Exact!

Application stories from around the world

Inside
Issue No.20

New high viscosity testing facility

Newly installed in the laboratory at DOPAG headquarters in Cham, Switzerland, is an advanced device for testing the viscosity of high viscosity pasty materials, such as adhesives and sealants. This device is able to measure the pressure drop caused by the movement of pasty materials through components.

The resultant data produced by this new facility is particularly useful when it is necessary for system engineers to accurately calculate the length and diameter of flexible material hoses or rigid pipework runs, since material data sheets for high viscosity materials very often simply state that the material is “pasty”.

Brazilian success

The largest industrial exhibition in South America is MECÂNICA, the latest of which took place in São Paulo in May. It was the showcase for 1,969 separate exhibitors at the Parque de Exposições do Anhembi, amongst them Hilger u. Kern / Dopag Group distributor B. Sordi.

During the 5 days of the exhibition, over 117,000 visitors attended the giant event.

B. Sordi’s offering focused on automated dispensing systems with both 3 and 6 axis robot systems in evidence. Commented Managing Director, Bruno Sordi “This is a very important exhibition in our calendar in terms of contact with our target markets and has proved to be a major success.”

Hilger u. Kern / Dopag Group

Laying gaskets by robot

DOPAG micromix S proves perfect for high precision robotic gasket laying application

G.U.D. Filters, South Africa's leading automotive filter brand manufactured its first filter in Durban in 1949 and as the automotive industry evolved so the Company has expanded to become not only market leader in South Africa, but also a major international exporter.

With expansion comes diversification and now G.U.D. also produce water pumps for major automotive manufacturers. Part of one such water pump production process calls for the application of a liquid silicone gasket to be applied as a bead directly into a groove on the pump housing to act as a water tight seal.

Accuracy of the bead's diameter is obviously vitally important in terms of its function and in this case the specification called for the diameter to be 2.8 mm with a tolerance of just plus or minus 0.2 mm.

Following consultations with DOPAG South Africa distributor, Resin Processing Solutions (RPS), an automated system to very accurately meter, mix and dispense the two component 100:100 mix ratio silicone was installed.

Fed by two separate P30 drum pumps, the two components of the silicone sealer are proportioned, mixed and dispensed by a DOPAG micromix S machine. This micromix is ideally suited for very precise dispensing requirements, as both components are proportioned separately by stepper motor driven metering cylinders.

This configuration allows not only for very precise proportioning of the two components, but also close control of the output flow rate, an obvious requirement when the mixed material is to be laid onto the workpiece robotically.

In this case, a Fanuc LR Mate, 6-axis robot grips the workpiece and manipulates it beneath the dispensing nozzle, following the path of the groove into which the liquid gasket is dispensed.

The finished, perfectly formed gasket that has taken exactly 10.25 seconds to dispense will weigh precisely 1.6 g (plus or minus 0.16 g).

Now, that's precision dispensing!

Twin P30 drum pumps feed the two components to the micromix S; whilst a six axis robot manipulates the workpiece beneath the dispensing valve

Composite success

DOPAG micromix E upgrades advanced composite propshaft bonding process

Applying mixed adhesive to the inside bore of a composite shaft

Domination of Le Mans and perfect reliability in Formula One are just two indications of CTG TORQline's track record in designing and manufacturing outstanding advanced composite motorsport products that increase performance and reliability.

TORQline is the brand name for CTG's ranges of advanced composite propshafts and driveline products. Based on filament-wound carbon fibre composite tube technology, TORQline propshafts include motorsport and high performance automotive applications amongst many others.

Until recently, CTG has specialised in producing carbon fibre composite propshafts specifically for motorsport teams and racecar manufacturers worldwide that successfully compete in motorsport championships.

This success has now led to demand for CTG propshafts from a major European high performance "supercar" manufacturer and with the prospect of a significant increase in production rates, CTG set about investigating ways of speeding up the process of producing the propshafts.

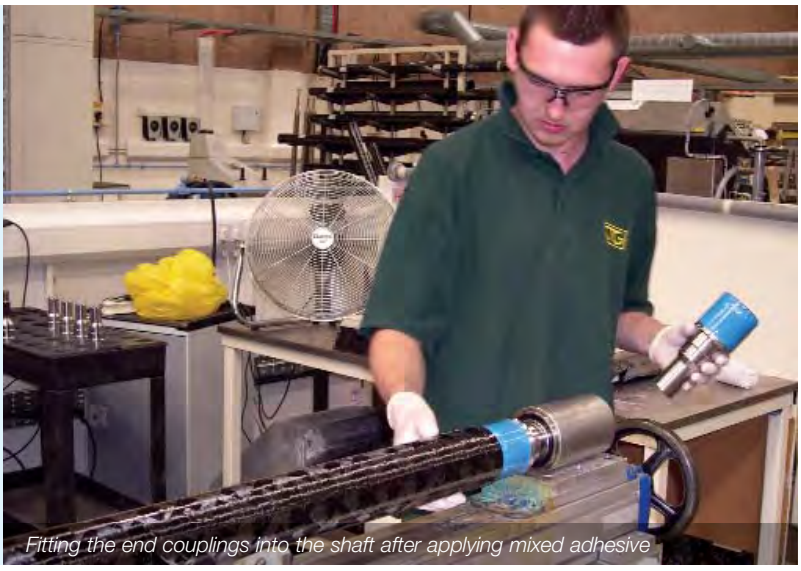
Explained CTG Technical Manager, Nick Henry "During the assembly process, we need to bond the end couplings into the ends of the shafts. Proportioning and mixing the adhesive by hand was always a time consuming process, so we contacted a number of companies that we thought might help us to automate this part of the process. Eventually we chose to work with DOPAG since they were able to satisfy our quality requirements and could comfortably handle what is a very viscose adhesive."

