

# Exact!

Application stories from around the world

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## Metering and mixing at the point of application

The newly launched DOPAG shotmix is revolutionary in its ability to accurately meter and mix many types of two component materials directly at the point of application.

The shotmix is fed by remotely located standard drum pumps which means that several separate application points can be fed by a single pair of drum pumps and a single controller.

Weighing in at just 4.2 kg, its light weight and compact size make the shotmix suitable for either manual or automatic application of epoxies, silicones, polyurethanes, acrylics and polysulphides in sealing, bonding and encapsulating processes.

Amazingly versatile in its capabilities, the shotmix system is able to effortlessly handle filled and abrasive as well as compressible and thixotropic materials, whilst its accuracy of metering remains stable even when faced with changing conditions of temperature or viscosity.

Highly accurate metering is accomplished by firing rapid micro shots of each component within the shotmix up to 2,500 times per minute, achieving flow rates of up to 600 cc per minute. Materials with mixing ratios between 100:100 and 100:10 are suitable for processing by the shotmix. A metering computer controls all process parameters, which is also capable of memorising alternative programs.

For more information, contact your local partner of the Hilger u. Kern / Dopag Group.



**shotmix**



**Hilger u. Kern / Dopag Group**




# Helping Mother Nature



DOPAG ELDO-MIX 202  
smooths production  
of self-powered water  
pumps



 The very existence of people, livestock and crops depends largely on a plentiful supply of clean water. However, more than 1 billion people, or 16% of the world's population do not have access to an improved water source, meaning that they have to rely on unprotected wells, springs, lakes or rivers for their water.

In such circumstances, the SQFlex pump range manufactured by Grundfos in Denmark aims to lend nature a helping hand by providing both a water pumping system for clean water and the power needed to fuel the pumping system.

Solar panels or wind turbines, or a combination of the two are used to power the pump, so that whether the location is blessed with an abundance of sunshine, or wind,

or even some of both, the system will adapt to the weather conditions of the location.

During manufacture of SQFlex pumps, the electrical cable connections are encapsulated with two-component polyurethane. In the past, Grundfos have experienced difficulties with piston pump driven dispensing equipment, so they decided to contact DOPAG SCAN ApS in Denmark to recommend a solution. The answer was to use a DOPAG ELDO-MIX gear pump driven system.

It is important that the cables are held in a fixed position until the polyurethane has cured, so the assemblies are firmly clamped into a fixture during the dispensing process. The operator then places the dispensing nozzle into position

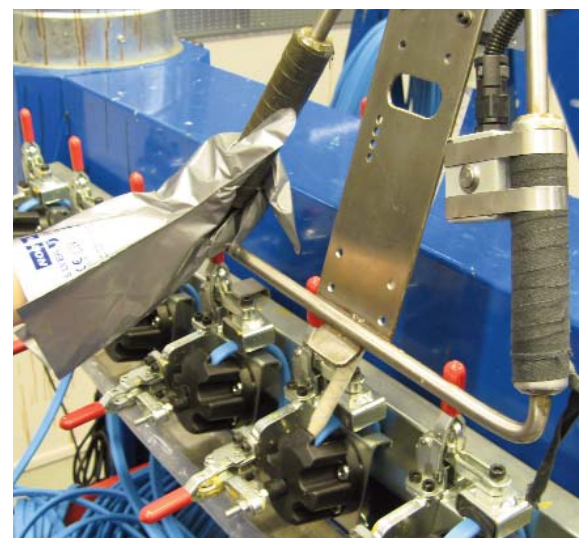
before triggering the DOPAG twin dispensing valve to dispense a 40ml shot of mixed polyurethane into the housing. The two components are proportioned in the ratio of 100:38 by volume, by a DOPAG ELDO-MIX 202, which is located close to the work area on a rail system in order to allow it to be positioned adjacent to the section of the production area currently in use.

Due to the high filler content of the material, the gear pumps have been treated with a special wear resistant material and the material is agitated within the feed containers to avoid the fillers falling out of suspension.

