



## New MICRO-FLOW Sensor for improved quality control

Process reliability during any metering or dispensing system is absolutely crucial and especially so when it involves either semi or fully automated production processes. In these cases, it is particularly important to verify whether the medium has been dispensed or not.

The newly developed MICRO-FLOW Sensor from the Hilger u. Kern / Dopag Group addresses this problem and guarantees this type of process security. The sensor is able to detect whether material has been dispensed or not, without any contact with the material.

Should the electronic controller fail to send a signal that results from an interruption of material flow, the master control unit will activate an alarm.

The sensor can be used with most unfilled greases, oils and silicone oils and can be used with a range of DOPAG metering valves. The sensor can also be easily retrofitted to existing DOPAG installations.



## New brochures

Two brand new brochures have recently become available from the Hilger u. Kern / Dopag Group, the first of which features metering and mixing systems that have been specifically designed for use in the Wind Energy market whilst the other illustrates the new Modis proportionally controlled adhesive dispensing system which is aimed at the automotive market (As featured in Exact! issue No. 11). Both brochures are available in either English or German. Please contact your local DOPAG office or distributor for copies.



### Inside

- 2 Moulding composites for aircraft
- 3 Automated sealing of shower cubicles
- 4 Environmentally friendly encapsulation
- 5 Cartridge filling in the medical industry
- 6 News and events

# Flying high - without a pilot!



DOPAG ELDO-MIX ensures the quality of unmanned aircraft



Much has been done recently to push forward the development of pilotless aircraft, known as Unmanned Aerial Vehicle systems (UAVs).

The obvious potential for UAVs lies in their surveillance and monitoring capabilities, being particularly useful for such purposes as border control observation.

Advanced Technologies and Engineering Co (Pty) Ltd. (ATE) of Midrand in South Africa, have developed such a system, known as VULTURE; an aircraft that is fully automated in launch, flight and recovery.

It is also one of the few international UAV systems that is completely self-contained with the capability to launch from 10 tonne trucks within 30 minutes.

The structure of the VULTURE aircraft is modular, consisting of two wing halves, fuselage, detachable tail boom, tail plane and nose module, which are all produced, from composite Glass Reinforced Plastic (GRP) using hand lamination and vacuum techniques.

The two component epoxy resin system cures in a polyadditive process, which demands accurate dosing and mixing at a ratio of 100:38 to achieve the desired material properties.

On the advice of Resin Process Solutions, the Hilger and Kern / Dopag Group distributor in South Africa, a DOPAG ELDO-MIX 101 gear pump type metering and mixing system was installed to process and dispense the resin system.

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.

Output rates of up to 1.2 litres per minute are possible and the mixing ratio is easily adjustable to suit the application.

ATE view UAVs as the future in aerospace and they rely exclusively on equipment of the highest quality with innovative technologies to remain leaders in this field.

We are proud to know that ATE accepts DOPAG products as synonymous with their motto: "Through precision and excellence we lead."



A VULTURE aircraft wing in the mould



DOPAG ELDO-MIX 101

# Relocation, relocation!



## How installing DOPAG ELDO-MIX systems allowed a French manufacturer to switch production back to France

Specialising in the manufacture of aluminium and glass shower cubicles, Aquaprod, who employ around 300 people and whose turnover exceeds 45 million Euros annually, realised that they needed to reduce production costs, leading them to relocate part of their production away from their Chéméré (Loire-Atlantique) facility in France to Romania, where assembly costs were considerably lower.

However, following the relocation, it became increasingly clear that delocalising is not always the miraculous formula that it would appear to be at first sight. Although it fulfilled the objective of reducing the cost of labour during the assembly processes, it quickly became clear that a number of other factors had been adversely affected by the move.

In particular, transportation costs from Romania escalated and since around 80% of Aquaprod sales are in France, this was a serious problem. Extended delivery times and communication problems also prompted a rethink of production strategy.

So, three years after the move, Aquaprod took the unusual step of reversing their earlier decision to relocate and restored production to Chéméré, opting to invest in automation in order to achieve similar cost savings.

Explained an Aquaprod company spokesman "We relocated part of our production to Romania in order to reduce assembly costs of our shower cubicles. However, logistical costs increased to an uneconomic level, so we decided to return that part of production to France as the installation of a purpose built robot cell to carry out the necessary assembly proved to be a more economic solution for us."

As part of the new facility, Aquaprod switched the adhesive that they were using to fix the glass panels into the aluminium frames from a single component silicone adhesive, to a fast curing two component polyurethane adhesive.

