

# Exact!

Application stories from around the world

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## Ceramic metering systems control flow rates precisely



Designed to be used in such industries as automotive, automotive component, aerospace, medical and many others where materials need to be metered and applied in a high precision and repeatable way, these advanced systems make use of low-wear, high performance ceramic technology.

In order to easily process filled and abrasive materials without causing damage to the parts that are in contact with the material, neither seals nor valve technology is used, resulting in exceptionally low maintenance requirements and greatly increased service intervals.

The new ceradis system is used to process single component materials, requiring only the addition of a suitable material supply system and metering computer.

Multi component materials can be accommodated by using the ceramix system, which due to its modular construction simply comprises of two or more ceradis systems, connected by a mixing block with the addition of a disposable static mixer.

When controlled by the Hilger u. Kern MR20 metering computer, precise flow rates as well as shot sizes can be pre-programmed. Speed proportional material dispensing can also be achieved for use with robotic application if required.



Hilger u. Kern / Dopag Group



# Going for a Million



DOPAG system allows white goods industry supplier to increase production of domestic appliance components



Eickel & Spindeldreher are located in Arnsberg near Dortmund in Germany where Managing Director Stefan Schmidt ranks the Company to be amongst the largest suppliers to the white goods industry in Europe.

The company employs around 100 people at the Arnsberg location and specialises in the production and supply of worktops and top cover panels to the domestic appliance manufacturing industry, for use with domestic appliances such as washing machines and dishwashers.

The worktops consist of laminated fibreboard, onto which an angle framework of aluminium or plastic and a number of plastic fastening parts of different size and form are attached.

The angle framework and the plastic fastening parts are bonded to the panels using two component polyurethane adhesive. The two components are proportioned, mixed and dispensed by a DOPAG ELDO-MIX 603 system.

The A-component of the adhesive has a viscosity of approximately 8,000 mPa s, whilst the B-component has a viscosity of approximately 250 mPa s and they are fed separately to the ELDO-MIX by means of two heated pressure vessels. The resultant mixed polyurethane is air reactive and hardens in just a few seconds after dispensing.

Some of panels and worktops are produced using 12-station rotary tables and during each stage of the dosing procedure, carefully controlled volumes of adhesive are individually dispensed according to the requirement for each component.

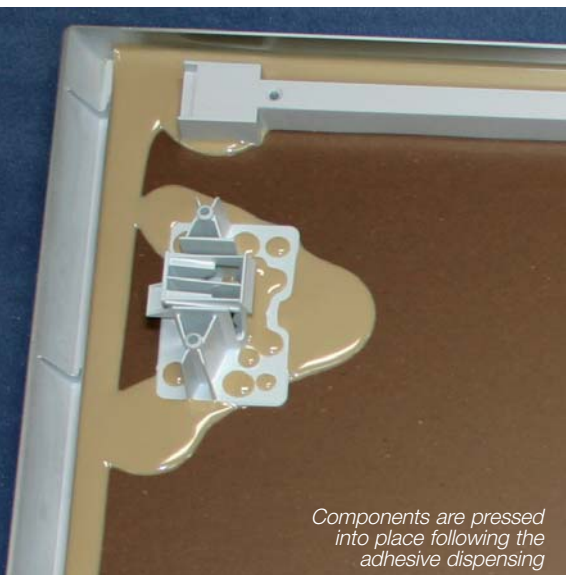
Production is divided into stages and in the first stage, the panel and angle framework are inserted and placed into a fixture on the rotary table.

At the metering station the adhesive is delivered by means of a DOPAG "snuffer" type twin dispensing valve mounted onto a robot. Firstly, the adhesive is dispensed onto the angle framework, in order for it to bond with the panel, after which the adhesive is dispensed directly onto the panel in order to bond the plastic parts to the panel.

The rotary table then indexes to the next station where the plastic parts are ready to be positioned and lightly pressed into place. When the panel is withdrawn from the rotary table, the adhesive has already hardened.

According to Production Manager Meinolf Berghoff, Eickel & Spindeldreher manufacture approximately 900,000 panels using this facility each year. In 2010 they now plan to increase production to approximately one million.

