

DRUG

DISCOVERY & DEVELOPMENT

STRATEGIES & TECHNOLOGIES DRIVING DRUG DISCOVERY TO MARKET

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■ HOW IT WORKS *Automation Tools*

Automating Workflow

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With high demand for reliable and accurate data across the drug discovery industry, automation has become a key component within almost every laboratory. The ability to streamline workflows in an efficient manner increases walk-away time for lab personnel and frees them up for more-demanding tasks. Numerous automated instruments are available; however, it is the integration of these instruments into a complete workflow that can prove challenging. Plate movers are just one example of a robotic instrument that has become vital to an automated workflow, ensuring the efficient management of a specific protocol or set of actions. With the ability to move at high speeds, plate movers can provide industrial-level performance within a compact benchtop footprint and facilitate the safe and efficient movement of microplates between instruments.

Automated workflows streamline processes to maximize productivity by substantially reducing the user input and time needed to complete the required task. As automation can be utilized for more and more processes, larger, increasingly complex workflows can be undertaken. However, as the majority of the plate movers currently available are sta-

tionary, they have limited reach and functionality. This restriction impacts on the number of instruments and storage units that can be placed around the mover, restraining the size and ability to automate an entire workflow. The inability to reach instruments can significantly limit the development of automated systems, as it reduces the hands-off time that would be available for other research tasks.

The plate mover should be able to access all of the instruments, regardless of how many are required. The Thermo Scientific Orbitor BenchTrak extends the functionality of the existing Orbitor RS by incorporating a track that the plate mover can travel freely along. This not only substantially extends the reach of the mover, but also means that more instruments can be accessed and utilized within any given process. Additional tracks enable a large, fully automated workflow to be carried out, as well as ensuring flexibility and expandability.

As complexity increases, however, so does the demand put upon the user in the initial set-up and calibration stages to ensure that the plate mover is aware of where all instruments are located in order for it to feed plates. The teaching of instrument nest and plate storage device location can be a difficult, time-consuming, and complex task that often requires input from specialist personnel. Spe-



The Thermo Scientific Orbitor BenchTrak extends the functionality and versatility of the Orbitor RS plate mover.

cialized software is included with the Orbitor that guides users through the steps required to calibrate automated workstations. By providing detailed instructions on how to manually move the robotic arm, while simultaneously calculating safe locations for the mover and ideal paths to other instruments and devices, the software removes the need for specialized input. Furthermore, additional control and scheduling software effectively integrates all of the protocols within a workflow, configuring all devices to allow multiple users to operate continuously. Not only can advanced and complex workflows be fully automated to increase throughput, but flexibility and productivity can be maximized through the provision of complete walk-away functionality. This set-up can be used to address almost any requirement, including sample preparation, ELISA, nucleic acid and protein purification, cell or biochemical assays, qPCR, and next-generation sequencing, all of which can be carried out alone or in combination. ■

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