time - 77662
- Audit Trail
- Electronic Record
- Data Audit Tool
- Schedule and Enforce System Care Methods
- “Store Well Concentration” Command
- Normalization command can create dilution schemes based on “WellAttribute”
- Add Labware command
- Remove Labware command
- API “1.1” now enables error handling
- Disable visualization of sub-routine scripts in Configure System / Application settings to increase speed of worklists at run time - 80286
- New Functions ○ Transfer or pipette based on barcode

- GetLabwareLabel(“Barcode”) ○ Transfer to top of a stack
- GetCoverSiteName(“LabwareLabel”)
- GetCoverSiteIndex(“LabwareLabel”) ○ Execute vector based on dynamic positions
- GetLocation(“LabwareLabel”)
- GetSite(“LabwareLabel”) ○ How long since last maintenance?
- GetTimeSinceSuccessfulExecution(“MethodName”)

5.3 Changes or Improvement

- Speed improvements when loading and switching states 80323
- FCA Get Tips fetching logic based on labware index, not based on physical position of the arm - 79151
- FCA only tries picking up once before moving on if force feedback indicates no tip is present (otherwise it still retries twice) - 75903
- FCA & MCA check all configured waste bottles when washing, flushing, or priming - 78398
- To help teaching & troubleshooting, Sliders and Move To buttons are enabled for default liquid classes, labware, and carriers - 75575
- Set Location command has rotation parameter - 67576
- Driver name is displayed even if the command is collapsed - 79709 & 80287

5.4 Default Liquid Class Improvements

- Added “default” place holders instead of omitting undefined default liquid class subclasses
- Replaced variable “volume” with “aspirationVolume” in aspirate MicroScript in all LC’s
- For Serum Free Multi, added conditioning volume formula for all DiTi types for Liquid FCA.
- For Serum Free Multi, corrected Pulse Volume formula for Air FCA Pulse now used only for <25ul
- For Water Free Multi, corrected Pulse Volume formula for Air FCA Pulse now used only for <10ul
- For Standard Wash, Changed the STAG from 10ul to 20ul
- Changed parameter set for all DiTi 10 LCs to support the new (3.6 mm longer) DiTi 10. The new LC also supports the DiTi 10 supplied prior than v1.4.
- Renamed:
  - “DMSO Contact Single” to “DMSO Contact Wet Single” ○ “Master Mix Free Multi” to “MasterMix Free Multi” ○ “Master Mix Free Single” to “MasterMix Free Single” ○ “Water Contact Multi” to “Water Contact Wet Multi ○ “Water Contact Single” to “Water Contact Wet Single”
- New liquid classes:
  - Water Contact Single Air FCA all tip types ○ Water Free Single Liquid FCA DiTi 5000 ○ Water Free Multi Liquid FCA DiTi 5000
- See Read Me for information about liquid classes and upgrades

6. FluentControl 1.5 (V1.5.0.41335)

6.1 Bug Fixes

ID	Title
79580	Method DiTi Reset screen uses wrong worktable logic
80937	Reagent Distribution command shows context check error 'select target wells' for number of samples = 0
80977	Import Variable fails with 'delimiter does not match' if there is an empty string
81283	MCA384 Pipetting Commands give error message 'specified argument was out of the range of valid values' and leads to crash
81392	If script line >1 has focus, new labware cannot be dragged to the worktable
81476	SampleTransfer with variable for replicates gives context check error not enough space in y
81755	FluentControl freezes when supervision error occurs
81933	Simulation of Keyence Barcode scanner is not possible
82148	Opening front door during "run is paused" leads to duplicated error message and software crash
82158	Sample Transfer Script Command shows incorrect context check error
82257	Dual FCA system fails to initialize when more than 2 washstations are present
82373	After runtime error during 'On Empty Tray' subroutine user cannot return to edit mode
82430	FCA Mixed Tip configuration - Tip 1 is also moving down even only tip 5 - 8 are used
82550	Copy and Paste of runners with tubes creates runners not editable by Group Editor
83302	Error switching to ZeroG after Active Stop
83316	FluentControl randomly crashes during script editing
83383	Worklisting with 384 well plates leads to error "None of the selected tips can access all wells in this sequence."
83407	Method Approval significantly affects the load/save/window refreshing
83408	Reduced likelihood of SVN Problem on new Fluent System after rebooting PC
83486	Software crashes while using export variables command
83711	Script export did not contain liquidclass
83817	FCA Y Range checking inconsistent between runtime and worklist conversion
83826	Intermittent collision error on nested MCA DiTi pickup.
83837	False context-check error at Dilution command
83982	Error Handling in Asynchronous Subroutine doesn't work. Software freezes.
84079	Carousel does not present plate upon resuming after Active Stop
84297	FC freezes on Retry after prompt to close cabinet door lock
84388	Data Audit Tool cannot be started in FluentControl 1.4.1
84512	Air FCA Z Brake Test: Z-Axis touches upper hard stop
84594	Missing error flag in Sample Tracking reports for aspirate air after liquid detection error
84735	FluentSetup in doesn't start after approving method in 1.3 and upgrading
84881	TouchTools crash during reset DiTi step if worktables have mismatching MCA DiTis
84883	RGA transfer labware command to MIO failed with PREPAREDEST error message (intermittent, rare)
84890	System care methods doen't complete successfully when method recovery state is present

6.2 New Features

- Fluent ID support
  - Start Loading
  - Allow Removal
  - Wait for Finish

6.3 Changes or Improvement

- Snapshot Tool General Improvement
- Worklist will skip pipetting for labware not on worktable
- MCA DiTi Pickup & Drop side movements
- New Functions: FileLineCount(filePath) & FileExcelRowCount(filePath, [column], [startRow])
- General run-time error message “run was stopped due to collision or hardware error” has been split into two distinct messages: one for collision errors and another for general hardware errors.

7. FluentControl 1.5 SP1 (V1.5.1.42658)

7.1 Bug Fixes

ID	Title
58944	Problems when editing or saving labware opened from the worktable rather than controlbar
66184	Pathfinder problem when recovering from active stop with gripped deepwell plate
78168	Software crash with ‘Index out of range’ error while placing incubator onto worktable
78598	Errorhandling ‘continue pipet nothing’ for airFCA ‘Pressure out of range’ not working
79024	Context check problem with 3rd party devices that have more than one site (i.e. centrifuges)
79176	Worklist based on 2D tube barcodes scanned with Ziath scanner fails with 'unknown labware'
79494	TouchTools Variable command displays keyboard directly with no instructions
79540	Welloffset does not work for custom 5*15 Tube Runner
81248	‘DiTi have to be discarded to perform Inline Filter Test’ error occurs when error handling is performed after a Pressure Out of Range error
81282	TouchTools Variable command at the start of a method may cause software freeze
81389	RGA tries to grip lid from wrong position
81473	RGA ignores z-Grip offset for part of the move when using regripping
83303	‘move to selected’ during RGA vector teaching could cause collision
83390	Welloffset not working for labware with a name containing a dot (e.g. 1.5ml Eppendorf, 0.5ml DeepWell Plate)
83392	Method recovery did not reset dispense counter
83710	Context check error when Worklist should use DiTis added with 'Add Labware' command
83815*	Tracking speed in truncated cones and pyramids is initially very high (*) ❼ this bugfix was not successful and removed in FluentControl 1.5 SP2
83820	Impossible to FCA DiTis into MCA waste chute if different sizes of DiTi are mounted simultaneously
84085	Approval functionality not working when importing scripts

84157	FCA Aspirate Script Command has some errors with option 'use next when empty'
84202	Method execution is started after pressing "Cancel" button on the CED of Method Recovery
84296	Deleting a lid with 'remove labware' leads to error in subsequent 'transfer labware' commands of the plate
84459	sometimes two methods can be started in parallel
84584	Worklist: FCA cannnot access different tubes at once when specified by Source Tube Barcode
84588	Running script sporadically impossible with ‘SaveRuntimeWorkspace failed’
84657	Software crash when trying to run an empty method
84658	Add Labware not working with labware names not containing brackets []
84661	Rounding problem in liquid classes can lead to ‘Too much in tip’ error
84732	script editing slow when using array variables and labware with truncated cone/pyramid
84734	Worktable simulation performance improvements
84770	Some actions Labware Group Editor give ‘object reference not set to an instance of an object’ error
87772	SampleTracking: Register Labware command ignores manually entered barcodes and pauses the system
84781	FCA Dilution command sporadically failed with 'sequence contains no element'
84821	not possible to use 3 T-GIO extension boards
84836	grid numbers for back extension are shown inconsistently
84865	Touch Tools Variable command crashes with empty variable
84872	Software crashes if "Trace View" window is dragged out of main window during script start
84874	Method recovery fails if script contains different MCA headadapters
85120	Context Check error ‘No tool has been found’
85146	SampleTracking logs warning in traceview when labware is moved during script edition
85197	Position of some non-grid based devices lost during software upgrade
85219	Problem with ‘Dispense Back and Retry’ error handling after pressure out of range error
85676	Import Variable command in microscript failed with "Value cannot be null Parameter name “methodName”
85718	Shaker Carrier definition did not have a valid default HW address specified
85719	Export Variable command did not show number of selected variables
85720	FCA transfer tool did not allow reliably discarding empty FCA DiTi trays to MCA-off-deck Waste Chute
85737	Error messages in main script can hide touch tools prompts from subroutine
85740	Possibility to recover after timeout during liquid level detection
85751	Prevent timeout when starting run when many DiTi boxes are stored in Stacker
85825	Set location allowed moving carriers when could lead to 'key not found in dictionary' error
86006	Prevent software crash when hardware reports certain errors
86052	Prevent software crash at Get DiTi command if scripts with different worktables are used
86065	Carousel prompts twice for missing barcode
86105	Run marked as finished successfully although tips are deactivated after an aspiration supervision error
86106	Improve recovery from Active Stop at during Get DiTi command in subroutine

86109	Recovery does not remember DiTi position
86188	Context Check Error in Ziath scan barcode command
86388	Pause during MCA Get DiTi command could block MCA head in active DiTi carrier
86393	Pathfinder deadlock when both MCA and RGA try to move to the same position
86408	Improved error message when trying to assign a string value to a floating point variable
86419	Info message missing when transfer labware command involving an external device needs to be reexecuted
86479	MCA96 nested tip pickup sporadically failed with hardware error message
86481	worklist is converted into inefficient temp-script when using several source labware but one common destination
86531	Sporadic initialization timeout caused by Cytomat
86532	Method recovery failed with disabled script lines that contain undeclared variables
86584	software crash when declaring the same variable as string and floating point
86678	Air FCA: Automatic pressure out of range error handling not working
86720	Carousel ReadAllBarcodesInLocation fails when the last plate (top-down) of a tower has unreadable or no barcode
86748	Touch monitor displayed ‘run finished’ before it actually was finished
86803	Occasionally pickup of nested MCA96 disposable tips failed with hardware error
86860	Worklist does not skip labware placed in carousel
86909	Liquidlevel detection in tubes was done simultaneously even though liquid classes with different detection sensitivity were used
86933	No labware could be added to worktable when TeShake driver was enabled
87196	Active DiTi carrier remained locked after MCA drop DiTi command
87314	Automatic restarting of FluentControl failed with ‘already running’
87377	Imported mesh files were not displayed and carriers were shown with red color
87380	Worktable TouchTools prompt did not display the selected labware
87417	Upgrade installation failed
87479	Toggling between two script commands changed the labware index

7.2 Changes and Improvements

- New worktable access function ○ GetLabwareByLocation() - 83780
  - Programmatic access to stored disposable tip information - 75902
    - GetNumberOfTipsInTipBox()
    - GetTipBoxStatus()
    - SetTipBoxStatus()

- SampleTracking ○ Register Labware command now allows using a variable to specify the platemap file –
  81878 ○ Improved available volume data after not-enough liquid error handling – 81242 ○
- Drivers ○ Improvements to SiLa driver allowing to use ‘work during pause’ function -79588 ○ Finish thermal cycling with Inheco ODTC after active stop - 86011 ○ Driver settings are

preserved during upgrade – 82358 ○ Allow using Datalogic Matrix210 2D BC reader as on-the-fly tool
  - Allow manual barcode entry on Touch Screen after carousel barcode read error – 84820

- Pathfinding ○ Worklist engine takes hotels behind the worktable into account when selecting tips for the pipetting – 80027
  - Prevent pathfinder timeout when RGA needs to move away from under the MCA – 81475
- RGA execute single vector allows setting z-offset - 84453
- Direct command improvements (prefill more parameters) - 85838
- Snapshot tool improvements – 85147

7.3 Default Liquid Class Improvements

- Retract position and speed:
  In all airFCA and FCA liquid classes the retract position was changed to liquid level +/- 5mm. After this initial retract out of the liquid the tips will retract to z-travel with a speed of 20mm/s.
- Pressure Limits in Mix LC decreased the lower and upper pressure limits to +/-1000.
- Dispense speed of Empty Tips LC Reduced dispense speed to 600 ul/s.
- Conditioning volume in wide bore tips:
  Increased conditioning volume to 50ul in Water Free Multi and Water Free Single liquid classes for DiTi 1000 Wide Bore filtered for both AirFCA and FCA.
- Further corrections:
  - Changed hardcoded aspiration speed in microscript to use the use the "AspirationSpeed" variable in the liquid class Water Contact Wet Single MCA.
  - Corrected variable name for the selection of error handling options on pressure out of range error for airFCA liquid classes.

8. FluentControl 1.5 SP2 (V1.5.2.42885)

8.1 Bug Fixes

ID	Title
87773	Incorrect FCA liquid level tracking in FluentControl 1.5 SP1

8.2 Changes

The bugfix 83815 introduced in FluentControl 1.5 SP1 caused bug 87773. The changes were reverted.

9. FluentControl 1.5.3 (V1.5.3.43025)

9.1 Bug Fixes

ID	Title
83815	Incorrect FCA and airFCA liquid level tracking
86998	Fatal error in pressure out of range error handling
87031	Method Recovery: Execution of transition failed
87132	Automatic screen lock is not working reliably

87514	MCA or RGA significantly slows down during the run
87605	Wrong airFCY y-range calculation
87962	Method recovery shows wrong worktable picture
87990	Method Recovery is slow

10. FluentControl 1.6 (V1.6.4.44360)

10.1 Bug Fixes

ID	Title
55181	"Stacked Plate to Plate offset" is not functioning for x and y offsets
56469	sensitivity calculation command doesn't check for missing liquid
56648	Corrected aspirate position when using partial MCA tips on labware in portrait orientation
58675	undo not working when deleting waypoints of robot vectors
59229	not possible to change password when switching users on touchscreen
65133	Switching between simulation and real mode fails
66137	String + operator does not work in Userprompt
66145	Declared variables appear multiple times in Intellisense, when command is deleted followed by an undo
66191	Magellan Trial Period Expiration Error Message shows up as a worktable error during init
67095	Empty Tip Contents (MCA384): Switching from the lowest index labware to the highest index labware via column/row offset is not accepted
67176	MIO, No warning messages are logged / shown for the delta temperature
68897	Error Msg for Init Vol Adjustment shows Target Vol smaller that Feasible Vol, this is due to a rounding issue in the message box not the calculation itself
69549	Device Placement values are different if you reopen editor, GUI displays incorrect values
69878	3D Simulator New Configuration screen gets stuck behind Simulator if always on top is selected
74805	It is not possible to delete carriers in the Control Bar that are used in Worktables
77624	FluentControl occasionally hangs during Method recovery
78170	20 grid back extension cannot be deleted from worktable.
78383	The speed attribute of labware does not the move to an on-the-fly tool during transfer labware
78393	When an object is imported with a name that is already in use, the imported object is not renamed, resulting in 2 objects in the database with the same name.
78860	An empty Error Window (with ID Unknown) is shown after importing XDS-file
79021	Stop with gripped(RGA) DiTi box in ADH leads to error message
79125	RGA Grips in wrong position when dealing with stacks of lidded plates
79489	Device Placement values are different if you use the transfer button or type them in by hand
79702	When changing the allowed labware, it may lead to orphaned Labware which cannot be deleted and Run not possible because of Context Check errors

79810	functions row() and column() now no longer need the labware name when used in an aspirate or dispense command
80692	'Fetch labware for teaching' after a run ends with 'Move to home after each run' enabled
80987	A failed Inline Filter Check command results in an error dialog appearing twice
81048	FluentControl initialization with Magellan Tracker displays two Magellan login screens
81389	RGA tries to grip lid of DiTi box from wrong position
81390	After upgrading FluentControl it may be necessary to run a repair for Sample Tracking
81519	SW upgrade resets UMS settings
81814	duplicated method tab during method recovery
81820	'query at startup' variable triggers 'disposable tip status' TT prompt
82195	RGA vectors of manufacturer objects can be changed

82197	Reverting carrier to restore point doesn't revert to RGA vectors. (Reverting the whole database should)
82199	FluentControl crashes if TouchTools Worktable command links to non-existing picture file
82331	MCA384: Aspirate/Dispense without LCs gives no runtime error - scripts finish successfully but don't pipette
83380	Sensitivity calculation command detects with a Well Offset of 1 (e.g. if A1 is selected B1 will be used). Values are not otherwise impacted.
83822	Load Worklist Context Check error with DiTis added to worktable with 'Add Labware'. Workaround: ensure all need DiTi types are on initial worktable and use Remove Labware command if necessary.
83824	Teaching not possible when labware is opened from infopad window. Works fine if opened from worktable context menu or from Control Bar.
83828	TouchTools doesn't automatically refresh user specific methods on switch user. Leaving to Main Screen and returning shows correct list.
84083	During worktable simulation Add Labware only adds items to worktable overview list but does not remove it
84301	Worktable simulation error (site index below zero) when moving layers of nested MCA DiTis to waste
84458	Methods with same GUID/Name leads to FluentControl crash and disappearing Touch interface (TouchTools crash)
84515	I/O state of drivers not tracked in Audit Trail Log
84659	FES sensors are not read in non-RGA scripts which potentially leads to collisions during arm avoidance moves
84772	Sample Tracking: manually entered barcode is discard if the enter key used (behaves like clicking cancel)
84819	TouchTools Worktable command does not highlight labware
84867	After clean install 'Administrator' role does not have the right to 'run unapproved methods'
85025	If Undo/Redo history is blank (e.g. after Import), System Care scripts with comments may prompt for saving after being run. This save will place the System Care method in the root directory (default location).

85028	If Method Recovery point takes place during the lid handling step of transfer labware, both the labware and lid must be returned to their original locations
85731	Fluent ID Start Loading LEDs show extra flashes
85734	Inside RUP Worktable Script command all labware is displayed with Site 1
85736	inconsistent context checking of smart commands
85738	Traceview truncates list of errors & warnings
86007	Fluent ID Start Loading color parameter change does not trigger request to save
86068	ExportVariable command shows Array variables multiple times and doesn't export them
86072	Array variables show up multiple times in Expression box autocomplete
86105	Run is finished successfully although tips are deactivated after an aspiration supervision error
86108	Movement Limits for FCA are not applied
86338	Liquid Class Editor does not save information when changing tip type or arm
86339	Status light stays solid green when going in edit mode after method run finished with warnings
86387	Fluent Memory Usage increases while opening, closing and editing script
86421	context check error of cLLD Self Test when using mixed fix/disposable tip configuration
86486	context-check error when a lid is moved with narrow reverse orientation
86658	FES sensors status not transmitted to pathfinder
86703	Aspirating with the FCA out of a 300ml SBS trough placed on a portrait nest is not possible

86760	Sample Tracking manual barcode entry during register labware command shows the site number calculated over all carriers on the touch monitor, rather than the site on the current carrier
86775	Incorrect worktable reset leads to DiTi Reset problems and Worktable Commands not showing labware
86787	MCA mix failed with no device available
86803	MCA Get Tips failed after ADH
86860	Worklist must skip pipetting for labware not on worktable
86882	Carousel cannot retry after error to present plate
86909	simultaneous cLLD for different sensitivities when using worklist
86910	cLLD with liquid classes containing different sensitivities can happen simultaneously when using worklist and custom liquid classes
86914	Te-Shake configuration panel referenced incorrect carrier
86986	Edit barcode at Worktable Overrview window changes labware label instead
86998	Fatal error in pressure out of range error handling
87013	Te-PS tips crash into Wash Station Cleaner Deep
87030	NullReference with 'use next when empty' and partially filled tube runner
87031	Method Recovery: Execution of transition failed
87048	FCA Aspirate Script Command has some errors with option 'use next when empty'
87085	timeout when starting driver configuration panel the first time

87098	Context Menu Hide is not persistent between software restarts
87099	Smart command cannot calculate needed cycles for fixed tips
87132	Automatic screen lock is not working reliably
87227	duplicating DiTi boxes does not duplicate the custom attributes
87228	Scan manually Touch Tools command does not unlock the doors
87257	pathfinder problem during worklist execution
87314	Automatic Restarting of FluentControl triggered by SampleTracking fails with 'FluentControl is already running'
87318	Wrong Tip Index used in error message "...Unknown disposable tip(s)...."
87377	carrier mesh files are incorrectly displayed after import
87416	Software freezes after statement deletion when previous statement is SetVariable containing SetAttribute function
87417	Software upgrade sometimes fails unless computer is freshly restarted
87419	unnecessary 'too much in tip' error message after retrying cLLD multiple times
87424	The Add Labware command does not treat the index as 3 digit value
87426	upgrade fails when backup path becomes too long
87427	SampleTracking not working for MCA
87428	Error shows up in Sample Tracking Server, when a tip is dropped in Fluent error handling
87429	arm priorities not consistently enforced
87471	Audit Trail files are deletable
87474	move simulation problem in very long scripts
87479	Labware index changes when switching between two scripts
87514	MCA or RGA significantly slows down during the run
87556	Pipetting sequence generated by Sample Transfer is sometimes not optimized
87572	NullReference error caused by invalid window layout file
87584	Run with pressure out of range error must end with errors
87601	No context-check error is shown when a non-Fluent ID runner is used in FluentID commands

87603	GetAttribute function cannot access well barcode
87605	Wrong airFCY y-range calculation
87611	inconsistent limits when configuring UMS from FluentControl
87613	improved error messages
87618	Fetch labware for teaching cannot select MCA tips
87620	Stacking of lidded plates is not possible
87623	Lid handling is not working for plates with inserts
87627	[MCA 384] Selecting Wells is not working with Fixed Tips Adapter
87631	Labware label allowed blank name
87648	FCA Traceview Warning Message "Not enough liquid to dispense" is not displayed under some circumstances

