Exact!

Application stories from around the world

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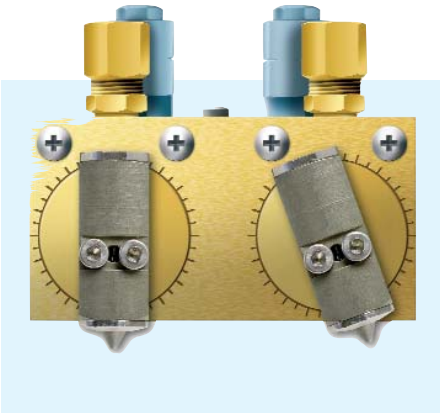
Issue No.19

New High-Speed precision dispensing valve



Designed primarily for use with greases and oils, the newly launched DOPAG High-Speed Valve allows either shots or beads to be dispensed entirely without contact with the work piece.

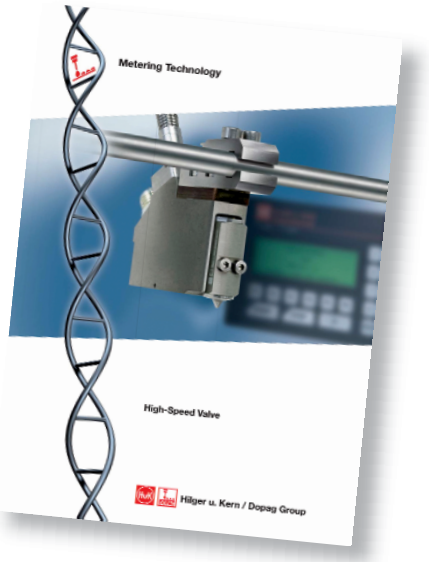
This innovative valve can be used to apply grease or oil from a distance of up to 120 mm from the work piece, making it an ideal choice for use in automated applications where space might be limited or application is needed in difficult-to-reach places.

It's ability to apply the product remotely from a distance can also be a cost effective benefit when used in conjunction with automated motion systems, as its remote application facility may well allow the number of axis' to be reduced.

Shot size is infinitely adjustable between 1 mm^3 and 20 mm^3 and bead laying is accomplished by firing multiple, high speed shots. All parameters are pre-selected directly by means of a metering computer, which also has the facility to memorise additional programs.

Products with viscosities of up to 150,000 mPa s can be accommodated and since the accuracy of the shot size is important, the unit is supplied with an integrated heating system as standard, which is designed to maintain a constant material temperature and hence produce a constant viscosity, a crucial factor when accuracy and repeatability are required.

Five alternative nozzle sizes are available, allowing for fine adjustment specific to the application, each of which features a self-cleaning design in order to eliminate the possibility of "stringing."



Hilger u. Kern / Dopag Group

Winkler Solar panels form part of the facade of a property in Austria

Towards the sun

DOPAG silicone dispensing system helps Austrian solar module manufacturer to expand

The amount of energy radiated by the sun onto the earth in just three hours is the same as that used by the population of the world in a whole year.

So says Martin Winkler, Managing Director of the company Winkler Solar, who know a thing or two about solar energy and of giving their customers the opportunity to make active use of the sun's energy.

Based in the town of Feldkirch in Austria, adjacent to the Principality of Liechtenstein, Winkler Solar were pioneers in solar energy systems having been active in the industry since 1992. Until now they have specialised in the production of high quality customised solar solutions, especially wide area collectors, where their VarioSol A-antireflex models are reputed to be the most efficient wide-area collectors on the market.

Now, Winkler have decided to enter the mainstream market with standard size solar modules, using new technologies that offer light-weight, high efficiency units that produce greater outputs from smaller module sizes.

They plan to produce 11,000 modules a year of these new products in their modern production facility, equivalent to 30,000 square metres.

One stage of the new production process involves laying a bead of silicone very precisely onto aluminium panels. The bead must be 2.5 mm in diameter and must be applied in no more that 5 seconds.

