

Exact!

Application stories from around the world

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New systems for the fibre-reinforced plastics market

compomix

DOPAG compomix is a whole new range of solvent-free gear metering and mixing systems that include both desktop and mobile versions.

Against a background of increased worldwide discussion of energy efficiency relating to climate protection and sustainable stewardship of available energy resources, the trend in the use of fibre-reinforced plastics has moved from individual part production to partial or fully-automated production processes.

The newly developed range of DOPAG compomix systems helps to facilitate this ever-increasing trend.

Designed by the Hilger u. Kern / Dopag Group specifically to process low to medium viscosity multi-component media such as polyurethane, epoxy or other resins for the production of fibre reinforced plastics, the systems benefit from wide ranging variable mixing ratios.

The systems also feature programmable variable flow rates and can be used to dispense either volumetric shots or to dispense continuously. A particular feature is the accuracy of metering in terms of the mixing ratio even with varying flow rates as well as the high repeatability of the shot sizes.

Compomix systems are also able to control the internal pressure of the mould as well as having a follow-up



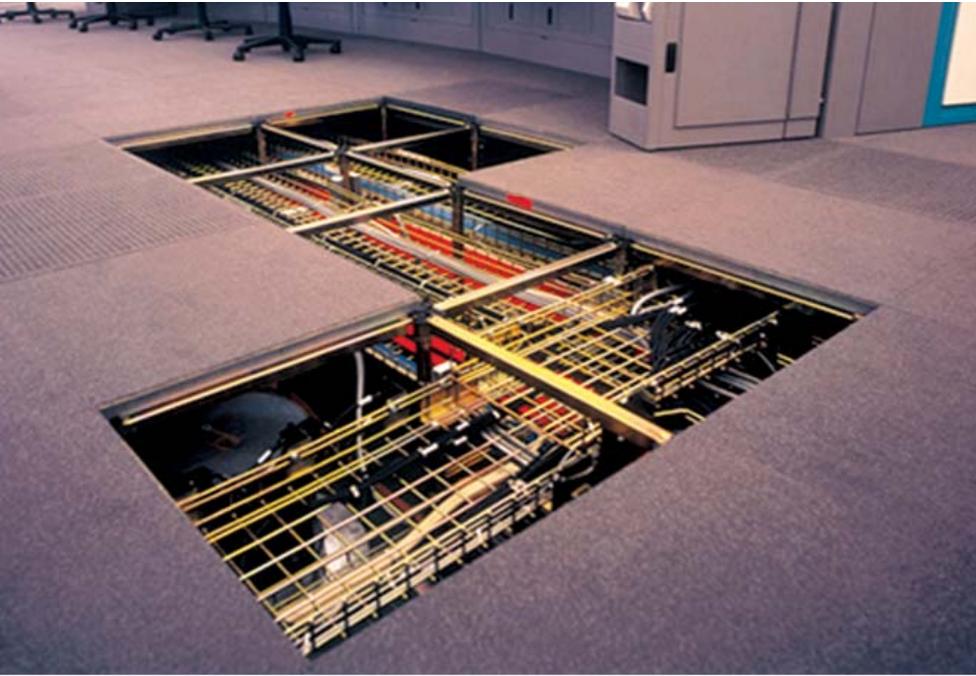
pressure function for optimal mould filling.

Material pressure vessels are used to supply the material into asynchronous motor driven gear pumps. Each gear pump is protected against over pressure and dry running as standard.

A metering computer is used to control and monitor the system, whilst all compomix systems can be fitted with the most appropriate choice of mixing system for each individual application.



Hilger u. Kern / Dopag Group



Access all areas



The world leader in raised access floor systems chooses DOPAG eldomix again



Located in Marleet, in the city of Kingston upon Hull in the East Riding of Yorkshire, Kingspan Access Floors (UK) Ltd produces around 17,000 raised access floor panels every day.

As part of the worldwide Kingspan Group with over 40 years of innovation and experience, their products help to provide flexibility to office space, whilst at the same time reducing energy consumption.

Raised access flooring also allows for underfloor air distribution, which improves indoor air quality, and enhances personnel comfort. As a result, this type of floor system with underfloor air conditioning, wire and cable distribution has now become a standard solution when constructing new commercial buildings.

Each individual floor panel starts life as a 600 x 600 mm square section of chipboard.

The chipboard core is then encapsulated in galvanised steel, which is bonded to the chipboard. Later, the panels are finished in whatever external covering the client requires, whether that's carpet, tiling or even marble.

The adhesive, which is two-component polyurethane, is applied to the surface of the chipboard panels by means of a roller coater. A conveyor automatically feeds the panels to the coater, which then applies a thin film of adhesive to the surfaces as it passes through.