87676	Unnecessary error messages are displayed when using 3 cabinet doorlocks
87679	object reference not set to instance of object when trying to open Labware definition
87750	Recovery of a deleted method: dialog shows placeholder instead of method name
87753	Save button is activated and context check triggered without actual changes by the user
87755	Manually Scan Barcode command: SW crash when you type in a variable as labware index
87756	Path too long in Journaling
87761	In mixed tip configuration SmartCommands only use volume capacity of the smallest channel
87762	FluentControl SW crashes at Preview of FluentID LED light when invalid values are entered
87764	FCA 350ul wafer cannot be discarded to MCA thru deck waste because of incorrect default vector
87767	Tip not in compartment error during AirFCA error Handling
87770	cannot return to edit mode after aborting run
87773	Incorrect FCA and airFCA liquid level tracking (this also solves Bug 83815)
87799	Software freezes when using both liquid classes with and without cLLD in the same command
87813	Set Location command does not accept variable as Labware
87819	MCA nested tip status cannot always be reset from touch monitor
87824	plate types specified in labware group editor occasionally are lost
87827	TouchTools 'Wait for close' in asynchronous subroutine pauses main script
87880	StackOverflowException when trying to recover after an aspirate with use next when empty
87881	Incorrect Unit for Te-Shake Frequency
87892	Tracking speed when dispensing in labware with truncated cone compartment shape
87939	'+' is not allowed in labware name
87940	Carousel Barcode Scan Error User Prompt displays false labware type
87941	Defining an interleaved Labware is not working
87962	Method recovery shows wrong worktable picture
87990	Method Recovery is slow
87998	Electronic Signature Dialog pops up twice, No AuditTrail Entry on cancelation
88005	Air-FCA: Pressure out of range error leads to summing up of Air-Gaps
88007	Value cannot be null error message when last Variable declaration line is selected but empty
88082	Wrong disposable tip information when starting a method after abort.
88089	Synchronous On Empty Tray subroutine fails at recovery
88101	Pipetting volume is limited to 0 ul, although there is mathematically enough in the well
88102	Enhanced logging for pathfinder problems
88104	Recovery Editor shows wrong description for SetVariable
88107	Stop and Pause/Start Buttons not visible after aborting a script run

88117	Timing issue in the recovery of asynchronous "On Empty Tray" subroutine

88130	Tips Pickup MCA384: MCA384 is not able to pick up 15ul MCA384 disposable tips properly with the combo adapter plate.
88143	Recovery of Query At Startup variables with scope RUN fails
88144	Query At Startup variable with scope ITERATION is not set for the next iterations
88184	Data Audit Tool - only one manipulated file was shown
88187	Remove Labware command does not support variables
88192	FCA Standard curve smart command didn't work with replicates in column-wise arrangement
88201	Labware teaching: FCA doesn't move up to z-travel with Move To buttons to move from Well 1 <-> Well 96
88215	The Shaker shakes in the wrong direction
88222	improved error messages for TeVacs
88232	Transfer Labware command arm is unable to move to specified position error occurs, because virtual LW blocks the position
88238	Plunger acceleration for MCA empty tip not was not limited to allowed range causing overcurrent error
88253	Warning message for end of hardware lifetime is not displayed
88254	Default carrier definition of centrifuge is has reference offset, which leads to incorrect Placement & Teaching
88255	Background coloring of TouchMonitor now corresponds to run status
88256	Row and Column offset for Get Tips when using nested MCA96 tips
88258	Added retract for FCA tips after aborted run
88263	mix in FCA dilution smart command does not take well offset into account
88267	Te-Vacs: inconsistent labelling of rear and front site - tubes may need to be swapped
88304	FluentControl is closed when deleting a previously added labware (via "Add Labware" command) from the worktable
88305	Aspirate/Dispense from/into an added labware via "add labware command" is not working
88307	Additional Context Check about undefined Tool ID Name is shown for Get Tips command
88308	Add labware command - rotation value cannot be 180°
88309	Changes are logged in the audit trail even when they are cancelled
88376	Corrected SampleTracking volume when using cLLD error handling during dispense
88402	aborted direct commands reported as 'executed successfully'
88497	buttons greyed out after switching user
88498	MCA and FCA Script Commands generate errors when using labware from add labware statement
88499	unnecessary warning message 'dispense target volume reduced'
88513	pauses runs could occasionally not be resumed
88519	Index of Audit Trail file is not increased after modifications
88541	FCA relative move slowed down after 1.5 SP2 upgrade
88542	User Management Errors were not displayed on touch monitor

88550	repeatedly using dispense back and retry on aspiration supervision errors did not update the selection of affected tips
88554	software freeze after shaker hardware error
88555	No warning message show when specified temperature of TeShake could not be reached
88556	Repetition of labware movement in Plate Action Report
88557	Automatic handling of pressure out of range error as defined in LC not working
88562	Aspirate Available when no liquid detected shows >0ul in SampleTracking report

88579	Exception when script/method run is resumed after Stop is clicked during Dispense
88595	configuration problem with duplicated MIO incubators
88596	volume higher than available volume error when pipetting in 1536 well plate
88602	Barcode Reader: numbering of automatically generated IDs are not successive
88612	Context Check & Runtime error in LC Microscript with function availableVolume
88613	"Move to Selected" and Labware Z-Coordinates "Move To" in carrier or labware editor causes NullReferenceException
88628	Executing a method as operator with no rights is possible
88632	CNS is working only with admin rights
88634	Script execution is severely delayed and UI freezes temporarily
88637	Recovery view not correct for subroutines, worklists, script iterations or several scripts
88651	Finished scripts and subroutines are not properly recovered
88657	Command line unintentionally jumps to the end to the script
88675	"Specified argument out of range" when using Run Partially
88676	RegisterLabware command does not assign tube barcodes when Enter key is used.
88686	UI-Labels truncated in Magellan Measure Command
88698	After cytomat 'scan cartridge' it takes >2 min before barcodes are sent to FluentControl
88700	Tip crashes into the bottom of the plate after a no liquid error handling for another tip
88707	Green indication shown in Fluent RuntimeController, When Run finished with Warning(s)
88709	FluentControl crashed with invocation error after adding DiTis to Stacker in LGE
88725	Reset DiTi status for MCA stacked DiTis is not working as expected
88733	Fluent Control crashed after all DiTis in the direct command Sensitivity Calculation are disabled
88735	Abort run does not work for Standard command in TouchTools
88757	FCA dilution command shows incorrect info in status line
88758	When switching user from Operator to Admin, open scripts remain in read-only state
88773	Normalization command - operator verification map shows initial concentration as target concentration
88785	7mm Regrip Nest cannot be selected in Add Labware
88794	Missing error context check for Remove Labware command
88795	Touch Tools command 'Manual Scan Barcode' cannot scan group of plates with door open

88817	Exception thrown while aspiration out of an empty trough
88836	FCA DiTis collide with FluentID handles during pathfinder move
88854	Deviations between labware definitions and drawings
88870	MCA couldn't evade from RGA when removing empty nested tip wafer
88880	Add Labware followed by functions GetNumberOfTipsInTipBox(), GetTipBoxStatus() & SetTipBoxStatus() leads to context-check error
88886	FCA Aspirate Execution Error "index was outside the bounds of the array"
88889	Not possible to reset nested FCA DiTi stack
88953	Checkbox for Heater enabled is unchecked though heater is enabled
88954	FluentControl crashed when switching to user with expired password
88962	Tolerance for mechanical imprecision is too small when using FCA tip spreading
88967	Snapshot window always covers FC error message
88973	Pause and Stop buttons disappear
88984	Labware Editor - Custom Attribute "Stacker Type": value > 10 is initially not possible
88999	unnecessary 'too much in tip' error message
89005	WT merge error by loading/creation a method that use two scripts with the same worktable
89006	FluentControl crashes when run resume check was aborted and run finished
89026	Transfer of Nested DiTi racks from the Stacker Tower to the MCA DiTi Base is not possible with tool location robot
89060	Sub journal exception when recovering after stop / retry in an aspirate or dispense with the FCA
89099	MCA96 GetTips fails with 'unknown column offset' when using layer of DiTis moved by RGA
89102	Sample transfer command: Overview missing for 1x16 16x100mm Tube Runner
89103	Switch user: Different users were shown in FluentControl and TouchScreen
89122	RUP Variable with Textbox and Numpad always need to delete default value before typing
89145	Fluent Setup Pipetting test fails in first cycle
89151	MCA Get Tips command shows no error when labware does not exist
89262	Approval Release Menu Item is missing
89269	RGA driver error during FluentControl startup
89275	Operator can execute 'suspicious' method, even though he doesn't have the necessary rights for this
89313	SW crash at runtime followed by FCA crash with broken tip adapter in next run
89315	Importing a corrupt file with InSituNormalization Command leads to an Unhandled exception
89330	Installer includes non-tested components
89357	Sample Transfer smart command gives "Unhandled exception" if no tubes are selected in a runner
89358	Carousel command "ReadBCsInLocation" non-readable Barcodes causes a non-recoverable error
89398	Substring command gives context check error if there is no initial barcode set for the labware
89426	RGA is not in Zero G state after the warning demanding to move the arm by hand

89542	Tips collides with the labware during aspirate command when the labware was added by Add labware command

10.2 Changes and Improvements

- Redesigned Export/Import
- Allow suppressing Active stop messages for external drivers
- New ‘On System Prompt’ command
- Enhanced MCA96 Advanced DiTi pickup to choose move distance automatically and support multiple tip sizes

10.3 Default Liquid Class Improvements

- Ethanol Free Single and Free Multi:
  enabled prewetting by changing default value of the variable ‘prewettingSteps’ from "0" to "1" for all tip types
- DMSO Contact Wet Single: changed AccuracyAdjustment (aspiration and dispense) for DiTi 50 and DiTi 50 Filter
- Serum Free Multi Liquid FCA:
  changed Conditioning Volume, AccuracyAdjustment (dispense) and First Dispense Correction for DiTi 200 and DiTi 200 Filter
- Serum Free Single Liquid FCA:
  changed AccuracyAdjustment (Aspiration and Dispense) for Standard Fixed Tips, DiTi 50 and DiTi 50 Filter
- Serum Free Single Air FCA: changed AccuracyAdjustment (Aspiration and Dispense) for DiTi50 and DiTi 50 Filter, DiTi 200, DiTi 200 Filter and DiTi 350
- Water Free Multi Liquid FCA: changed Excess Volume, Conditioning Volume (Min&Max), AccuracyAdjustment
  (Dispense) and First Dispense Adjustment for DiTi 350
- Water Free Multi Air FCA:
  changed PulseVolume and First Dispense Adjustment for DiTi 350
- "Standard Wash Tipblock 125" was renamed to "Enhanced Wash Tipblock 125"

New liquid classes

- DMSO Contact Wet Single AirFCA DiTi 50
- DMSO Contact Wet Single AirFCA DiTi 50 Filter
- DMSO Contact Wet Single MCA384 96DiTi 200 Wide Bore
- DMSO Contact Wet Single MCA384 96DiTi 200 Wide Bore Filter
- DMSO Free Single MCA384 96DiTi 200
- DMSO Free Single MCA384 96DiTi 150 Filter
- DMSO Free Single MCA384 96DiTi 200 Wide Bore
- DMSO Free Single MCA384 96DiTi 200 Wide Bore Filter
- Ethanol Free Single Air FCA DiTi 50 clear
- Ethanol Free Single Air FCA DiTi 200 clear
- Ethanol Free Single Air FCA DiTi 1000 clear
- Serum Free Single Air FCA DiTi 50 clear
- Serum Free Single Air FCA DiTi 200 clear • Serum Free Single Air FCA DiTi 1000 clear .
- Water Contact Wet Multi MCA384 96DiTi 200
- Water Contact Wet Multi MCA384 96DiTi 150 Filter

- Water Contact Wet Multi MCA384 96DiTi 200 Wide Bore
- Water Contact Wet Multi MCA384 96DiTi 200 Wide Bore Filter
- Water Free Single Air FCA DiTi 50 clear
- Water Free Single Air FCA DiTi 200 clear
- Water Free Single Air FCA DiTi 1000 clear
- Water Free Single MCA384 96DiTi 200
- Water Free Single MCA384 96DiTi 150 Filter
- Water Free Single MCA384 96DiTi 200 Wide Bore Filter
- Water Free Single MCA384 96DiTi 200 Wide Bore Filter

10.4 Default Labware Changes

Troughs: 25ml, 100ml, 1000ml, 125ml MCA, 200ml MCA, 250ml MCA, 1000ml

Plates: 24 Well Flat, 48 Well Flat, 96 Well Flat, 96 Well Round, 96 Well Crystal Quick, 96 Deep Well 0.5ml, 96 Deep Well 1ml, 96 Deep Well 2ml, 384 well, 384 Well Deepwell, 384 Well LoVol HiBase, 384 Well LoVol LoBase, 384 Well LowVol Round Corning, 1536 Well

Tubes: 50ml Falcon, 15ml Falcon

11. FluentControl 2.0 (2.0.4.45040)

11.1 Bug Fixes

ID	Title
30423	No undo/redo entry created during "Edit/Search and replace LiquidClasses"
86071	Touch Tools does not switch back to home screen after run. Showing User Input Variable
87754	Move Simulation fails after undoing delete of a DiTi stack
88975	first undo not working after copying carriers on worktable
88995	classification of errors into collision and other hardware errors is not working
89103	Switch user: Different users were shown in FluentControl and TouchScreen
89106	commands appeared twice in Controlbar
89163	Executing a script step by step is not possible - script cannot be aborted after second statement
89265	FluentControl crashed after Import of zeia file
89318	Opening door while MCA aspirates aborts script
89355	Sample Transfer smart command does not consider arm range when using well-offsets and multiple runners
89356	TouchTools 'worktable' command did not show FluentID runners
89387	On multiple changes in System Configuration that includes change in Sample Tracking I/O State, Fluent doesn't instruct to restart the application
89427	Retry after stop during "Remove Empty Tip Spacers" command is not working
89437	connection error to MIO incubator during initialization
89457	NullReference exception when editing 'on error goto' command
89508	AirFCA moves to wrong position with Move Tool Home Position button

89542	Tips collides with the labware during aspirate command when the labware was added by Add labware command
89546	Software freezes when paused during timer
89559	No "Retry"-option if variables are exported to a folder that doesn't exist. Run aborts.
89571	Can't switch user, after closing User Management Editor without saving changes
89583	Inheco MTC driver could not be simulated (hangs when I/O state is set to off)
89588	Approval Release Context Menu Item not available when admin activates approval functionality
89612	CNS send notification command did not display checkboxes for selected recipients
89616	Move Simulation fails after undoing delete of a DiTi stack
89621	FluentControl crashed when access to AuditTrail logfiles was blocked
89661	Windows Screensaver is blocked while Fluentcontrol runs
89674	If the door is opened exactly when a 'plate lost' error occurs the RGA may keep moving
89680	Typo in Te-Stack error message
89706	FluentID did not ask for rescan of tubes after opening door
89707	TouchTools 'worktable' command showed wrong site numbers
89715	Unnecessary error flag transmitted to SampleTracking when dispensing to a labware which had a previous aspiration error
89732	On screen keyboard stays on Touch Monitor after user login and overlays method starter
89733	TouchTools 'worktable' command does not show TeVacs, FES-Fingers, MCA head adapters and DiTis on MCA Active Nest
89741	Error message of Keyence driver during startup
89749	Previous button on Touch monitor was not working reliably
89763	Repeated import of the same zeia-file creates always a new worktable and method
89764	Labware definition for 1.5mL Eppendorf Tube was not accurate
89775	After importing two labwares and the worktable had the same name
89788	Dot in labware name leads to error during aspiration when using option "use next when empty"
89799	Inline Filter command is not skipped on Liquid FCA
89812	New Clear FCA DiTi definitions were not protected as manufacturer objects
89814	The error handling window for "No liquid detected" does not show the position and the barcode of the tube to be refilled
89827	Advanced MCA96 DiTi drop performed only side-move but not second drop
89833	FluentID tried asked for tube rescan twice when switching from real to simulation mode and back
89855	error after importing script from old FluentControl version
89866	Changes not reverted when they could not be written to AuditTrail (write operation to audit trail failed)
89875	Data Audit Tool wrongly marks empty GWL File as invalid
89895	5000ul DiTis could not be picked up on instrument with DiTi adapters on channels 1-4 and fix tips on channels 5-8

89899	Touch Monitor does not display query text for User Input
89903	Touch Tools does not switch back to home screen if the last statement in a wizard group has context check errors.
89955	labware label name without index leads to an error in Smart Commands including Worklist 'R' and 'T' statements
89965	ADH for FCA for reactive case is not working
89974	Tips are not picked up by FCA Get Tips when script is recovered
90018	Two warning messages shown when switching to research only mode instead of one
90114	Drivers using a GUIprovider cause a wrong ‘not released ‘ warning

11.2 Changes

- Compatibility with Windows 10 added

12. FluentControl 2.1 (V2.1.19.46163)

12.1 Bug Fixes

ID	Title
79132	Software freeze during FCA pipetting
80975	clld cross talk check is run even though 'trough mode' is enabled
84656	Labware may be preserved in runtime worktable after aborted run
86107	Operator cannot execute newly created methods
87001	already loaded FluentID runners are not re-verified after the error messages 'Pick up Tips no Tips' and 'Tips already mounted'
89148	Context check error that FCA tips are out of range appears after opening method or deleting second script from method.
89274	MCA 96 DiTi Pickup stopped with HW error
89290	FluentControl crashes during script editing when activating ‘has lid’ in Cytomat
89384	Return labware from teaching shows error message that labware is gripped
89412	calculation of pathfinding evasion routes can be slow
89571	Can't switch user, after closing User Management Editor without saving changes
89676	Initialization fails with 'power switching failed'
89738	ToolLocation to present plate from the cytomat does not free up RGA
89903	Touch Tools does not switch back to home screen if the last statement in a wizard group has context check errors.
89917	Software hangs when FluentID Run Resume Check is aborted
89922	When using 'user input' with limited range on the touch monitor some numbers can only be entered by using the + and - keys
89930	Imported methods only become accessible for operators after withdrawing and granting user permission again
89931	Error when switching user while using method approval to release a method
89932	While Importing a zeia file additional information is shown and files are not imported

89952	Variable view shows variables transferred to subroutine twice
89956	Initialization with simulated instrument occasionally fails with 'move cannot be executed because not move profile exists'
89969	Move Arm relative in X to a not reachable position with another arm in the way causes FluentControl run to freeze
90035	Sample Transfer is fails when selecting a tube runner that is not on the left of a group as source
90044	error when using spaces in variable name
90045	FluentID run-resume check can take very long
90067	FluentControl freezes at SampleTracking 'Generate Report' command if SampleTracking is not responding
90093	Method Recovery problems when using parallel subroutines
90097	configuration for touch monitor can be lost when starting FluentControl without connected touch monitor
90127	Import does not show conflict if only an RGA vector was changed
90159	Exporting a script with dependencies doesn't export the liquid classes, if liquid class is used per channel in aspirate/dispense command
90186	prepare method fails with 'unable to save new runtime worktable'
90283	When user aborts a run the status message may read 'Fast stop event received' rather than 'aborted by user'

90284	Pause button not visible after pressing continue in touch tools 'standard' command
90305	Worktable graphic in Touch Tools 'Manual Scan Labware' command does not show hotels on back extension
90325	Software slow down when starting hundreds of methods via API
90335	Running script with smart command unapproves the used worktable - script gets 'suspicious'
90341	User gets locked after typing wrong password twice when 3 retries are allowed
90348	Using automatic lid handling and specifying a lid-location without free space can lead to software crash
90401	Status light keeps blinking green even after continuing run
90407	Using the function FileExcelRowCount() can lead to sporadic freezes of FluentControl during context checking if Excel does not respond
90408	Labware in incubator is not excluded as inaccessible for pipetting during worklist execution
90426	Not possible to continue run after stopping during FCA move arm command
90438	Sporadic software crash while saving script
90446	Renaming site of non-grid based carrier changes RGA vector
90503	Doorlocks do not disengage to allow manual barcode entry after failed read with Keyence BC scanner
90515	Unnecessary warning message about reduced volumes is shown due to rounding problems
90530	Error 'value too high or too low for int32' when using 25ml Trough

90541	Using a well offset for a trough with only one well shows misleading error message 'invalid labware format' instead of 'invalid well offset'
91190	Retry option is offered for unsuccessful move to position outside of arm range which will also fail when retrying
91213	New methods do not become available for operators until permission has been enabled in user-management
91220	Storing subroutines in sub folders leads to error during method recovery
91226	Adding new tip types to a liquid class fails the first time with 'all tip types have already been added' when not types are defined. It works on the second try.
91227	Run aborts after method recovery, subroutine not found
91251	System does not initialize if the RGA has a gripped labware
91254	No info popup shown when setting channel to broken after pressure out of range error and failed inline filter test
91255	Doorlocks can fail to reopen when stopping a run within few seconds after starting
91257	Robot vectors can become incorrect when editing and moving carrier without saving the worktable
91259	Access denied error at startup if a windows user does not have access to C:\AuditTrailBackup\AuditTrail\LogFiles
91272	Error 'Update SVN repository - Error CreateContentWithoutCopy failed' during upgrade
91280	Wrong positioning of non-FluentID runners on FluentID segment
91281	Improved error message when trying to start run with 'stored DiTi information' and labware of the new script is overlapping with a stored disposable tip box
91309	Opening door immediately after executing 'fetch labware for teaching' may lead to 'FastStop' error
91316	Collision error when picking up lowest layer of nested 350ul or 10ul FCA tips
91346	Operator cannot continue on 'labware lost' error message
91361	Errors that occur while monitoring the tube runners from FluentID barcode scanning are displayed only after rescanning the tube barcodes
91404	No specific error message and retry possibility when a RGA FES finger is removed during run

91444	Y-range obstacle check does not take into account the y-dimension of the FCA z-bar
91459	User information is not transmitted to Magellan tracker triggering a password prompt
91475	Worktable merge errors after resetting stacked disposable tips by add/remove labware commands
91477	Software freeze due to simultaneous rending in main and touchtools thread
91487	Export tool fails to export some linked liquid classes specified via expressions.
91488	Import shows worktable as conflicting even if it does not yet exist on target system
91561	No error message shown when partial pickup of MCA96 disposable tips failed due to misaligned box
91613	Worklist shall skip records for tubes/wells barcode not on the worktable
91614	Doorlocks do not open when aborting script immediately when starting it
91673	No default carrier definition exists for 'waste thru through 8*100ml'