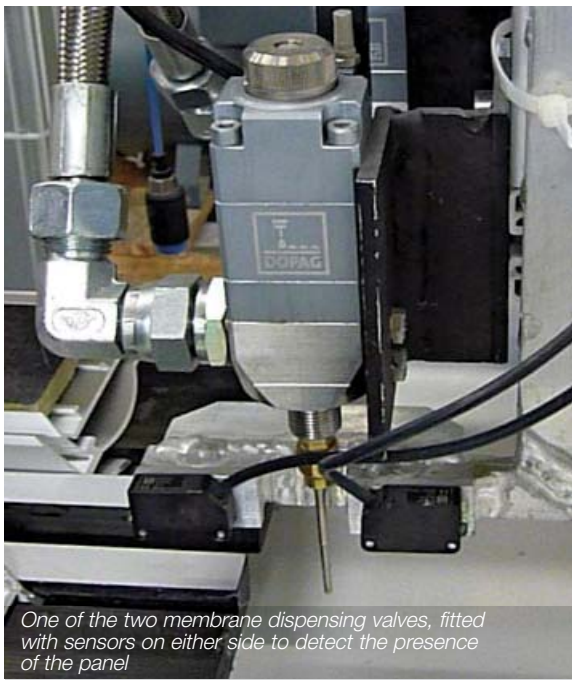
Winkler chose a single component silicone for this purpose that has a viscosity of 250,000 mPa s, and following a search for suitable equipment to apply the silicone decided on the basis of quality and value for money to purchase the system from DOPAG.

DOPAG Sales Agent Swantje Mahn-Maugsch supported by Area Sales Manager Patrick Marbacher proposed the use of a DOPAG P80 drum pump system to unload the silicone from the shipping container and feed via a material pressure regulator to a gear pump system where it is metered at the appropriate flow rate to produce the correct size beads.

Twin DOPAG membrane dispensing valves are mounted onto a linear slide mechanism in order to produce the beads. The valves are fitted with a sensor on either side so that they can detect the presence of a panel when in motion and open and close automatically as required, regardless of the length of the panel being processed.

This was a mutually satisfying project that required the use of high quality DOPAG equipment to help produce high quality products.

Managing Director Martin Winkler and Production Manager Harald Glück inspect their new DOPAG system



One of the two membrane dispensing valves, fitted with sensors on either side to detect the presence of the panel

Steering in the right direction

DOPAG micromix S helps to improve productivity in steering wheel production

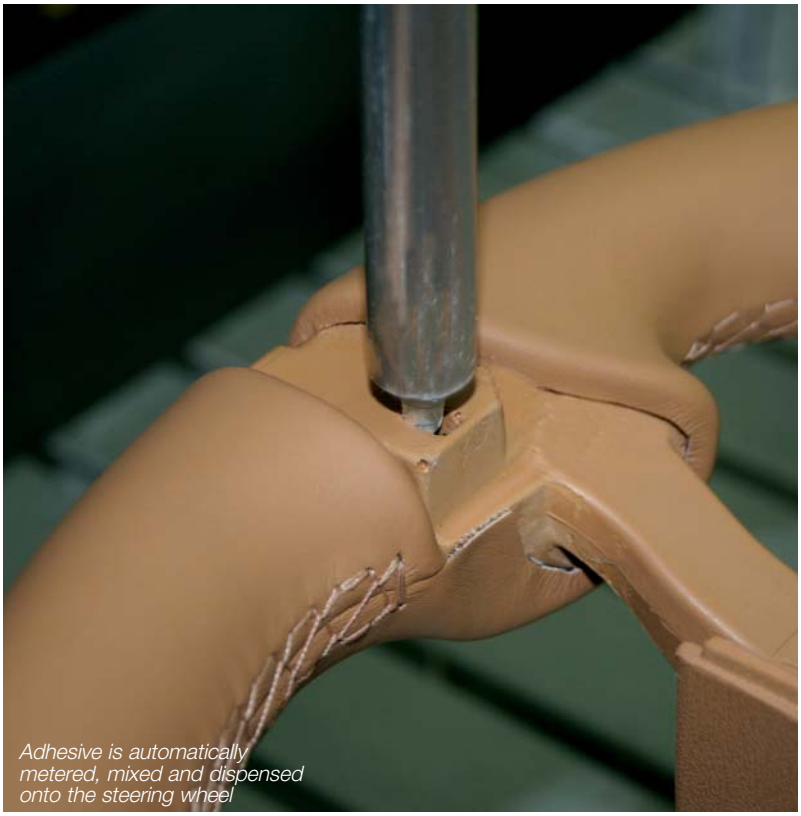
TRW Production Manager Adnan Aydin with the new DOPAG micromix S system

TRW Automotive ranks among the world's leading automotive suppliers, operating in 27 countries and employing approximately 66,000 people worldwide.

