Fluent®

for research laboratories.

ADVANCED AUTOMATION WORKSTATION FOR INCREASED PRODUCTIVITY

TECAN.

Enhancing productivity from the inside out.

Fluent was designed and built to increase throughput and productivity while maintaining precision and accuracy, enabling laboratories to get more done in less time – and less space.

1 MORE FUNCTIONALITY IN LESS SPACE

Fluent's patented **Dynamic Deck™** allows the high-capacity worktable to be freely configured and easily reconfigured. The cabinet-mounted option lets you take full advantage of the system's in-deck and below-deck access, expanding capacity and functionality without extending the instrument's footprint.

2 INTUITION BUILT RIGHT IN

Every Fluent comes with a dedicated **touchscreen interface** with a unique, run-only mode that can be individually tailored to specific applications. Users require minimal training as the interface clearly defines every action for more straightforward, consistent operation.

3 DEVICE INTEGRATION FOR FULLY AUTOMATED WORKFLOWS

Enjoy true walkaway operation with Fluent's seamless integration of complementary peripherals, all fully managed with FluentControl™ software for maximum throughput and minimum operator input.

4 EXECUTE PROTOCOLS MORE QUICKLY, EFFICIENTLY AND RELIABLY

Perform multiple tasks simultaneously with fast, independent, task-specific arms that work in parallel. Tecan's patented **Path Finder™** technology automatically calculates the optimal route for each arm, every time, ensuring that runs are completed quickly and efficiently.

5 LOAD. CHECK. RUN.

Embedded DeckCheck cameras identify and highlight discrepancies between the loaded deck at run time and the expected layout to reduce loading errors and ensure successful runs.

6 GREATER PEACE OF MIND

Ensure the integrity of your results with a broad array of fully integrated technologies and capabilities:

- 1D/2D barcode reading for efficient sample identification
- Liquid level detection for reliable pipetting performance
- Plate movement confirmations
- User interaction logs

7 FLEXIBILITY TO DEAL WITH THE UNEXPECTED

Fluent's **Active Stop and Resume** function enables the operator to instantly access the deck during a run – allowing set-up errors or omissions to be corrected – simply by opening the door. Once the action is finished simply close the door and resume the program, which will pick up where it left off.

8 SAVE REAGENTS AND SAMPLE

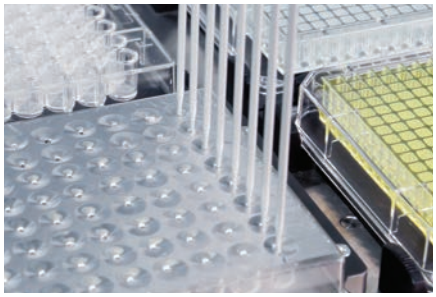
For optimal liquid handling performance, Fluent is equipped with sensitive liquid level sensing that provides real-time aspiration monitoring and liquid arrival checks, enabling the use of smaller sample volumes and reducing dead volumes, as well as exceptional automated error handling.

9 FAST AND EASY METHOD TRANSFER BETWEEN INSTRUMENTS

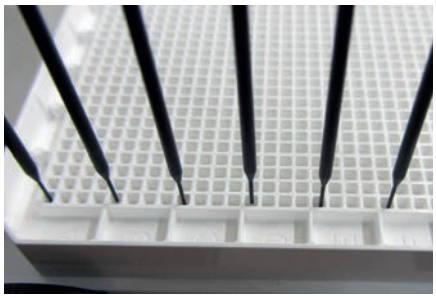
Fluent's outstanding precision and unique Zero-G teaching capability simplify the set-up of channel positions for 96-, 384- and 1,536-well microplate formats. Methods can be easily transferred between platforms simply by exporting and importing scripts, without the need for time-consuming set-up of individual instruments.

Be more productive and feel more confident with every run.

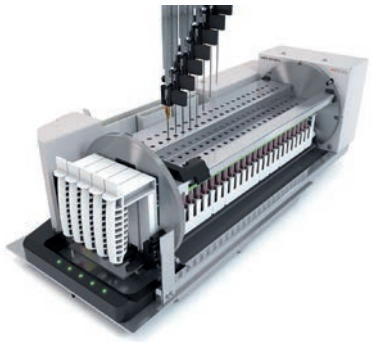
Fluent delivers exceptional positional accuracy and pipetting precision for enhanced process security and peace of mind for walkaway processing.



