

Press Release

Bartels Mikrotechnik at Analytica, Booth A3.568

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Bartels Mikrotechnik launches new liquid dosing robot 'Alchemist'

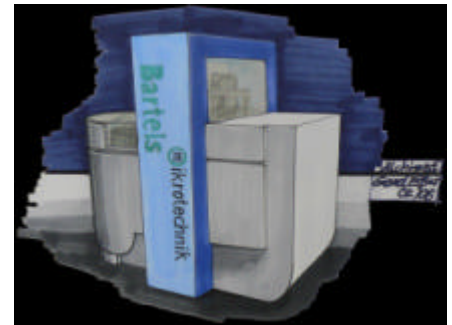
Bartels Mikrotechnik turns the world upside down. Currently, most liquid dosing robots only allow dosing from a very limited number of reservoirs. This is no longer the case with the newly developed dosing robot 'Alchemist', first presented at Analytica 25 – 28 April 2006, in Munich.

The 'Alchemist' dosing system is a fully automated stand-alone device which is designed to create mixtures totaling 1g or 10g, out of **200+** single ingredients. All of this functionality comes in a compact size. The overall dimensions are 80 cm in width, 140 cm in height and 160 cm in length (2.6ft x 4.6ft x 5.2ft).

Any single ingredient can be accurately dosed in quantities ranging from 10g all the way down to 500µg. This enables the customer to drastically reduce material consumption by keeping sample size to a minimum, while providing high flexibility in mixing ratios and freedom in formulation. The machine has a built-in high precision balance (resolution down to 1µg) for gravimetric dosings and is able to cover a viscosity range from 1 mPa·s (water) up to 500 mPa·s (honey). Dosing accuracy so far is +/- 3% or +/- 100µg.

The fluids are stored in 5ml and 20ml glass-syringes, which can easily be refilled/replaced. Materials in contact with the liquid media are glass, stainless steel and PTFE, giving a high degree of flexibility in dosing aggressive chemicals. In addition to the 200+ syringes for small volume doses, four special high volume containers are provided for dosing of heavily used liquids.

All the necessary information regarding the dosed formulas is recorded and presented via a web-interface number of dosing steps, order of dosing also including actual parts dosed and percent error,.



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Upon completion of a sample, a corresponding label is printed to identify the contents, and then the next empty sample vial is loaded. Currently, a sample tray containing 50 available sample vials is built into the machine. This allows for significant up-time between servicing, including overnight operation.

If required, the tool can be equipped with an inert gas-flush system and/or a temperature regulation system.

The compact device was designed specifically to meet the needs of liquid formula creation tasks in the modern chemical and pharmaceutical industries.

About Bartels Mikrotechnik

Bartels Mikrotechnik is providing innovative technologies and product solutions spanning various branches from its MEMS background. Their technological know-how stems from their extensive micro technology experience, especially in micro fluidics, and their powerful affiliate network as part of a MEMs Creative Center. A proprietary excimer laser jobshop and a wide array of their own distinctive products define the unique selling proposition of Bartels Mikrotechnik GmbH.

With the market launch of 'Alchemist' at the Analytica, Bartels Mikrotechnik now showcases its long time activities in dosing and spray technology.

For any further technical questions please contact:

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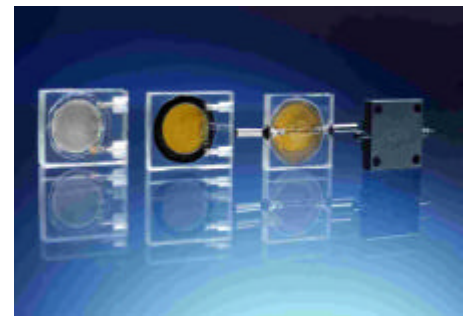
Microfluidics Urges Industry

Innovation flows - in analytics, classical consumer goods industry or in the medical technology. With microfluidics a young high technology urges established industries to more innovation and competitiveness. So are micropumps and microfluidic systems, as offered by Bartels Mikrotechnik GmbH, reckoned as a key to future. That is why the Bartels microexperts and their new strategic production partner Fennel CosMed focus consequently on serial production for the industry now.

And this shows once more: Microfluidics reached the market – and have become with the development of microfluidic solutions and own serial products an important partner for industry. For example: Due to its strategic partnership with Fennel CosMed GmbH & Co. KG in Bad Oeynhausen Bartels Mikrotechnik newly offers its clients the entire value creation chain: The idea of a product, design, development, prototyping and the serial production of microfluidic components or products are in Bartels hands. “The realization of new applications using microtechnology have never been so easy and efficient”, states Dr. Ulrike Michelsen, head of marketing.

