

# VOGELBUSCH GMBH: PATENT APPLICATION FOR THE OPTIMISATION OF A CHROMATOGRAPHIC SEPARATION PROCESS

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In applying for a patent for a highly-efficient chromatographic separation principle, Vogelbusch GmbH has confirmed its role as a leading force in the development of biotech process technologies. The process adapts the separation process known as "simulated moving bed" to the specific needs of pharmaceutical companies. A prototype was presented to an audience of experts for the first time at the PREP 2008 conference in San Jose, California, where it attracted a great deal of interest.

Conventional chromatography is a well-established standard procedure used in the pharmaceutical industry to separate mixtures of substances. Although simulated moving bed (SMB) chromatography represents the cutting-edge of technology in the commodity sector, it has seldom been used in the pharmaceutical industry.

With the development of an innovative distributor system, Vogelbusch has for the first time succeeded in adapting SMB chromatography for use in the pharmaceutical industry. The distributor system has been optimised specifically for use in single column SMB, which has numerous commercial and process engineering benefits over multicolumn SMB. In particular, the distributor device - for which a patent application has been submitted - is perfect for small-scale use, making it the ideal response to calls from the pharmaceutical industry for highly-efficient processing of low batch volumes. Vogelbusch GmbH has been operating a larger-scale single column SMB pilot system for use in the commodity sector at its headquarters in Vienna for some time. Having impressed representatives of the pharmaceutical industry, this system was the catalyst behind the call for smaller systems.

The system is based on liquid distributors which enable the individual process streams to be introduced into and/or drawn off from the adsorbent evenly at various points in the column. While the various inlet and outlet points of a multicolumn SMB are located in the piping between the columns, the distributor system now locates these in the adsorbent. The resin bed is no longer divided into several columns, which also eliminates the disadvantages associated with this process.

The distributor system was developed in cooperation with the Department of Biotechnology at the University of Natural Resources and Applied Life Sciences, Vienna. Outlining the technical advantages of the new single column SMB technology, Prof. Alois Jungbauer of the Department of Biotechnology explains: "If separation resins are used as adsorbents in SMB, they experience a change in volume between the charging and discharging of the columns. In the multicolumn process, this change in volume can lead to a decline in separation performance or a large hydrodynamic pressure drop. However, in the single column process, the expansion and contraction of the adsorbent occurs at various points in the column simultaneously. As a result, both effects cancel one another out and the volume - and thus the separation performance - remains constant."

A suitable prototype was unveiled at the 21st International Symposium on Preparative / Process Chromatography which took place in San Jose, California from 15 to 18 June 2008. Markus Lehr, who represented Vogelbusch at the event, comments on the audience's reaction: "It was clear that they would recognise both the technical advantages already outlined and the commercial benefits of our process. Firstly, using one column instead of several columns significantly reduces the cost of manufacturing, preparing, operating and cleaning the system. Secondly, the single column principle opens up new areas of application that remain closed to the multicolumn process due to the ongoing problem associated with the changes in adsorbent volume. In addition, the system contains fewer moving parts and is thus less prone to disruption. This means processes are uninterrupted and the life cycle of the system is increased. Given that this system is also more efficient than multicolumn SMB, the commercial benefits are obvious - less investment, lower running costs and increased performance will clearly maximize profits for the user."

With an international patent application now submitted for this device, Vogelbusch GmbH has confirmed its leading role as an innovative developer of optimized processes for the pharmaceutical and biotechnological industry. The company has achieved this status thanks to numerous research collaborations with university and non-university partners and financial support from the Austrian Research Promotion Agency (FFG). The company's proximity to its customers also provides the ideal environment for translating research results into practical applications in the industrial sector.

Photographs available at: [www.vogelbusch-biocommodities.com/de/ueberuns/Pressebilde...](http://www.vogelbusch-biocommodities.com/de/ueberuns/Pressebilde...)

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About Vogelbusch GmbH (as at July 2008):

VOGELBUSCH GmbH plans and implements global production facilities for biotechnological processes. Customers include starch and sugar processing companies ("white biotechnology") and the biopharmaceutical industry ("red biotechnology"). The company is based in Vienna (Austria), was founded in 1921 and is privately owned. VOGELBUSCH employs a total workforce of 125 and has subsidiaries in Katy, Texas (U.S.) and Hong Kong (China).

[You can find this press release here](#)