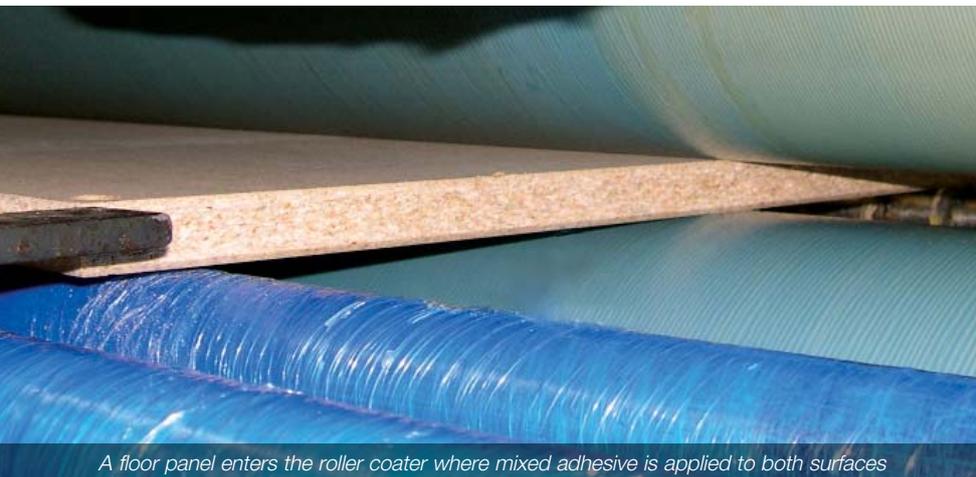
The polyol and isocyanate adhesive components arrive at the factory in bulk containers, where they are pumped separately by DOPAG re-filling pumps to holding pressure feed containers mounted onto a DOPAG eldomix 202 metering and mixing machine.

The two components are accurately metered at a ratio of 3.5:1 by volume, by two high-precision

gear pumps, before entering two separate DOPAG twin valves fitted with static mixing systems.

The mixed material is dispensed into two separate wells on the roller coater, one of which provides mixed material for the upper surface of the panels, whilst the other takes care of the underside. Twin individual flow monitors continually monitor the ratio of the materials being processed and the usage of each component.

Commented Engineering Manager Steve Williams "This new facility guarantees that the adhesive is proportioned and mixed correctly, which in turn ensures the quality of our products, so we are delighted with it's performance."



A floor panel enters the roller coater where mixed adhesive is applied to both surfaces



DOPAG eldomix 202

Avoiding overload

ABB STOTZ-KONTAKT

DOPAG ceramix provides precise metering, improves safety and reduces production costs



An integral part of the global ABB Group, ABB STOTZ-KONTAKT is located in Heidelberg, Germany and employs 1,500 employees. The Company produces a range of high quality, low voltage modular switchgear products, including thermal overload relays that protect against phase loss, phase failure imbalance and overload.

Designed to ensure the safety of a motor during operation, the relays have three poles, each with bimetallic elements. The motor's current flows through the elements and heat is generated both directly and indirectly. If there is an overload, the bimetal elements will deform due to an increase in heat, causing the positions of the contacts to change.

Part of the production process calls for the relays to be encapsulated with a two-component epoxy resin, a process that has previously been accomplished manually.

In order to improve the consistency and accuracy of the resin application, it was decided to automate the process, which in turn, has also enhanced overall production safety considerations.

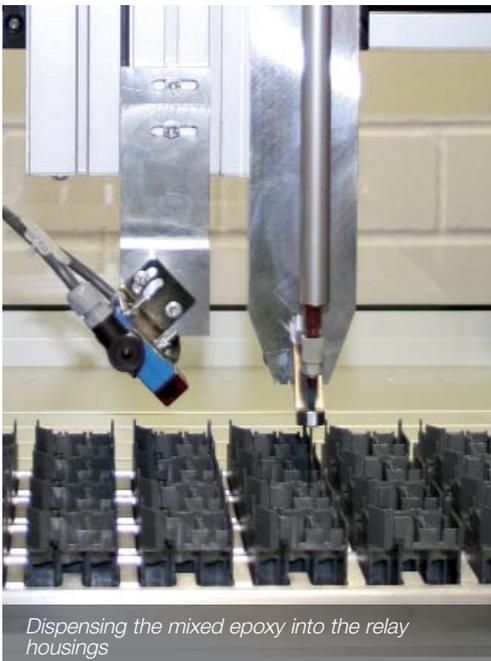
The relays are placed into a purpose made tray, which is then positioned onto a three axis robotic table. Accurately controlled volumes of mixed resin are then automatically dispensed into each relay in turn, by means of a DOPAG ceramix.