The resulting facility has seen a significant improvement in quality, which in turn will continue to benefit some of the poorest people on earth.



The SQFlex pump plug encapsulating facility



Dispensing the polyurethane into the pump plug


# It's in the bag



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## DOPAG SILCO-MIX systems add space and reliability to airbag fabric coating line

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 Airbags have been among the most important automotive safety products ever since the concept of inflating a textile cushion to protect vehicle occupants in collision was first conceived.

In frontal impacts, for instance, driver airbags are estimated to reduce fatalities by 25% for drivers wearing seatbelts and for serious head injuries by over 60%. For front-seat passengers (that are further away from the dashboard than a driver is from the steering wheel) the protective effect is estimated to be around 20%.

In side impacts, curtain airbags are estimated to reduce the risk of life threatening head injuries, while thorax airbags reduce serious injuries to the chest by approximately 25%.

There is also an increasing demand for knee airbags, because although frontal airbags and modern seatbelts have reduced the risk for head injuries, little has been done until now to reduce injuries to legs.

At Autoliv's Congleton plant, the fabric used to manufacture such airbags is woven on huge looms where it is wound onto large webs before being transferred to a coating line. Interestingly, during the weaving process, the design of each airbag is woven into the fabric.

Although the fabric is closely woven, it is at this stage porous and hence unsuitable in this form for its

eventual purpose, so the fabric has a thin impermeable coating applied in order to make it gas tight.

The coating, which is a two-component silicone is proportioned at a ratio of 100:100 but has an additional 0.5% of a cross-linking material added by the twin DOPAG SILCO-MIX systems. In use, one system is in operation whilst the second is on standby, waiting to changeover when the drums of material are exhausted, so that material is always available.

The coating line runs at a speed of 20 metres per minute and the proportioned material is fed to it at up to 3 kg per minute, where it is mixed and dispensed onto the fabric web. The mixed silicone forms a "roll" on the surface of the web, the diameter of which is dependent on the rate of dispensing and the speed of the web. A doctor blade regulates the thickness of the coating.

As the SILCO-MIX systems' hydraulic drum pumps also act as metering pumps, the new DOPAG systems occupy a fraction of the space of Autoliv's previous systems.

Commented Autoliv Project Manager Mike McCarty "We are delighted with the performance of the DOPAG systems. We find them extremely user friendly, reliable, versatile and occupy a very small footprint. The standard of service we have received from DOPAG has also been excellent."

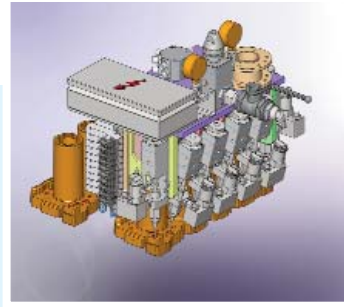


DOPAG SILCO-MIX



Controlling the flow rate of mixed silicone onto the fabric web

# Core solutions



Bonding sand cores with a DOPAG metering system reduces weight and cycle times



Since 1992 Matheus Industrial Automation GmbH of Osann Monzel has offered innovative and intelligent solutions to many industrial automation applications in many different branches of industry, but particularly with suppliers to the automotive industry, where Matheus specialise in customer-specific, purpose built solutions.

One such project involves the production of sand cores used in the casting of engine mountings, in which they have developed in association with Hilger u. Kern, a concept for the automated assembly of multiple cores.

The cores themselves are manufactured from sand with the addition of a resin-bonding agent and a specialised core-making machine. Traditionally, the various parts of the cores are secured together using mechanical fixing bolts, but this new inventive solution now relies instead upon bonding the core sections together with a single component adhesive.

The adhesive has a viscosity that is light enough for it to be supplied directly from a remotely located pressure feed container to a special fixture onto which is mounted ten DOPAG metering valves. The fixture is then placed in position by a

6-axis robot arm before metering precise volumes of adhesive onto the cores.

All ten valves are actuated simultaneously, so that the entire metering process takes little more than a single second, which offers a noticeably higher degree of economy over the traditional bolting method.

