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- 21 Watson-Marlow pumps bring flotation process into 21st century
- Chemical reagents metered include methyl isobutyl carbinol, sodium isopropyl xanthate, sodium carbonate, Investment assisted the revival of UK's only fluorite producer

Watson-Marlow pumps aid the recovery of rare industrial mineral

Watson-Marlow Pumps Group supplied no less than 21 positive displacement pumps to British Fluorspar Ltd, the UK's sole fluorspar producer. The pumps, which include 12 of the latest Qdos no-valve metering pumps, have all been set to work on vital flotation duties at the company's Peak District facility. The mine reopened in May 2012 following closure 18 months beforehand. With the help of Watson-Marlow pump technology, the site is now responsible for producing 60,000 tonnes of fluorite every year.

Acid grade fluorspar (fluorite) is a relatively rare industrial mineral. The UK's main reserves are now found solely within the Southern Pennine orefield in the Peak District National Park. Extraction can be by open cast methods, often to considerable depths, or by underground mining. Following acquisition and investment by the Italian Fluorsid SpA group last year, British Fluorspar Ltd is now prospering with 45 people working across two shifts. The company today comprises an underground operation at Milldam Mine, open pit extraction at Tearsall Quarry, and processing operations at Cavendish Mill.

Time for change

When the site was re-opened last year, British Fluorspar was keen to source new pumps that represented 21st century technology: efficient, reliable, precise, low maintenance, clean and user-friendly. The company called on the services of an external consultancy and the advice was simple: consider peristaltic.

"We knew about the peristaltic concept but in all honesty never had the financial backing to make the change," says Mr Large. "However, with the new investment we were able to take a look at the market and soon realised that Watson-Marlow were the people to approach."

Following consultation, Watson-Marlow was able to recommend: 12 Qdos 30 universal pumps offering flow rates from 0.1 to 500ml/min at 7 bar; eight 520UN/REL process pumps providing flow rates up to 3550ml/min ; and a single 620UN/RE with flow rate from 0.004 to 18 litre/min. Regarding the latter, a probe is used to control the dosing in line with pH fluctuations. All of the pumps offer IP66 protection and NEMA 4X classification. All of this is far cry from the equipment used prior to the site's reopening – where the system relied on a bucket and wheel feeder/proportioner which was both was erratic and inaccurate."

The emphasis on the Qdos 30 range reflects a design which is aimed specifically at chemical metering. These high performance pumps accurately dose chemicals without the need for any valves or ancillary equipment, keeping costs to an absolute minimum – in fact, the total cost of ownership is less than that of a typical solenoid or stepper-driven diaphragm pump.

Floating the idea

Today, all 21 Watson-Marlow pumps have been deployed successfully in the flotation process at British Fluorspar. Reagents are pumped up from mixing tanks into the head tank, from where they follow plastic pipes down into flotation.

Among the chemical reagents handled by the pumps include methyl isobutyl carbinol, sodium isopropyl xanthate, sodium carbonate, sodium sulphide, caustic soda pearl and sodium silicate. In total, British Fluorspar produces 60,000 tonnes of fluorite ore every year, which is extracted from 300,000 of crude product. As a by-product, limestone is discharged from the mineral and sold.

"We first used the pumps in March 2013 and have been really pleased with their performance," concludes Mr Large. "At last we have equipment befitting a business such as ours. I must also add that the back-up and response from Watson-Marlow has been excellent throughout the entire process."

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EDITORS' NOTES

The Watson-Marlow Pumps Group comprises of:

- Watson-Marlow Pumps: peristaltic tube pumps for pharmaceuticals and industry
- Watson-Marlow Tubing: precision tubing for pumping and other purposes, in a range of materials
- Bredel Hose Pumps: heavy-duty hose pumps
- Watson-Marlow Alitea: unique peristaltic solutions for OEM customers
- Flexicon Liquid Filling: aseptic filling and capping systems
- MasoSine Process Pumps: sinusoidal pumps

Part of the Spirax-Sarco Engineering Group, Watson-Marlow Pumps Group is an international operation based in Falmouth, Cornwall, UK. Watson-Marlow Pumps has offices in Argentina, Australia, Belgium, Brazil, China, Denmark, France, Germany, India, Italy, Korea, Malaysia, Mexico, the Netherlands, New Zealand, Russia, South Africa, Sweden, Switzerland and the USA.