CLIENT | The Automation Partnership (TAP)

Automation and Process Control for Ultra High Throughput Screening

The Automation Partnership designs and manufactures advanced automation systems for research, development and manufacturing processes within the life science industries.

Business Problem

High Throughput Screening (HTS) is an important part of the drug discovery process. This allows a company to screen the initial effect of thousands of components against identified targets ('diseases'). Many pharmaceutical companies have set minimum goals of running 100s of targets per year against 500,000 compounds per target. To reach this goal, an average of 200,000 compounds must be screened every working day of the year.

Until recently, the only choice available to HTS management to meet these goals was to buy more laboratory robotics, hire more skilled staff to support the robotics and find the additional office and lab space to house both. This option is both difficult and costly.

Tessella Solution

The Automation Partnership, in close collaboration with AstraZeneca (Alderley Park, UK), have developed Asset, a fully integrated, HTS system that can process a plate every 30 seconds, using any assay technology. Tessella, with their background of involvement in the pharmaceutical industry, has helped the Automation Partnership to develop the software required to control Asset.

Complex assays that require multiple plate washes, incubations, reagent additions and even multiple measurements are easily set-up in the user defined assay protocols.

The control software then takes over, coordinating the movement of each of the robots within the system, monitoring the environmental sensors, and activating the plate readers. In addition, maintenance panels for each of the robots allow engineers to test the robots and adjust them during and after maintenance.

The software was developed using Visual C++. It runs on a bank of computers running Windows NT, which communicate with each other using DCOM (Distributed Component Object Model).

Results and Benefits

Asset enables more screens to be completed faster with a greater number of compounds than is possible with previous approaches. Reduced operator involvement and closely controlled processing eliminates the variability problems associated with batch processing. The reliability of both

the hardware and the software mean that Asset can be left unattended for overnight operation, further increasing the throughput that can be achieved.

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