Cap piercing using washable fixed tips with the liquid displacement Flexible Channel Arm



Pipetting into a 1,536-well microplate with the Flexible Channel Arm and Te-PS™ tips



Sample mixing and aliquoting with the Fluent Mix and Pierce Workstation

BEST OF BOTH WORLDS – ONLY TECAN OFFERS BOTH LIQUID AND AIR DISPLACEMENT TECHNOLOGIES ON ONE INSTRUMENT

By offering both air and liquid displacement pipetting technologies, and the unique ability to apply both technologies in one instrument, the Flexible Channel Arm™ provides unrivalled flexibility to suit the needs of your laboratory workflow and increase productivity.

Liquid displacement offers a choice of washable fixed tips or disposable tips, with a large dynamic range and the option to use alternative system liquids, such as DMSO for priming and bulk dispensing in compound management workflows.

Air displacement eliminates the need for system liquids and associated maintenance operations. Ideal for genomics applications, this option uses inline filters for optimal channel protection and process security.

Phase Separator™ is a unique, pressure-based feature of the Air FCA, capable of removing the plasma phase from centrifuged blood samples. It detects liquid layers while aspirating with all eight channels in parallel, enabling 24 samples to be processed in under 10 minutes* per arm. The dual-arm option enables liquid separation to be carried out in 16 tubes simultaneously. Accurate and precise phase detection occurs inside the tube, eliminating the need for an optical line of sight to the samples (for phase detection), thus avoiding time spent moving tubes or analyzing images.

FROM NANOLITER TO MILLILITER VOLUMES

Ideal for the preparation and distribution of samples and controls, the **Flexible Channel Arm** features independent pipetting channels that can access any tube or well configuration, with automatic adjustment of tip spacing between different labware formats, providing outstanding speed of liquid transfer.

SAMPLE DISTRIBUTION WITHOUT TUBE DECAPPING

The **Fluent Mix and Pierce Workstation** offers precise tube-to-tube and tube-to-plate distribution of samples that require consistent mixing, while eliminating the need to decap and recap tubes for sample distribution. Excellent pipetting performance for challenging sample types provides the necessary result standardization needed for multiple applications, such as serology and liquid chromatography-mass spectrometry in the clinical space.

* Timing is volume dependent. Time given for separation volumes of 5 ml.

MULTIPLE CHANNEL ARM (MCA) – HIGH PRODUCTIVITY

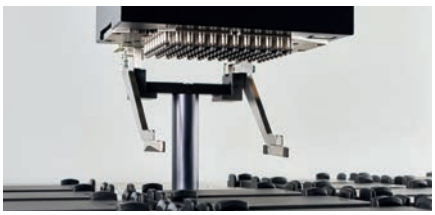
The **Multiple Channel Arm** ensures high productivity for automated liquid handling processes. The MCA384/96 exceptional flexibility for walkaway processing can automatically switch between 96- and 384-channel formats, or washable fixed tips and disposable tips, in seconds during a run. Combined with outstanding movement speeds, this increases throughput and reduces turnaround times.

The **MCA96** with its extended volume range from 1 to 1,000 µL is ideally suited for high volume extractions with unmatched speed. cLLD capacity on each tip allows liquid detection in any trough with any tip pattern selected.

Both Multiple Channel Arms can pipette virtually any combination of individual rows and/or columns – as well as custom arrangements – simplifying plate replication, sample reformatting and dilution series generation. The ability to automatically change tip formats, sizes and types ensures a broad dynamic liquid volume range while maintaining optimal pipetting performance for 96-, 384- and 1,536-well formats, including deep-well plates.

