PRESS RELEASE

preeflow eco-DUO450 convinces BPR Medical

Microdispenser helps ensure integrity of life-saving medical device

preeflow – with ist two-component dispenser eco-DUO450 – provides the perfect solution for the latest application of BPR Medical in Mansfield. BPR‘s Bidirectional Firesafe™ Cannula Valve, used for in-home medical oxygen supplies to extinguish fires which can occur in the line between the concentrator and the user’s mask or nasal cannula. Such fires can occur if the line comes into contact with ambient flame – such as a candle – or more commonly if the patient is a smoker.

Preeflow´s Key Customer Benefits

- Confidence of consistently high quality
- Increased productivity
- Decreased operating costs
- Time savings pre, during & post-operation
- Reduced material usage
- Reduced reject rates
- De-skilled assembly process
- Aesthetically superior products

The UK’s Home Oxygen Service supports some 90,000 patients. In the US, accident & emergency units attend to in excess of 1,000 thermal burns a year caused by ignitions associated with home medical oxygen, of which smoking was by far the leading cause*.

*National Fire Protection Association estimate

Life and death integrity

BPR’s unique inline Bidirectional Firesafe Cannula Valve extinguishes the fire by cutting off the oxygen supply. It is a development of an existing, unidirectional design and acts as a thermal fuse whereby the oxygen supply is cut off when a fusible component softens as a result of the heat from an approaching fire in the oxygen delivery tube. Integrity of operation is vital and could literally represent the difference between life and death.

When BPR had chosen a two-part epoxy to bond both halves of the valve’s body, the next task was to find a dispensing solution that would assure deposition of a precise, repeatable volume of the adhesive, metered and mixed in the correct ratio,

on to a cylindrical assembly. The resulting bond integrity would help ensure conformance for CE marking under European Medical Device Directive, as well as BPR's unerring commitment to quality.

Technical Director Ben Johnson's team evaluated a number of possibilities, including premixing and dispensing via a pinch tube valve. This yielded inconsistent results due to changes in viscosity which begin to occur naturally as soon as epoxy is mixed, exacerbated by temperature fluctuations. It also took an unacceptable amount of set-up and clean up time.

The accuracy of volumetric dispensing

Having determined that volumetric technology would provide a better solution, BPR contacted Intertronics and two other vendors to arrange equipment demonstrations. Trials using the selected epoxy were conducted in a wide ambient temperature range, and rigorous pull, flexural and other testing of the assembled valve, revealed that the preeflow eco-DUO precision metering, mixing and dispensing system suggested by Intertronics was the correct solution. It offers ±1% dosing accuracy, >99% repeatability and can dispense volume flows of 0.2 to 32ml per minute, with a minimum volume of 0.01ml. The preeflow positive displacement technology means that the volume dispensed is not affected by viscosity changes in the material.

The two alternative potential vendors and their systems were also evaluated, but Intertronics was selected – not only on the basis of the eco-DUO meeting BPR's needs, but because of the lower total cost of ownership and promise of superior initial and ongoing support from Intertronics.

Ben Johnson and Product Development Programme Manager Mike Brudenell worked with Intertronics to configure the dispenser into its bespoke manufacturing jig, into which the two populated halves of the Firesafe valve body are manually loaded prior to being rotated whilst the epoxy is applied. Each of the 20,000 units per month produced at the time of writing is non-destructively tested, whilst regular samples are subject to a three-point flexural test.

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The system operates an automatic purge at the end of the shift, eliminating the need for cleaning down. Control is via a preeflow plug 'n' mix interface and stored settings ensure consistency and repeatability, and eliminate daily set-up time. Thanks to preeflow's accuracy, the volume of epoxy applied has been reduced to 0.05 g from the pinch tube valve's 0.06 g.

Ben Johnson commented: *"We had to go through a number of stringent processes to ensure the integrity of the bonding of the two body halves. An essential part of this was how the two-part epoxy adhesive was applied: to ensure a highly accurate, repeatable dose on a rotating jig, but also to maintain the correct dispense volume regardless of viscosity changes caused by temperature. After evaluating a number of options, we chose the eco-DUO from Intertronics as it provided the best results for both of these criteria."*

He continued: *"Intertronics helped us choose a volumetric dispensing solution that was the best one for our needs. We've been very impressed with their expertise, they're responsive and always on hand to support us with any queries or technical support we might need. The way they've helped us to integrate and set up the system means that we always achieve a consistently high level of process capability."*

Ben concluded: *"Not only that, but we estimate our return on investment to be in the region of £2,000 a month."*

Link to a video of the application: https://youtu.be/_xkT2DNxCAo

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Micro-Dosing in perfection!

preeflow® is a brand name powered by ViscoTec Pumpen- u. Dosiertechnik GmbH. ViscoTec primarily deals in systems required for conveying, dosing, applying, filling and emptying medium to high-viscosity fluids. The headquarters of the technological market leader is in Töging (upper Bavaria, near Munich). In addition, ViscoTec has subsidiaries in the USA, in China and in Singapore and employs more than 120 people worldwide. Established in 2008, preeflow® ensures precise, purely volumetric dosing of liquids in the smallest of quantities. preeflow® products are appreciated worldwide, not to mention because of their unique quality - Made in Germany. An international distribution network offers professional service and support in all areas of preeflow® dosing systems. The various fields of application include, among others, automotive, electrical and electronics industry, medical technology, aerospace, renewable energies, electrical and hybrid technology and measurement and sensor technology. The complete preeflow® portfolio can be easily integrated due to standardized interfaces. Worldwide about 10,000 preeflow systems are working in semi- or fully-automated dosing applications - to the user's and customer's complete satisfaction.

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