Market report: Bartels is one of the Leading Microfluidics Vendor

And in fact: The concept of Bartels seems to succeed. So the French consulting company “Yole Développement” states in November 2004 that the German microexperts belong to the 20 leading microfluidic vendors worldwide. And for the Bartels micropump – a low priced injection moulded plastic pump – the analysts predict a successful future. In the field of micropumps they expect until 2010 an immense growth up to 2 B\$ total market volume worldwide.



The long way from the prototype (l.) to the commercial product (r.). Micropumps are the first microfluidic serial products that have reached the market.

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Just now the Bartels minipump is primarily demanded by industrial sectors like chemical analytics, the classic consumer goods industry as well as in the medical technology. But due to its broad flow rate (50 nl/min up to 5 ml/min), good particle tolerance and chemical resistance the pump can be used for much more applications in nearly all industrial sectors. "Anyway there are several fields of applications as we can see from national and international orders", says marketing expert Dr. Michelsen.

Key Technologies: Microtechnology and Microfluidics

No wonder: Today microtechnology is considered to be one of the most reliable key technologies for the development and innovation of products. And it urges industries rapidly. Claus Weyrich, member of the Siemens management, recently stated that an innovation always has to succeed on the market – and the German microtechnology would be a great example for that. Or listen to the consultants of "Frost & Sullivan": At least for the diagnostic and analytics sector the US-Analysts see in microfluidics an innovating pacemaker. Until 2008 they expect an annual growth rate of 33 percent in this areas. Bartels marketing head Dr. Ulrike Michelsen: "That shows us the immense potential of microfluidic systems. And industry has recognized that. So showing the possibilities and their transfer into serial products is our job today".

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Microsystems

Microsystems are normally defined as miniaturised systems consisting of miniaturised sub systems or single components again.

Microsystems operating on gases or liquids are especially called **microfluidic systems**. They often use basic modules which can be classified as following:

<i>passive</i>	<i>active</i>	<i>sensory</i>
channels	pumps	optical
mixers	actuators	electronic
filters	active valves	mechanical
valves		

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Serial Produced Micropumps Entering the Markets

Up to now micropumps were only available as high priced prototypes. But now the first serial produced micropumps are entering the markets. Like the new pump of Bartels Mikrotechnik GmbH, who presents its latest generation of injection moulded plastic pumps for high volume applications at the Hannover Fair.

They are used in chemical analysis, medical technology, engineering or classical consumer goods industry: Micropumps have become quite popular within a short time. "Anyway, there are several fields of applications as we can see from national and international orders right now", says Dr. Ulrike Michelsen, head of marketing. Her company – the Bartels Mikrotechnik GmbH in Dortmund – just presents its latest generation of commercialized plastic pumps for high volume production at the Hannover Fair. "And by now we met a really big response", states Dr. Michelsen.

Reliable and Low in Price

The new micropump weights only 835 g, is just as small as a cent-coin and copes with most particles in fluids by flow ranges of 50 nl/min to 5ml/min. The complete pump is made up of injection moulded plastic (polyphenyl sulphon / polyimide) and powered by a piezo that works between two double valves. "Finally the easy design is the clou", states marketing expert Dr. Michelsen. So the pump is not only highly reliable but also – in mass-production - absolute low in price. Because the production requirements are easy and due to the injection moulding process very cost-effective for high volume applications.



Small but smart: Serial produced micropumps like this one offer flow rates of 50 nl/min to 5ml/min. Produced in high volumes, it becomes absolute low in price and is due to this predestinated for disposable use.

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Thus the disposable use of the hi-tech pumps is no problem anymore. That is all new. As new as Bartels' consequent way to the markets. On the basis of a strategic partnership with its production partner Fennel CosMed Bartels Mikrotechnik newly offers its clients the entire value creation chain: The idea of a product, the development, prototyping and the serial production of microfluidic components and products are in one hand now. Dr. Ulrike Michelsen: "With this full service the microfluidics finally reached the markets and meets the customers demands as consequently as possible."

One good example are the micropumps. Bartels designed them as a stand-alone product as well as an integrated OEM-sub-modules for customized systems (e.g. "lab-on-a-chips"). Moreover there are offered various electronic pump controls which even allow a flexible control via PC, for instance.

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