The DOPAG ceramix multi-component, high precision ceramic metering system meters and dispenses the epoxy resin at a ratio of 100:48, directly at the point of application.

The Hilger u. Kern MR20 metering computer precisely controls three separate 0.2 g shots, each shot positioned on one of the three bimetal elements.

The system has resulted in improvements in quality and safety, whilst simultaneously reducing production costs.

ABB STOTZ-KONTAKT Manager Thomas Keilbach remarked " We have been using the ceramix for almost a year now and we are very satisfied with this system."



Dispensing the mixed epoxy into the relay housings



DOPAG ceramix, 3 axis robot and MR20 controller at ABB STOTZ-KONTAKT

Raising the roof



Swiss timber laminate manufacturer appreciates the reliability and ease of use of DOPAG variomix



Hüsser Holzleimbau AG began producing laminated timber in 1988, but it was not until ten years later, with a move to new and much larger premises in Bremgarten, some 25 km to the west of Zurich, that the company became involved in manufacturing structural laminated timber roofing products.

Also operating as a structural planning consultancy for architects when designing load bearing laminated timber roof sections, the company are able to produce sections up to 40 m in length and 2.6 m in height.

Such sizeable laminations are frequently used in large public buildings such as sports halls and conference centres and require substantial fixing technology in order for the construction to conform to safety requirements

when under extreme environmental loading. Typically, each end of a laminated section is connected to a steel bracket assembly that will in turn connect to the vertical steel building framework.

To secure the brackets to the laminated sections a CNC machine drills holes into the ends of each timber section; into which threaded steel fixing rods are then located. Once the rods are in place, a two-component epoxy resin is introduced via a cross drilling into the space between the laminate and the rod in order to fix each rod permanently in place. This method is patented under the name "System Ferwood®."

Recommended by their partner company Ducret-Orges SA, Hüsser Holzleimbau chose a DOPAG variomix EV system to proportion, mix and dispense the resin at a ratio of 100:12 by volume. The length of

the hole determines the volume of mixed material that is dispensed with each shot and varies between 360 g and 600 g.

The mixed material enters the filling holes via disposable funnels, which act as a visual indicator, ensuring sufficient resin has been dispensed. They are left full after dispensing in order to deal with any seepage of the resin.

The company is delighted with a system that has allowed them to increase production, whilst at the same time also guaranteeing them total control and accuracy of the mixing ratio.



DOPAG variomix EV



Dispensing the mixed material through the funnels



The BMW X3 is one of many models using the EPAS technology from ThyssenKrupp Presta

Electrical steering gear



DOPAG micromix S helps to optimise the process of prototyping power packs



The technological leadership in the field of steering systems has established for many years the strong position of ThyssenKrupp Presta AG as an innovative partner for nearly all global automotive manufacturers. Therefore, it is not surprising that steering technology from ThyssenKrupp Presta is used in approximately 75% of all new cars produced.

Today's technology relies fully on the electromechanical assisted steering EPAS (electric power assisted steering). The electric power assistance just activates when needed, thus fuel savings of up to 5% are possible.

These systems are developed and tested at the prototyping center "Protoshop" of ThyssenKrupp

Presta located in Eschen, Liechtenstein, before bringing them into production. Part of these systems is a power pack consisting of a motor and a control unit.