The adhesive, which is a two component epoxy resin paste supplied by Henkel, is proportioned at a ratio of 4:1 by volume. It is supplied in 25 litre size drums, which require ram mounted P30 drum pumps to feed the two components separately to the proportioning and mixing system.

A DOPAG micromix E was selected to proportion and mix the two components. This system uses pneumatically driven piston pumps to proportion the adhesive in accurately metered shots before discharging the mixed adhesive via a disposable static mixer onto the components.

The process requires mixed adhesive to be applied to both the end couplings and the inside bore of the composite shaft before both items are brought together under lateral pressure in a special fixture.

Commented DOPAG (UK) Ltd Plural Component Sales Manager Martyn Owen "This was quite a challenging project due partly to the rheology of the adhesive, but also because CTG asked us to minimise the floor space required. We were able to achieve this by using a purpose designed integrated construction containing both the feed pumps and the micromix proportioning and mixing system."



Fitting the end couplings into the shaft after applying mixed adhesive

Handling high voltages

DOPAG eldomix 101 provides precision encapsulation for high voltage automotive parts

Producing high voltage devices is a specialised field that calls for both high precision manufacturing and very particular safety and insulation requirements.

Satrotec AG, an international company located in Dielsdorf, Zurich, Switzerland, produce high voltage wiring and diagnostic cables and offer precise solutions to its customers, right from the original idea through the development phase and the tool construction up to the successful serial production. After all, the company slogan is: Idea. Series. Success.

When Satrotec was asked to produce a high voltage wiring system for a well known European hybrid car manufacturer, they turned to the Hilger u. Kern / Dopag Group to provide the necessary encapsulating system.

The requirement was to dispense a 180 ml accurately metered shot of polyurethane encapsulant into an electronic enclosure, automatically. The specified polyurethane was a two component product with a mixing ratio of 100:44 by volume.

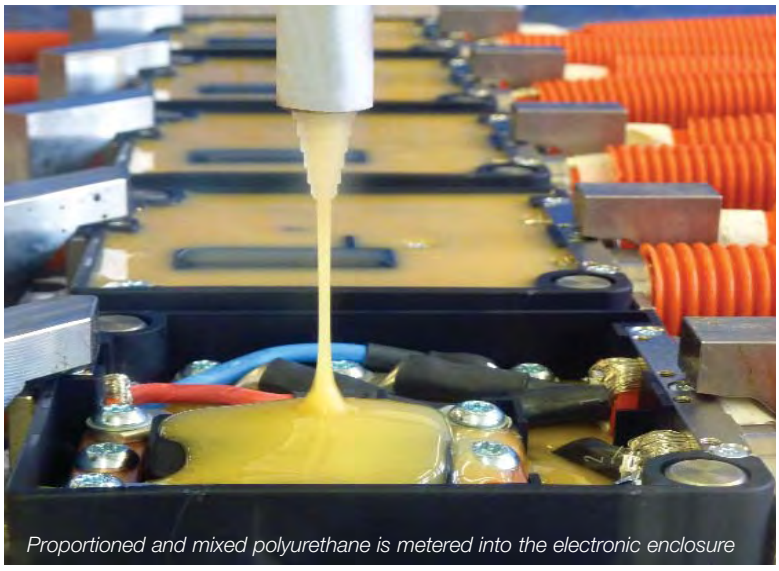
A DOPAG eldomix 101 gear type metering, mixing and dispensing system was selected to process the polyurethane and an automation cell was constructed that would accommodate five electronic enclosures. The eldomix system was fitted with volume counters on both the base and catalyst lines to ensure that the precise volume was metered into each component.

At the start of the encapsulation process, after the enclosures have been placed into fixtures, a bar code reader automatically scans each assembly to verify that the correct part is present, following which, 90% of the total volume of mixed material required is dispensed into each enclosure.

Following a pause to allow the encapsulant to settle, the remaining 10% is automatically dispensed into the enclosures and after 90 minutes the devices are removed from the fixtures and the cycle is ready to be repeated.

Finally, Satrotec employs an over-moulding technique to the enclosures using thermosetting plastic which allows for additional protection for the electronic systems from damaging environmental effects such as water, dirt and vibrations.