Multiple Channel Arm picking up 96 500 µL disposable tips

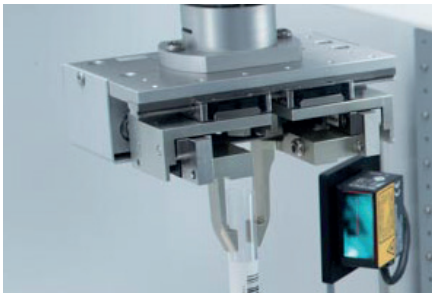
Multiple Channel Arm picking up one row of 24 50 µL tips



Multiple Channel Arm 96 with optional finger exchange system gripper”

VERSATILE PLATE AND TUBE HANDLING

The **Robotic Gripper Arm™** rapidly moves plates and tubes between logistical and processing devices without interrupting the pipetting process. Essential for long unattended runs, it smoothly and quickly delivers labware to pipetting arms and integrated devices, and simplifies the set-up of external devices using the Zero-G one-touch teaching function. The patented **Finger Exchange System™** automatically changes gripper configurations within seconds, extending the boundaries of walkaway workflow automation.



Tube handling with the Robotic Gripper Arm

ENHANCED SAMPLE SECURITY

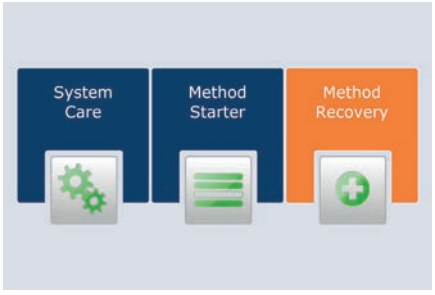
The **Fluent ID™** option provides barcode identification of sample tubes, with read-as-you-load capabilities and immediate feedback. Accommodating up to 192 samples in just six grid spaces, the modular Fluent ID can scale up for a range of different tubes to provide unrivaled speed, capacity and security.

The **Robotic Gripper Arm** can deliver tubes and plates to standalone barcode scanning options or, alternatively, can be fitted with a forward- or rear-facing barcode reader, enabling identification of plates during transfers or rapid inventory scans of hotels or stacks on the deck, respectively.

Fast and simple sample loading and identification with Fluent ID

METHOD RECOVERY RESTORES PROTOCOLS TO ENSURE SUCCESS

Confidence in workflow automation is critical to success. **Method Recovery** is a powerful feature of FluentControl, which minimizes the disruption caused by unexpected events – such as a power loss or computer failure. Method Recovery guides the operator through the simple steps required to re-establish an interrupted protocol, minimizing potential loss of valuable samples and reagents, further extending the extensive in-method error recovery capabilities.



Recover interrupted runs via simple touchscreen interactions

Adding simplicity to every interaction.

FluentControl provides a powerful set of tools to quickly and easily set up and run even the most challenging assays.

Operation at a touch of your finger

Use pictures, videos and text to support the operator preparing a run

DeckCheck highlights differences to the expected worktable

A PERFECT FIT FOR OPERATORS AND PROGRAMMERS

FluentControl software meets the needs of both day-to-day operators and system programmers without compromise.
Assay development and configuration is quick and easy using a dedicated programming environment, with no specialist knowledge required. A special run-time mode presents a clear and simple interface on the built-in touchscreen, which guides users through daily tasks for fast, efficient and user-friendly operation.

CONSISTENT, REPRODUCIBLE AND RELIABLE OPERATION

Fluent has a unique touchscreen interface that simplifies daily activities by guiding scientists through routine set-up and operation of the system for consistent, reproducible results. Using built-in cameras to identify common loading errors, it can provide graphical instructions and prompts for every step of the set-up process, as well as aiding user interventions during method execution.

- Visual guides for complex tasks
- Easier compliance with standard operating procedures
- Faster start-up for new operators
- Status and run-time progress indicators
- Method Recovery allows a process to be easily recovered, even after a fatal error, such as a power outage

EVERY RUN SET UP FOR SUCCESS

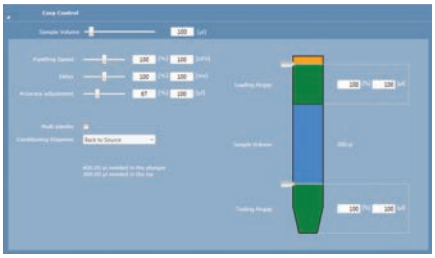
DeckCheck™ highlights loading mistakes during worktable set-up, drawing attention to potential problems before they occur to make sure every run is a success. The system uses built-in cameras and an advanced software algorithm to compare a live picture of the worktable to a reference image, displaying discrepancies and allowing manual corrections in real time during instrument loading and worktable set-up.