One of the nineteen TRW Automotive plants located in Germany is in the town of St. Leon-Rot near Heidelberg, where up to 6 million airbag systems are produced annually.

TRW develop and produce both active and passive safety systems and whereas such systems as ABS braking and electrically powered steering are classed as active safety systems, airbag systems fall within the definition of passive safety systems.

Airbag development has progressed rapidly since first introduced, so that now there are airbags for not only the driver of the vehicle, but also for the front seat passenger with protection for the head, side and knees.During the production process at the St. Leon Rot plant, driver airbags are integrated into steering wheels. Following insertion of the airbag, a DOPAG micromix S is used to meter, mix and apply two-component polyurethane adhesive to a number of positions on the steering wheel to facilitate the bonding of snap fasteners to the cover of the steering wheel.



Adhesive is automatically metered, mixed and dispensed onto the steering wheel

The adhesive is pasty in nature and requires a DOPAG P30 ram mounted drum pump to feed each of the components to the micromix S system, where it is proportioned at a ratio of 100:100.

Firstly, the steering wheels are manually loaded into fixtures. The airbags are then assembled into the steering wheel, after which eight shots of mixed adhesive are automatically dispensed onto the steering wheel by a 3-axis robot. It is then possible for the covers to be assembled.

The process is then complete if subsequent tests on the electronic components of the steering wheels are positive. Within a period of 30 minutes, the reactive adhesive has cured.

Installation of the new system has provided tangible benefits for TRW, as explained by Project Manager Adnan Aydin: "The new automated dispensing system has speeded up this part of the production process, which in turn has eliminated the inevitable waiting periods that we previously encountered, resulting in far more efficient and cost effective production."

Musical motorbikes

Pi SHURLOK™

Harsh environment demands quality encapsulation of infotainment systems

An advanced infotainment module

Many of us who make regular use of a car to travel from place to place enjoy listening to music or our favourite radio programmes whilst on the move. Sophisticated in-car entertainment is something we take for granted and yet I wonder how many of us have ever considered the concept of motorcyclists enjoying the same experience.

It seems extraordinary, but such is the level of current technology that advanced radio “infotainment” modules are now available as an OEM option to fit a major European manufacturer’s range of high-end motorcycles.

Pi Shurlok, based in Pietermaritzburg, South Africa, was sub-contracted by a leading media electronics company to design and manufacture such a unit, the final specification of which called for an AM/dual-FM RDS tuner with traffic message channel (TMC), mp3 music playback from USB memory stick and iPod connectivity.

The specification also included the option to easily upgrade the design to include a satellite tuner. The audio output section had to connect to multiple Bluetooth enabled cycle helmets and include a Class-D amplifier for direct drive to speakers.

All the detailed electronics, software and mechanical designs were to be created by Pi Shurlok engineers and in the exposed environment of a motorcycle, special care needed to be taken to protect the equipment against the elements by encapsulating the electronics.

A Dow Corning 100:100 mix ratio two-part flexible silicone elastomer was selected as the encapsulant most perfectly suited for the protection of electronic devices and components such as these.

Formulated particularly for use in harsh environments such as those with high humidity and exposure to moisture, this product is also intended for use in applications that require guarding against mechanical shock and vibrations.

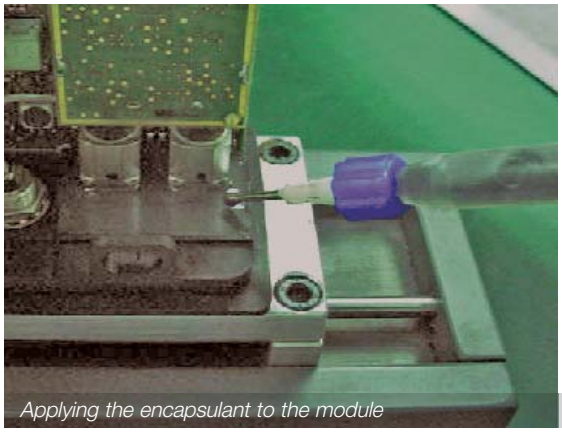
A DOPAG eldomix 101 gear pump driven two-component system supplied by South Africa distributor, Resin Processing Solutions (RPS), is employed to meter, mix and dispense the silicone into the modules.