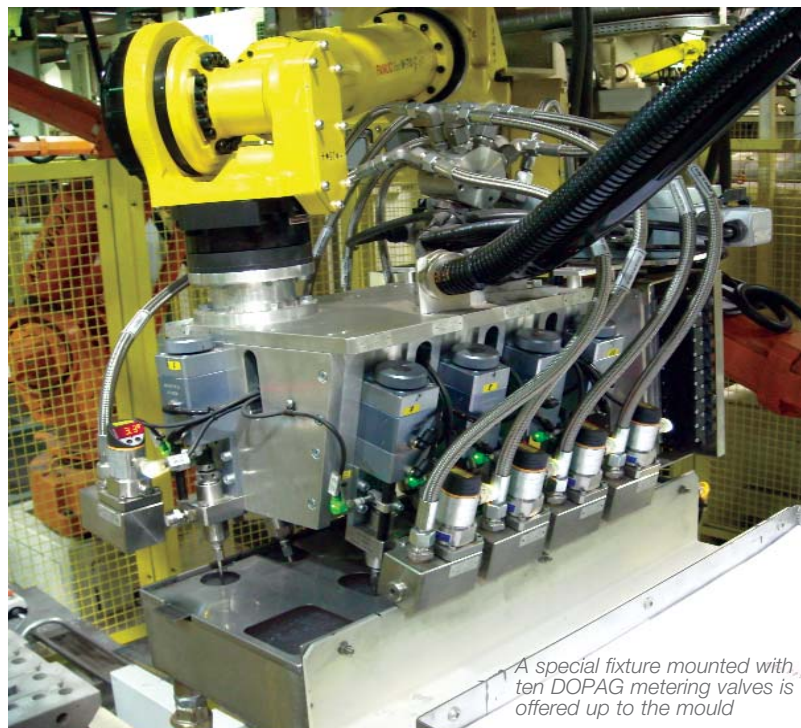
After completion of the adhesive dispensing process, the robot arm transports the assembly to the oven where the resin hardens within a period of around ten seconds.

Bonding the cores offers a number of benefits compared to bolting, not the least of which is that the weight of the engine mountings is reduced to a minimum, meaning that the wall thickness of the individual cores are also reduced.

This in itself represents considerable savings in costs, but costs are even further diminished by the speed of the bonding process in comparison to the bolting technique, resulting overall in a process that is a more cost effective and efficient alternative to bolting.



The adhesive is fed to the metering valves by a pressure feed container




A special fixture mounted with ten DOPAG metering valves is offered up to the mould



# Cashing in on smart dispensing



Major German electronics company chooses DOPAG systems again

 EN ElectronicNetwork is one of the leading companies operating in the electronic manufacturing services industry in Germany and is represented nationwide in 6 locations as well as a development company.

What differentiates the company from their competitors though, is their ability to organize the whole life cycle of their products as a full service provider, from the development phase and the procurement of components, via prototyping and production, right through to the end of the product's life.

Many of EN ElectronicNetwork's customers are globally successful companies from the automation, automotive, energy, industrial, medical and security sectors, who entrust them with the life cycle of their products.

There are over 2 million "hole-in-the-

wall" cash machines, or ATM's, in the world today and at EN ElectronicNetwork's largest manufacturing location in the spa town of Bad Hersfeld where 300 people are employed, the company's project team, along with Hilger u. Kern engineers, designed and installed an automatic dosing system to meter and dispense a two component epoxy resin into the safety electronics used in their construction.

In this application, EN ElectronicNetwork use twin DOPAG MICRO-MIX S systems to encapsulate 30,000 of these units each year. The systems have a common material supply and are used to meter, mix and dispense the epoxy resin at a mixing ratio of 100:38 onto the electronic components.