- Common loading mistakes corrected before they cause problems
- Increases number of successful runs
- Exceptionally easy to use
- Saves money and maintains productivity
- Increases user confidence for all applications

FAST AND EASY ASSAY SCRIPTING

Configuring assays in FluentControl is straightforward, with drag and drop command editors and an intuitive 3D worktable. It automatically checks for errors while editing to ensure rapid, easy scripting. Highlights include:

- **Liquid class editor** – use predefined parameters for a wide range of liquids, or quickly define custom liquid classes to suit individual applications
- **Advanced undo/redo features** – undo or redo changes, even after saving or rebooting
- **3D simulations** – create and visualize new scripts without a real instrument, improving laboratory productivity



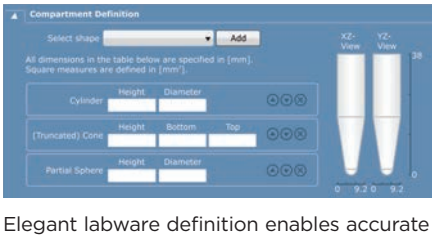
Liquid class editor

SMART COMMANDS

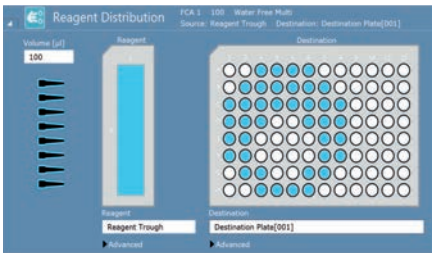
These simple, one-line workflow design tools manage common activities, making it fast and easy to generate basic protocols.

Functions include:

- Fill a plate, or series of plates, with a reagent from a tube or trough
- Transfer samples and aliquot replicates from tubes to plates
- Dilute samples based on imported files, run information (eg. concentrations calculated during the run) or predefined factors
- Create simple standard curves



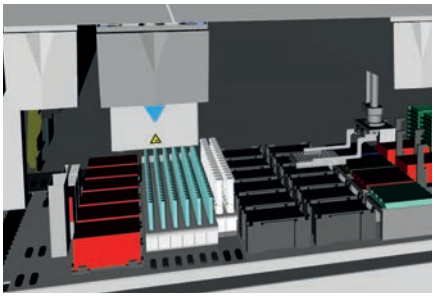
Elegant labware definition enables accurate calculation of detected liquid volumes



Smart Commands – spend less time setting up common pipetting tasks

CREATE WIZARD–LIKE INTERFACES

The Application Toolkit provides a collection of commands that allow programmers to create 'wizard-like' interfaces to further simplify everyday operation of the system. This powerful protocol development toolkit also includes special commands for embedding rich user prompts.



3D simulations

RAPID SCRIPT DEVELOPMENT FOR QUANTIFICATION AND NORMALIZATION WORKFLOWS

Rapidly develop scripts for common tasks, such as quantification and normalization workflows. By embedding these functions into FluentControl as standard commands, application specialists can save several hours of programming per script.

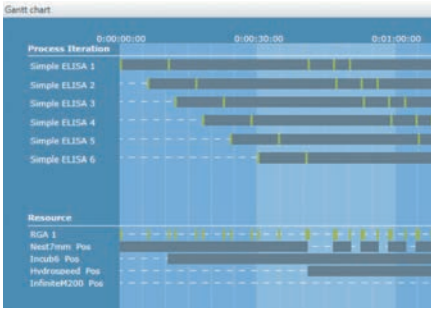
Build custom software solutions using the API to take control of FluentControl

CONTROL FLUENT FROM ANOTHER APPLICATION

For those looking to 'automate their solution', the Application Programming Interface (API) allows external programs to start and stop FluentControl protocols, query the status of runs, and upload variables.

INCREASE PRODUCTIVITY

Dynamic scheduling allows you to build a process and review the automated schedule before starting a run. The software then updates in real-time during the run, making adjustments to the schedule based on how long each step takes.