Happily, this new target will not present a problem now that they are able to make use of the advanced equipment technology from the Hilger and Kern / Dopag Group.



*Components are pressed into place following the adhesive dispensing*



*Dispensing the mixed adhesive*

# Cars à la carte



Reliability and service back-up a key factor in DOPAG SILCO-MIX choice for vehicle customising company



*Operators assemble a rear apron onto a vehicle. Having dispensed the adhesive onto the apron they use a moulded fixture to place and hold the panel in position whilst the adhesive cures.*



The demand for individually customised vehicles such as special editions or complex options has been steadily increasing over the last few years, causing something of a headache for high volume vehicle manufacturers.

On the one hand, manufacturers would ideally like to satisfy all potential customers' requests for personalised equipment, but on the other, modern production assembly lines are not constructed in such a way as to easily manage the assembly of vehicles with a large number of variations of non-standard components.

The solution to this problem is solved by companies such as Zender, who operate modification centres in Belgium, Italy and Spain.

In Belgium, Zender, who employ 84 people in Genk, have converted approximately 600,000 individually customised vehicles since 1990.

Zender are located in close proximity to the Ford factory, where they have recently opened a new facility to act as a flexible application production line for non-standard vehicles.

Modification work can include special body parts such as spoilers, aprons and other attachments, as well as leather equipment, trailer couplings and much more.

Special body parts are assembled using DOW Betalink two-component polyurethane adhesive and when Zender needed equipment to meter, mix and dispense the adhesive they chose a DOPAG SILCO-MIX L200.

The adhesive is pumped and metered directly from 200 litre size drums at a mixing ratio of 100:100 by volume by the SILCO-MIX at the track-side, *(bottom left)*

A 24 metre long overhead steel pipework manifold directs the adhesive to a single take-off point on either side of the track, where a flexible hose feeds a manual dispensing valve that mixes the adhesive by static mixer whilst being applied to the component. *(bottom right)*

Production Manager Jochen Jung points out that Zender is contracted to rework vehicles within 48 hours of receipt, so equipment reliability and service back up is paramount and was a key purchasing aspect when choosing a system from the Hilger u Kern / Dopag Group.



*The DOPAG SILCO-MIX L200 in position track-side at Zender*



*Laying the bead of mixed adhesive*

# Hammers and shovels

Hand tool manufacturer Lasher Tools increases production by over 300% by upgrading to a DOPAG ELDO-MIX 101



At Lasher Tools, a shovel is not just a shovel - there are far more shapes and sizes than anyone might imagine.

Apart from the more usual varieties such as those with round-nose and square mouth blades they also produce shovels for firing steam locomotives, cleaning ash from industrial boilers, solid socket shovels, pit pan shovels, and hosts of others. They even make chrome plated spades for ceremonial occasions.

Seventy-seven years ago, the first shovel manufactured by the African Shovel Company appeared on the South African market.

In 1971, the Norton Group took a controlling interest in the African Shovel Company and the name was changed to Lasher Tools. (The task of removing rock and rubble with shovels was known as "lashing" and the Scottish miners who came to South Africa at the turn of the nineteenth century were known as Lashers.)

Today the company make many other types of hand tools, like hammers for example, including a recently introduced type of claw hammer designed to have its head attached to the shaft with distinctive bright yellow two component polyurethane adhesive.

Lasher Tools had previously used a DOPAG DOSO-MAT system to meter, mix and dispense this adhesive and using that system was able to produce 600 claw hammers in each 8-hour shift.

However, as demand increased, Lasher approached local Hilger u. Kern / Dopag Group distributor Resin Processing Solutions (RPS), based in Cape Town, with a view to boosting production of the claw hammers.

RPS recommended upgrading the dispensing facility by moving to a DOPAG ELDO-MIX 101 gear pump driven system, as not only would this be capable of dispensing the very small shot sizes required, but would do so at speed and with great accuracy.

The ELDO-MIX 101 is a compact bench top machine that uses precision gear pumps with defined gear volumes to meter the two components in the correct mixing ratio.