91674	opening front door during MCA pipetting leads to aborted run
91675	Error message "Too much in plunger" is shown during execution of aspiration command
91690	Buttons of error message greyed on main monitor are greyed out after locked screen and the dialogue can only be answered from the touch monitor.
91709	Carrier Attribute 'grasp offset' is ignored
91716	OutOfMemory exception during very long run
91734	FCA makes an unexpected movement when MCA evades
91764	airFCA z-channels sporadically move up or down during zero-G
91767	Contouring error when picking up disposable tips from lowest layer of nested 350ul tips
91827	If MCA wrongly mounts service head adapter it crashes when putting back the service adapter
91845	MCA drop tips not possible after error during MCA get tips
91871	Runs sporadically stop with message 'Entry could not be written to Audit Trail'
91873	FluentControl freezes when aborting during 'manual scan labware' TouchTools prompt
91877	MIO incubator shows communicationException at startup
91878	When teaching 384 well plate only the position of well #1 but not well #384 can be transferred
91879	Improve Error Message when well offset cannot be applied to plate outside pipettable area
91880	using Datalogic 2D barcode scanner as on-the fly tool leads to 20sec delay and timeout
91889	Status lights unnecessarily switch to red during initialization if user switches script editor tabs
92007	Pressure out of range error handling option 'retry once with new tip' does not switch the tip if dispense back fails
92008	Pathfinder does not consider the time required to retract pipetting arms out of labware bounding box which can cause a delay in an evasion move resulting in crash between arms
92009	changing carrier site definition while script is open may cause carrier to disappear from worktable
92010	software freezes when aborting during 'wait' command
92011	Doors can be opened while arms are moving when recovering a run and pressing pause while a touchtools prompt is active
92012	Exporting a script with dependencies does not export the referenced files of StartApplication and RegisterLabware script commands
92013	RGA direct command 'drop fingers' tries to drop tips even when a labware is gripped
92081	Switching between two TouchTools prompts within a Wizard group not possible with open door
92082	Context Check doesn't flag invalid labware selected in TouchTools worktable command

92084	Balance driver sporadically fails to load and give no context check error. Runs will stop at first balance command.
92086	Stop button not working when TouchTools 'manually scan' labware command is active
92159	RGA Transfer Labware to retrieve a plate from the carousel sometimes fails with 'error sending command'

92160	SampleTracking report may show small aspirated volume (<0.1ul) even though nothing was pipetted when no liquid is detected and 'aspirate available volume' chosen as error handling
92200	When airFCA error handling option 'dispense back to source and retry' after pressure out of range error SampleTracking reports pipetting volume 0 for the unaffected channels that successfully pipetted before executing the error handling.
92222	FCA GetTips command only calculates arm range for tip 1
92224	Pathfinding resolution occasionally insufficient to detect colliding elements during fast RGA rotational move
92226	Door locks not opened when user prompt appeared for refilling system liquid
92229	Improve error message of worklist command convert CSV to GWL
92230	Improved error message for Transfer Labware command if the specified on the fly tool is not available or not working
92233	When stopping and aborting a FluentID "Start Loading" command a context check error appears after returning to Edit mode
92293	Occasional Fluent doesn't switch axes to zero-G mode when aborting run
92297	Selected Labware in SmartCommand gets lost in combination with Add/Remove Labware
92299	TouchTools worktable command displays portrait plate with orientation 180 incorrectly
92300	Runs sporadically stop with message 'Entry could not be written to Audit Trail'
92302	API shows unknown state when method recovery is active
92303	Querying FluentControl status via API during startup prevents successful startup
92304	Context check error about object out of arm range can be unnecessarily displayed when after switching back to edit mode at the end of a run
92397	CNS over iphone does not get any messages
92402	Worklist does not use all tips to pipette reagent from through on a rear nest
92403	Sporadically SyringeSize function cannot be resolved in Microscript
92406	Dataversion number restarts when using method approval
92408	Communication problem to centrifuge after long period of inactivity
92498	Carrier definition for Stacker left had a type in the TransferStationSite1 custom attribute
92499	FluentControl froze when running method with Array variable of scope run
92500	Switch User via Lock Application not working
92501	The context check of Smart Commands for the well selection and well offset does not account for the possibility of partially filled tube runners which can unnecessarily raise context check errors
92503	Light collision of FCA DiTis was not detected and pipetting continued without error message.
92565	Hidden and Deleted methods are incorrectly displayed in TouchTools Quickstart view
92567	Method recovery failed when using finger exchange system for RGA
92568	Method recovery failed when recovering an interrupted touch tools wizard group
92571	Lid_location on source carrier gives context-check error
92572	Method property Show Disposable Tips Information greyed out

92589	Pickup of nested MCA96 disposable tips fails with hardware error
92590	Doors not unlocked on liquid detection error when using 'use next when empty'
92752	SampleTracking doesn't process messages fast enough
92753	default liquid classes can be edited
92764	Labware not gripped error handling opens grippers before user can choose Ignore and Continue
92923	Method recovery fails when aborting during touch tools commands
92969	Editing workspace is slow
92971	Recovery of Methods with Subroutines and FluentID Run Resume Check is not working reliable
92972	Software crash when trying to edit a particular script
92995	Incorrect z-height of Fluent ID runners
92996	Software freezes when no firmware answer is received for liquid detection result
93062	Unnecessary context check error after FluentID allow removal command
93105	Error 'Cannot ensure detected tool equals mounted tool' in traceview
93106	GWL worklists are not exported together with script
93108	SampleTracking script command "Register Labware" shows the error "Object Reference Not Set To An Instance of an object"
93110	After not enough liquid error on FluentID runner and refill only the refilled tube is pipetted
93112	editing carrier fails with 'key not present'
93123	Sporadic software freeze during FluentID barcode scanning
93134	FluentID does not give an error when tubes are swapped during the run
93155	Trace view shows driver init ok even it is failed
93161	Context-check error after running Standard Curve command
93188	Snapshot tool finished with 'errors occurred' when using default settings
93213	Retry option in Stop on Error Handler leads to re-execute and not to recovery of current statement
93214	Selected labware in SampleTransfer does not update when labware is renamed
93218	'runner removed' warning missing in SampleTracking report when FluentID runner was removed during pipetting
93266	subroutines displayed even though disabled in configure system
93268	Automatic lid handling fails with 'position occupied error' when moving plate between several positions that don't allow lid
93305	TeStack slide not initialized after an error
93307	Error "000 Value cannot be null. Parameter name : key" when declaring a variable name with an invalid character
93309	RGA error during FluentID scan (continue while scanning) removes FluentID info from touch monitor and continues without scanning barcodes
93319	Cancel not working while duplicating driver
93321	Wrong ST report when FluentID tubes are swapped during 'not enough liquid' error handling (refill)

93330	Start of method with worklists takes too long
93332	RGA doesn't evade during MCA sidesteps
93360	Carrier dimensions not editable
93389	After opening door resume needs to be pressed twice to restart run

12.2 Changes

- Intended use changed to general purpose
  (when used on Fluent 2018 design together with GX assurance software)

13. FluentControl 2.2 (V2.2.16.47310)

13.1 Bug Fixes

ID	Title
87629	Changes to the user management done in Fluent are not logged in UMS Audit Trail correctly.
89316	Inconsistent behavior when trying to save Scripts, Methods, Worktables and Liquid Classes with the same name
89530	grid and site numbers shown in worktable editor are inconsistent
89671	CNS doesn't send emails for state 'user interaction required'
89696	Configuration of TeStack: Y position value can be set higher than actually available. No error-message on script execution
89910	Entry could not be written to AuditTrail error
90437	Change of rotation coordinate by exactly 360 degrees cannot be saved since it has no effect
91275	Improve logging for moves with Move Tool
91461	Carrier definition for MCA off deck waste chute is higher than real carrier preventing 500ul MCA DiTis from being dropped
91670	Liquid class 'Serum Free Single' has wrong accuracy adjustment
91672	Differences in MCA96 disposable tip mounting height for 1 column or all 96 tips
91676	Operator has execution rights for imported methods without being explicitly granted this right
91678	Exporting a script to USB stick is very slow
91881	Touch tools "Select Wells" command cannot show runners with 24 or 32 tubes
92042	Context checking of parameters (such as password length) for user management is different in FluentControl and user management standalone
92087	Unit of Te-Shake shaking frequency is displayed as Hz instead of rpm
92157	'Show delta' button in Carrier editor shows incorrect values
92294	Imported tool definitions (Disposable tips, MCA head adapters or RGA fingers) are not found during context checking until restarting FluentControl.
92295	Commands moved out of a variable pipetting loop keep a tip-mask entry which causes no tips will be used
92301	after changing instrument configuration file new worktables are created with a blank name and cannot be saved without changing the name
92411	Importing maintenance methods shows an unnecessary warning message that it contains no worktable

92570	Move simulation fails if FES fingers are mounted in a subroutine. Script must be started with disabled context check.
92973	FluentControl crash at runtime when running as method
93061	Method started via Prepare Method does not auto return to edit mode after successful run
93063	Move Arm commands repeated fully when resuming or recovering run
93109	Pathfinding fails if two parallel subroutines trigger evasion moves simultaneously
93113	After Tip Lost error disposable tips are cleared from pathfinder
93156	Obsolete warning message when exporting script with Normalization / In Situ Normalization command
93191	Run can sporadically not be resumed after active stop
93269	collapsed MIO incubator set temperature command doesn't show specified temperature
93308	User Prompt is replaced by the Error message dialog box when you abort the script execution

93343	MCS communication problems leading to sporadic freeze of FluentControl when using SampleTracking
93377	Shaking frequency of MIO incubator is now shown in summary of collapsed command
93379	Run could not be continued after opening the door during airFCA pipetting. Method recovery after reinitialization works.
93431	Dispense back error handling after pressure out of range error dispense from z-start with upward tracking
93433	Question mark characters are automatically inserted after each character when typing a labware name into the 'waste' field in the worklist command
93521	Referenced files are not shown explicitly in export/import
93533	Connection to API is lost after 10 minutes of inactivity
93536	Exporting Script with ST register labware command gives unnecessary warning message 'application file could not be found'
93540	FCA move arm shows 'well offset cannot be calculated for labware outside pipettable area' even when plate is in pipettable area
93542	Fluent control crashed after several consecutive method runs, if Fluent is operated via API
93743	FluentControl crashes when Undo and redo was done in method editor
93744	Operator that has rights to edit methods cannot run approved methods
93745	FluentControl can crash during a run if the lock screen is displayed
93748	Change in intended use is not logged in audit-trail logfile
93749	Data Audit Tool detects inconsistency unnecessarily when TeShake is used
93750	Tecan Licensing Client Module is not working after installing SparkControl magellan 2.2 or Magellan 7.2
93830	Operator is able to execute suspect methods in addition to approved ones
93898	AirFCA cannot drop 1000ul disposable tips to FCA off deck waste-chute - out of range error
93902	FluentControl sporadically freezes when used from API
93940	Worklist reagent distribution with a tip reuse > 1 does not work

93955	Method Recovery fails if 'leave loop' or 'next cycle' commands are used
93980	Method cannot be continued after active stop during 'on empty tray' action with the FCA transfer tool
93982	Touch monitor interface disappears when using query at startup for variable input
93996	CNS communication timeout can lead to FluentControl software crash
94003	Pipetting to this partially filled tube rack not possible
94048	no possibility to continue run after improper cLLD error
94073	Saving device carrier not possible directly after editing site definition
94094	License Client Module crashes when aborting Open-File Dialog for adding an existing License File
94095	Interior Light Off command executed and Touch Tools Header menu still shows Turn off
94096	'DiTi lost' error is not reported in Trace View
94134	Touch Tools shows an empty user prompt window when executing a script with Query at start-up set.
94187	Sample Transfer command: Additional Error prompt pops up stating "Fatal error encountered" when trying to Abort run from a Liquid handling error prompt
94201	CNS over internet cannot be activated in some cases
94220	RGA Move Arm and Execute Single Vector command fails when gripping labware that is not define in software worktable
94221	Pathfinder error during method recovery
94236	RGA rotation during move can lead to collision with other arm

94248	Repeated error message 'run stopped due to hardware error' and abort not possible
94251	'preserve disposable tip position' does not preserve position of disposable tip lid.
94327	FCA move arm command doesn't allow moving to DiTi labware
94344	Licensing client crashes and not license can be requested
94347	problems using database export when referenced files are used.
94354	Pathfinder used old worktable for checking and therefor found collisions with objects that no longer exits
94355	Empty Tray command generates Collision Error for FCA when two 5 Stack disposable tips are placed on sites next to each other
94380	Worktable Editor: Undone changes cannot be saved.
94474	File Version Checker displays duplicated drivers as 'not released'
94488	FluentControl can crash when switching the user during the run
94489	FluentControl info bar shows a logged in user even after deactivating UMS
94537	Snapshot tool fails with 'inner exception' on windows 10
94546	Run stops to due to hardware error 10
94560	False context-check error after run when setting concentration via Set Attribute function
94564	Unnecessary warning 'dispense target volume was reduced to available volume'
94577	'invalid job index' error message during worktable editing

94580	Sample Tracking out of Memory after registration when empty positions in tube runner
94581	Method recovery of asynchronous subroutines fails
94598	liquid FCA channels randomly drop to the worktable after script is aborted
94612	Wrong icon for mouse cursor on unlock screen after switch user
94613	Slow context checking while editing dynamic disposable tip handling parameters in worklist command.
94620	FCA spreading axis is varied too quickly when used from the move tool
94637	Software can crash at FluentID start loading command depending on worktable layout
94638	"Too much in tip" error during aspiration command which followed after a wash command.
94656	Wrong site name in default carrier definition of Te-Stack
94657	Software Crash while editing labware group settings
94721	Installation fails on non-English Windows versions
94749	liquid level detection not possible after fast-stop event
94769	Additional logging for 'execution of transition failed' error
94771	Fluent crashes after deactivation of the UMS and running a script
94774	FluentControl occasionally crashes when defining variables
94834	FullExport function does not export referenced files of scripts
94836	Motion delays from pathfinder are added to the wrong arm possibly leading to collisions at runtime
94875	Context Check error message in SampleTransfer command doesn't specify which labware is missing
94876	'Save as' of read-only liquid class also sets the copy to read-only
94877	FCA move arm command can fail with 'invalid well offset'
94878	Software froze during Data Export Generate Report command when using an automatically generated barcode
94892	FluentControl can crash when deleting a labware that is moved
94913	Tracking during aspiration is enabled although the aspiration is performed at Z-MAX (AirFCA, clear Ditis)
94914	Empty tip LC for 1000ul wide bore and clear disposable tips on AirFCA is missing
94915	Water Mix liquid class is missing for FCA 1000ul wide bore tips, clear tips and MCA96 200ul tips
94916	Wrong dispense acceleration formula in liquid class Water Free Single for Diti50 on FCA
94981	option 'notify by mail' in the FluentControl user administration panel is not working
94993	TeShake initialization can take several minutes
95051	Pathfinder could not find a path
95067	Method recovery fails when stopped during MCA aspirate command
95070	Copy Paste in Method Editor leads to Object Reference not set to an instance of an object error
95079	initialization fails without meaningful error message when home position of the arms is not accessible

95169	Summary dialogue after import does not count referenced external files
95261	Unnecessary context check error 'rearranging labware in stacker location after move failed'
95265	FCA gripper failure after evasion move in asynchronous subroutine
95266	API ReadyToConnect event is not available for Excel VBA and COM
95288	'volume has been reduced' warning during pipetting
95294	Pathfinder evasion move fails with 'target position is out of the valid position range'
95353	Running script with 'standard curve' smart command unapproves the used worktable - script gets 'suspicious'
95365	Worklist optimization changes order of advanced worklist commands
95369	FCA gripper skips alignment move when run in stopped and resume during finger pickup
95397	Error when using SampleTracking register labware with a plate-map for a tube runner
95449	Cannot drop plate to waste since GetCoverSite function returns empty String

13.2 New Features

- License control of FluentGX features
- UserManagement via Windows Active Domain
- SampleTracking Standalone including Report Designer, Web Server for Reports and Quick Viewer • FCA gripper

14. FluentControl 2.2 SP1 (V2.2.17.47727)

14.1 Bug Fixes

ID	Title
96210	Possible droplet formation on liquid-FCA with fix tips because airgap is sporadically not dispensed

15. FluentControl 2.3 (V2.3.13.48369)

15.1 Bug Fixes

ID	Title
92042	Context checking of parameters (such as password length) for user management is different in FluentControl and user management standalone
92396	CNS Browser Gadget shows FluentControl as 'MyControl Application'
92412	CNS Send Notification sends out emails to users that are locked in UMS
92755	Data Export report does not contain Detected Volumes
92920	CNS Send Notification script command icon changes color
93191	Run can sporadically not be resumed after active stop
93379	Run could not be continued after opening the door during airFCA pipetting. Method recovery after reinitialization works.
93431	Dispense back error handling after pressure out of range error dispense from z-start with upward tracking
93744	Operator that has rights to edit methods cannot run approved methods

94202	GX status lost when switching to simulation mode and then back to real mode without restarting FluentControl
94278	Reinitialization needed to recover after removal of FluentID runner while pipetting
94750	'Labware lost' error during removal of empty nested MCA tip wafer in landscape mode due to non-optimal grip parameters
94769	Additional logging for 'execution of transition failed' error
94879	Nested FCA tips are not used in the correct order
94910	wrong display of FCA gripper fingers in 3D visualizer
94919	Unclear error message when login fails due to wrong capitalization of username - username is case-sensitive
94960	When switching to PAUSE and carrying a plate the RGA does not drive up the exact same distance like it drops down
94993	TeShake initialization can take several minutes
94994	Email Recipients not listed in CNS Send Notification command after fresh FluentControl start
95313	Set 320ml trough as read-only and adjust bounding box
95315	Error message run aborted due to hardware error shows incorrect axis
95362	Allowed locations for 2 Grid Left 147mm carrier are wrong
95363	Labware editor permits allowing more than one lid type per labware which then causes wrong offsets to be applied
95368	Error message improved when arm is standing inside a bounding box
95497	switching user during initialization aborts the initialization
95498	retry after dilutor error fails
95571	'exceeding remaining tip volume' error message when resuming from active stop during airgap aspiration
95574	Reinitialize of MCA P&S axes needed after aboring run during MCA aspirate
95586	Expanding FCA get finger command in the script can change selected fingers
95587	Driverinterface does not allow to create carrier or labware
95588	FluentControl crash when trying to switch user during the run
95598	Method recovery fails after collision during nested tip handling routine
95657	FluentControl shows general purpose intended use even when Spark is used (which is a research-only device)

95665	Software crash when using 'Save as' and not providing a filename
95687	Software crash at TouchTools 'Worktable' command
95689	Tuberunner in landscape orientation is scaled incorrectly in graphical user interface
95691	Errorhandling for failed labware detection in FCA transfer labware command has 'retry' rather than 'ignore and continue' option
95693	When aborthing run from FluentID command the background of the prompt is green instead of red
95783	Methodrecovery unnecessarily asks user to remove FCA transfer tool when recovering run aborted during nested tip handling routine

95788	Variable in AdvancedWorklist is not working
95789	Context-check error 'enter valid XY-position offset' when using a labware with a compartment shape with width zero at z-bottom
95790	CNS Send Notification: Underscore in Username not Displayed
95791	MCA 'S target positoin exceed movable range' error
95980	Target position for arm FCA 1 out of range during worklist execution
96021	Object reference not set to instance of object error when executing direct command after an error
96123	Running FluentID command as direct command is possible and then causes TouchTool driver to crash
96167	Array variable cannot be resolved when variable scope is set to RUN
96168	TeVacs Vent command has back/front sites inverted
96202	RGA vector coordinates for non-grid based carrier cannot be overwritten
96203	Cancelling 'switch user' is not possible from touch monitor
96210	Possible droplet formation on liquid-FCA with fix tips because airgap is sporadically not dispensed
96354	Method recovery fails when using worklisting and loading more than one worklist
96381	RGA z-axis not in zeroG after Fetch labware for teaching command
96391	Configure System tab does not refresh immediatly after enabling driver
96395	MCA tip pickup fails with 'hardware error'
96396	Method recovery failed when using asynchronous subroutines
96401	Error 'arm has been moved during pause' when resuming from cLLD error
96412	Doors remained locked after script stopped for error prompt
96426	On System prompt not working in subroutines
96462	Unit 'rpm' was shown as 'RPM'
96463	Retry failed after 'tips not fetched' error
96536	Software freeze when resuming after hardware error
96582	Run stopped during MCA aspirate could not be resumed
96705	'Object reference not set to an instance of an object' when opening script
96722	Move Tool not updated after manually removing disposable tips
96723	FCA dilution command shows error about DiTi capacity when using fixed tips
96740	Wrong SampleTracking report when using 96well plate with MCA and teaching slightly deviates from 9mm spacing
96791	SVN Restore data to previous restore point does not work to go back to revision 1
96846	No context check error is displayed when script name is missing in Subroutine command
96857	FluentControl crash during carrier editing
96874	FCA gripper failed to drop fingers after detect labware command
97023	Touch interface disappears at the end of a run
97046	Run paused at touchTools prompt and could not be continued

97048	Error 'Failed to deserialize statements' while loading script
97060	Initialization fails with 'positioning of FCA over waste failed' when using RGA when centric finger and FluentID middle.
97084	RGA evasion move after 'grip failed' error can lead to dropping of gripped labware

15.2 New Features

- Parallel API access via Execution channels
- Support of UVC light option

15.3 Changes and Improvements

- Expression input box to specify connection in ICP commands
- Improved logic for FCA nested tip pickup

16. FluentControl 2.4 (V2.4.23.51375)

16.1 Bug Fixes

Some bug numbers were changed during migration to a new tracking system. The migrated bugs show the original bug number in square brackets as part of the description.