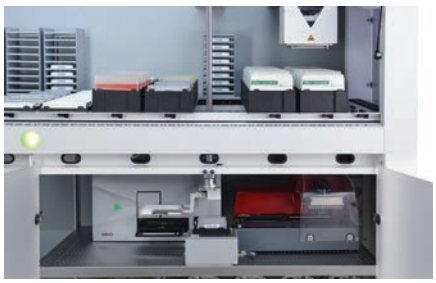


Dynamic scheduling option maximizes throughput and resource usage

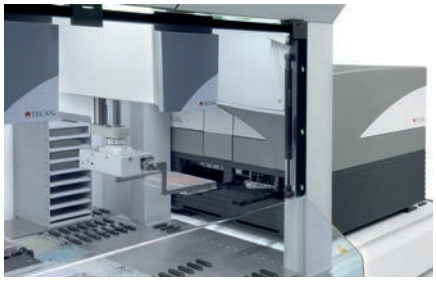
Do more in less time and less space.

Fluent is designed to simplify your daily tasks by bringing together all the modules and devices required for complete workflow automation.

Fluent 780 with carousel (right side) and stacker (left side) maximizes walkaway time



Below-deck integration of a centrifuge



Side integration of Tecan Spark® multimode reader

DEVICE INTEGRATION FOR FULLY AUTOMATED WORKFLOWS

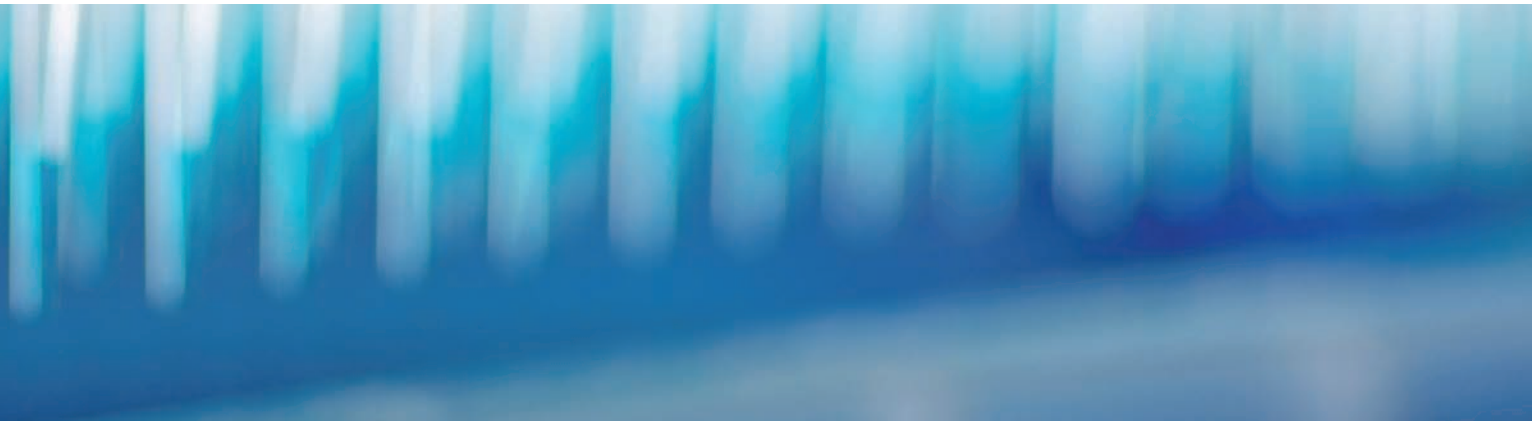
Fluent's patented Dynamic Deck ensures exceptional capacity in a compact footprint. This allows integration of peripheral devices on, around or below the workdeck without compromising on instrument throughput – making it easy to get more done, more quickly.

Stacker

A high-capacity stacker can be mounted adjacent to the Fluent, allowing rapid transfer of microplates or tip racks to the workdeck. Each stacker can accommodate up to four stacks of 50 microplates or 40 multichannel tip racks, extending walkaway times by ensuring availability of consumables.