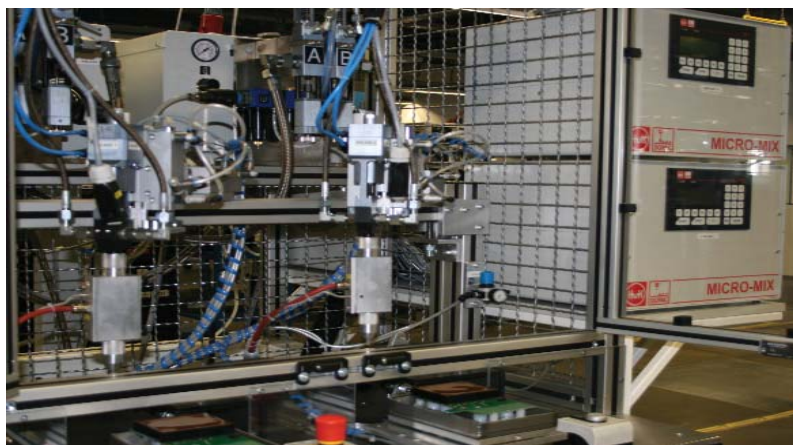
The DOPAG MICRO-MIX S systems are ideally suited for processing the highly abrasive material in small and

closely controlled volumes within a given cycle time.

The desired shot sizes, which vary between 5 and 10 cm<sup>3</sup> depending on the component being processed, are pre-programmed via the MR20 controller of the MICRO-MIX S.

The proportioned epoxy resin components are mixed and dispensed by DOPAG twin valves, which are fitted with heated static mixing tubes and mounted onto a 3-axis robot. It is critical to the quality of the finished product that the dosing procedure should take place slowly in order to avoid unwanted cavities and can be up to 60 seconds long.

A long-time customer of Hilger u. Kern, EN ElectronicNetwork are delighted to be once again using high quality DOPAG systems to compliment their own high quality products.



Twin DOPAG MICRO-MIX S systems feed proportioned epoxy to the dispensing cell



An electronic assembly after dispensing

# DOPAG USA relocates to Cincinnati

Products and systems of the Hilger u. Kern Group have been available in North America for many years through our network of local distributors. Recently, the opportunity arose for DOPAG (US) Ltd. to relocate from the West Coast area to Cincinnati in Ohio.

Our aim in taking this step was to allow us to support our customers and distributors throughout North America in a more effective way and to offer them an improved level of local service. We have been particularly fortunate to obtain the services of Ken Walker as the new Managing Director of DOPAG US, ably assisted by Mike Hoskins, who between them can claim many years of experience in the sales and service of DOPAG products throughout North America. We are delighted by this new opportunity to continue to progress our business in the United States, bringing with it a great deal of local, as well as practical experience to the Company.



Managing Director,  
Ken Walker



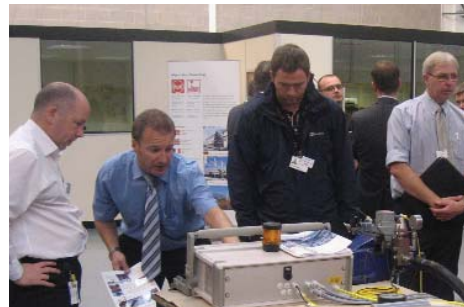
Mike Hoskins

## Open Days in the UK



As a way of introducing several new DOPAG products to the UK market, launch seminars and demonstrations were recently held over two days at DOPAG (UK) Ltd. headquarters, in conjunction with Europe's largest robot manufacturer, KUKA Robotics.

Live demonstrations featured the proportional control valve (*bottom left*), as well as the newly released ceradis ceramic metering system and the micro dispensing valve. Visitors also had a unique opportunity to examine the eagerly anticipated shotmix for the first time.



All of the new products on display generated a good deal of interest from automation integrators, material manufacturers and end users who attended the events.

## Exhibition watch



31 March - 1 April 2010 /  
easyFairs MAINTENANCE / Brussels, Belgium



13 - 15 April 2010 /  
JEC Composites / Paris, France



11 - 15 May 2010 /  
MECÂNICA / São Paulo, Brazil

### Editor

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Marketing Communication  
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Author: Bob Jones: [bjones@dopag.com](mailto:bjones@dopag.com)

1200 copies printed  
Printed on chlorine free bleached paper  
Schweiz / 2010



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