93058	Magellan ini file is not validated after changing COM port causing an unnecessary warning about an invalid checksum
96725	Software freeze after fatal error while showing TouchTools prompt in asynchronous subroutine
97039	TouchTool QuickStart button sometimes cut method name
97093	Worklist with decontamination washes leads to sequential rather than parallel pipetting of with individual tips
97113	Method with zero iterations of a script and query at startup variables cannot be opened
97175	Variable pipetting loop on 24-position FluentID runners fails
97214	User is reasked to save when closing 'configure system' even after having already saved changes
97371	Carrier '24 Eppendorf adapter' does not have the checkbox 'accessible to pipetting arm' enabled
97408	'Remove Labware' command does not allow to remove tube runners
97808	Standard Wash liquid class causes rapid wash be on for 2 minutes when a flush/wash volume smaller than 0.5 ml is specified.
97812	Method aborts when trying to start a 2nd method during the run via API. 2nd run request should be blocked without aborting running method
97827	Unclear error message when output folder for 'export variable' command is not accessible
97828	FluentID runner definition is too wide and prevents placing a wash station next to FluentID segment even though it physically does not collide
97830	When starting to edit a labware barcode form the worktable editor but cancelling barcodes can unintentionnaly be set to 'no barcode set'
97831	Incorrect timing of evasion move leading to RGA/FCA collision

97833	When method start fails due to context check error the system returns to edit mode and the error message is no longer shown
97835	FluentID grid flashing red upon removal of runner after finishing a script at script editor
97836	Switching user fails when run is stopped for user-prompt and the screen is locked

97843	Delay after script command
97867	[93938] Labware name longer than 32 characters leads to failed Magellan measurement
97869	[94651] FluentControl with Magellan Tracker leads to Magellan login screen at Initialize if password > 8 characters
97882	[96826] Incorrect Grid numbers displayed on 20 Grid Back Extension
97883	[97033] Timeout error caused by pathfinder when two FCA simultaneously try to access same tip stack
97884	[97034] Variable not consistently colored in blue during script editing
97885	[97035] using labware definition with truncated cone that has identical top and bottom diameter (i.e. a cylinder rather than a cone) leads to error 'negating the minimum value of two complement numbers'
97886	[97037] 'object reference not sent to instance of object' context check error after running script.
97887	[97877] RGA could not evade from arm FCA1
97888	[97087] 'labware does not exist' error when retrying after crash during TeStack slide movement when the TeStack is marked as waste location.
97889	[97091] Software freeze when trying to save script
97890	[97094] Store Well concentration commands tries to access SampleTracking information at edit time and causes SampleTracking error because barcodes do not yet exist
97891	[97095] Software crash when trying to declare two variables with same name
97892	[97096] Software freeze when trying to recover method after modifying the underlying script
97893	[97406] Run is marked as 'finished successfully' when aborting immediatly after starting.
97895	[97482] defining interleaved labware with less than columns not possible
97897	[97534] Variable name for sometimes not working for output path of Export Variable command
97898	[97535] Sending StopMethod via API immediatly after an error occurred does not work
97899	[97536] Running context check is cannot be aborted
97900	[97537] Software crash during script editing when mixing / using variables names only differing in lower-uppercase
97902	[97545] After navigation up and down in complex script a context check error 'position occupied' is unnecessarily displayed
97903	[97605] TouchTools worktable command highlights wrong position in some cases
97905	[97637] Evasion move cannot be started while errorhandling routine is executed.
97906	[97738] FluentControl sporadically crashes when saving script
97907	[97739] Aborted method cannot be recovered due to 'plunger not able to prepare move' error

97909	[97743] Interrupted long-term runs due to synchronization issue in listing of runnable methods
97913	[93376] Starting instrument in simulation sporadically fails and restart of FluentControl is required
97915	[96558] Method recovery failed when using asynchronous subroutine
97916	[96584] Carrier corrupted after editing site-offset
97917	[96871] Pathfinder error when two arms are active in different subroutines and both trigger an evasion move for third arm
97918	[96878] Resume after error not possible and error 'no sub journal with the name MCSMessages found' shown
97921	[97114] Labware with zero wells leads to software crash
97923	[97205] worklist can fail when 18mm spacing is used on position next to a hotel

97924	[97207] FCA gripper opened while transporting plate
97925	[97403] In some scenarios with nested FCA tips, the FCA cannot get the required number of disposable tips but does not trigger the on empty tray subroutine that would allow fetching more tips.
97926	[97404] Automatic DiTi Handling subroutine does replaces tips earlier than needed in 'reactive' mode.
97927	[97410] Software freeze when aborting while starting recovery of a method with asynchronous subroutines
97928	[97411] No context check errors in edit mode if MCA Dispense has empty well selection
97930	[97542] Lockscreen can by bypassed by using Windows 'close all windows'
97931	[97543] RGA drops labware when 'colliding end position' error occurs
97932	[97564] Moved labware is not immediatly deleted from pathfinder swift scene and blocks position for another move.
97933	[97601] TouchTools 'Variable' command sorts fields column instead of row-wise.
97934	[97602] TouchTools 'Worktable' command show wrong grid number in edit-time details
97935	[97603] TouchTools worktable command does not nicely display back extension
97936	[97604] 'Store Well Concentration' command uses regional language settings for decimal separator unlike the rest of FluentControl
97937	[97700] FluentControl can crash with error 'message carrier or labware not found'
97939	[97741] CNS shows Info messages for 'display and continue' TouchTools user prompts
98638	Functions date() and time() depends on language settings
98720	Direct command 'drop tips' did not work after stopping a run during pipetting
98725	SampleTracking error after many empty tip commands to waste location
98737	SampleTracking show volume with accuracy adjustment instead of net volume when using negative accuracy adjustments
98783	API reports status 'EditMode' around 100ms before it is possible to start a new method
98818	Microscript command 'Move absolute z' should allow to access all positions in armrange, also below worktable

98834	Unloading lid from carousel with barcode scanning leads to error 'object reference not set to instance of an object'
98835	Error Handling Option "Retry at same position" for Get Tips retries at next rather than same position
98836	Allow specifying which new DiTis are fetched by Replace Used DiTi Racks command
98854	Incorrect Syntax highlighting for <Labwarename>.Barcode statements
98863	MCA can oscillate when dispensing with tracking to a compartment with zero initial diameter
98877	When continuing after some errors the status light is flashing green instead of solid green
98880	FCA gripper plate presence check fails if breakthrough event is reported
98885	long pauses between pipetting and washing steps
98901	For some partial shpere compartment diameters no graphic is shown in the labware editor
98906	Warning message 'this run was recovered after an error' reworded to 'This run was recovered after an error or a recovery point exists from a previous run'
98923	Status of mounted RGA fingers not correctly displayed in MoveTool in Fluent Control
98926	Starting scheduled maintenance run not possible after aborting other run
98937	User is unnecessarily asked to save the Base worktable even when it has not been modified
98962	No context check error when no output filename is provided for Convert CSV to GWL command
98964	Certain Programming commands displays field values with red dotted underline although valid

98965	Start VB command does not show context check error when selecting txt instead of vb file
98980	Method recovery with asynchronous subroutine fails stating that subjournal files are missing
98989	sporadically run cannot be started
98992	API occasionally incorrectly returns no available methods
99051	Deselected tips must move to z-travel during round-move within a plate
99055	Query at startup variables not shown after starting Method
99064	Pickup of FCA nested tips fails with pathfinder error
99070	FluentControl freezes when trying to open method with duplicate variable names
99087	Active Stop during Wait for Timer command leads to error
99088	Start application command shows red border on textfield for output variable even though no context check error is detected.
99107	CNS reports incorrect run status
99142	Pathfinder unneccessarily still considers gripped labware as attached to the RGA when an evasion move is triggered immediatly after releasing the labware.
99143	CNS Send notification command does not resolve variables (between tildes ~)
99144	Volume Well attribute after dispense is increased by gross rather than net dispensed volume
99404	Fluent Control can crash after long run time

99439	FC crashes during print script to pdf or BackToEditMode after run finish
99507	Variable transfer via API is not reliable
99537	Reactive SBS DiTi handling not working
99551	Resuming run after stopping during programming command (such as wait) fails
99556	FCA gripper plate presence check incorrectly identifies plate as missing even while it was correctly transported
99574	Deleting labware that is shown at a simulated position can lead to a software crash
99596	FluentControl crashes when adding empty lines to available drivers and then deleting those lines again without filling in any text
99599	Incorrect compartment definition of 25ml trough
99629	'use next when empty' switches all 8 tips to new trough even when there is still enough liquid for some of them.
99634	FluentControl hangs if you try to add a script to a running method
99648	Unexpected syntax check errors, if variables are used in GetAttribute function
99658	Command Select Wells does not allow to go back to the previous page from Touch Tools
99660	Null reference exception and software crash when starting method via API
99662	No prompt is shown when all stacks of nested FCA are empty and need to be replaced
99664	dispenses after empty tip command show warning 'reduced target volume'
99666	API execution channel terminates when active stop occurs.
99672	Initialization fails with 'Positioning of FCA over waste failed' due to incorrect bounding box of RGA fingers
99684	'Manually Scan Labware' command in Wizard Group forces to close the door in order to execute the following Standard RUP command
99693	Manually Scan Labware command does not support variables in Title and Instructions fields
99697	runtime controller displays wrong color after unrecoverable error
99759	Te-Vacs Vent script command: front and rear radio buttons are incorrect labelled
99779	Collision avoidance fails on system with 2 RGAs when started while FES fingers are mounted
99780	FCA Get Tips failed with RPR-B and run could not be continued
99797	Side window panel is simulated in the middle rather than on the outside of the beam and
	therefore prevents RGA from moving to some physically accessible positions
99868	Method recovery for method aborted at liquid level detection in trough only pipets with the detecting tip rather than with all 8.
100011	When all tips are marked as broken after failed inline filter test, the FCA get tips command shows the confusing error message 'invalid tip selection'
100084	Red light keeps blinking after switching to edit mode from failed run
100090	RGA could not evade error when evasion move is triggered when while the RGA is on the regrip station
100116	'liquid class not known' error when selecting liquidclass with a variable transferred from a subroutine
100129	Unclear context check message when selecting a not allowed labware as 'emptyTipLocation' in the Sample Transfer smart command.

100166	RGA crashed again front screen when trying to move back to original position after failed move
100196	FluentControl shall does not show a warning/error if several copies of a DLL are loaded.
100221	SmartCommand shows incorrect context check warning that transfer will be split into multiple steps if the liquid volume plus leading airgap exceed tip capacity.
100258	Reset DiTi status not possible when using Te-Stacker as WasteLocation
100384	Aborting the run shall also close the API execution channel

16.2 Changes and Improvements

- airFCA channels are in zeroG mode when system is paused
- I/O control script commands added
- Run partially now uses worktable expected at first selected script line
- Destination and liquid class of Empty Tip command generated by SmartCommands and Worklists can be configured
- Maximal volume supported by MCA96 Extended Volume Adapter (EVA) has been increased by 10ul
- More commands are allowed in TouchTools Wizard Group
- TouchTools Worktable command shows 3D graphics and supports variables
- String parsing functions InStr(), FormatDateTime(), ParseDateTime() and Format() added

17. FluentControl 2.4 SP1 (V2.4.25.51907)

17.1 Bug Fixes

100522	Reagent Distribution command performs empty tip step over source wells instead of the specified location
100533	Empty Tip location cannot be set to a plastic waste chute
100828	MCA aspirate and dispense commands fail with "no wells selected" when using a variable to specify the number of mounted tips
101120	MCA move speed is not reset after liquid class execution

18. FluentControl 2.5 (V2.5.18.52326)

18.1 Bug Fixes

97795	Increased retract distance after FCA Get Tips to decrease risk that empty tray of nested tips will be pulled along
97862	[92227] FluentControl installation can abort if a pending windows update tries to install at the same time

98547	Logging for Import Variable & Query At Startup
98580	Show error message when disposable tip could not be picked up but position is not empty
98635	[41026] 'Cannot ensure detected tool equals mounted tool' error can appear when initializing the MCA after power cycle of the instrument
98939	No description displayed on touch monitor for user input
99093	Carousel ReadBCsInCartridge command shows context check 'worktable invalid' error after a run. The error clears when pressing F5.
99393	Improve performance at script/method start - SVN
99610	Handheld Barcode scanner: wrong barcode will be not overwritten on the next scanning
99613	AirFCA can display 'out of range' error after execution of the direct command Set Tips Back
99761	Moving carrier by mouse is not possible if a script adds labware to it using 'add labware'
99801	Method Recovery View in Wizard Group command is incorrect
99848	Pathfinder error when moving to nested MCA384 tips
100120	Position of non-grid based devices is lost after importing new worktable. Please use SVN revision history to reset old worktable if necessary.
100128	Run sporadically aborts unexpectedly after FluentID 'allow removal' command
100168	Method recovery option is shown after aborting a run before first script line was executed. Recovery then fails because no actions can be recovered.
100180	TeVacs default carrier definition leads to arm range error
100192	Repeated message 'please move arm manually' after failed FCA disposable tip pickup
100203	FluentControl can crash when saving carrier definition
100249	Nest7mm_pos not listed in Allowed Locations for other carriers
100269	Asynchronous Subroutine cannot be run in API execution channels
100295	incorrect bounding box for FES finger nest
100309	Pathfinder prevents move which would be possible
100318	Title of add labware command is not updated when changing the selected labware
100319	Renaming labware on work table is not reliably updating the labware selection the SampleTracking Generate Report command

100329	Stop button and time disappear when run is stopped due to Magellan error
100332	Deleted recovery point is still shown on touch monitor
100354	TouchTools display can disappear after stopping run from main windows of FluentControl
100363	Rich User Prompts do not work with variable scopes
100390	Duplicated tube runner has no tubes allowed by default
100391	FluentControl API loses connected during long period of inactivity
100403	After error in reader, the control light of the Fluent can blink green instead of red
100418	"On Empty Tray": unexpected behavior when "Execute in parallel" is checked
100439	Dilution command does not execute any Context Check for the field "Liquid Waste"
100506	Liquid class specified for empty tips action in reagent distribution command is not automatically exported with the script

100516	execution of on empty tray command leads to fatal error
100523	Incorrect Context-check error at GetLabwareByLocation() function
100549	3D rendering for wash station shows 3 instead of 4 trough positions
100580	Syntax check of function teMotionPosition prevents dynamic usage
100589	Store Well Concentration seems does not correctly calculate dilution factors when comma is used as decimal separator in regional language settings
100597	Move tool does not use all channels at the same time and does not stop
100612	The commands accessing the digital input and outputs sporadically fail with 'pin not configured'
100682	Input files of 'store standard curve' and 'normalization' commands not stored to AuditTrail/Data folder
100801	custom TouchTools prompt not closed at the end of the run
100825	FluentControl must be restarted after re-enabling broken tip from Configure System
100836	Store standard curve command can't read ASC file with replicates
100837	Store Standard Curve command does not accept Magellan workspace older than 10 minutes
100839	Imported labware which is not allowed on the worktable does not show up as orphaned
100882	Remove lid with remove labware command right after transfer of lid raises context check error in unrelated commands
100934	Import Sample IDs from file command: when using a variable as path, the variable does not turn blue
100952	improved pickup parameters for MCA384 tip pickup in active DiTi carrier
100985	[97810] Performance edit time - variable handling and rendering
101033	FluentControl can crash during printing to PDF
101104	z-Heights for MCA active DiTi carrier not optimal leading to the MCA starting pickup motion even when head it not correctly aligned in x/y axes
101127	FluentControl can crash when switching between real and simulated mode
101229	Unnecessary warning during context check to not use a multi dispensing liquid class
101251	Empty Tip command execution gets slower when a script is executed for a long time
101414	Automatically reduce airFCA plunger move distance and show warning if physical plunger position does not allow to execute the full planned move
101425	Inline filter test not working correctly when plunger is not at zero-position when starting the command
101444	Retract supervision was unintentionally enabled in the Water Free Multi liquid class for 1000ul filtered tips
101482	Main menu file close is not blocked during runtime of methods
101630	On the fly scanning operation not performed with the current grip mode
101659	Abort run needs to be pressed for each active micro script to abort run after dilutor error
101819	Preview of TouchTools prompt is not removed when starting script
101891	SampleTracking errors at edit time when using labware without barcode in SampleTracking Set Value command.
101946	worklist considers warning about reduced volume due to non-defined airgap as error

101948	Pipetting position in 25ml trough is slightly away from the center in x
101981	Opening the door during a normalization command causes a fatal error and script abort
102030	Available volume evaluates submerge depth at the height and labware diameter for start rather than end of the aspiration

18.2 Changes and Improvements

- Vacutainer/Vacuette Piercing support added ○ Definition of piercing needle
  - Pierce and Retract from Septum Microscript commands ○ Template Piercing LC ○ Move Tool tracking piercing status ○ Optional logging of piercing force curve ○ Retract Piercing Needle direct command
  - Labware definition for BD Vacutainer and Greiner Vacuette with piercing specific parameters
- Support for additional MCA head-adapters and pin tools with arbitrary magnet encoding and tip-spacing
- Faster start of methods
- Configurable error or warning message for worklist command when specified labware/barcode is not on the pipettable worktable
- Arm and tip type preselection for liquid class editing based on instrument configuration and persistence of manual selection
- Initial Drop Tips command in generated scripts is skipped when no tips are mounted
- Optional shake of MCA384 tip-box using clamps of active carrier before tip-pickup
- Export Variable allows to export variables of type string without enclosing quotation marks
- Subroutine command allows to map expressions to variables in subroutine
- Temperature and humidity logging for instruments equipped with TeGIO2 board • Lookup function for serial number

19. FluentControl 2.6 (V2.6.14.53223)

19.1 Bug Fixes

99598	No dumpfile created at software crash because output directory does not exist
100490	No specific error message is shown when a user account is locked due to too many incorrect login attempts. Login fails but no reason is shown.
100515	After SVN restore of a LiquidClass Snapshot it cannot be edited until FC is restarted
100798	Spark carrier is named Symbio
101481	Some tube runners do not contain tubes when dragged onto the worktable
101549	Fatal error when trying to open API execution channel
101561	Deadlock during evasion move
101603	RGA sends finished status even though it still in centrifuge - centrifuge door then closes and crashes
101641	Infopad shows also shows errors of non-active scripts
101863	Leading Airgap can be subtracted from tip capacity if the plunger position is not exactly at zero before aspirating
101974	Run could not be continued after active stop
101991	Script can be started when an subroutine is edited and not saved

102003	RGA arm remains powered off after some errors and subsequent moves therefor fail
102035	Run can be resumed with the door of the carousel open and then stops with error when the carousel is needed the next time
102153	Rewording of error message when trying to mount too many MCA384 tips outside active carrier
102167	Labware transfer to carousel continues even though covering the plate with its lid failed
102221	Placement section if carrier definition is not expanded during printing
102233	No prompt is displayed to refill disposable tips once all present boxes have been used up with automatic tip handling
102250	SampleTracking Generate Report command does not context-check that a labware is selected leading to a fatal error at runtime
102259	FluentControl can crash at the end of the run when switching back to edit mode very quickly while the CNS driver is still processing the status change
102297	Retries after needle stuck error duing piercing and retracting can lead to sample tracking messages being sent twice leading to double volume in Sample Tracking report
102323	Array Variables cannot be transferred to subroutine
102424	Subroutine Variable with Scope "Run" Is Overwritten by Main Script Variable with Scope "Script"
102466	sporadically switching from simulation mode to real mode fails
102540	Location field of drivers did not accept selection by mouse
102554	No 3D rendering shown for Eppendorf tubes
102556	Labware can become selected when doubleclicking outside worktable view and the moving the mouse to the worktable with the button pressed
102564	Object Reference not found error when executing inline filter test in simulation mode
102629	context check error 'select valid labware' after deleting labware and then using undo to restore it
102630	Display problems when entering long floating point numbers via touch tools
102631	Software crash when switching user from touch monitor
102655	A FluentSetup action which is executed but not required shall create a report saying 'not required' rather than 'failed'

104050	MCA Get Headadapter command sporadically fails with 'Not able to prepare move with teMotion Drive-P'
104093	corrected part number of 4 Landscape 61mm Nest (from 30157271 to 30042719)
104111	Recovery of method containint TouchTools Close Prompt command fails
104112	TouchTools Close command does not close all TouchTools prompts
104113	TeGIO commands sporadically show error that pin is not configured
104119	High Acceleration and Decerleration in DMSO Contact Wet Single liquid class lead to overcurrent errors
104120	TouchTools worktable command fails with 'Unknown error during adding to GUI. Attempted to read or write protected memory'
104128	FluentControl pre-installer did not contain .NET 3.5 which prevented installation on some Win10 systems

104148	Software freeze when editing script
104149	pathfinder failed to calculate evasion move for MCA
104185	"Register Labware with Platemap" requires prior plate barcode assignment instead of taking it directly from platemap
104226	Cannot convert XAML Report Template to PDF Report File
104229	Script conainting Standard Curve command for FCA2 cannot be opened on system with only one FCA
104259	graphical well selection for MCA Drop DiTi command not stored when DiTi labware was specified via variable
104336	Base Worktable could be renamed which causes problems when editing carriers and labware
104351	Airgap aspirated as part of FCA get tip commands not discarded and can lead to 'too much in plunger' error after many aspirate dispense cycles
104389	FCA get tips command fails with 'Exception : Index was out of range. Must be non-negative and less than the size of the collection'
104402	The RGA ReplaceUsedDiTiRack command does not tranfer a new tip box when interrupted
104415	Context checking that variables are not used with different scope in scripts that are in one method
104444	DIV and MOD operators did not accept operators of type floating-point
104547	'On Error GoTo' command can no longer catch errors of 'import variable' command
104548	Pathfinder error when using 'move to' button during RGA Vector teaching
104580	Traceview shows message 'unable to save new data for runtime workspace'
104626	partial tip selection for MCA get tips command is not stored
104635	Reagent Distribution with sample direction specified as row-wise pipettes column-wise
104659	TouchTools 'variable' command does not allow to input values for array variables
104666	Software crash when changing selected MCA head adapter in get tips command
104743	Slow script execution when using well offset larger than number of wells per plate
104773	Revision history only shows the first 5000 restore points
104806	Rapid wash pump did not wash tips and continued run without error
104915	RGA moves to transfer station of device without using pathfinder
104928	context check error when using ReplaceUsedDiTiRacks command outside of automatic-ditihandling subroutine
104931	Store Well Concentration to a tube runner causes fails with 'InnerException: An item with the same key has already been added'
104968	Setting for output folder of SampleTracking CSV reports is ignored
105078	Optimized motion parameters for RGA y-axis
105113	No context check error when adding scripts with different worktable to same method
105132	On error goto with 'continue after group' not working
105180	Windows 10 taskbar is shown on touch monitor
105392	GetFile and SelectWells TouchTools commands cannot write to array variables

19.2 Changes and Improvements

- Common Notification Service (CNS) replaced by Tecan Connect
- Safe-travel height to move over FCA stacked tips as long as the height of the stack has not been detected
- New functions ceil() and floor() to round up or down to the next full number
- Conversion functions numeric() and alphanumeric() for well identifiers
- Transfer labware command allows to move labware-like carriers (such as SBS format tube adapters)
- Labware can be moved during on-the-fly barcode scanning
- Support for front mounted MCA Active DiTi carrier
- Forwards compatibility for script import (meaning that scripts from newer software versions can be imported and shown; unknown script commands will be marked)
- On airFCA systems ‘Empty tips’ command is tracked by SampleTracking the same as the ‘Dispense’ command thus permitting concentration calculation in Magellan
- Removal of Windows 7 support. Only Windows 10 is supported now.