Carousel

This option provides random access storage for SLAS-format microplates, labware or disposable tips (maximum 210 standard microplates), which can be easily accessed by the Robotic Gripper Arm. A built-in barcode reader ensures complete process security and makes this an ideal solution for sample, compound library or growth medium storage, allowing hands-free generation of assay plates.



Readers and washers
Tecan offers a range of multimode readers and washers – including the Infinite® and Spark series readers and the HydroFlex™ and HydroSpeed™ washers – designed specifically with complete automation in mind. From rapid absorbance measurements for DNA quantification to advanced cell-based and biochemical assays, there is a Tecan reader or washer to suit almost any assay requirements.

Fluent 480 with integrated laminar flow hood

Laminar flow hood*
An integrated laminar flow HEPA hood with UVC light maintains a clean environment throughout the workdeck, ensuring environmental protection for cell biology and other sensitive applications. The integrated UVC lamp can be used to ensure the cleanliness of deck area is maintained.

Incubators
A range of on-deck and peripheral incubator options are available, from the compact Monitored Incubator Option (MIO™) for up to six microplates, to large robotic units for up to several hundred cell plates.

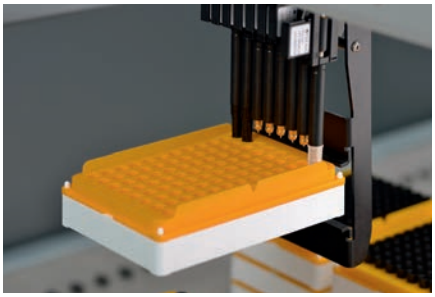
Exchange deck segments for flexible assay set-up, device integration and reconfiguration

Magnetic and vacuum separation
Fluent supports magnetic bead-based and vacuum separation workflows. Offering fully-automated separation in multi-well formats, this option is ideally suited to nucleic acid extraction and genomic sample clean-up activities.

Third-party devices
FluentControl offers straightforward integration of third-party devices, with an ever-increasing library of drivers – including support of SiLA devices – and simplified Zero-G one-touch protocol set-up.

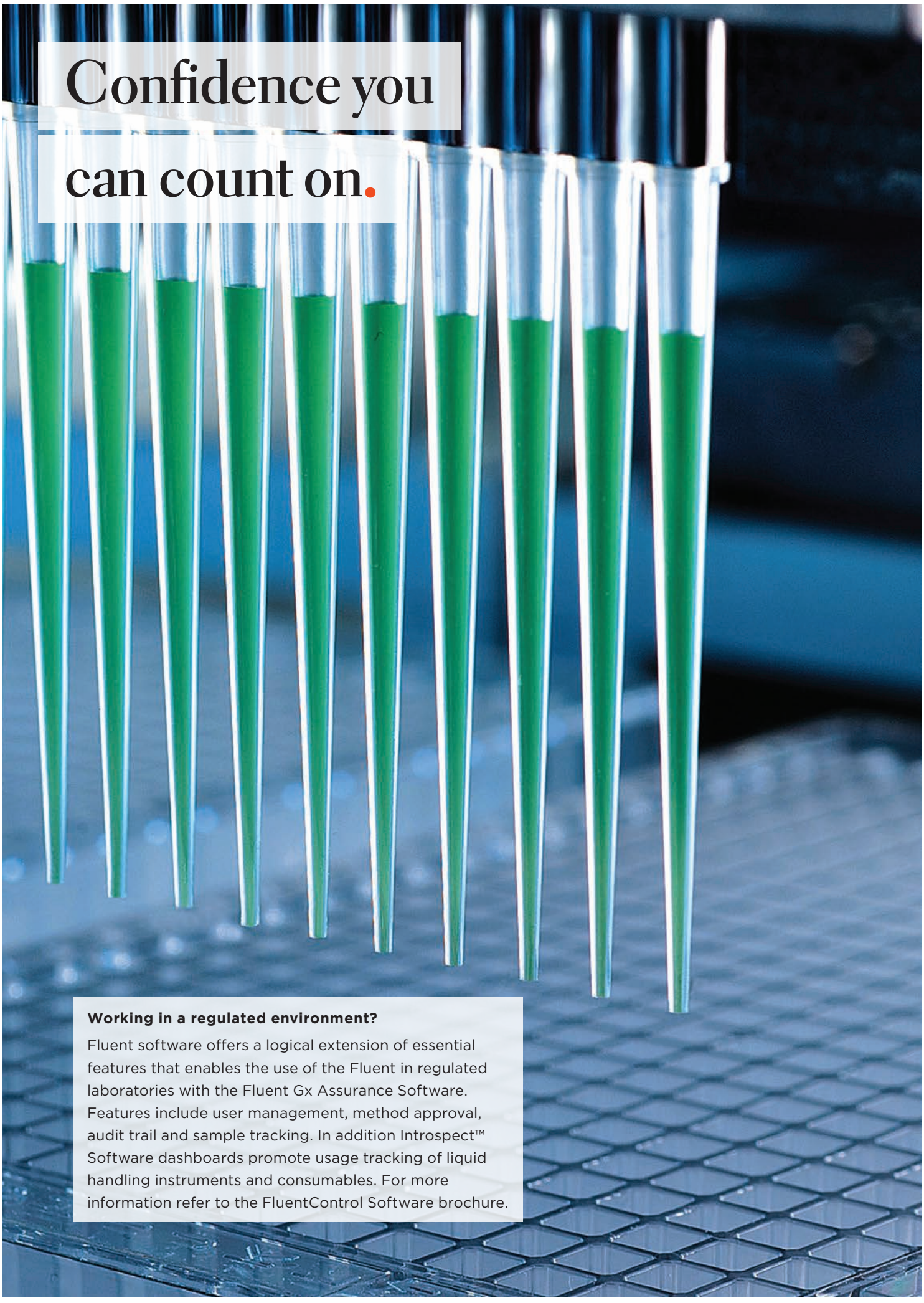
ENHANCED PRODUCTIVITY WITH TECAN CONSUMABLES

