



IN THE MIX

WHAT'S NEW

The SilcoStar E-Flow has arrived after a successful launch at the K-Trade Fair

A bright idea for LED lighting solutions

Coasting to success

The mystery of flower displays



THE NEW SILCOSTAR E-FLOW

This year, **2KM** Germany participated at the K-Trade Fair Dusseldorf with a new system. The new version of the e-flow from the SilcoStar range, comes with an innovative, more ergonomic design and additional standard features. Requiring minimum space, with low energy consumption and optimised barrel emptying, the advantages extend to significant annual savings and a number of customised options to suit specific needs.

Servo-electric driven Metering System

- Servo Electric linear drives with fixing brake and planetary roller screw actuator
- Estimated lifetime of 10 years (at max. pressure of 200 bar and output of 49 tons per year)

Optimised Barrel Emptying

The combination of two completely new developed systems reduces the residual quantity in the 200 l barrel to the minimum. The required follower plate deaeration, when a barrel is changed, is regulated automatically (optional) and the quantity is reduced to the minimum thanks to a new technology. The barrel support floor prevents dents in the baseboard. Different filling quantities of the A and B component can be balanced using gravimetric adjustment. The above mentioned technology reduces the residual amount in the empty drum to 1%.

Advantages

- Potential capacity savings through equal, complete and constant emptying of the delivery vessels
- Integrated roll-in device with automatic barrel bottom support
- Minimum space required
- Low energy consumption



Possible annual savings in a 3-shift-Operation

Shot weight 12g-Barell change: every 7 days.

Savings: approx. 8,300.00€/a

Shot weight 5g- Barell change: every 4 days.

Savings: approx. 18,200.00€/a

Shot weight 50g-Barell change: every 2 days.

Savings: approx. 32,850.00€/a

Basic Equipment

- Integrated roll-in device with automatic barrel bottom support
- Filling level control
- Programmable Logic Controller (Beckhoff PLC) with operation display
- 200L follower plate (optimization of residual quantity)
- Pressure sensors warning for lack of material and overpressure
- Standard machine connection (mixer block, outlet valve and static mixer)
- Adjustable mounting foot for easy placement of the machine
- Varnishing in standard paint (RAL 7035 and RAL 9003)

Options

- Automatic follower plate daeretion
- 20 l follower plates
- Metering control of A and B component
- Colour feeding 0.7 l pressure vessel, 10 l colour feeding pump, 20 l colour feeding pump with optional agitator
- Cooled static mixer
- Reciprocal feeding of two LIM units
- Colour shortage control by pressure sensors
- Varnishing in customised paint

Spot Light on the LED Lighting Industry

Automating the process

Background

The manufacturer already had four **2KM** machines for the manufacturing of lighting systems based on LED technology. The machines encapsulate the printed circuit board with the PU material, protecting the LED and water proofing the system for internal or external usage.

The materials used in the specific application are a filled black material as well as an unfilled water clear product for other lighting solutions.

PU Encapsulation Systems for LED Manufacture

The application of plural component polyurethanes has long been the main focus of 2KM in the UK. The Process Gear Mix systems have been adapted and developed for various manufacturing processes encompassing the benefits of urethane materials. These applications have covered everything from many hundreds of kilogrammes of material per minute for offshore applications, down to gram shots for the electronics industry.

The Process Gear Mix platform, centring on twin drive metering unit utilising inverter controlled, geared AC motors, directly coupled to precision gear pumps, ensures the system can be easily adjusted to suit the end users application.

Since manufacturing of the PGM 100 series has been transferred to the UK, systems have developed for the encapsulation of electronic circuit boards using filled materials. The use of these type of formulations reduces costs for the end user but can cause issues with pump wear. The end user ruled out the usage of piston metering systems because of varying element length and the intension to eventually automate the process.

2KM knowing the application very well, used precision metering pumps sized to the approximate material ratio and a low rotational speed. This method reduces wear on the system and enables the flow rate to be quickly adjusted to suit the manual application of the material as well as get integrated into the 2KM manufactured automated system.

For the automated process the application head was fitted to a belt driven X-Y table. This manipulation device worked over tooling manufactured to cover the light system lengths from 400 to 1500 mm long. The innovative software and sensors allows the control system to sense the length of the light unit and automatically dispense the correct pattern for the system.

The automated unit preheats the light system before the dispensing takes place, lowering the material's viscosity during the pour and ensuring a fast, even coverage of the PU irrespective of ambient conditions.

The automated system is designed to encapsulate a lighting system every minute with a single operator.

2KM has produced a similar manufacturing system for the doming of automotive decals as well as the sealing of cable joint boxes.

All systems use the innovative **PGM** metering system giving control and repeatability to even the toughest applications.

COASTING TO SUCCESS

Making coasters may not be a high end complex moulding operation, but it is representative of the versatility and ease of use, of both Silicones and Polyurethanes.