20. FluentControl 2.7 (V2.7.18.54561)

20.1 Bug Fixes

98297	Group of MIO incubators cannot share one location name
100017	Rotation coordinate of RGA vectors is always relative to the rotation of the carrier and cannot be defined as absolute
101321	Touch monitor does not clear old content when aborting run from a wizard group
102248	Changes to a carrier could not be saved because save button is grayed out
103194	Orphaned labware cannot be place in script worktable by dragging
104447	Export does not include input files and pictures of TouchTools 'confirmation' and 'plate map confirmation' commands
104740	Snapshot Tool does not capture the full screen when using high-resolution display and scaling factor
104927	'Do not show again' option not working for warning about research use only
104930	FluentControl freezes when trying to execute carousel ReadBCsInCartridge command with open carousel door.
105136	Pathfinder did not fine evasion route
105165	Constants such as Z_MAX must be usable in if-statements of liquid class MicroScript
105196	Context checking the counts trailing airgap towards the dispensable liquid volume
105210	MCA Get Tips command does not completely color-code selected tips in blue for partial tip selection
105301	Marking a position of a vector as absolute in the carrier editor is saved even when the carrier editor is left without saving
105329	FluentControl can sporadically crash when searching in long scripts
105394	Configuration of TeStack must be preserved when switching between tabs in configure system
105430	Worktable command shows wrong grid location for the 100ml Waste Trough
105461	Colliding position error when using transfer labware to move to plate between high neighboring objects
105465	cLLD error message not formatted nicely
105547	Variable defined in scripts with Iteration scope shown as error in method editor
105585	FC crashed when opened a large script with many context check errors
105590	Software hangs on wait for timer command
105596	Resuming run while RGA is under worktable level can lead to crash
105598	Change in Labware position throws an error message in edit mode
105640	Door locks do not open to allow manual closing of door when ‘closing of door locks failed..’ error is displayed
105645	Labware groups on worktable and on script level are merged together
105663	Performance improvement for very long runs
105709	Worktable command shows wrong site index for the 5 Pos 1.5ml Tube Adapter

105818	Index out of bonds error when FCA 'Get Tips' needs to use tips from two different 5000ul boxes
105820	Windows displays 'non responding' state for FluentControl during worktable import
105832	RGA crashes into fix tips standing above wash station
105841	Software crash after adding/removing drivers
105858	Reagent Distribution command generates temp script without Empty Tips command - reagent discarded with tips
105937	Magellan commands (and other legacy driver commands) are not executed when using 'run partially'
105953	Custom attributes can be defined for carriers with an empty name field; these carriers cannot be edited afterwards
105976	MCA384 dispense and empty tip to MCA waste location fails
105979	Piercing commands developed are also shown on airFCA systems that don't support piercing needles
106048	orphaned labware cannot be deleted and leads to software crash
106050	software crash when using concat() function for worklist filename
106071	alphaNumeric() function on labware added with Add Labware shows syntax check error
106096	barcode checksum verification cannot be activated unless it is also activated for barcode type 'CODABAR'
106114	Liquid Class editor does not accept MCA384 microscript commands
106128	SampleTracking should subtract aspirated excess volume from source labware volume
106157	Wrong dispense speed for MCA96 50ul tips in LiquidClass Water Free Single
106163	If volume is larger than tip size, Reagent Distribution command uses Tip multiple times although Max Tip Reuse is set to 1
106171	Sample Transfer does not create empty tip command in smart subroutine when Max Tip Reuse is set to 1
106296	The well volume is not updated with the expected net volume after dispense and aspirating with multi-pipetting LCs
106298	New user is not prompted to change initial password when empty passwords are allowed
106304	DiTi rack ‘FCA_ 350ul Nested’ is allowed to be placed on ‘96 Well Flat’ & ‘24 Well POGO’
106314	Errormessage when TeVacs target pressure cannot be achieved is unspecific
106448	Channel is marked as 'broken' after selecting 'deactivate tip' error handling option
106452	No context check is triggered when labware is removed from worktable
106458	Incorrect site offsets for 1x32 10mm Tubes 75mm barcode carrier definition
106617	Context Check error 'unable to generate valid pipetting sequence' when pipetting to second plate of group while first plate is outside of pipettable area
106744	After start of method in TouchTools the SW sporadically remains unresponsive and displays Run button
106976	GetFluentIDSensorStatus expression function only works after Start Loading command
107022	'Arm cannot move to position' error for 12 well trough on site 1
107148	IoT client not upgradable

107159	Long delay between inserting FluentID and update of touch monitor

20.1 Changes and Improvements

- Enhanced Normalization workflow ○ Normalization Calculation Command ○ In-Situ Normalization Calculation Command ○ Transfer Individual Volume Command
- New Script commands to export/import labware attributes
- New Liquid Class micro script command Liquid Level Check
- Function to return mounted MCA adapter and RGA FES fingers
- MCA Get Tips command supports partial tip pickup in Active Carrier
- Capacitive liquid level detection microscript command allow sending detected volumes to SampleTracking
- Software support added for upcoming new hardware ○ MCA waste chute with drop guide ○ Tube Rotator ○ FRIDA reader
- Integrated IoT client upgraded to version 2.1
- Supported SampleTracking version changed to 1.3 SP1 Patch3
- Snapshot Tool improvements

21. FluentControl 2.8 (V2.8.10.55332)

21.1 Bug Fixes

102313	[Fluent Setup] Setup SW requires Wash Station for AirFCA in some tests
102651	Error when checking mounted FES finger in Simulation mode, if pc has been connected to real instrument
104249	Cannot teach well position 96 with tip 8 on plate in front position
105636	[2.8] FC: Print script to PDF does not open and print commands inside the groups starting from certain line (for long script)
106128	FC does not send the expected net volume after aspirating to ST
106482	"Declare" button in SetVariable command does not work.
106510	Standard Curve Pipetting Command gives context-check error in Portrait
106801	[2.8] [TRD] [Error Handling] HardStop/Contouring error should be a recoverable error
106859	Lid disappears in Waste forever, even for following runs
106882	Base Unit on old WT does not have a name -> not possible to save LW groups added via OpenLabwareGroupEditor
106924	Error message shown when tried to execute a direct command with unsaved editors open
107044	New created or duplicated Liquid Classes or Worktables appear in the Controlbar when editing or creating a Method
107069	[2.8] Context Check for Normalization/InSitu Calculation for minimal pipettable liquid (sample/diluent)
107071	Error Tube Holder shall be a grouped as Nest not Runner
107107	ST command GetValue does not accept function alphaNumeric(loop,"ElisaA",3) in the field "Position in LW".
107108	Same run and iteration scope variables written in different case can be saved despite an error. Saved script could not be opened later.
107139	Syntax check error when using the SetVariable GetLocation for dynamically added labware
107201	[2.8] Normalization Calculation unexpectedly cannot find a valid sample and diluent combination
107206	[Channel Gripper] Context check error when trying to move labware to Bioshake
107220	[2.8] After unsuccessful pipetting the volume well attribute is not updated with the expected volume after dispense and aspirating
107233	[2.8] [TRD] Abort Run is ignored when aborting a run on cLLD error
107247	[2.8] [TRD] [Improvements] Failed Retract Piercing Tip Handling
107287	[2.8] [TRD] 2x Start Rotation leads to misbehaviour
107304	[2.8] [TRD] Duplicate of Tube Rotator Middle with Wash Station is not possible
107307	[2.8] Not possible to place trough runner on FluentID grid 6
107342	[2.8] Transfer Individual Volumes Command - Reuse mounted tips/sample filter option does not work for tube runners
107373	Not all wells selectable for aspiration in portrait orientation
107386	[2.8] A Context Check error is thrown when the Drop Spectrometer Group Command is loaded in a subroutine.
107393	[2.8] No specific error message when non-disposable tip is missing during initialization
107410	[Fluent Setup][TRD] "Command signalled an error" during the TR Init Offset Setup action execution
107419	[2.8] RGA cannot move to home position after script execution
107438	[2.8] Single green position on not yet loaded runners
107441	[2.8] Additional (duplicate) TouchTools Reports are created
107476	[2.8] [TRD] Abort/Retry scenario differs from oscillate to rotate
107482	FluentControl Crashes when switching Users while Configure System is still opened
107494	[2.8] When restarting FluentControl after getting a dilutor error software crashes at Startup phase
107495	[TRD] [2.8] Deadlock after restarting a run that was stopped before
107496	Empty Tip Contents with well offset moving to next labware doesn't work
107497	[2.8][TRD] Runners "lost" in loading ID of TR2 when stop movement of TR1

107515	Fatal Error in Stop/Resume scenario with asnychronous Subroutines
107520	[2.8] The Transfer Individual Volumes Command causes an endless Loop if double entries in
	the Pipetting sequence are used
107523	[2.8] [TRD] Pause/Stop is not reliable - dead lock
107615	[TRD][Bounding Box] Issue with Bounding Boxes of Lower DiTi eject and TR during mixing
107673	Control Bar doesn't provide all allowed labware while editing plates in Labware Group Editor
107720	[TRD] Tube Rotator labware has same location multiple times --> Errors in Sample Tracking
107761	Worktable not correctly updated in script editor mode
107774	[FluentSetup]: Liquid FCA pipettes on the wrong grid when the Balance carrier is moved to a different grid on the WT
107846	[2.8] [TRD] Run/Resume Check triggered for Fluent ID after Pause
107847	[2.8] [TRD] Method Recovery aborts during Recovery of finished Rotation and Oscillation Statements
107867	FluentControl API: Channel "commands" not working
107870	Touch Tools disappears and FC freezes at TT Worktable command
107880	Fatal error on SCC REM Error 56
107899	FluentControl freezes after TouchTools Confirmation in subroutine
107902	SW Freeze while pipetting worklist after it failed to find liquid it never displayed error message
107981	Empty variable field in Subroutine command leads to object reference error
108120	Run aborts with hardware error due to RGA gripper in Zero-G state
108174	SmartCommand cannot generate pipetting sequence due to rotation angle
108216	TT Standard cannot display gif file, TT Confirmation can display gif file

21.2 Changes and Improvements

- ZeroG mode can be toggled from the TouchTools monitor
- New Fast Simulation Mode for 3D Simulator
- New Confirm Standard Curve command
- New and updated QC-Kit scripts on installation medium
- Loop command is allowed in Wizard group
- New barcode verification option for FluentID
- New variable scope Parameter
- Scripts can be saved as Modules in new command bar section
- Software support added for ○ FRIDA reader (release pending) ○ MCA waste chute with drop guide ○ 12 Well Trough SBS
  - ○ 15mL Falcon Tube FluentID Runner
- SnapShot Tool improvements
- Improved performance when editing long scripts
- Integrated IoT client upgraded to version 2.1 SP1

98118	[2.8] SetMCATipMask SampleTracking functionality for FluentControl
98486	[2.8] Fast simulation/offline run
100479	[2.8] Magellan once connected to simulated Infinite does not show any errors on initialization/run time but also does not execute the commands in real during run time
100527	[Fluent Setup][2.8] New production workflow is needed to produce arm modules without instrument.
100652	[2.8] Confirm Standard Curve command which actually displays the standard curve to be confirmed

101498	[DropSpec] [2.8] Store Well concentration command should read the standard Fluent Control Magellan output file format
101769	[DropSpec] [2.8] Store Well Concentration could not be used twice (or more) to store concentration from two different quant plates for two different parts of the same source

	plate.
102189	[DropSpec] [2.8] Store Well Concentration command does not consider initial concentration factor in the source plate
102401	[2.8] Performance improvements - edit time
104139	[Fluent Setup][2.8] FluentSetup SW: if door was opened during Pipetting test it continues without notification, but then fails.
104258	[2.8] Store Well concentration command should store warnings as well attributes
104692	[2.8] allow defining variables of subroutines as input parameters
104817	[FRS-2.8] Merge Fluent Scheduler to Development
105441	[2.8] Update QC-Kit scripts on master media of FluentControl 2.8
105714	[2.8] allow making Modules from subroutines with input parameters - original
105748	[Fluent Setup][2.8] new tip adapter - configuration option whether old or new tip adapter is used
105926	[Fluent Setup][2.8] Allow setting of a PMP board serial number in Setup Process
106265	[3.0] PMP Support in FluentControl
106325	[2.8] make insert to guide MCA384 tips during ejection available as labware/carrier in FluentControl
106393	[DropSpec] [2.8] Update the NuGet packages of the Drop Spectrometer and integrate the drop spectrometer module msi into the FluentControl Installation
106394	[DropSpec] [2.8] Implement a Stand Alone Prepare Measurement Command for the Drop Spectrometer
106655	[2.8] FCA retracts to global instead of local z-travel during pipetting
106764	[2.8] Write move counters to logfiles during initialization
106977	[2.8] Log improvements (Introspect)
106983	[2.8] [TRD] [Usability] allow FluentID start loading command in Wizard group
106984	[2.8] [TRD] Barcode Verification option for FluentID
106996	[2.8] [TRD] [Usability] Loop command should be allowed in Wizard group
107184	[DropSpec] [2.8] Drop Formation LC and Drop Spectrometer specific Wortable data shall be part of the FC 2.8 installation
107186	[DropSpec] [2.8] The snapshot, that is created with the snapshot tool shall contain logging output of the drop spectrometer module
107205	[DropSpec] [2.8] Context Check Warning for missing FRIDA Reader is not consistent with that for TRD device
107230	[DropSpec] [2.8] Transfer Individual Volumes script command shall create a context check warning, if not all selected tips can reached all wells of the source and target labware
107236	[2.8] [TRD][Improvements] GUI changes for Piercing commands
107252	[Fluent Setup][2.8] External Door Locks Test in Setup SW
107283	[2.8] [TRD] [Usability] Empty Tube Rotator Move Tool tab shall be removed
107294	[DropSpec] [2.8] The Buffer Drop Measurement command does not save and load the adjustment recorder values to optimize the adjustment routine
107299	[Channel Gripper] Not able to move because of a collision at the end position
107338	Standard RUP commands continue to display the same picture, even if the picture has been changed on file system
107340	[DropSpec] [2.8] TIV Command with Dynamic DiTi handling throws Runtime Error when insufficient tip size capacity is entered in dyn. DiTi Handling Expression Box
107398	[Fluent Setup][2.8] Management QC Results Reporting: Additional devices
107468	[2.8] [TRD] All TRD LC should only be available for Piercing Tips
107554	[2.8] Integrate IoT Client version 2.1 SP1 into FC 2.8

107616	[2.8] Update MasterMedia Contents of FluentControl 2.8
107726	[2.8] Snapshot tool improvements (subset of 105904)
107772	[2.8] Carousel slide is not moved to transfer position when RGA transfers plate to slide after init
107776	[3.0] PMP Aspiration Error Handling in FluentControl
107777	[2.8] Apply usage of standard FluentControl Magellan output format for each measurement
107842	[Fluent Setup][TRD] Alignment of the Drum should be a QC checkpoint in the Setup SW
107848	[DropSpec] [2.8] Change labels in drop spectrometer commands UI
107876	Loading ID: Manually entered barcodes are not visibly marked as wrong when they do
	not match the pre-defined barcode
107896	Apply usage of gain and z-position from standard curve each measurement
108046	Configurability of concentration unit to support reader specific concentration units
108217	Run is not aborted immediately if a Delay Command is running

22. FluentControl 3.0 (V3.0.16.56719)

22.1 Bug Fixes

107913	MCA384 crashed into FCA while moving to the waste because FCA did not evade
107954	MethodRecovery after exception fails with error 'No sub journal with the name x found'
108113	Saving carrier defininition of '6 Landscape 61mm Nest' failed: Value cannot be null
108300	Incorrect context check error 'Mismatching parenthesis or function...' in Set Location command Tags
108309	Communication issues with FluentID during Allow Removal command
108480	First script line skipped when running multiple iterations
108492	Fatal Error at Runtime: "Tecan.Core.ResourceManagement.LocalizedCoreException: Path and file name could not be resolved.
108536	When switching from Simulation to Real mode, Flush command does not work
108688	[FRS] Incorrect Remaining, Elapsed & End time
108741	FluentControl crashes during execution of Direct Command 'LockPlate (BioShake1)'
108808	[FRS] Execution of Transition failed after run
108835	Worklist generates temporary script that Get Tips on channels that already got a tip earlier
108837	FC crashes occasionally during worktable updates
108882	Retry after not gripped lid at automatical lid handling fails
108914	Delays between scripts when using API execution channels
108919	Error when Get DiTi for 8 tips with VSLH Mosaic SW
108940	Pressure out of Range error recovery resets Movement limits
108971	It's possible to declare multiple variables with same name and different scope within same script
109060	At FluentID Start Loading command the system intermittent cannot power the RGA x axis
109073	No sub journal found after pressure out of range and error handling
109082	Index was outside the bounds of the array.
109131	[MethodRecovery] When recovering a method, the script command "End Script - Success" aborts the recovery
109153	'retry' fails with subjournal error when channel was deactivated
109182	Errormessage about improper shutdown when starting FC
109205	MCA crashes inside active carrier during Get Tips (related to Pause & Resume)
109403	No suitable labware connector specifically for MCA384, 50ul Filtered

109510	FluentID Loading issue
109531	FCA aspirates from the wrong labware if 2 tips per well is selected
109588	RGA Axis G axis not in a ready state
109604	Fatal error after active stop and retry dropping a nested DiTi tray to waste
109644	Exception at aspiration with Contact Wet liquid classes since upgrading to FC 2.8
109700	Script started via API reported as successfully finished when nothing is executed
109818	Reagent Distribution not working for mixed tip configuration (mix&pierce + DiTi)
109836	FCA hardware error leads to broken channels
102285	AirFCA: It is not possible to execute any Fluent Setup action requiring DiTis without a restart, when the previously executed action with DiTis had requested a labware refill
104579	External drivers: Object parameters aren't displayed
105568	HydroWasher driver cannot be duplicated in FC
106921	Wrong "Lid_6mm_1" instead of "Lid_9mm" will be added on top of the plate via labware group editor, if "Lid_6mm_1" is available in the databank.
107045	Incubator starts shaking after Microplate is transferred out of the device
107114	Windows Media Player window appears in background and blocks FC to show a picture on "Confirmation" command or to continue after WaitForTimer: "The file you are attempting to play has an extension (.) that does not match the file format."
107515	[3.0] Fatal Error in Stop/Resume scenario with asynchronous Subroutines
107580	Air FCA 2 drops channel grip with deep well plate after recover from error
107581	Fluent Control: Initialization fails with Fluent Control on an instrument with RGA-AirFCA-MCA384
107737	FluentControl crashed while editing a carrier
107785	On open script: "The script .... is already opened. Any script can be edited only once." The script will not be opened.
108085	Device is not correctly placed on worktable after import
108164	MCA: Aspirate from SBS trough believes to use only "1 tips" instead of 96 tips. Subsequent ST report is wrong.
108215	Standard Curve command 'Fatal Error' in runtime when using rotated Labware with Well Offset
108250	[FRS-3.0] Clicking +(increase) or -(decrease) iteration button in Touch Tools quickly Touch Tools dissapears or becomes non responsive
108333	[FRS-3.0] Gantt chart window appears with fluent scripts
108337	[FRS] FC crashes if you try to rename a Process after renaming its worktable
108338	[FRS-3.0] Gantt Chart is not updated during execution
108354	SubroutineCommand: Variable headers will be lost if drag and dropped out of command
108362	[FRS] Updated variable values are not shown in the variable window during run.
108387	[FRS-3.0] Reported step end time can be different from the actual end time
108391	[FRS-3.0] Cancel "nice to have" updates that delay the run
108393	[FRS] Context check errors in ProcessEditor due to error occured in previous execution
108394	[FRS] Error Message "Run was aborted!" if a script was aborted due to an error
108418	[FRS-3.0] Executing a Method without an intial Schedule is possible
108420	[FRS] Gantt Chart window are directly open when starting FC for the first time
108421	[FRS-3.0] Irritating log entry "Step could not be found in schedule "
108422	[FRS] Inconsistent timing constraint drop down behaviour when process is modified
108423	[FRS] Jump back to process editor when opening a processing script by clicking more than 2 times for double click
108424	[FRS-3.0] Method Editor is opened twice
108425	[FRS] No schedule available when processing step uses MCA and RGA.
108432	[FRS-3.0] Not possible to start a Run again after aborting it

108434	[FRS-3.0] Methods can be started with unsaved changes in Process Editor
108459	[FRS] Method 'Elapsed Time' does not update on 'Direct Run' of complex Process
108462	[FRS-3.0] Recovery Point for method with script is deleted, when method with process is aborted
108467	[FRS-3.0] Calculating schedule overlay is displayed in the Gantt Chart while running a script
108473	Fluent freezes when the iteration is changed during a run while it is paused
108486	When new method created prepare method button is enabled
108493	[FRS-3.0] Script recovery results in "run finished successfully"
108497	[FRS-3.0] FC crashes when source step labware name is changed by quick typing
108502	[FRS] Width of runtime indicator changes during execution
108503	[FRS] Context check error 'No Schedule Created' not updated
108504	[FRS] Process and Process step can be deleted, although process step script is open
108506	[FRS] Orphaned Labware context check error is not shown in the process
108507	[FRS] non connected Source-Step is not marked in red
108508	[FRS] Variables are not present in the Suggestion list of the Commands
108512	[FRS] Context check error indicator does not vanish from process editor tab when error solved
108514	[FRS] Process name is written wrongly in Labware Report
108516	[FRS] Process Tab is not deleted from the Infopad if the process is closed
108518	[3.0] Move tool : error message “One or more errors 67ccurred” when RGA tried to move to home position after aborting the run
108523	[DropSpec] Runtime error during FRIDA Measurement: “Execute Prepare Meauserement (Object reference not set)”
108533	[FRS-3.0] After run has been aborted – windows with WaitForTimer will not be closed and continue countdown
108539	Fluent crashes if an operator with no edit script user rights clicks on Variable in variable grid
108542	[3.0][Bugfix] Correct logging channel of MCA384 script commands
108557	[FC 3.0] Store Well Concentration command must not apply the concentration factor of the source plate, if source and target plate are the same
108568	Modules cannot be opened via Double-Click after making changes to a saved module
108579	[FRS-3.0] Non affected iterations are removed from the schedule after transfer error
108588	[GS1b] HW error: the system cannot find a solution for the requested arm movements with RGA 1
108594	Fluent crashed during initialization
108628	[3.0] Fast simulation mode with physical devices
108642	Changed Module name is not displayed in the controlbar after the ‘Export’ Window was opened
108678	Changes in the device configuration for the ‘Incubator1’ driver are not committed to the Fluent Audit Trail
108743	[FRS-3.0] If a step starts on one and finishes on the next day the reported duration can be negative
108745	Trace View double entry after abort
108748	DuF import message shows empty backup path after Reinstallation (from FC 2.7 to FC 2.8)
108799	FC2.8.1 suddenly LEDs of 5 previous runners changed from green to red, reload not working.
108824	After an "Instrument Connection Lost" error recovery point will be created but does not work
108926	Fluent Control crashed when dropping command from Control bar into the Script Editor
108956	GetCoverSiteName and GetCoverSiteIndex not working for base box of nested tip tower
108992	[FRS-3.0] Implement Method-editor variable-grid update for iteration variables
109072	Movement counters are logged only when an initialization is forced
109124	SiLA2 driver can not be duplicated
109141	Variable Grid in the method editor does not show correct information