Tecan offers a broad portfolio of high quality consumables – from disposable tips to troughs – in Tecan Standard, Tecan Pure and Tecan Sterile purity levels. Every product undergoes stringent testing to ensure reliable automation. Nested disposable tips are also available for both the Multiple Channel Arm and Flexible Channel Arm to further increase efficiency, productivity and walkaway times.



Maximize your deck capacity with Tecan's nested tips and unique tip rack transfer tool

* Laminar flow HEPA hood is a product of Bigneat Ltd., Waterlooville, UK.



Confidence you can count on.

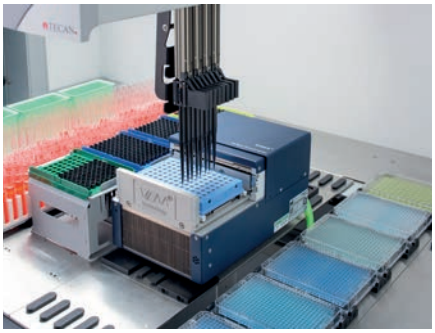
Working in a regulated environment?

Fluent software offers a logical extension of essential features that enables the use of the Fluent in regulated laboratories with the Fluent Gx Assurance Software. Features include user management, method approval, audit trail and sample tracking. In addition Introspect™ Software dashboards promote usage tracking of liquid handling instruments and consumables. For more information refer to the FluentControl Software brochure.

Tecan has re-invented laboratory automation with the Fluent Automation Workstation, a unique concept built around the application-specific needs of laboratories.

THE FAST TRACK TO GENOMIC RESULTS

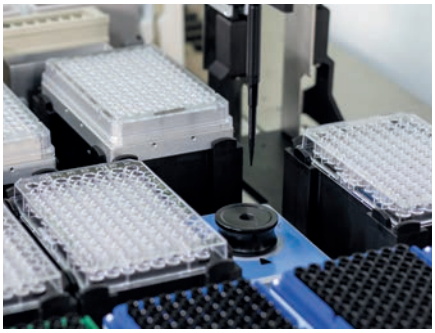
Fluent was designed to meet the needs of various life science workflows, such as high-throughput genomics. It combines high-precision liquid handling – down to 200 nL – with straightforward set-up of normalization, sample transfer and reagent distribution using Smart Commands. Its freely configurable architecture allows rapid integration of devices for DNA quantification and processing, and offers exceptional storage capacity for plates and tips. Addition of the Flexible Channel Arm Gripper option enables certain plate moves between pipetting positions, plate magnet and shaker for simple automation of extraction protocols.