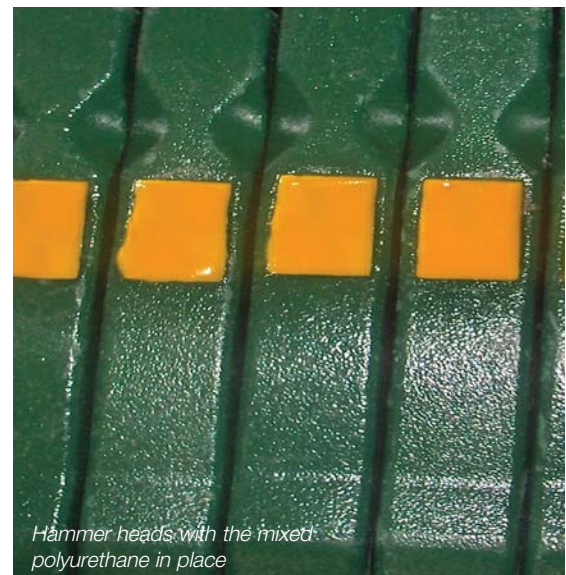
The direct result of the upgrade has meant that Lasher has been able to boost production by an impressive 300% and is now able to produce up to 2000 hammers in every 8-hour shift.

Commented Operations Manager Bruce Turner "The ELDO-MIX accommodates our need for small shot sizes and production is now a lot more efficient and effective!"

No doubt in years to come, Lasher Tools will be as famous for their hammers as they are for their shovels.



DOPAG ELDO-MIX 101



Hammer heads with the mixed polyurethane in place

# Rocket man



DOPAG ELDO-MIX applies adhesive to Ariane 5 rocket boosters for Europropulsion



An Ariane 5 type launch rocket takes off from Kourou (French Guiana) every couple of weeks, most of which carry satellites without which we would have neither weather forecasts nor navigation systems. Many radio and television channels could not be received, and telephone and internet would not have their present day capabilities.

Just 130 seconds into launch, the two huge boosters have used up their 238 metric tons of solid fuel. With their work done, they are jettisoned.

The boosters propel the rocket to a height of 55 kilometres, not least thanks to a WACKER silicone adhesive, applied using DOPAG ELDO-MIX technology.

Although, at first sight, just a minor detail, this adhesive is in fact crucial



DOPAG ELDO-MIX



to the mission's success. It is used to fix the cable ducts onto the side of the 30-meter-high rocket engine. It ensures that the computer housed in the rocket can transmit data smoothly to the jet nozzles even under extreme conditions.

The adhesive is also used to fix explosive charges between the cable ducts which destroy the booster cases after they have been jettisoned from the main engine, otherwise the long metal tubes would float on the sea after splashdown and present a hazard to shipping.

The latest rocket version is more powerful than earlier models, with more takeoff thrust and a much heavier payload capability. Of course, its reliability must not suffer and for this reason, the adhesive bond between the engine's steel skin and the cable ducts has been redesigned.

In earlier rocket models, metal strips were simply spot bonded in place. Now, resin cable ducts are fully bonded onto the skin by a material that produces bonds that are just as secure as the previous adhesive but also meet other, higher specifications.

WACKER ELASTOSIL RT 774 two component silicone was chosen as the ideal adhesive to meet this specification. Used extensively in numerous other industrial applications, including photovoltaics, electronics and household appliances, it can withstand the exceptional stresses caused by lift-off of the Ariane 5.

When DOPAG France were asked by the company Europropulsion to provide the capability to meter, mix and dispense the silicone, they developed a bespoke gear pump driven DOPAG ELDO-MIX system specifically for this purpose.

The two components are fed separately to the gear metering pumps by ram mounted DOPAG drum pumps, where they are proportioned at the correct mixing ratio prior to mixing. The mixed material is then applied to the entire length of the booster by robot.

"Then you have to work fast," adds Yann Procureur, Wacker's Sales Manager, as the technicians have only a few minutes in which to attach the cable ducts. Three days later, the bond is resilient enough for cables to be threaded into the ducts, ready for delivery to Astrium and yet another successful launch.



**Editor**

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