109253	[FRS] Implement 'Close all' for processes
109254	[FRS] TC violation error should have a tolerance of at least 1 sec
109312	[FRS-3.0] Automatic UI update after changes is missing
109314	[FRS] Error message "the given key was not in the dictionary" at end of run with process in multiple iteration
109747	Cannot use Keyence on-the-fly tool in simulation anymore
109839	''MCA384, 50ul Filtered' is not allowed on Carousel RightTower_P69_7Nest
109849	Stop or resume a run in system idle time due to timing constraint

22.2 Changes and Improvements

- Scheduling feature to schedule processes and protocols (FluentControl Scheduler FRS)
- Software Support for Pressure Monitored Pipetting Artificial Intelligence (PMP AI)
- Software Support for DeckCheck
- New FluentID runner available for 15ml Falcon tubes
- Improved normalization calculation command with sample well offset and range possibility
- Fast simulation mode for physical devices
- Extended FC autorun UI with PostInstaller and ReadMe to improve installation process
- Default logging mode changed to ‘Info’ and improved logging
- Improved ST information when emptying tip contents
- Mix&Pierce: Tip stuck in septum error message can now be manually removed when tip is released
- Integrated IoT client upgraded to version 2.3
- Removing QC -Kit Scripts and Liquid classes from Master Media

108251	[FRS-3.0] Enable scheduling licensing
108263	[FRS] Automatic diti-handling
108264	[FRS-3.0] Final-destination-step behavior
108265	[FRS] "Approved-process"-flag and electronic signatures
108267	[FRS-3.0] Extend set of functions to work during scheduling
108325	[FRS] Allow Scheduling in GP mode and remove command line parameter
108326	[FRS] Inherit context check errors of (opened and closed) Scripts to Processes to Method
108327	[FRS] Prevent deletion of a process, if used in method
108329	[FRS-3.0] Force to save changes to processes prior to a run
108339	[FRS-3.0] Additional Context Check Scenarios
108361	[FRS] Zooming the gantt chart does not always work when switching between zoom modes
108596	[FRS-3.0] Reduce calculation time for schedule creation
108638	[FRS-3.0] Change Color gradient of Timing Constraints if 'Transfer' is used as anchor point
108639	[FRS-3.0] Add barcode to labware report
108640	[FRS-3.0] Add customization of transfer scripts
108732	[FRS] Control Bar shall not show Steps group when no process editor is active.
108733	[FRS] Display Process names and iterations instead of labware names in the gantt chart
109213	[FRS] Delete steps option in right click context menu shall be greyed out if only connections are selected
109365	[FRS] Add scheduling options to config page
109526	[FRS] Prevent Process step scripts to exist in Database before saving
109618	[FRS] Suppress error handling of the RGA driver to increase unattended runs
106265	[3.0] PMP Support in FluentControl
107776	[3.0] PMP Aspiration Error Handling in FluentControl

108182	PMP AI Licensing
109056	[CR] Add PMP AI Curve Viewer to installer
109558	Limit automatic retry of PMP Error to one new DiTi
106525	[3.0] Create DeckCheck ScriptCommand
106526	[3.0] Create DeckCheck Correction Handling
106527	[3.0] DeckCheck Settings
105441	[3.0] Update QC-Kit scripts on master media of FluentControl 3.0
108218	[FC 3.0] Display warning message, if not enough liquid is available in the tip
108470	[FC 3.0] Extend FC autorun UI by PostInstaller
108489	[3.0] Parameter variables should behave as script when used as output variables
108499	[FC 3.0] [DROPSPEC] The normalization command must use the barcode of the labware for the plate map confirmation file, if barcode is assigned using ManuallyScanLabware statement
108520	[FC 3.0] ST volume information is not updated after Empty Tip Contents with liqFCA or MCA instrument
108528	[3.0] Update MasterMedia Contents of FluentControl 3.0
108532	[FC 3.0] [DROPSPEC] The normalization command does not use a unique name for the plate map confirmation file
108546	[3.0] [FCA Piercing][TRD] Tip stucked in septum warning not automatically removable
108617	[Typo_Wording] Small UI and text change requests for 3.0
108619	[FC 3.0] [DropSpec] Enable the user to select wells for Normalisation Calculation Command
108623	[FC 3.0] Transfer Individual Volumes: after a well was skipped -> following wells were pipetted with suboptimal tips selection 1+7 instead of using all 8 tips in parallel
108737	[MS] FluentControl Update for supporting Fluent AirFCA with Multisense
108753	[3.0] no FluentID runner available for 15ml Falcon tube
108860	[3.0] Fast simulation/offline run (merge changes from 2.8 release branch to Dev branch)
108962	[FC 3.0] Touch Tools RUP shall be abortable within a Wizard Group
108991	[3.0] Update year of tecan copyright in the About Box to 2021
108993	[3.0] update the integrated IoT Client in FC 3.0
109217	[Test Automation] Changes and fixes for supporting automation testing
109424	[Logging] Log - Improvement
109712	[CR] Add step to installer to show the readme
109761	[MS] Implement PMP Functionality of MultiSense

23. FluentControl 3.1 (V3.1.11.57925)

23.1 Bug Fixes

109685	AuditTrail files are not protected from modification
109625	[3.1] 5ml Diti not working in FC 2.8 anymore as they are pushed off by channels not having mounted tips
110058	FCA does not evade MCA in Amplitude Script
110129	FluentControl shuts down during run
110054	FluentControl fails to start with misleading error message
110244	"Use Next when empty" proceeds to tube with different label if tube is placed on runner or adapter carrier
109632	If Get Tips parameter Proceed to next position is unchecked and it runs out of tips the run gets stuck and FC needs to be killed via task manager
110172	MCA384 Combo Adapter: Count of mounted and selected tips doesn't match
109946	After run has finished: "Touch Tool UI thread was aborted by an exception".
110135	Tip adapter crashing into waste station with mixed tip configuration (mix&pierce +DiTis)
110019	[Mix&Pierce]: SW reports a "collision" between Safety Shield on FCA and FluentID barcode scanner but physically enough clearance
110562	Run Abort due to: VX_RUNTM_001_007 - No sub journal with the name "McsDispenseErrorMessage" found
110559	FC changes Aspiration target volume and throws fatal error
109678	OnSystemPrompt not working because lastErrorId() = None
110699	Variables are not allowed for device commands for MIO and Te-Shaker
108096	MCA collides with FCA DiTi Nest carrier during Random Move Test in FluentSetup
110205	Moving into hardstop causing overcurrent error during retraction of piercing tips in maintenance script
110822	FluentControl does not start due to " VX_APPFR_012_007: Internal error during set up of data repository (part of data store)."
110811	Reference Offsets Not Applied On Left Grid Segment
110772	FC V3.0 Freeze after STOP
109387	FluentControl cannot start up anymore (in real mode while it can start in simulation)
110894	Pathfinder could not find a path for arm RGA 1 to move to current position

23.2 Changes and Improvements

- Fluent Scheduler: select labware for process iterations via a barcode file
- Fluent Scheduler: incubation at <Base>
- Fluent Scheduler: Gantt Chart visible in Touch Tools
- Support for new 50µL short filtered DiTis in standard tray, including 5 new Liquid Classes
- FCA 5mL DiTis can be used (not supported in FluentControl 2.8 and 3.0)
- Snapshot Tool always collects large dump files
- Variables can be used in Te-Incubator (MIO) and Te-Shake commands (not supported in FluentControl 2.8 and 3.0)
- Improved DeckCheck usability at edit and run time (hardware release pending)
- Magellan output format configurable when not for use with FluentControl (not supported in FluentControl 2.8 and 3.0)
- MCA waste chute with drop guide supports both MCA384 and MCA96 tips
- IoT client upgraded to version 2.5 integration
- Sample Tracking version 1.4 integration

- User Management System (UMS) version 1.1.11 integration

108593	[3.1][FRS] Enforce scheduled steps to be closer together
108827	[3.1][FRS] Trace View should report aborted sequences
109479	[3.1][FRS] Import of custom transfer steps from another process results in conflicts.
109904	[3.1][FRS] It's possible to open a processing script when its process is closed
98579	[Fluent Setup][2.8] FSE part replacement: inconsistent triggering of Door Sensor- and Door Lock Test for extensions
104628	[3.1][FRS] Introspect enhancements for scheduling
104629	[3.1][FRS] Tecan Connect App support
104630	[3.1][FRS] process steps without dynamic plates
107221	Carousel barcode scanner cuts off long barcodes from 21th symbol
107755	[FluentSetup] Reports are stored in XPS format that cannot be opened
108312	[FluentSetup] FluentSetup does not detect when user wrongly configured a long RGA as a short
108433	[FC 3.1] Long delays while imports
109994	[FRS] Context check for processes is spamming log file
110059	[FluentSetup] Cannot run Mount Pipetting Tips action with TRD mounted on a specific GRID
110062	FC 3.1: New labware definition and liquid class to support the new 50ul LiHa (short) Tips filtered in standard tray in FluentControl
110084	[FluentSetup] Integrate FSE Authenticator
110088	[3.1][FRS] Squeezed label in Gantt Chart
110096	[FluentSetup] About Box is not up to date
110145	[3.1][FRS] Select labware for Process iterations via a barcode file
110163	[3.1][FRS] Allow multiple Processes in one Batch
110176	[3.1][FRS] Process Step names are forced to be system unique. Should be process unique.
110178	[3.1][FRS] Make it easy to edit step name and change expected duration
110261	[3.1][FRS] Enhance Touch interface: Gantt chart on Touch Tools
110295	[3.1][FRS] Allow base-incubation with fully occupied Hotels
110299	[3.1][FRS] Improve Wait command with option to execute without popup and display time in HH:MM:SS
110454	[FluentSetup][DeckCheck]Improve UI: Order of Windows / Prompts is not logical
110471	[FluentSetup][DeckCheck] In case of an error with any camera (disconnected/broken) the SW does not show clearly which camera is affected
110719	[DreamPrep CR]: Make modules functional when saving in sub-directories
110721	[DreamPrep CR]: Pre-populate default parameter values of a module in the script
110804	[FRS] API shall support variable query and expressions
111046	[DeckCheck] Improvements Config
111047	[DeckCheck] Improvements Edittime
111139	[FRS] Base incubation: Do not automatically open the Labware Group Editor in Process Scripts.
111140	[FRS] Enhance Touch Interface: Hide resources in Gantt chart on Touch Tools.
111218	[FluentSetup] Extend FSE Token Validity Duration
110813	[FluentSetup] Devices with TOY firmware (Labwerx) not supported
110185	[FluentSetup][3.1] Update Manual
110105	[3.1] Integrate the new version of Sample Tracking (v 1.4) in FC 3.1

109688	[3.1] FluentControl 2.8 and Magellan 7.4 Pro: Output always in fixed layout
108749	[FluentSetup] FluentSetup update for supporting AirFCA with Multisense
109944	[3.1][CR] update the integrated IoTClient in FC 3.1 to version 2.4 (or newer)
110808	Microsoft Visual C++ redistributable contains an known vulnerability MS11-025
111045	[DeckCheck] Improvements Runtime
111251	[FRS] Processing Step, TouchTools Gantt and Script expected runtime needs a visual update
110590	[FluentSetup] Check Door Sensor During Door Lock Test
110068	[FluentSetup] Required Labware not Shown when Using WXS Balance
109722	[CR] [3.1]: Update / Remove Microplate and Trough labware according to Consumables Phase-out plan
108784	[Fluent Setup] Syringe exchange leads to faulty pipetting
109123	[3.1] One MCA Waste for multiple Tip Types using different Positions

24. FluentControl 3.2 (V3.2.8.59234)

24.1. Bug Fixes

112154	DiTi not ejected if pressure out of range error occurs during dispense back of 'Continue, dispense back, pipette nothing' error handling option
110745	"Run finished with errors" after it finished all lines successfully
111970	Fluent Control shuts down during run
111657	[TRD] Freeze: Mixed Tip Configuration cannot Aspirate from TRD wells 20-24 (Pathfinder does not find a Path)
112318	Changes in partial tips (MCA Get Tips command) are not saved during edit time.
112121	Hardware crash if FCA Y-spread > 38mm and pipetting with all 8 channels
110869	ST Register Folder: Returned a fatal error for barcode: 'BC1234'. The barcode is eventually already registered.
111071	FC gets stuck / freezes during Reagent Distribution
112965	Registering Labware with Platemap file leads to "Script Command aborted with error [...] An item with the same key has already been added"
110642	Barcode data missing on Sample Tracking report
110977	Error thrown at “Register labware” (ST) command.
113347	Arms move slowly with open FrontDoors
112740	Default labware disappears from worktable after import
113232	PathFinder cannot evade MCA384 arm as it doesn't use all available range
112646	FCA unable to mount DiTi after error handling option „Retry once with new tip“ is selected

24.2. Changes and Improvements

- Windows 10 Enterprise LTSC 2021 (version 21H2) compatibility
- FCA Y-spread > 38 mm with all 8 channels used in parallel no longer causes physical collision with labware
- Tube Rotator: support of mixed tip configuration
- Usability improvements related to DreamPrep NGS
- Sample Tracking command Register Labware with Platemap and option Folder now works
- Improved MCA384 DiTi pickup
- MCA384 Get Tips command saves partial tip settings in GUI
- DeckCheck command improvements

- Fluent Scheduler improvements
- IoT Client 2.5 SP1 integration
- Sample Tracking 1.4 SP1 integration
- User Management System (UMS) version 1.1.12 integration
- Loading ID FW update to version 1.10
- TeGIO II FW update to version 1.1.0

111397	[FRS] Context Check Error in Method: error for unsaved changes in process editor when the labware is orphaned
111072	[FRS] Default and Custom Transfer send comments to the Connect App
110372	Lost Labware error ignored in custom transfer steps
109736	Import Editor lists Modules under Scripts. After the import Modules are listed under Modules and not under Scripts.
111567	[DeckCheck]: SW freezes during "Worktable" RUP after a DeckCheck command has been placed before
111677	[DeckCheck]: Labels of RoI should be shown in DiscrepancyScreen when RoI is affected
110722	[CR DreamPrep]: Improve context check error messages for Modules
111944	[DeckCheck] Remove "Validation" from DeckCheck output
110840	[CR DreamPrep]: New function to query the Worktable Name
110847	[CR DreamPrep]: Modules shall be better discriminable from conventional scripts
111495	FRS commands and UI Elements not being linked with the online help
110720	[DreamPrep CR]: Display query text from variable section next to the respective parameters in the module editor (in the script)
112650	[FluentSetup][Multisense] Modify TipAdapter Tests for Multisense Board
112385	[CR] [FC 3.2] Changes required for FluentControl 3.2 Win10 LTSC 21H2 compatibility
111620	[FluentSetup][Multisense] Add tests for Air FCA with Multisense Board
104625	[FRS] Implement Dynamic loading
110566	License text in FC Pre-installer is not up to date
110001	[FluentSetup]: Naming of "Cabinet is available" is potentially wrong
110617	[FluentSetup] Latest FW Versions to Be Integrated: UniBootloader II V1.2.0 and TeGIO II V1.1.0
111334	[3.2] Aspirate 'Execute exception with liquid class'
111625	[DeckCheck]: Rename the "Sensitivity" to "Confidence Threshold"
108749	[FluentSetup][Multisense] FluentSetup update for supporting AirFCA with Multisense
111443	[3.2] [CR] update the integrated IoTClient in FC 3.2 to version 2.5 SP1
111464	[3.2] [CR] Integrate the new version of Sample Tracking (v 1.4 P1 or newer) in FC 3.2
109545	[FluentSetup][3.2] Integrate TeMotion2 in FluentControl 3.2
112878	Setup SW Support of Loading ID FW V1.10.0
110041	[FRS] Allow that Processes are started at a predefined time.
109545	[FluentSetup][3.2] Integrate TeMotion II V3.1.0 in FluentControl 3.2
110823	[CR Te-Chrom]: Integrate Te-Chrom labware into FluentControl

25. FluentControl 3.3 (V3.3.11.60625)

25.1 Bug Fixes

109096	Intermittent FluentID grid with runners get unexpected GetFluentIDLEDStatus values
109168	Open cabinet door locks failed message at TouchTools command
111315	Fatal Error during method recovery
111348	Scheduler: Gantt chart does not update properly after completed run
111936	Freeze during method recovery if script contains disabled If statements
113051	FluentControl crashed during Export - Eventlogs: "System.ArgumentOutOfRangeException"
113109	Setting custom "Sounds" in Configure System does not work
113333	Fluent overnight runs stopped due to a collision or hardware error or to communication issues
113336	Tip touching results in tip moving past well dimensions for 2ml Deep Well Plates
113365	Unable to execute worklist due to faulty temporary script: "Aspirate volume must be at least Dispense volume"
113513	FluentControl crashes when attempting full export
113727	Temporary scripts generated by "Load Worklist" command trigger erroneous cLLD exceptions.
113924	FluentControl shows error that DiTi box is out of range when box is accessible
113977	Cannot use variable in Reagent Distribution command for Empty Tip Labware field
114163	Method Run scope variable Context Check error at edit time
114177	Protect Audit Trail fix not effective for upgrade installations
114413	FluentControl pulls the MCA active carrier out of the worktable, breaking grids
114575	Fluent cannot initialize with AirFCA on the right of the MCA384 and correspondingly an FCA waste on the right of the MCA waste
114621	Variable scope Script and Run are not usable within liquid class variable declaration
114660	MCA aspirates sample liquid into head after initialization (after power cycle)
114858	Slow RGA performance with long move pauses at transfer of 96 tube rack
114945	"Select a valid labware" context-check errors when opening Modules
115007	TouchTools starts up at wrong screen, but goes to the correct position when opening Configure System
115063	FCA moves to Global Z-travel prior to dispensing at Z-dispense
115124	Transfer Individual Volumes with Dynamic DiTi Handling not working
115137	Standard Curve command aborts run if labware is specified with a Variable at the index
115207	Invalid character in Set Variable command causes FluentControl crash
115222	FluentControl 3.2 freezes while executing "Add Labware" command in complex scripts
115269	Lids added in the Carousel through the Labware group Editor are not present at runtime and disappear after the script is closed or exported
115270	User unable to run script due to "Unable to generate functional pipetting sequence" error
115283	It is possible to define negative offsets for Z-ax in the liquid class for the MCA arm
115510	Transfer Individual Volumes command cannot be used with fixed tips
115749	FluentControl 3D Worktable editor not rendering properly when using Intel generation 12 processor
115590	Touch Tools displays wrong error for a variable with limit
116017	Scheduler: if plate is lost, unrelated iteration is aborted. Abort reason not logged
115613	Sample Transfer cannot generate valid subscript due to replicate
115079	Context check does not calculate the variable associated with the function FileLineCount()

25.2 Changes and Improvements

- Windows 10 Enterprise LTSC 2019 (1809) and Windows 10 Enterprise LTSC 2021 (version 21H2) compatibility
- Software support for new MCA96 arm
- MCA384 Get Tips and MCA384 Drop Tips commands have been renamed to MCA384 Pick Up Tips and MCA384 Set Tips Back
- New MCA384 Get Tips and MCA384 Drop Tips commands
- New MCA Transfer Liquid smart command for MCA384 with EVA adapter
- New Te-Chrom smart command
- Software support for new MultiSense board for AirFCA
- Software support for new Phase Separator
- Delay command only available for MicroScript
- Removed possibility to run a repair installation
- FluentSetup: new firmware TeMotionI V1.10, TeMotion II V3.1.2 and UniBootloader II V1.3.1
- IoT Client 2.6 integration
- User Management System (UMS) version 1.1.13 integration

104563	Upgrade Licensing Client to support TLS 1.2
109545	[FluentSetup][FW] Integrate TeMotion II V3.1.2
110831	Cannot connect to SVN service anymore after a FluentControl repair
112109	Modules shall be listed directly underneath the Scripts in the Controlbar
112555	[FluentSetup] Arm Alignment failure text is wrong
112807	[FluentSetup][FW] Integrate TeMotion I FW 1.10.0
113940	[FluentSetup][FW] Integrate UniBootloader II V1.3.1
113962	[Scheduler] Integrity check of added Processes (Destination Step)
114174	Integrate UMS V1.1.13
114354	Log instrument Initialization data for IoT Client
115531	Increase contouring error threshold to 160 for DiTi eject of FCA arms

26. FluentControl 3.3 SP1 (V3.3.12.60898)

26.1 Bug Fixes

116574	FluentControl 3.3.11 does not have GP state with SampleTracking Stand-Alone
116515	[3.3] Add IoT Client Installer V2.5 additionally on MasterMedia

27. FluentControl 3.4 (V3.4.9.617874)

27.1 Bug Fixes

113138	FluentControl cannot return to edit mode after run with a message "The execution of the transition failed".
114060	FluentSetup SW vs Excel Check List discrepancies
115359	FluentControl fails to import manufacturer definitions after upgrade from 3.1 to 3.2.
115550	FluentControl user management randomly modifies admin rights upon user creation.
115980	Fluent Scheduler Timing Constraints lacks a scroll bar so some constraints cannot be seen/entered.
116398	MCA384 could not evade from FCA after upgrade from FC 3.0 to FC 3.2.
116426	TouchTools crashes after completion of methods/scripts.
116505	After failed initialization due to device turned off, re-initialization after turning on device will initialize that device but overall initialization fails.
116523	"DiTi Lost" - Error when detecting liquid with the dedicated "Detect Liquid" command.
116638	User cannot reliably edit a carrier definition because reference & site offsets are randomly saved or not saved.
116672	Variable window not displaying all variables.
116682	Container barcode overwriting plate barcode when registering with Platemap from a file.
116737	Increasing times of pipetting steps and e.g. delays in RGA movements cause violations of timing constraints of processes.
116916	Generate Report Export Data command: File gets overwritten
117121	Error while moving arms. Differences between destination position and the arm's current position after move have been detected.
117156	Z-Offset from LC is added for Dispense despite cLLD being used.
117166	FluentControl unusably slow with when method approval is active.
117202	FluentID Start Loading scan doesn't work in FC 3.3.
117295	Run aborts if Sample Transfer command is performed with 10ul FILTERED DiTis.
117342	MCA DiTi pickup with Active Carrier: Labware Definitions of MCA384 DiTi products
117366	Pathfinder Delays
117371	Exception event during pipetting - "Invalid attempt made to decrement the events count to below zero"
117424	FluentControl Scheduler cannot close a running process and freezes.
117572	Te-Chrom smart command does not use variables in Subroutine.
117574	FluentControl crashes during very long runs.
117905	Te-Chrom cannot generate a valid subscript with provided parameterization.