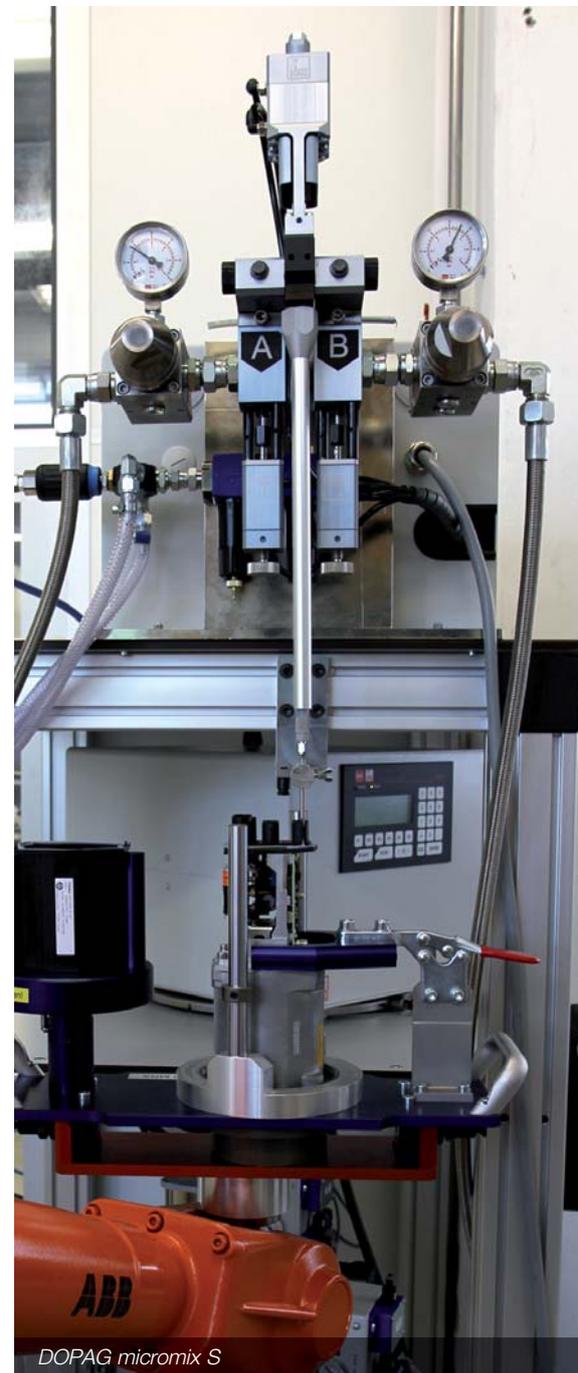
The exposed position of the power pack located at the front axis demands an increased standard of the components. During the assembly this requirement is met by using a 2K silicone elastomer for bonding the motor and control unit together, at the same time this process covers the need of sealing the power pack against dust and moisture.

Previously the 2K material was dispensed with a cartridge press, the dispensing unit was too heavy and did not allow the quality of bead required. It was at this point when ThyssenKrupp Presta decided to order a micromix S metering and mixing system from the Hilger u. Kern / Dopag Group.

The pasty, abrasive material is fed by two DOPAG P10 drum pumps into the micromix S system, where the silicone elastomer is proportioned at a volumetric mixing ration of 100:13 before being mixed in a 2K valve with a static plastic mixing tube.

The power pack is positioned below the mixing tube by a robot. Two beads of the homogeneously mixed material are dispensed onto the components applying a total of 7 ml of the silicone elastomer. The cycle time of this process is 1 minute.

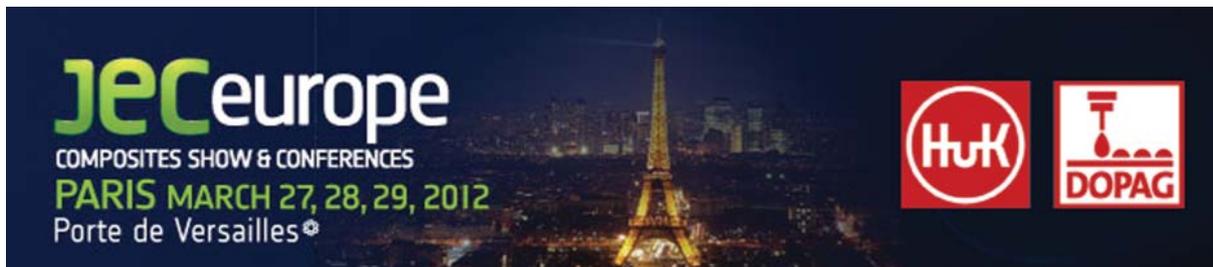
The new installation increases the process reliability and guarantees the required high product quality.



DOPAG micromix S



Dispensing the silicone elastomer



In industries such as aviation, aerospace, automotive and wind energy production, the importance of lightweight construction steadily increases to achieve higher rigidity and weight reduction of the components.

The JEC Composites Europe in Paris was in March again meeting place for the industry to present production and process solutions for fiber composites. Around 30,000 visitors were interested in gathering comprehensive information from exhibitors and forum speakers in order to learn about the latest manufacturing technologies and the process steps along the supply chain.

The show hosted 1,200 exhibitor companies, one of them the Hilger u. Kern / Dopag group for whom this international trade fair is an important part of the corporate communication as it offers a perfect meeting point for customers, material manufacturers as well as sales partners from around the world.



Exhibition Watch

See us at these international exhibitions during 2012:



08 - 11 October 2012 / Bondexpo / Stuttgart, Germany



06 - 08 November 2012 / Feiplar Composites / São Paulo, Brazil



07 - 08 November 2012 / Aero Engineering / Birmingham, UK

Editor

Hilger u. Kern / Dopag Group
Marketing Communication

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2500 copies printed
Printed on chlorine free bleached paper
Schweiz / 2012



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