Explained RPS Managing Director Andre Schlenk, “We had previously supplied Pi Shurlok with a DOPAG dosomat system to dispense this elastomer, and later on with an eldomix 101, both of which have performed in an exemplary fashion, so it was not a difficult decision for them to specify DOPAG again for this application.”

The eldomix 101 monitors and controls both the shot size and the mixing ratio, as well as all other parameters such as over and under pressure conditions for each of the pressure feed containers via the touch screen PLC controller.

The result has been that Pi Shurlok delivered fully certified products in time for the motorcycle manufacturer’s motorcycle product launch.

The success of this project has led to Pi Shurlok being re-engaged to work on the next generation product that will include a full implementation of the satellite tuner capability that was allowed for in the current design.



Applying the encapsulant to the module

The DOPAG eldomix 101 at Pi Shurlok

Smoothing the way

DOPAG variomix system ensures trouble-free deployment of airbags

With over one million people killed every year globally in traffic accidents, there is a compelling need for improved automotive safety.

Autoliv are a worldwide leader in automotive safety and a pioneer of both seatbelts and airbags whose customers include all of the leading automobile manufacturers in the world. The company lists the invention of side-impact airbags for chest protection and Inflatable Curtain (IC) airbags for head protection, as just two of their contributions to automotive safety.

The company services their customers from 80 facilities, test their cars and products at 21 crash test tracks in 11 countries, and employ over 37,000 people.

Component production is concentrated in relatively few locations, while assembly plants are located close to their customers. Final products are typically delivered "just-in-time", sometimes several times a day, to the vehicle manufacturer's plants.

One of Autoliv's production plants in the UK is located in Congleton, where the airbag fabric is woven and coated before shipping to the assembly plants.

Following the weaving process, the fabric web has a thin, impermeable, plural component silicone coating applied in order to make it gas tight. (See Exact!18 for full story.)

However, this coating leaves a relatively "sticky" surface finish to the fabric, which could compromise the inflation time during deployment of the airbag, which is designed to be up to six times faster than the time it takes to blink an eye.

To overcome this potential problem, Autoliv apply a further coating to the fabric web to render the surface less sticky. This coating, which needs to be applied to the fabric at a rate of 10 grams per square metre, is also a plural component silicone product and is proportioned, mixed and dispensed using a DOPAG variomix 2A system.

The two components are fed to the variomix system separately, using transfer pumps. The base component carries a high percentage of solids, so needs to be constantly agitated in the drum.

The variomix system stores the two components in 45 litre size pressure feed containers before proportioning and feeding them at a ratio of 100:10 by weight to the production line, where they are homogeneously mixed and dispensed on demand, by a DOPAG 2K valve.

The mixing ratio is constantly monitored and verified by means of flow meters.

When cured, the coating provides the smooth surface to the fabric that is required to ensure trouble-free operation if and when airbag inflation is needed.

Mixing and dispensing the silicone coating onto the fabric web

The DOPAG variomix 2A metering station

DOPAG (UK) Ltd relocates

After eight successful years, DOPAG (UK) Ltd finally outgrew their Hartlebury home in the beautiful Worcestershire countryside.

Not wishing to stray too far, they have been fortunate enough to secure more spacious premises near the Spa town of Droitwich, little more than a stone's throw away from Hartlebury.

Commented Managing Director Calvin Priest "We are very happy to have found such superb premises that will allow us to cater for the growing needs of our customers and staff for many years to come."

Swiss Plastics Exhibition

SWISS PLASTICS

Swiss Plastics is one of the premier events in Switzerland for the plastics industry and brings together all the relevant companies and service providers both from home and abroad in the exhibition centre at Lucerne. This exhibition is a vehicle to introduce new products and processes and offers an interesting programme with special exhibitions and a forum with professional lectures.

Commented DOPAG Sales and Marketing Manager Alois Tschopp, "We exhibited at last year's inaugural exhibition and were delighted with the results, so we had no hesitation in re-booking our stand, which proved to be a great success."

Exhibition watch

23. - 25. June 2010 /
Wind Power Asia / Beijing, China

13 - 16 September 2010 /
Bondexpo / Stuttgart, Germany

10 - 12 November 2010 /
FEIPLAR COMPOSITE & FEIPUR / São Paulo, Brazil

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