This had the benefit of radically reducing the cure time of the adhesive to just 10 minutes, allowing the finished units to be shipped almost immediately, resulting in faster delivery times and a significantly reduced inventory.

The new automation cell includes three Kuka robot arms, two of which apply the metered and mixed polyurethane onto the aluminium frames before the third robot places the glass into the frames.

The base material arrives at the factory in 200 litre size drums, whilst the catalyst component



*DOPAG ELDO-MIX system (centre) feeding a robot mounted dispensing valve (left)*



*DOPAG P200 and P80 pumps (right) feed the DOPAG ELDO-MIX system (centre)*

is supplied in 80 litre size drums. DOPAG P200 and P80 drum pumps are used respectively to pump the viscous products directly from the original drums to two separate DOPAG ELDO-MIX gear type metering and mixing systems.

The adhesive is proportioned and mixed by the ELDO-MIX systems at a ratio of 100:10 before being automatically dispensed onto the frames.

The ELDO-MIX systems selected for this application are capable of dispensing the mixed polyurethane at up to 300 ml per minute and the actual output rate of the mixed adhesive is closely controlled to ensure that the optimum amount of adhesive is laid onto the frames in every case, thus ensuring that quality standards are always strictly adhered to.



# Connecting with the environment



New environmentally friendly dispensing system also improves product quality for Swiss connector manufacturer



Located in the town of Apples, in the Western, French speaking area of Switzerland, Fischer Connectors have been continuously developing their product range of over 20,000 types of high-performance connectors and accessories for more than 50 years.

Recognised the world over for reliability and precision, Fischer Connectors are predominantly used in medical, military

and security, instrumentation and broadcasting applications, where faultless quality is always required.

One of the main features of Fischer Connectors is to provide high vacuum-sealed or watertight IP 68 connectors. They mostly transmit electricity, but can also transmit light, liquids or gases and sometimes a combination of more than one type of media.

The challenge for connectors is to ensure that performance is not disrupted by the transmission process which can be critical when, for instance, patient's lives may depend on the reliability of the equipment.

Little wonder then that when Fischer Connectors were looking to make the sealing process for their high vacuum connectors more efficient, they turned to the Hilger u. Kern / Dopag Group for assistance.

Following previous trials at DOPAG Headquarters in Cham, Switzerland, a DOPAG MICRO-MIX S was selected to meter, mix and dispense the Huntsman two component epoxy resin.

Six different metered shot sizes between 0,07 and 0,8 ml were called for, along with a number of different fixtures that are needed to accurately hold the connectors in place whilst a three axis robot manoeuvres the DOPAG twin snuffer valve and static mixer into position for dispensing mixed resin into each separate connector automatically.

Previously, a lighter viscosity polyurethane product had been used as an encapsulant for this application, but although the epoxy resin is a more environmentally friendly material, it has a significantly higher viscosity, and a mix ratio of 100:90.

The MICRO-MIX S system has accommodated this by simply heating and retaining the resin temperature in the entire system to between 50 and 60 degrees centigrade.

Consequently, the new system has produced a pleasing increase in product quality and consistency, whilst at the same time helping the environment, surely something that every manufacturer should now be aspiring to.



*Dispensing mixed resin into a connector*



# Medical breakthrough

## DOPAG METO-MIX solves twin cartridge filling problem for silicone manufacturer in medical marketplace



*Filling the twin cartridge with the two component thixotropic silicone*



*A silicone impression for a patient's nose*

Principality Medical Ltd. has been developing and producing silicones in the town of Newport, South Wales, for use in medical prosthesis manufacture for almost 20 years.

Their original Cosmesil maxillo-facial silicone was one of the first dedicated silicone materials developed to meet the requirements of maxillo-facial technologists and their patients.

During the last 20 years there has been an established relationship between Principality Medical Ltd and Cardiff University and this unique collaborative link has allowed much novel research to take place in this often neglected area.

In recent years, patient requirements and expectations have altered, which has led to the necessity for increased material performance with regard to working, bonding and curing, as well as final prosthesis softness, appearance and longevity.

When a patient requires facial surgery that necessitates the permanent removal of tissue, the lost tissue can subsequently be replaced with prosthesis and it is of course important that the prosthesis replicates the patient's original features as closely as possible.

This is achieved by first taking an impression of the original tissue prior to surgery.

A specially formulated two component thixotropic silicone which displays the non-slump properties that are essential for use on vertical surfaces and larger unsupported areas, where it will remain in situ following dispensing, has been developed for this purpose.

