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Clean Sampling from Bioreactors

Max Planck Innovation licenses innovative sampling system to bbi-biotech

Max Planck Innovation GmbH, the technology transfer organization of the Max Planck Society, is concluding two exclusive licensing agreements for a liquid sampling system with bbi-biotech GmbH, an innovative biotechnology company. The technology, developed at the Max Planck Institute for Dynamics of Complex Technical Systems in Magdeburg, provides a sterile and economical way of taking samples for bioprocess analysis.

In its collective efforts to develop new drugs, the pharmaceuticals industry is making increasing use of biotechnology based on the application of natural biological transformation processes. One of the most important methods is the cultivation of microorganisms or cells in a bioreactor filled with a liquid culture medium. As drug manufacture is subject to especially strict regulations, the conditions inside the bioreactor need to be monitored precisely. Possibilities for analysis inside the reactor itself are extremely limited due to the need for thorough sterilization, with either steam or gamma rays. The use of external analyzers is therefore absolute necessary. Probes are used to check the cultivation: the probes extract samples from the medium and transfer them to an analytical system, which analyzes relevant parameters. However, a key problem with conventional sampling systems is the fact that they cause an unnecessary loss of medium in the bioreactor and often contaminate and distort the samples owing to a lack of sterility.

bbi-biotech now offers completely novel sampling systems capable of taking sterile samples from bioreactors – without incurring any dead volume. The sterile boundary is in the reactor itself. Pre-rinsing is therefore not required in order to obtain a representative sample. The system consists of a disposable probe, a pump, a pneumatic unit and an innovative control mechanism. The sampling system extracts from the bioreactor no more than the quantity needed for the analysis or quality control step. The innovative way in which the sample is transported using sterile gas facilitates the automatic cleaning of the conduit system. An optional rinse can in every case prevent contamination or distortion of consecutive samples. Furthermore, the fully automatable sampling procedure can be kept very short with the help of the novel system that turns offline analysis into atline analysis. With the data being measured in real time, the status of the process can be determined immediately, or almost in real time, and regulated at once. “The new sampling systems can be employed in all process engineering applications, in other words processes in which microorganisms, for instance, are used to create a product by means of biological methods, in the biotech, pharmaceuticals, food and cosmetics industries. They work with bioreactors of all sizes and can be connected to any type of analysis instrument, including flow cytometers, enzyme sensors, mass spectrometers, HPLC and bioarrays. We thereby help protect our customers’ investments in their existing equipment,” explains bbi-biotech’s CEO Bernd-Ulrich Wilhelm.

According to Bernd Ctorteka, Patent and License Manager at Max Planck Innovation, bbi-biotech is an “innovative provider of exclusive technologies in the production of scientific instruments. The company is even in a position to supply its customers with customized, one-stop solutions for process engineering applications, including bioreactors. Our patent is a key component in the company’s strategy and presents bbi-biotech’s customers with completely new possibilities for monitoring, checking and managing cultivation quality.” bbi-biotech will exhibit the new sampling system, called bioPROBE MK1, at Analytica in Munich, where it can be seen in hall A3, booth 580/12 from March 23-26, 2010.

About bbi-biotech GmbH

bbi-biotech GmbH, a young and innovative biotechnology company located in Berlin-Brandenburg, is an innovative provider of exclusive solutions for process engineering applications in the biotech and pharmaceuticals industries. The company develops instruments to combine fermentors and bioreactors with modern analytical instruments and components, particularly disposables for the biotech industry as well as a new generation of fermentors and bioreactors for biotechnology. The company has its own, proprietary patented systems and a broad-based, international network. By integrating cutting-edge developments from the spheres of materials science, information technology and automation, bbi-biotech creates value for its customers in applications employed within a highly regulated environment. The company manufactures all of its instruments in Germany in order to meet the highest standards of quality.

About Max Planck Innovation

Max Planck Innovation advises and supports scientists of the Max Planck Society in evaluating inventions and filing patent applications. Max Planck Innovation markets patents and technologies to industry and coaches founders of new companies based on research results from Max Planck Institutes.

Every year, Max Planck Innovation evaluates about 150 inventions, of which about half lead to the filing of a patent application. Since 1979, just under 3,200 inventions have gone through Max Planck Innovation and nearly 1,900 license agreements have been concluded. Moreover, the company has supported about 90 successful spin-offs since 1990.



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