

# Fluent™ – behind the scenes

The launch of the latest Fluent laboratory automation solution has brought the advantages of this application-oriented platform to a host of new users, offering walkaway compound management and assay plate generation to complement the existing end-to-end automation of cell-based and biochemical assay protocols. To learn more about the benefits of the Fluent workstation's innovative liquid handling automation concept, we spoke to some of the team responsible for its development.

At the heart of the Fluent platform is a unique instrumentation concept, as Kevin Moore, manager of the liquid handling products and applications team, explained: "Resource pressures mean that many laboratories no longer have the time to perform application development in house. As a result, they are increasingly looking for 'ready to run' solutions that have been developed and validated at the vendor level. From the outset, the design brief for the Fluent project was to create a liquid handling workstation that focused on our customers' applications, building on the success of our market-leading Freedom EVO® series of open architecture workstations."

"Ensuring that these integrated solutions provide straightforward set-up and walkaway performance, while still offering the flexibility to fit individual laboratory workflows, was the real challenge. By working with expert academic and industry partners, we have been able to guarantee that each Fluent laboratory automation solution offers superior precision, throughput and walkaway time for everyday activities."

Bronwen Forster, senior product manager for liquid handling, took up the story: "This was certainly an exciting project. It covered so many different aspects of the laboratory workflow, from the most commonly used sample formats through to the final goals of a laboratory's research. From a hardware perspective, one of our main aims was to increase modularity and flexibility, making it easier to build a system that meets a customer's specific requirements – and can adapt as those needs change – without

creating bespoke solutions. The instrument's Dynamic Deck™ is an example of this, providing greater deck capacity and unique multidimensional access for the integration of virtually any combination of modules and devices on, in, around or below the workdeck."

"As we were creating an entirely new platform, we also had the opportunity to develop new electronics and motor control hardware to ensure straightforward, robust integration of both Tecan and third-party devices. This not only enhances speed and control for individual operations, it also provides greater stability and enables introduction of 'teach-free' hardware modules and Zero-G one-touch teaching for the set-up of external devices. Ease of maintenance is almost as important as instrument set-up and operation, and the Fluent platform is

designed to allow all maintenance tasks to be performed from the front of the system. This may seem like a small thing but, with an increasing trend towards liquid handling platforms being fully enclosed for applications such as cell-based assays, this can make servicing activities much faster, minimizing downtime for busy laboratories."

Hal Wehrenberg, who led the team developing the new FluentControl™ software, added: "We've been doing laboratory automation for a long time, and we're already a market leader in terms of usability and functionality, so it was a lot of fun as a company to ask ourselves 'What can we do even better?' This was very much the design principle for FluentControl, and probably the biggest innovation was to acknowledge that what the day-to-day operator needs is different from what the system programmer



A multidisciplinary team developed the Fluent workstation hardware...



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wants. We chose to focus on both of these, targeting them directly with separate solutions so that we didn't have to compromise for either.”

“We started by creating a dedicated user interface that's optimized for the daily laboratory workflow. Taking design cues from smart phones and tablets, it is very intuitive and walks the user through maintenance or assay set-up, making it as easy as possible for operators to run experiments. Unlike the standard touchscreen interfaces now available across the industry – which use the same commands but ‘bigger buttons’ – we have

special commands for embedding pictures and text, which we believe is completely unique in the marketplace. This allows laboratories to take their SOPs – which might be in a binder that you hope people read – and integrate just the parts needed for the run the user is about to perform into the instrument set-up process. It's right there for every single user and application, and you can fully customize it to your needs, adding photographs of the workdeck or even videos of, for example, how to remove a plate seal correctly.”

“From the other perspective, we didn't want to ignore the needs of advanced users and

programmers, and so we have a separate programming interface. Continuing the theme of ease of use, one of the most exciting new concepts for this interface is the introduction of Smart Commands. These are simple programming tools to take care of those activities that are part of every protocol, such as reagent distribution or sample transfer. Instead of writing out a script line by line – sometimes up to 30 lines of code – we've created single line commands that allow you to just add the parameters you need. We still have the advanced functionality to cover virtually any task you can think of, but we've made it faster to write basic protocols. We've also worked very closely with both our application specialists and beta testers to make sure that these Smart Commands are still useful for expert users, not just basic level programmers. It was an interesting design challenge, but I'm really proud of how we've pulled it off; maintaining the robustness, flexibility and power that people expect from a Tecan liquid handling platform, while making it easier than ever before to program and use.”

To find out more about Tecan's Fluent laboratory automations solutions, visit [www.tecan.com/fluent](http://www.tecan.com/fluent)



...working closely with the FluentControl software team