27.2 Changes and Improvements

- Software support for new MCA96 arm
- New MCA96 Transfer Liquid smart commands
- Updated Te-Chrom smart command

- Software support for new MultiSense board for AirFCA
- Software support for new Phase Separator
- FluentSetup: new firmware TeMotion I V1.10.0.11416, TeMotion II V3.3, and TeGIO II V1.1. 0-0-g8e1cb3550
- User Management System (UMS) version 1.1.13 integration
- DisplayLink USB Graphics Software for Windows V11.0 M0
- Sample Tracking 1.4 SP2
- SPARKControl Magellan 3.2 fixes issue with automation interface

28. FluentControl 3.4 SP1 (V3.4.10.62215)

28.1 Bug Fixes

119435	Slow Buffy aspiration for PPD-testing
118627	RGA Z contouring error on execute single vector
119737	FC 3.4 not importing zeia created in FC 3.3

29. FluentControl 3.5 (V3.5.7.63142)

29.1 Bug Fixes

116981	Trough mode (8 tips performing in parallel) is disabled in a mixing step
117003	Transfer Script takes longer because Fluent pauses for 20 seconds
117172	Wait command timer is skipped during run
117284	RGA drops plate if system pauses when executing single vector
117301	FluentControl freeze (deadlock) when using both automated Lid Handling and Automated DiTi Handling
117307	[Scheduler] Processes cannot be opened anymore
117681	Get File in TouchTools does not close
118021	FCA not able to hit pick from 96 well MTP in on 7mm nest located in front of hotels
118342	[Scheduler] If Process is started with Tasks, it cannot set a variable of scope Iteration
118724	MCA384 timeout while on Pick Up Tips command
118775	It is possible to initialize the Fluent with open doors
118927	FluentControl crashed during a run
118987	Pause Worklist execution and then Resume ends in Fatal Error and TouchTools window crashing
119086	Arms move at normal speeds during re-initialization of Fluent with open doors
119322	[Scheduler] Process cannot be opened and FluentControl crashes when try to delete affected process
119608	After manually moving the MCA384 after an error, the arm crashed the fixed tip adaptor when dropping head adapter to nest
119614	[FluentAPI] CloseMethod in state RunModeResetTips resets state machine to RunModePreparingRun instead of EditMode
119715	Worktable changes are not saved when editing worktable in subroutine
119718	Resume Condition Check Failed after a successful FluentID scan followed by an error
119853	Not possible to import all database objects from export file
108889	[FluentAPI] If TouchTools is the active window, Shutdown via API does not work
114357	Creation of restore point failed

115949	[Scheduler] Incubation process steps aborted after a non-connected iteration had a washer error
119909	[MCA384] MCA96 Adapter: 50ul non-filtered DiTi box with wrong labware definition
119910	FluentControl crashes when returning to Edit-mode after failed run
120380	Mix command not executed after "not enough liquid" error
120382	PathFinder cannot evade MCA384 arm as it does not use all available range
120671	Cannot edit MCA384 Liquid Class Positioning Z Offset in FC 3.4
120890	[Scheduler] Unexpected error occurred while adding due Processes
120985	RGA contouring error when evading MCA384
120754	Runtime error and abort when executing partial script containing commands that add, remove or move labware
121255	[Scheduler] Freeze during Automated DiTi Handling
120569	FluentControl freeze during context check of large scripts and simultaneously viewing further scripts
116917	"Sequence contains no Elements" error after pressing <continue> for replace DiTi
119854	Not possible to save duplicated MCA384 head adapter definition: “An item with the same key has been added”
121090	"Find and Replace Liquid Class" does not work for Aspirate and Dispense commands

29.2 Changes and Improvements

- Scheduler enhancements
- Support for pressure based liquid level detection (pLLD) for MultiSense AirFCA
- Support for XY move during aspirate
- Support for dual RGA (available via Labwerx)
- Support for i300 (hardware release pending)
- Snapshot Tool enhancements
- Integration of IoT Client V2.7
- New instrument worktable for device placement
- FluentSetup: Role based access
- FluentSetup: TeMotion II FW V4.0.1

118004	[MCA96] Improvements needed for MCA96 Liquid Classes
118801	[FluentSetup][MCA96] Add support of drop plate made from plastic and update cLLD Test
118498	Improve Error / Warning Messages for MCA96 Transfer Liquid Smart Command
117845	[FluentSetup][MultiSense][FW] Integration TeMotion II FW V4.0.1
118538	[Scheduler] Add batch ID as prefix to scheduler output files (Labware and Timing Constraint report)
117989	[FluentSetup][MCA96] Improvement of Alignment and Displacement, Positioning Actions
119940	SampleTracking report wells containing multiple samples after contouring error and resuming the run
113628	[FluentSetup] FSE shall be able to download bootloader
111578	Snapshot Tool improvements
118658	[Scheduler] Do not accept NiceToHave schedule updates that increase overall time unless in conjunction with adding new iteration or method
118769	[Scheduler] Improve RGA error handing of transfer steps
119139	[MCA96] Corrected location names of sites on 4 Nest segment

120430	[Scheduler] Start iterations in sequence
121377	Add warning message to MCA96 Move Tool
118203	[FluentSetup] Role based access to Setup SW
118530	[Scheduler] Allow timing constraints to be defined as non-critical
114747	[Scheduler] Create labware in batch 1 script followed by batch 2 process with 'assign labware by barcode' does not work
118534	[Scheduler] Do not re-schedule or start new steps while a step that has been given extra time is not completed
113800	Support of dual RGA configuration
121282	New instrument worktable layer for device placements
118531	[Scheduler] Allow definition of transfer timing constraints for individual transfer steps
116959	Update the integrated IoTClient to V2.7
119355	Support for i300
113799	[FluentSetup][DualRGA] Support of dual RGA configuration
113999	[MultiSense] FluentControl update for supporting pLLD
119414	Software support for XY move during aspirate

30. FluentControl 3.6 (V3.6.11.64496)

30.1 Bug Fixes

113267	Error Handling with multiple parallel subroutines can lead to unresponsive state of FluentControl
120687	After arms were successfully sent to home position, FC displays error "ID CC_HOME_001_002" "Send arm to home position failed."
121076	Non-grid based device graphics default to top of Grid 1 after import a worktable
121168	FCA stops over 50ul DiTi's after picking up the tips
121177	Transfer Individual Volumes splits volumes into multiple steps but still runs into error too much in plunger
121325	FluentControl unexpectedly crashed during script execution
121428	When adding module to script it shall not add additional outer double quotes to 'Value from main script'
121440	Internal error during tracking calculation: No time for volume was calculated
121481	FluentID with 24pos Runner: Fatal Error encountered and script is aborted.
121511	"Find and Replace Arm" does not work for RGA/MCA96 Transfer Labware command.
121555	Different offset behavior with 24pos and 26pos runners on loop cycle
121805	FCA cannot find evasion route in position above tube rack when the RGA wants to move rack with tubes inside underneath FCA
122229	Open Labware Group Editor stutters and response is slow
122501	Fluent fails to initialize after upgrade from FC 3.4 to FC 3.5
122653	PDF report created via TouchTools command "Report" doesn't contain all data after upgrade to FC 3.5
122706	In FluentControl 3.5 the GetFile command gives a fatal error if the file path is a variable
122757	Missing Objects in Full Export exported from FC 3.5.7 / imported into FC 3.5.7
123005	FluentControl Syntax Check also performs a Context Check for fileExcelRowCount()
123048	MCA384 cannot evade from RGA when RGA is holding a plate

123185	In specific scenarios, some liquid is dispensed when volume = 0 in dispense command and using default Water Free Multi liquid class
123203	FC crashes after trying to close unsaved script
123455	Liquid level detection error does not trigger run pause with user prompt
123501	PDF of FC Script printed with errors
124223	Run stopped by error when trying to assign MicroScript variable Z_LIQUID to a helper variable
124391	[Scheduler] RGA returns plate to <BASE> after aborted step via Regrip Station but crashes into regrip carrier as it fails to apply grip offset
124768	Warning Dispense target volume has been reduced occurs since upgrade to FC 3.5

30.2 Changes and Improvements

- New Transfer Phase command for the Phase Separator
- New integrated driver for the Brooks PreciseFlex 400 robotic arm
- New pooling feature in the Sample Transfer smart command
- New FluentAPI support for DeckCheck
- New Email notifications feature
- New Capture Worktable command for DeckCheck
- New Script for Loading Guide feature
- New Device placements and carrier adjustments are stored on the instrument (Te-Control)
- System liquid can now be dispensed via Worklists
- Te-Chrom smart command supports gradient collection workflow
- Scheduler support of 0 Process iterations
- Software support for 2 RGA on one Fluent (dual RGA)
- Enhanced software support for Resolvex i300
- New Optimized Log Extractor G (OLEG) log file viewer tool

111170	Modules and Subroutines shall support alphabetical variable sorting
112556	[FluentSetup] After Arm Alignment failure, Displacement is necessary
113265	[FluentSetup]Saving the system configuration by File/Configuration makes the instrument initialize again
113862	[FluentSetup] AirFCA ZeroG: apply correct calibration pass/fail limits
114828	[FluentSetup] Corrections to watermarks on Reports
115249	[FluentSetup] Instrument Information File shall provide arm order
115497	Implement driver of Brooks PreciseFlex 400
115724	[FluentSetup] Axis move counter is shown as "-" instead of "0"
116215	New Phase Separator Transfer Phase command - Workpackage I
117328	[Te-Chrom] Support of Gradient Collection workflow in Te-Chrom smart command
117374	Segment Deck 1 grid to be added to Fluent Control
117429	[FluentSetup] Leakage Test and Pipetting Test does not start if MCA384 configured as second arm
118470	[Scheduler] Support the use of 0 as iteration for processes in Methods
118933	[FluentSetup] Door Sensor Test fails as cabinet door sensor reported as closed permanently
119956	pLLD pressure compensation for mechanical Backlash
119959	[FluentSetup] MCA96 stops during Z-down movement before touching the worktable at alignment-, displacement-, positioning-test
119969	[Phase Separator] Support Detect Phase MicroScript command in simulation

120478	[FluentSetup] MCA96 Gripper Plate Move Test with standard segment instead of 4-nest segment
120752	Remove deprecated commands Dilution, Normalization, Store Standard Curve and Load Standard Curve from FluentControl
121252	Snapshot Tool improvements
121437	Retry' after not enough liquid pLLD error shall use fresh DiTi
121441	[FluentSetup] Log time series during Running In action
121446	Define up to 50 x,y coordinates for custom labware attribute XYTrackingSequence
121890	Integrate MAP PMP Curve Viewer into FluentControl
121983	Update naming of Resolvex i300 commands in FluentControl
122009	[Scheduler] Allow Scheduler to work with Labware Groups that have been modified by AddLabware or RemoveLabware.
122124	Segment Deck 7 grids waste thru to be added to Fluent Control
122125	Segment Deck 6 grids multipurpose to be added to Fluent Control
122134	FluentControl shall support pooling in Sample Transfer smart command
122160	[FluentAPI] DeckCheck Support
122162	New Email notifications feature to send an email on error
122830	[DeckCheck] Save camera pictures using new Capture Worktable command
122870	Update instrument name in Device Manager under USB Devices
122924	[FluentSetup] Backup & Restore does not include MAP Config
123052	Segment Deck 6 grids thru to be added to Fluent Control
123092	New Script for Loading Guidance in Methods
123095	Fix typo in driver initialization message for simulated reader devices
123111	New PMP AI model DNN - ARP_Asp_Anomaly_WholeBlood_cLLD_A01
123875	Migrate existing teaching values to instrument Te-Control board on first connect after upgrade of FluentControl
123893	Implement solution for TouchTools image display issues (black lines, images not displayed)
124521	Update mesh files of carriers and labware
125570	[Compliance] New intended use IVD for Fluent

31. FluentControl 3.7 (V3.7.12.125)

31.1 Bug Fixes

121225	[Scheduler] FluentControl sometimes freezes when a timing constraint is violated
122364	Software freeze during Dynamic Diti handling
122376	Dynamic DiTi handling within "Transfer Individual Volumes" command does not execute according to the conditions set
123192	MCA384 EVA and non-EVA adapters occasionally over-dispense
123432	[Performance] FluentControl non-responsive during context check
124539	FluentControl cannot start due to NullReferenceException error
124636	[Multisense] Pressure out of range error on one channel of the AirFCA causes all other channels to have dispense target volume reduced
124712	[FluentSetup] AirFCA MCA96 RGA Configuration: Running-in test not successful
125670	User Prompt aborts run due to curly bracket "{" in prompt-text (CIDVX_COOR_001_005)
125793	MCA96 tip pick up offset not applied correctly in rare scenarios
126194	Method recovery still shows up in Touchtools and main screen when it is disabled in configure system
126196	FluentControl crashes if Tecan.Core.LoggingService.exe is terminated or crashes
126222	MCA96 applies wrong liquid level tracking if 2 tips aspirate from a single well simultaneously

126309	[MultiSense] AirFCA target position out of range error during Set tips back command execution
126417	Variable in Liquid class updated at unexpected timepoint
126427	[Teaching] In FluentControl 3.6 non-grid based device placements are lost after FluentControl restarts
126507	MCA384 cannot evade RGA
126820	Disabled lines in liquid class Microscript lead to software freeze at runtime
126878	[Multisense] cLLD profile for acceleration and deceleration must use be sinusoidal

31.2 Changes and improvements

- Compatibility with Windows 11 Enterprise (IoT) LTSC 2024
- Default liquid class 'Water Free Dispense' supports pressure based liquid level detection (pLLD)
- FCA and MCA smart commands support dynamic tip handling
- Updates to Transfer Phase command for the Phase Separator
    - New well attribute 'TransferPhaseResult' for source labware
    - Support of retry after initial liquid level detection does not detect any liquid
    - Support for defining tip re-use
    - Empty tip contents can now pipette back to source tubes and wells
    - New well attribute 'TransferredReplicateCountForTransferPhase' to store total number of achieved replicates per source tube
- Support for XY move during dispense ("spiral pipetting")
- Default pipetting path added to tube labware (13x100 and 16x100) for Aspirate/Dispense with XY Tracking ("spiral pipetting")
- 3D simulator supports MultiSense AirFCA and pLLD
- Improved robustness of (Air)FCA tip pickup procedure
- Scheduler:
    - support for defining process iteration by variable
    - improved timing constraint definition for individual labware
    - long running processes: skip automatic FluentControl restart on defined days of the week
    - long running processes: persist variables after automatic restart
- Support for Advanced Worklist feature
- Updated labware definitions of FCA 350µl DiTi and FCA 1000µl Wide Bore DiTi
- Enhanced software support for Resolvex i300
- FluentAPI supports arrays and querying labware type
- Compatibility with SiLA2 Client (driver) v2.3 and SPARKControl Magellan 3.2 SP1
- Integration of IoT Client 3.0 and TeMotion II v4.1.1 firmware
- Bug fixes and improvements

113844	[GUI] Default config 1080_LiqFCA_MCA_RGA references a real instrument
118415	[Scheduler] Cannot set number of process iterations by a variable
121477	[3.7][CR] Update FC installer to integrate the new IoTClient V3.0 or later
121765	[FluentSetup] Actions/Tests with Reference pins should by default be executed with 8 reference pins
122387	[TipHandling] (Air)FCA DiTi pickup improvements
122635	[FluentSetup][FW] Support of Te-Motion2 FW with fix of PWI 4024
122636	[Compatibility] Support of Te-Motion2 FW with fix of PWI4024
122840	[PhaseSeparator] Add Pippetting Path to LW definition of Tubes (13x100, 16x100)
124291	[PhaseSeparator] New command 'Dispense Liquid with XY Tracking'

124327	Not possible to simulate pLLD with provided instrument config files
124464	[Precise][Teaching] When teaching vectors with gripper arms the arm switches back to ZeroG or power off
124765	[PhaseSeparator] Introduce a well attribute for transfer phase result.
124779	[LiquidHandling] Water Free Single liquid class shall support pLLD
124882	[PhaseSeparator] Implement Retry option for cLLD error 'No liquid detected'
124905	[PhaseSeparator] "Empty DITI" after plasma transfer
124933	[FluentSetup][MCA96] Remove support of MCA96 head with metal ejection plate
125035	[PhaseSeparator] "Replicate Volume" doesn't allow to enter "if" statement with keyword and numbers
125117	[LiquidHandling] Mitigation of over- and under-dispenses of MCA384 adapters
125240	[i300][CR] Context check error for i300 commands when incorrect Pressure Head/Evaporator head is mounted
125252	[i300][CR] ”Stop” button does not stop devices of i300
125275	[LiquidHandling] Pressure Out Of Range errors on MultiSense AirFCA when mixing vigorously
125330	[PhaseSeparator] Transfer Phase command within a Variable Pipetting Loop does not work as expected
125335	[Scheduler] Timing constraint with the same step combination cannot be set up several times with individual Labware
125387	[PhaseSeparator] Configure tip re-use options in Transfer Phase
125472	[Scheduler][GUI] Scheduler Parameter has unclear and ambiguous name referring to task instead process step
125507	[ErrorText] Context check error is not shown for i300 commands executing on non-accessible labware
125508	[Worklist] Decontamination volume range selection within "Worklist" command limited between 1-1000 ul
125563	[Compatibility] FluentControl 3.7 shall be compatible with Windows 11 Enterprise LTSC 2024
125662	[API] Support get\set array variables in Fluent API
125790	[Scheduler] Skip scheduled software restart for certain days
125826	[Scheduler][Variables] Run-Scope Variables lose value due to Scheduler automatic restarts
125888	[PhaseSeparator] Context check & User Interface improvements
126061	[Database] Labware Definition: 350ul DiTi Mount Offset must be shortened by 0.77mm // 1000 ul WideBore DiTi Mount Offset must be shortened by 0.56mm.
126470	[Scheduler] Context-check error for method since it does not consider plate re-use from option assign labware by barcode file
126522	[PhaseSeparator] New Source Labware attribute recording achieved total number of replicates
126745	Fix delays when read\write values in Sila2 driver's configuration ini file
126946	[API] Add possibility to get labware type from FluentControl
127170	[Worklist] Advanced Worklist is a standard feature of FluentControl
127173	[IoT] Support external drivers sending environmental data to IoT
127343	[Compatibility] MCA96 DiTiAlignmentMoveDistance to 0.8mm
127759	[Scheduler][Variables] Run-Scope Variables lose value due to Scheduler automatic restarts

32. FluentControl 3.7 SP1 (V3.7.19.207)

32.1 Bug Fixes

123445	After last Nested FCA Tip is fetched there is an empty error message Replace Used DiTi Rack
124733	[TouchTools] FluentControl crashes when clicking Login button on TouchTools
125702	[FluentAPI] Pause method call from API does not always work

126124	[Teaching] Device placement for devices duplicated in 3.7.x not working
126180	[Teaching] Robot Vectors Correction is wrongly implemented
126369	[PhaseSeparator] SW freeze in deep well plate
127143	FluentControl deadlock when stopping run during FluentID StartLoading command
127405	[i300] Pressing stop button while evaporation is ongoing throws an unexpected error
127417	During FluentID scan the message 'See the touch interface for instructions' appears on the touch monitor instead of the main monitor
127432	Numbering of worktable positions is different between 3.7.7 and 3.7.9
127517	[DeckCheck] DeckCheck producing failed test results despite worktable being set-up correctly
127576	Wrong stacked plate to plate offset defined for 96 well skirted PCR plate
127649	AirFCA not spreading in Y when accessing front wells in portrait plate column A but in column B it gives target out of range
127706	[Introspect] Error occurrences reported within a run do not indicate the Activity
127740	[TeChrom] RGA crash into FCA during Transfer Labware at execution of TeChrom Smart Command
127741	FluentControl crashes during Process execution
127774	[PhaseSeparator] Unexpected error during the recovery aspirate/dispense steps of Transfer Phase command
127822	FluentControl stuck in run mode after pathfinder error
127827	[Scripting] In the "On Error GoTo Group" the worktable is not updated at edit time
127835	[SmartCommands] In Situ Normalization command does not consider the volume of the target well
127844	[i300] NumberOfWells and WellOffset in Dispense command have different starting point (Cabinet only)
127855	[i300] Apply Pressure does not recognize missing labware
127856	[i300] Droplet protector not under filter labware while unstacking
127879	Method Recovery does not work, when a loading guide script is part of the method
127883	[SampleTracking] Report shows some gross volume values even if gross volume is disabled
127907	[i300] Evaporator manifold unmounting not successful
127932	[i300] i300 stops upon recovered RGA crash
127949	Fatal Error During Second Incubation
128042	Not possible to add the FluentID 5grid if Wash station is placed on grid 6
128088	[i300] Preheat command does not stop upon cancellation
128158	FluentControl cannot start after upgrade with worktable error showing up
128162	[Teaching] FluentControl crashes during device placement when modifying robot vectors
128163	[Teaching] Non-grid-based device have 100 offset in Y after placement
128287	Liquid class setting On Detection Error reverts to User Prompt when liquid class tab is closed via X button
128334	[Teaching] Base worktable should not change after placing labware onto non-grid-based device
128417	[Teaching] FluentControl crashes when saving coordinates in the Robot Vector section of carriers for the second time
128529	[Introspect] Some Fluents are registered to Introspect with a wrong serial number
128612	[PhaseSeparator] Transfer Phase command ended with Invalid state of axis
128693	[i300] Context check does not check for Labware on Carriage and Configured LiquidContainer
128708	[Robustness] Fix multithreading issue in IcpProtocol class
128745	[PhaseSeparator] Detect Phase Microscript command stops working when parameter Volume is 0
128768	[i300] i300 is not able to continue after retry command after stop
128869	[FluentSetup] Random Move test doesn't run properly
128928	[Scheduler] Gantt Chart window has "Paused" overlay but the Process is running

