

FLEXIBLE BENCHTOP CYTOMETER BENEFITS FROM SMART LASER MODULES

USING INTERCHANGEABLE LASERS ENABLES NEXT GENERATION BENCHTOP FLOW CYTOMETERS, SUCH AS THE NOVOCYTE™ FLOW CYTOMETERS FROM ACEA BIOSCIENCES, TO COMBINE HIGH PERFORMANCE AND CUSTOMIZABLE FUNCTIONALITY, YIELDING A HIGHLY COST EFFECTIVE CELL ANALYSIS PLATFORM

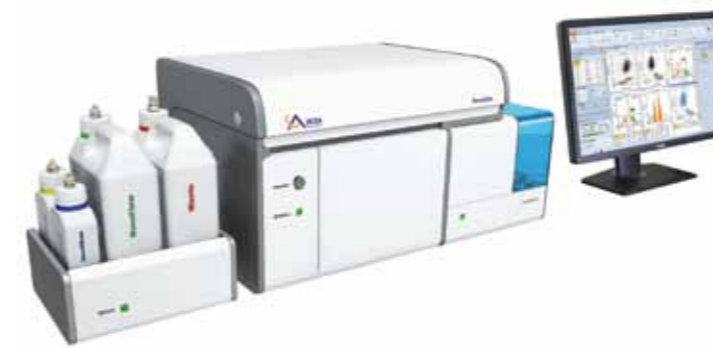


FIGURE 2. THE BENCHTOP NOVOCYTE FROM ACEA BIOSCIENCES IS FACTORY CUSTOMIZABLE AND FIELD CONFIGURABLE THANKS TO ITS MODULAR DESIGN, INCLUDING SMART PLUG & PLAY OBIS LASER MODULES FROM COHERENT



FIGURE 3. OBIS SMART LASER MODULES PROVIDE PLUG & PLAY FUNCTIONALITY AND IDENTICAL FORM AND FIT ACROSS A WIDE SPECTRUM OF WAVELENGTHS

SMART PLUG&PLAY LASER MODULES

ACEA has responded to this need with a novel benchtop cytometer line, the Novo-Cyte, which features a high degree of internal modularity. «It's a very flexible platform that allows us to include just the laser wavelengths specifically requested by each customer, plus the option to later change or upgrade functionality by adding modular

components without a factory return – explains Nunez – Lasers are notoriously difficult to align and combine at the precision required in flow cytometry. However, our use of OBIS smart laser modules from Coherent completely solves this challenge in the Novocyte. Specifically, these are self-contained plug-and-play smart modules with very consistent mechanical registration and unit-to-unit performance. Every

OBIS module delivers an identical beam shape, size and direction, so interchanging or adding lasers is relatively simple». Supporting the market for benchtop cytometry requires an agile supplier with a modular, customizable platform where the modules are easily interchangeable.

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BY MATTHIAS SCHULZE, COHERENT INC.

THE POWER OF FLOW CYTOMETRY

Flow cytometry is a laser-based technique for analyzing (and sometimes sorting) cells. After they have been treated with fluorescent antibodies that bind to specific cell types, the prepared cells are forced to flow in a single file

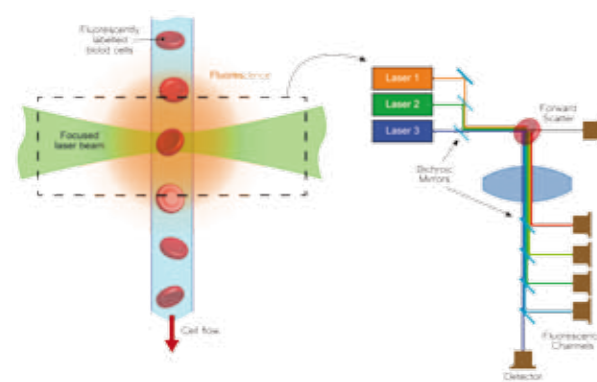


FIGURE 1. FLOW CYTOMETRY USES FOCUSED LASER LIGHT TO COUNT CELLS ACCORDING TO FLUORESCENT LABELS (FLUOROCHROMES) THAT BIND TO TARGET PROTEINS AND OTHER CELL SURFACE MARKERS

through a focused laser beam. The detected fluorescence reveals the number and types of various cells in the sample. Flow cytometers often incorporate multiple lasers, and can include a number of light detectors at different wavelength windows or scatter angles. This allows cell samples to be analyzed according to multiple parameters at the same time.

GROWTH IN BENCHTOP CYTOMETER MARKET

Flow cytometry is both a powerful research tool (e.g., in microbiology) as well as a widely used clinical tool for fast blood cell analysis (e.g., monitoring CD4 cells in HIV patients). And, as novel therapeutic modalities (e.g. stem cell treatment) are developed, new cytometry applications often blur the traditional distinction between clinical and research measurements. This has led to the development of a new generation of benchtop instruments that are smaller and more economical than the traditional large, floor-standing, research-only instruments.

CUSTOMIZED PERFORMANCE EQUALS COST-EFFECTIVE PERFORMANCE

Offering the optimum blend of performance, functionality, speed and economy is very important in this market, according to Rene Nunez, Senior Product Manager at ACEA Biosciences, a recent but fast-growing player in the benchtop market. He explains that «virtually every user of our instruments needs performance comparable to the traditional large platforms, in terms of sensitivity, data fidelity and throughput. But the investment cost on large platforms is high and these often lack features users need in their research. Each application needs a different set of capabilities, in terms of the number of laser wavelengths and detection channels. Customers might need the instrument configured for minimal detection but with automated sample handling capabilities, and still have the options to upgrade later. In this market, it is invaluable to provide flexibility and affordability».