Pipetting directly into thermocycler*

ACCURATE NUCLEIC ACID QUANTIFICATION AND QC WITHOUT SAMPLE LOSS

The Frida Reader™ module offers a unique approach to UV-based concentration and purity assessment of nucleic acids. Designed to work in combination with the platform's Air FCA, this patented approach performs measurements in a hanging drop, avoiding the consumption of rare and precious genetic material by aspirating the sample back into the tip for further processing after measurement.



Frida Reader offers in-process absorbance measurement free of any sample loss

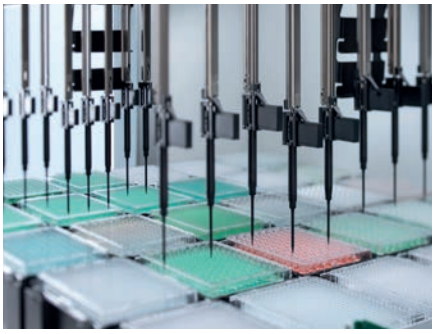
TAKING THE COMPLEXITY OUT OF CELL BIOLOGY

The Fluent Automation Workstation for cell-based assays offers walkaway processing for cell biology workflows. By seamlessly integrating all the complementary devices required for cell-based research – including incubators, washers and readers – into a single platform, Fluent offers researchers thefreedom and flexibility to focus on other tasks around the lab as the instrument runs unattended.

Incubation and environmental control for automation of high throughput, cell-based assay workflows**

SPEED UP EFFICIENCY WITHIN DRUG DISCOVERY PROCESSES

Compound management is a key activity in the drug discovery process, and the Fluent Automation Workstation for compound management has been developed specifically to meet the needs of this sector. It provides more capacity and increased speed – ensuring fast turnaround and optimal walkaway times – and uniquely offers both liquid and air displacement pipetting to ensure a high level of process security, while still allowing rapid bulk dispensing of DMSO.

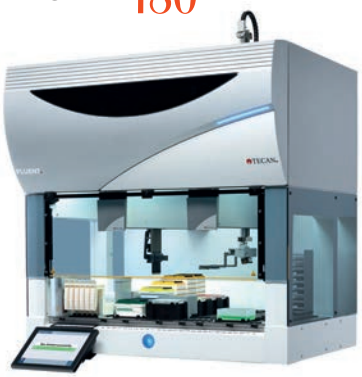


Up to 16 separate pipetting channels can be used to enhance throughput for applications such as hit-picking

Products shown: * On Deck Thermal Cycler, Inheco GmbH, Martinsried, Germany; ** Cytomat™ 10 C, ThermoFisher Scientific Inc, MA, USA

Optimal capacity.
Optimal throughput.
Optimal results.

FLUENT 480



30 plate positions

FLUENT 780

48 plate positions

FLUENT 1080

72 plate positions

DISCOVER THE FLUENT AUTOMATION WORKSTATION

To see Fluent in action and learn how it can improve the productivity of your laboratory, contact your nearest Tecan office or visit **www.tecan.com/fluent**

Climate neutral
Product
ClimatePartner.com/14988-2101-1001

The Fluent Automation Workstation is a carbon neutral product. The calculated carbon footprint covers all relevant emissions over the product lifecycle – including raw materials for assembly, energy for manufacture, inbound and outbound logistics, in-service usage and end of life disposal.

Australia +61 3 9647 4100 **Austria** +43 62 46 89 330 **Belgium** +32 15 42 13 19 **China** +86 21 220 63 206 **France** +33 4 72 76 04 80 **Germany** +49 79 51 94 170
Italy +39 02 92 44 790 **Japan** +81 44 556 73 11 **Netherlands** +31 18 34 48 17 4 **Nordic** +46 8 750 39 40 **Singapore** +65 644 41 886 **Spain** +34 93 595 25 31
Switzerland +41 44 922 89 22 **UK** +44 118 9300 300 **USA** +1 919 361 5200 **Other countries** +41 44 922 81 11

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