129086	MCA384 and MCA96 do not consider already aspirated volume upon Continue/Retry
129106	SVN Repair tool does not show pop-up window anymore

32.2 Changes and improvements

- Identity Access Management (IAM) replaces User Management System (UMS) as the user administration module in FluentControl
- 'Phase Separator Plasma Free Multi' liquid class for the Transfer Phase command for the Phase Separator, with support for 200ul and 1000ul filtered tips
- 'Phase Separator Plasma Contact Wet' renamed to 'Phase Separator Plasma Contact Single' and support for 200ul and 1000ul filtered tips added
- Transfer Phase command for the Phase Separator supports plate labware (previously only tube labware)
- Dual AirFCA instruments can use pLLD, cLLD and the Phase Separator command in parallel with PMP AI
- External drivers can send environmental data via the IoT Client to Introspect
- Variable names turn blue after pressing 'Declare' button in relevant commands
- Support use of variables to dynamically determine the estimated run time of a Method

124694	[Variables] Allow variables in Estimated End Time for Scripts to allow more accurate predictions
125328	[PhaseSeparator] Integrate new Phase Separator Liquid Classes
125826	[Scheduler][Variables] Run-Scope Variables lose value due to Scheduler automatic restarts
127136	[PhaseSeparator] Support for plate labware - update cone contamination formula
127334	[TeChrom] Standard RoboColumn default liquid class moves channels up to Z-travel too fast
127508	[LiquidHandling][MultiSense] channel allocation failing for pressure sensing when using two MS airFCAs on same instrument
127679	ODTC could not open the door error during a 4.5 hour run even though the ODTC door was opened
127767	[PhaseSeparator] Context check & User Interface improvements
127772	[Compatibility] MCA96 DiTiAlignmentMoveDistance to 0.8mm
127917	[Introspect] Support external drivers sending environmental data to IoT
128376	[UMS] Integrate MAP IAM (new UMS) in FluentControl 3.7 SP1
128480	[Scripting][Usability] Variable name does not turn blue after clicking Declare button
128587	[FluentSetup][FW] Support of TeMotion II FW V4.2.1
128802	[FluentSetup] E-Mail Address for Token login shall not be case sensitive

33. FluentControl 3.8 (V3.8.14.1098)

33.1 Bug Fixes

121066	[FluentSetup][MCA96] Positioning Test stays green after applying new configuration
125248	[i300] Evaporator manifold tracking fails if profile execution moves manifold bottom to top
125257	[i300] FluentControl crashes if an unexpected manifold ID string is reported
125377	[i300] i300 Liquid Class with 0uL/s aspirate and dispense speed causes FluentControl to crash
125449	[i300] Manual input of pressure should be limited (max 5.5 bar, and final entry with low pressure)
125453	[i300] Evaporator flow is not monitored during heat-up

125454	[i300] Bubble Sensor generates warning instead of error
125538	[i300] Recovery after Z Move fast stop during Evaporate Recording not always possible
125543	[i300] 100ml Trough (on i300 segment): Z-Max cannot be reached by air FCA with 50ul DiTi tip
125556	[i300] FCA equipped with Piercing Tips may touch i300 y-carriage during Random Move Test
125623	[FluentSetup] Communication with GSV device could not be found, used for PreAssembly RGA Gripper Force Test in FluentSetup
125761	[i300] Visibility of lifetime of i300 instrument in Introspect/Ignite
125884	[i300] Sample Tracking report does not include bubble sensor error/warning
126803	[Scheduler] Create Task command cannot resolve expressions like other script commands
127280	[API] FluentControl becomes not responding when try to open Settings in Menu
127322	[LiquidHandling] Move channels to Z travel directly after 'pressure out of range' error.
127325	FluentControl crashes when trying to delete Process "Saved As" in a sub directory
127359	[Scheduler] FluentControl displays "undefined" variable for due tasks with run-scope variables
127510	Orphaned labware is not displayed after method is imported
127519	Database update after software version update shows a lot of warnings for not transferable items
127617	[i300] Context check ignores i300 “Set Volume” commands during edit time.
127646	Controlbar Filter file is not updated during an update installation
127698	Wrong coloring for Research Use Only in about box, startup and shutdown window
127707	[i300] Empty pop-up messages when using i300 config
127722	[FluentSetup][Cybersecurity] Login bypass through window manipulation
127723	[FluentSetup][Cybersecurity] Potential remote code execution
127724	[FluentSetup][Cybersecurity] XML external entity injection in certificate login
127727	[FluentSetup][Cybersecurity] Certificate validity compared to system time
127842	RGA arm not powered on while teaching leads to error message
127889	[Scheduler] FluentControl crashes when trying to open custom transfer script
127920	[Scheduler] It is not possible to use variables for Labware group name in process editor
127937	FluentControl crashes when starting a method just after it finished executing one
127941	RUP worktable image cannot be rendered
127969	[Compliance] Electronic signatures not triggered on reverting to a restore point
127993	[Scheduler][i300] Resolvex i300 commands are incompatible with Fluent Scheduler
128017	Carousel gets unresponsive if the run is aborted
128025	After aborting a run, software froze when restarting the same script
128043	Liquid detection error with aspirate anyway
128090	Existing liquid classes disappear after importing other liquid classes with different names, no conflicts, and then recreation of the disappeared liquid classes with the same name not possible anymore
128118	Gx mode not working due to defect in whitelist for washer driver
128135	FluentControl and File Version Checker does not check the relative path of dlls
128238	Sample Transfer smart command cannot create subscript
128239	Software froze at previewing Touch Tools command
128275	[Scripting] Unused variable/expression in MCA Transfer Liquid command gives context check error "Invalid expression"
128305	[Precise] Fetch Labware for Teaching leads to error message
128403	[Robustness][API] FluentControl cannot properly shutdown via API and has error at next start
128412	[TipHandling] MCA96 Set Tips Back from a nested 350ul tray to another stack tray (bottom) fails

128421	[Scripting] 1x32 10 mm tube runner cannot be used in Sample Transfer smart command
128423	[ErrorRecovery] Method Recovery fails with error message "Collision while trying to place Carousel Right tower ..."
128429	[SampleTracking] Assigns sample ID to 2 samples on Pressure out of Range error
128501	Cryptic error message when full access of FCA channels to labware is not possible
128505	Touch Tools disappears while editing a method
128540	Incorrect context check error of potential lid-plate collision
128542	[Scripting] Vectors of nests changes when moving them from one segment to another
128549	[Scheduler] Pathfinder error (RGA in colliding position) because task started before other task had finished
128568	Section "Decimal digits" in "Balance weight" does not function properly
128581	Software crashes when executing a new run or direct command after a fatal error on one of the axes
128653	[Cybersecurity] Port 31812 Open by Default: Potential Security Vulnerability in Fluent Systems
128654	[FluentSetup] Undefined user issue in FluentSetup 3.5 during certificate login
128684	2ml sarstedt tube position in x is often off
128765	[i300] i300 is not able to continue after retry command after stop
128838	[Performance] FluentControl crashes often when editing scripts
129050	[Robustness][Scheduler] Runtime errors caused by memory leak
129063	[PhaseSeparator] Software is idle after clicking 'Aspirate anyway' option in 'No liquid' error message
129153	Sample Tracking does not work properly with MCA96 arm - Carry over SampleID from previous pipetting steps even if processed by different tips
129178	[Compliance] Audit trail does not properly display Chinese method names
129206	Change severity of the log entry to report run end to Introspect from error to info
129211	[Scheduler] Add dynamic plate to non-grid-based device in Processing step triggers "You have changed the Base Worktable..." message
129285	[FluentSetup] Serial number specific token can be used to execute service actions on any instrument
129300	Status light not active during run
129312	After retract supervision error liquid is not dispensed back
129315	MCA384 with 96 MCA384 Tips Adapter unreliably drops DiTis into waste
129334	[Scheduler] During PathFinder movement the FCA crashed into Nested DiTi Stack that was generated by Add Labware in a script before the process
129471	[IAM] After upgrade to FC 3.7 SP1 Admin right are lost
129478	Well Offset in Sample Transfer does not work for runners if more than one runner is needed
129494	[Teaching] Placement issues after upgrade from 3.5 to 3.7 SP1
129738	[FluentSetup] Labware remains in list of required labware after drag and drop from there to the worktable
129820	[PhaseSeparator] Method Recovery with the Transfer Phase command was unsuccessful and resulted in an endless run
129857	Dispense with pressure out of range error for 1 channel with option Safe discard tip reduced volumes in all other channels and the Sample Tracking report is incorrect
130096	Many subfolders are not shown at Save as
130222	Reagent distribution command shows needle instead of tip
130298	"On Empty Tray" command activated when partial tips are picked up in "MCA Transfer Liquid" and "Get/Drop Tips" commands

130553	New value instead of old value is transferred into subroutine with Register Event Handler command
130754	Imported Script is automatically approved after import
130803	There is no automatic software restart after the DUF import during software upgrade

33.2 Changes and improvements

- Faster FluentControl software startup
- Improved software stability
- Improved software performance in Edit Time, especially when working with scripts with many hundreds of lines
- Enhanced usability of Import workflow
- Improved MCA384 tip eject into waste with a waste guide
- Import and export of variables from XLSX files is faster and no longer requires Excel to be installed on the computer
- Improved RGA positioning precision
- New Replace Empty Tip Box command for the FCA Gripper
- New Register Event Handler command
- FCA smart Commands: new checkbox to dispense any remaining excess volume back to source (multi-pipetting)
- New MCA96 liquid subclasses for Water Free Single to support 50ul and 200 ul tips
- New SerialNumber() function
- Pressure-based liquid level detection (pLLD)
    - Supported in Detect Liquid command
    - Supported in Phase Separator Transfer Phase command
- Fluent Scheduler
    - Create Task command can resolve expressions
    - Variables can be used for labware group name in Process editor
- Resolvex i300
    - Bug fixes and improvements
    - Fluent Scheduler compatibility
- Most recent Audit Trail file can be opened via the Database menu
- Cybersecurity fixes
- IoT Client v3.1
- Sample Tracking v1.5 with support for Identity Access Management (IAM)

114173	[Scripting] Add Labware cannot add lid onto plate if plate is in storage carrier
114680	[Scripting] Sample Transfer cannot select multiple runners if source labware is a variable
115771	[TipHandling] On Empty trigger scenario with Hotel is being occupied.
116043	[Robustness] FluentControl does not start causing downtime
117680	[Cybersecurity] Weak hash is used for checksum: Protection Commands
119275	[FluentSetup] Running-In test can be started with open door
121747	[FluentSetup] [DualRGA] RGA Z-break test cannot be executed for second RGA
121982	[i300] Vectors for the i300 lift cannot be edited or viewed
123006	[Performance] Replace nuget package Microsoft.Office.Interop.Excel with better performing Package (DocumentFormat.OpenXML)
123716	[FluentSetup][MCA96] Prevent execution of actions for a MCA96 arm with gripper head and Pre-Assembly certificate

124853	[Scripting] Parser function 'SerialNumber()' is not available in FluentControl
124975	[Usability] User expects to find Audit Trail file (or link) within software
125231	[i300] Move Tool control buttons improvement with auto relocation on available screen size
125234	[i300] Pressure manifold travels too small distance upon dispense
125244	[i300] Liquid Class field in the Dispense/Wash command shows variable field instead of drop-down
125253	[i300] Select all wells via corner is not working
125254	[i300] No graphical presentation of pressure and evaporation progress on touch screen
125351	[GUI] Software ignores Plate to Lid offset for placing and picking (but only in x)
125457	[i300] When clicking on worktable objects, the Controlbar does not show the appropriate allowed objects
125458	[i300] Permanent context check error in Mount Evaporator Manifold direct command
125544	[Performance] Set Variable command performance issues
125667	[i300] Save button does not gray out upon "saving"
125724	[Variables][Scripting] "Replace Empty Tip Box" command to facilitate tip box stacking
125803	[LiquidHandling] Excess volume shall be dispensable back to source tubes
125832	[LiquidHandling] MCA96 default liquid class Water Free Single for 50ul and 200ul tips
125953	[FluentSetup] Unnecessary tip used for liquid level test during gravimetric test with 200 ul tips
126241	[PhaseSeparator] Support pLLD in Transfer Phase command
126465	[PhaseSeparator] Transfer Phase does not multipipette aliquots smaller than 20 ul
126995	[LiquidHandling] Script command for Detect Liquid with pLLD
127044	[i300] Report volume to Sample Tracking by Apply Pressure and Evaporate command
127266	[ErrorText] No Error Dialog is displayed when the target position is not reachable by arm
127424	[i300] Preheat command is not stopping on error
127480	Simulate INSTRUMENTDoorOpenedError in 3D Simulator
127528	[i300] Add ability to import / read Pressure and Evaporator profiles from an input file
127602	[FluentSetup] Support Token-based FSE Authentication also when TeControl board is broken or missing
127876	Lid handling (uncover plate) with absolute robot vectors does not work correctly
127959	[Compatibility] FluentControl shall install latest Sample Tracking v1.5
128076	[LiquidHandling] "MCA liquid transfer" template misses retract step in microscript before taking trailing air gap
128105	[Compliance] Fluent Dx: update About box
128240	[FluentSetup] Hidden InstrumentWorktables are visible in FluentSetup controlbar
128262	Non-manufacturer Carrier/labware data, which is not part of the database, shall be imported after an update installation
128299	[Performance] Improve usability Import workflow
128479	[SnapshotTool] Troubleshooting data related to MAP IAM shall be automatically collected
128695	[FluentSetup][Robustness] Improve initialization procedure of R-Axis of RGA
128710	[Performance] Improve Edit Time
128712	[Performance] Improve FluentControl start up time
128713	[PhaseSeparator] The Transfer Phase smart command fails to execute for all other channels if a "Pressure out of range detected" error occurs on one channel
128785	[i300] Size of i300 buttons in Move Tool need to fit template
128915	Integrate IoT client v3.1 in FluentControl 3.8
128935	[i300][Performance] Worktable view update in edit-mode becomes very slow

129033	[Robustness] FluentControl cannot start because of problem with file ChangeLog.xml in attic folder
129200	[Cybersecurity] FluentControl can be blocked by IT security software because it is not signed as a verified software
129209	[Troubleshooting] Application software shall write installation log by default
129264	Alpaqua FLX Magnet is updated to the latest version
129324	[Scripting] Create new Register Event Handler command
129339	[Troubleshooting][Performance] Switch default for Log Level to Debug
129341	[Database] Update 1.5ml Eppendorf tube definition to include the correct cap
129391	[TipHandling] Change of tip alignment move with the MCA96
129401	[Database] Update labware definition of MCA Off Deck Waste Chute and MCA Thru Deck Waste Chute with Tip Drop Guide
129439	[Database] FCA always takes 9mm spreading when initializing regardless of the Y spacing defined in the labware definition
129603	[TipHandling] Implement a "1 mm safety distance move in Y" during Z-Move downwards in Tip drop guide
129821	[LiquidHandling] Wrong Duty Cycle in SPW SET
130022	[FluentSetup] SOUPs License Info in About Box
130190	[LiquidHandling] cLLD capacitance limit (FW err92) is legitimate LLD for all labware
130305	[FluentSetup] Numbering index for i300 in configuration editor must not be zero based
130357	[FluentSetup] Enable Reset Instrument for FSE
130405	[FluentSetup] Login with FSE Certificate shall not be possible anymore
130915	[FluentSetup] Shall allow to access to Myrius Instrument with Fluent Tokens

34. FluentControl 3.8 SP1 (3.8.16.1118)

34.1 Bug Fixes

131059	[Teaching] Cannot save Z rotation change in robot vectors when editing carrier instance
131235	[PhaseSeparator] FC is idle after clicking 'Aspirate anyway' option in 'Not enough liquid' error message
131247	Stop button not working after pressing pause, stop and retry during a method execution
131313	Labels missing in FCA commands
131960	Upgrade installation gets stuck
131961	UMS Migration tool is triggered when no migration is needed
132116	[FluentSetup] Invalid token grant access to Fluent Setup

34.2 Changes and improvements

130661	[TipHandling] Change Diti PickUp retract start time
131074	[TipHandling] Changing MCA96 DiTi pickup move to one movement
131405	[FluentSetup][TipHandling][Database] EtoN update of Labware in FluentSetup
132051	Remove TouchMonitor Startup Splash/Screensaveer

35. FluentControl 3.9 (3.9.9.1654)

35.1 Bug Fixes

128970	[PhaseSeparator] Transfer Phase command context check issues with variable values
129441	MCA384 GetTips shows error when using the 96 MCA384 Tips adapter
129692	[PhaseSeparator] NullReferenceException when switching to worktables missing exact FCA Thru Deck Waste Chute_1 in "Transfer Phase" command
129967	Incorrect context check error displayed when well offset exceeds labware capacity in smart commands
130076	[PhaseSeparator] Cycle exit criteria for max volume extraction & safety distance calculation
130174	UI issue with tube runner in Sample transfer command
130271	FluentControl crash when saving process copy (using Save as)
130472	Memory leak in ContextCheckController
130529	Reagent Distribution fails to generate Smart Subroutine for activated DiTi channels 5-8 due to Piercing Tips on de-activated channels 1-4
130589	Transfer Individual Volumes command does not process input string for target labware
130590	PathFinder in endless loop during arm evasion
130700	Erroneous "Data set out of sync" error reported at startup
130742	Pipetting is not repeated with all channels after arm is manually moved during error handling user prompt
130935	Channels move unsynchronized inside trough when using "custom labware attributes" to execute commands in liquid class microscript
131092	[MCA384] Leading Air Gap is included in Tip Volume causes "too much in tip" error
131112	FluentControl crashes on multiple systems
131398	FluentControl throws an "Object reference not set" error when running a worklist
131996	"MCA96 Transfer Liquid command" does not execute correct volumes if entered as floating point
132037	UMS Migration tool is triggered when no migration is needed
132038	Upgrade installation stalls
132043	Load Worklist - DiTi Type option 'provided by worklist' no longer working
132313	FC does not reduce the z-axis movement distance properly based on the immersion depth of the DiTi
132501	[CyberSecurity] DLL injection via Lucid Vision Labs -Arena SDK
132568	ApplyPressure and Evaporate command show wrong profile on touchscreen if profile is imported from file
132572	Runtime fatal error "Object Reference not set to an instance of an object" when script run with Cellario on some runs
132612	[Scheduler] FluentControl Scheduler application with Tasks has frequent FluentControl SW crashes
132641	Duplicated TSCC drivers have no matching whitelist entry in FC 3.8 SP1
132666	Not possible to login to FluentControl after run approval window is shown
132751	Doorlocks, residual magnetism implies a longer software timeout / query retry would be beneficial.
132782	Fluent crash when importing zeia with circular dependencies and approval active

FluentSetup

113828	Report cannot be saved
116019	[MCA96] Object reference not set error when the Random Test fails when user confirms that reference tools are not removed
115976	SW stops working when applying to instrument after restoring backup file

122209	Tip Adapter finds colliding end position with default worktable.
125346	Sporadically appears an error message to restart the Fluent Setup SW when setting the SN on Multiguage.
132720	StatisticInfoSchema Correct InstrumentSize type
131390	Part replacement of complete arm sets the serial number of the old arm.
132173	AirFCA pathfinder issue during evasion moves
130703	Rapid Wash Test action fails after drag and drop of deleted Runner from the required Labware
126582	Running In axis counter of RGA arm jumps very rapidly for R axis
132120	Invalid token grant access to Fluent Setup - Dev
132575	new instrument is shown as MYRIUS in production
130652	Selected tips disappear from GUI when selected in Move Tool tab
130431	FW does not trigger any MCA 384 axes to be updated when TE-Control part replacement is done
130583	Add possibility to change the user role by selecting a token
131137	Another instance of FS is already running message error is shown
131114	Plate Move Test failed with Object Reference not set to an instance of an object
130485	Token authentication mechanism hardened

35.2 Changes and improvements

- PMP Outlier Detection for Aspirate and Dispense + Curve Viewer
- API V3, no longer supporting COM-Interface, support for process start
- New lookup functions (SW Version, FW Version)
- Adjustments for Combi-Tray-Light (new mount offset)
- Allow setting preferred grip mode in RGA Transfer Labware Command
- Trigger Subroutine on Runner insertion
- Removed Obfuscation for IoT by default
- Removed support for FRIDA reader

119862	allow setting PMP thresholds to smaller than 2 decimal places
125832	MCA96 default liquid class Water Free Single for 50ul and 200ul tips
127526	ensure pressure and flow settings are defined when starting i300
127893	Improve pathfinder so MCA384 can evade when freshly picked up tips from highest tray of stack8 box
129737	Treat drivers without location as resources for scheduling
130195	AirFCA crash in Wash Station Carrier 160mm during initialization
130279	allow FluentID runner insertion to trigger a specific workflow based on tube barcodes
130338	Improve performance of Context Check
130360	detected liquid incorrectly displayed as 0ul
130385	Improve edit time performance
131029	improve i300 stability
131075	new script command to programmatically end a process iteration
131244	allow external drivers to raise error dialogs and pause the run
131384	update lid labware for better CombiTray and CombiTrayTLight compatibility
131393	improve startup robustness for Sample Tracking
131401	show correct iteration names for continuous loading
132051	update deployed PhaseSeparator LCs for correct phase range standard values

FluentSetup

116162	auto-select bootloader FW version
130923	Enable Reset Instrument for FSE
129185	Support customized fixed tips
129493	Support of TeMotion II FW V4.3.0
130720	Invalid entered token shall be removed from the User Login dialog when it was rejected
130995	Shall allow to access Myrius Instrument with Fluent Tokens
132025	allow using FluentSetup in offline mode
131268	improve error message if no instrument connected

36. FluentControl 3.9 SP1 (3.9.13.1657)

36.1 Vulnerability Fix

ID	Title
133352	[Cybersecurity] IAM v2 User Login and Password shown as clear text in logfile

36.2 FluentSetup

ID	Title
133444	[FluentSetup] FluentSetup V3.9.13 SP1 does not start up due invalid digital signatures