The silicone is applied by means of a small twin cartridge device, which contains 25 ml of each of the two components needed and is mixed together at a volumetric mixing ratio of 100:100 with a static mixer during dispensing.

When Principality Medical needed equipment to fill the cartridges with the two components, they enlisted the help of DOPAG (UK) Ltd., who, following a thorough analysis of the requirements, recommended the DOPAG METO-MIX as the ideal solution.

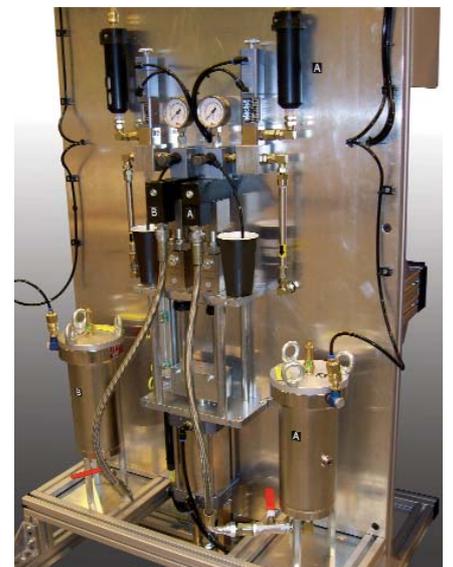
The METO-MIX utilises twin pneumatically powered piston pumps, each fed by a pressure feed container to meter and proportion the two components separately, before feeding them under pressure to the dispensing station.

Twin mandrills are provided at the dispensing station onto which the empty cartridges can easily be slid prior to filling and which will be forced off during the filling process by the pressure of the silicone.

In order to create a thixotropic silicone, chemical additives are accurately metered

into the stream of silicone components during the filling process by means of DOPAG needle metering valves, subsequently passing through steel static mixers, connected to the dispensing station prior to entering the twin cartridges.

The DOPAG METO-MIX has proved to be an elegant solution to an interesting and unusual application.



*The DOPAG METO-MIX Type 1S*

# New faces



Joining DOPAG SCAN ApS as Sales Manager for central Sweden, Martin Schubert brings with him a great deal of knowledge and experience, particularly of the adhesives market.

Formally Key Account Manager at Henkel / Loctite in Sweden for 9 years, Martin also has an intimate knowledge of the automotive industry from his previous employment at Saab.

Married with two children, 47 year old Martin is a classic car enthusiast and can be found putting the finishing touches to his restored vintage 1973 Alfa Romeo 2000 GTV in his spare time.



25 year old Leigh Thatcher has joined the DOPAG (UK) Ltd. team based at Hartlebury in Worcestershire as Service/Commissioning Engineer.

Leigh's background experience is in electronics and servicing and he comes to DOPAG after performing a similar role at John Deere.

In his leisure time, Leigh is a keen 4 x 4 "off-roader", putting his Jeep Cherokee through it's paces rock crawling and fording streams.

Needless to say, his servicing skills sometimes form an essential part of his leisure activities!



Effective from the 1st September 2007, DOPAG FAR EAST in association with DOPAG Switzerland has employed Mr. Johnson Hu as Country Manager for the Hilger u. Kern / Dopag Group in China. Mr. Hu has been involved in the chemical field for over 15 years and for the past decade has held a number of positions in sales.

A graduate of Chendu Science & Technology University, Mr. Hu has a Bachelor's Degree in Analysis Chemistry.

Mr. Hu is married with one daughter and lives in the city of Guangzhou, which was formally known as Canton, in the Southern part of the People's Republic of China, where DOPAG's activities for China will operate from.



## New Swiss fair

Taking place for the first time from 15th January 2008 until 17th January in Luzern, Switzerland, is a new Swiss Plastics fair. Designed to be the shop window of the Swiss plastics industry, the fair offers the opportunity for technically advanced and innovative products to be presented.

Exhibiting within the plastics processing machines category, the Hilger u. Kern / Dopag Group will be showing the latest DOPAG machines and systems.

We hope you will be able to join us.

**SWISS  
PLASTICS**



### Editor

Hilger u. Kern / Dopag Group  
Marketing Communication  
Copyright Hilger u. Kern / Dopag Group  
© Registered trademark DOPAG

Author: Bob Jones: bjones@dopag.com

1700 copies printed  
Printed on chlorine free bleached paper  
Konrad Print, Arth, Schweiz / 2007



## 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