The 2KM range of Process Gear Mix machines are ideal for plural component dispensing, with the option of further material streams and colour injection, allowing for flexible solutions to specific requirements.

Silicone materials are excellent for mould making processes as they are flexible with a long pot life. Additionally, as they can pick up even the smallest detail from the original master forms, extremely complex shapes can be easily moulded. The ability to quickly produce moulds from a single 'master' allows for almost anyone to offer professionally produced moulded parts.

The coasters, moulded for 2KM's presence at The Composites Engineering Show at the NEC, demonstrate the low cost production of flexible, personalised items. The coasters themselves are moulded from tough Polyurethane, which is demouldable within 15 minutes of casting into a silicone mould. An affordable, adaptable solution for small production runs.

Using static mixers on the entry level 2KM PGM102 allow clean, efficient production with low maintenance needs, making it a versatile dispensing unit and ideal for the first foray into the moulding industry. The 2KM PGM 102 has variable ratio control allowing a vast selection of materials to be processed. From Silicones to Polyurethanes, 2KM can meet your process needs.

MYSTERY SOLVED

Have you ever wondered how the water in some flower displays doesn't spill out when the vase is knocked over? Why the water over the pebbles doesn't move when you disturb the vase?

Maybe the answer is that it isn't water in the first place!

Closer inspection reveals a colourless, water clear product which is solid, but retains the look of water in the vase. It is actually water clear epoxy resin.

2KM has recently been contacted to help ensure that the busy production unit at Ruckley Estates, where the world famous Peony Flowers are produced, would be able to maximise their output for the QVC channel sales. Peony flowers are beautifully lifelike and pass even the closest inspection. The attention to detail is excellent and the 'Resin water' needed to be equally convincing.

2KM was selected because of the ability to meet Ruckley's requirements with an understanding of how to improve on existing production methods. Having faced technical and performance issues from the previous machinery supplier, 2KM was a breath of fresh air in responding to Ruckley's needs.

Replacing old equipment is never easy, as operators are used to how the existing equipment functions (including working around the known faults and idiosyncrasies). With this in mind, 2KM started speaking to the operatives and the production team in order to produce a 'wish list' for the new machine.

Having taken into account the production requirements and understanding the weaknesses of the old machine, 2KM designed and built a bespoke unit, based on the successful and proven Process Gear Mix 101.

Using gear pump technologies, the PGM101 was designed to deliver a 1:1 volumetric mix at a flow rate of up to 4 Litres per minute, building in plenty of expansion for larger components to be 'potted'.

From Ruckley's point of view, it was essential that the PGM101 should be capable of mixing the Water Clear Epoxy Resin, without any swirls or unmixed material visible in the glass vases supporting the Peony flowers. This proved to be troublesome in the past, with the mixing arrangement being the most challenging part of the old machine. 2KM liaised with the material supplier to make sure their requirements were fully understood, then set about proving the process and exhibiting the advantages offered. Using disposable rotary mixers, 2KM installed an efficient unit without the need to introduce solvents.

With a long open time on the Epoxy Resin, a single mixer can be used all day, thus reducing waste streams and minimising the maintenance requirements.

2KM also managed to produce a mix which could be dispensed straight into a vase without any secondary mixing process. The mixing arrangement even allowed for previously unattainable products to be filled direct from the mixing station! 2KM met and exceeded expectations!

Noise in the factory was overcome by utilising a servo driven motor which reduced sound output from the mixing, whilst generating a very efficient mix of the Epoxy Resin.

Ease of operation for the operative was also a consideration and again 2KM delivered! Adding timers to the PGM101 allowed for the accurate dispense of materials in known quantities at the press of a single button. This energised the machine dispense pumps and the servo driven mixer simultaneously to produce a quality assured product every time.

The PGM101 unit was also fitted with an automatic filling system for the clean and efficient management of materials via a bulkhead arrangement. Again, this was an improvement on the old machinery and has allowed Ruckley to use the PGM101 as a stand alone unit if required, being easily wheeled to a remote production station before being returned to the bulk filling area. This has allowed Ruckley to consider new production techniques, previously unachievable.

The response to the new unit has been immediate, with a unanimous acceptance of the efficiency and ease of use that 2KM had brought to Ruckley's production facility.

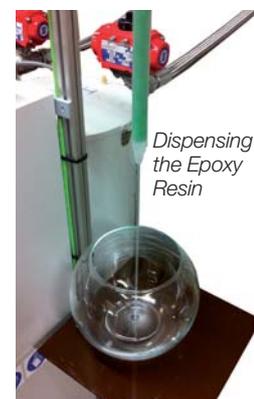
You could even go so far as to say, that in this operation, **2KM came up smelling of roses!**

For more information on the manufacturer visit:

www.ruckley.com

You can take a look at the Peony flowers at:

www.peony.co.uk



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