DOPAG eldomix 101



Proportioned and mixed polyurethane is metered into the electronic enclosure

Braking with convention

KÜSTER ACS
KÜSTER Automotive Control Systems GmbH

Grease and adhesive dispensing systems guarantee the quality of electric parking brakes

A chamber metering valve (top left) meters grease via a special fixture onto the brake unit mechanism

Twin DOPAG P30 drum pumps fitted with an automatic changeover system feed adhesive to the dispensing point

An in-line flowmeter checks the flow rate of the adhesive

Modern vehicle concepts typically feature systems designed to further enhance the driver's safety and comfort, whilst the growing need for manufacturers to differentiate themselves from their competitors has also prompted the development of new ideas.

The electric parking brake, which replaces the conventional mechanically operated handbrake, satisfies the increasing trend for additional functionality, comfort and space in the passenger compartment.

KÜSTER ACS originally joined forces to develop an electric parking brake in collaboration with Renault, but now the company also supplies other manufacturers including BMW Mercedes, PSA, Toyota, Subaru and Land Rover. More than 1 million units have now left the KÜSTER plant in Ehringshausen, Germany.

Part of the process of manufacturing the electric parking brakes involve applying metered shots of grease to a mechanism within the housings of the brake units in order to lubricate and thus reduce the frictional forces on a splined shaft.

The grease is supplied in 30 litre size containers and is fed to the application point by twin DOPAG P30 drum pumps. The pump system is designed to ensure that the supply of grease to the brake assemblies is always uninterrupted, by the use of an automatic changeover mechanism that switches supply to the standby pump when the first drum of grease becomes exhausted. The grease is then fed to the application point, where it is precisely metered onto the component, by a DOPAG chamber metering valve. [Fig. 1]

The system concept was designed to accommodate the nature of this special grease, which tends towards separation if left under pressure for long periods of time. To avoid this potentially damaging effect, the system automatically relieves the internal pressure when not in use.

Further on in the production process, the cover of the brake unit is bonded onto the housing with a single component adhesive. The adhesive is also fed to the dispensing point by twin DOPAG P30 drum pumps, featuring the automatic changeover system. [Fig. 2]

A gear pump then meters the adhesive to an automatic dispensing valve, whilst a small 6-axis robot grips the cover and manipulates it beneath the dispensing valve.

An in-line flowmeter checks the accuracy of the flow rate, thereby ensuring perfect results on every occasion. [Fig. 3]

Electrical parking brakes are of course, a safety-relevant product and as such, quality requirements are extremely high, something that is offered as standard by the Hilger u. Kern / Dopag Group.

Exhibition News

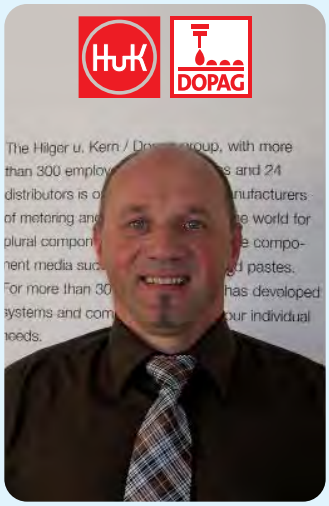
With a potential market of around 60 billion euros, the emergence of composite materials has been further buoyed by new environmental and energy requirements and the continuous search for ever lighter and stronger materials.

DOPAG France was able to discuss many composites applications at the JEC Show in Paris in April with key market figures whilst representing the Hilger u Kern / Dopag Group at this important showcase, reporting brisk business from international as well as domestic visitors.

More than 31,000 visitors from 82 nations made their way to Stuttgart in Germany in September to attend MOTEK 2010, the international fair for assembly, handling and automation technology. Held concurrently with MOTEK, the 4th BONDexpo fair for industrial bonding technology fared surprisingly well, boasting 85 exhibitors from 7 countries.

The Hilger and Kern / Dopag Group took the opportunity to demonstrate a number of new products, including and in particular, the new eldomix vacuum encapsulating system as well as the new advanced range of MR15 and MR30 metering computers, both of which generated a great deal of interest from visitors to the stand.

People



A warm welcome to Rolf Matter who has joined DOPAG in Cham as Area Sales Manager responsible for the United Kingdom and the Middle Eastern countries.

49 year old Rolf has many years experience in the metering, mixing and dispensing field and is academically qualified to MBA level.

In his spare time, when he is not watching his local ice hockey team, Rolf is himself a keen sportsman, active in skiing, mountain biking and athletics.

Editor

Hilger u. Kern / Dopag Group
Marketing Communication

Author: Bob Jones: bjones@dopag.com

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

Hilger u. Kern / Dopag Group

Hilger u. Kern Dosiertechnik • Käfertaler Straße 253 • 68167 Mannheim • GERMANY
Tel. +49 621 3705-0 • Fax: +49 621 3705-200 • dosiertechnik@hilger-kern.de • www.hilger-kern.com
DOPAG Dosiertechnik und Pneumatik AG • Langackerstrasse 25 • 6330 Cham • SWITZERLAND
Tel. +41 41 7855-757 • Fax: +41 41 7855-700 • info@dopag.ch • www.dopag.com