



the unseen advantage

WINTER 2014

More sub-sea success

The National Oceanography Centre (NOC) in Southampton is one of the foremost institutions of its kind in the world.

Among its on-going projects has been the development of miniaturised sensors to directly measure changing nitrate levels in rivers and oceans, and variations in ocean acidity caused by increases in atmospheric CO².

After a complex 18-month development programme, we've delivered our first batch of critical components for the latest sensors.

The innovative, microfluidic sensors are among the smallest in-situ oceanographic chemical sensors ever made and are to be deployed on a range of oceanographic platforms capable of operating at depths of several thousand metres.

For us, that meant designing a seal for the sensor's seawater sampling system that would meet the most stringent

standards of performance and reliability in an environment where high pressures, fluctuating chemical properties and very low temperatures would be an everyday reality.

Kevin Saw was quick to credit our role in the project.

"It's the first time we've worked with DP Seals," he said, "and we were hugely impressed by their understanding of our requirements, their insights into materials selection and their ability to meet our brief so effectively."

As a result of this collaboration, we are now working on tooling for a similar seal for larger 9.8mm pistons and this offers NOC real potential to finally achieve its 100,000 cycle endurance target across their full range and further enhance their reputation for producing exceptionally reliable, world-leading sensors.

See full article on website.



Welcome to the final DP Update of the year, with the latest news on just a few of the projects and developments we've been involved with during 2014.

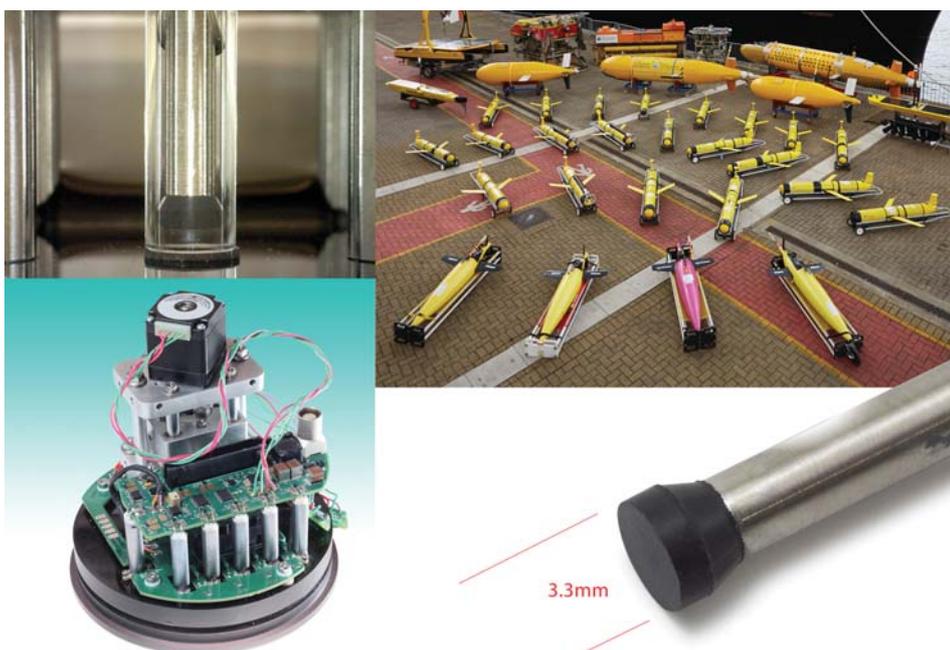
With the UK economy getting back on its feet, the year has certainly been one of steady growth and progress, and to make sure this continues, we've once again invested in both people and resources – so 2015 should see our capabilities expanding still further and our customers reaping the rewards as a result.

So genuine thanks to everyone who's played a part in our success – and a Happy Christmas and a Prosperous New Year to you all.

Andrew Piper
Managing Director

Christmas Shutdown

Closing at 12 noon on 23rd December until Monday 8.30 am 5th January.



The 3.3mm diameter piston operates in a borosilicate glass cylinder, obtaining sample fluids and processing them in the miniaturised sensor located in the cylindrical base of the unit shown above. The unit can be used in any of the NOC's impressive fleet of gliders and mini-sub's shown. Photography credits: Kevin Saw, NOC and David Owsianka, NOC.



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The low-down on low-temperature seals

Seals and similar mouldings that offer reliable and effective performance at very low temperature are indispensable to a wide variety of industries – from aerospace and oceanography to oil and gas exploration and chemical processing. Designing and manufacturing such components calls for a detailed understanding of both the materials suited to the task and the environments in which they will function.

As in most applications, choosing the right material and then formulating it in the way that best meets the operational criteria are essential prerequisites to success – and oversights or compromise at this stage will almost certainly lead to seals that become unacceptably brittle, lose compression and inevitably leak.

Working with trusted long-term partners such as Clwyd Compounders and Solvay Speciality Polymers, we're able to select from a wide range of FFKM, FKM and other advanced materials – each with a definitive set of characteristics that not only ensure predictable performance at temperatures of -40°C and below, but also provide excellent resistance

to acids, alcohols, hydrocarbons and many other aggressive agents.

Outstanding performance

Where FFKM is concerned, its virtually unbreakable chemical structure, exceptional stability, low permeation and low compression set all make the material an ideal choice for low-temperature applications, yet very few moulding companies are keen to promote its use because of perceived problems about production difficulties and cost.

In contrast, we've pioneered the use of innovative production techniques to address and resolve those issues – with our own in-house engineers custom-designing tools to produce FFKM seals to very exacting specifications and for an increasingly diverse range of applications – and our ever expanding expertise is proving that concerns related to mixing, mould characteristics and prolonged post-curing are all unfounded.

Proven expertise

In recent years, we've worked closely with industry leaders to develop critical components for sub-sea signal, data and power connectors, and in practice, these have provided exceptionally resilient performance in environments where very low temperatures, high pressure and fluctuating chemical properties are all commonplace.

We've also manufactured seals for the communications antennae of Royal Navy submarines, and most recently, have designed and supplied FFKM seals for the National Oceanography Centre's latest generation of miniaturised microfluidic sensors, in which an endurance target of 100,000 sampling cycles was just one aspect of the highly demanding specification.

While low-temperature seals remain one of the most challenging areas of activity, the on-going development of materials and processing techniques is extending industry's options all the time – and giving them an ever increasing range of viable solutions to operating in the most hostile environments.



A selection of low-temperature seals in current use. They don't always have to be black!



We've been successfully manufacturing low-temperature seals for the sub-sea industry for decades.

Blow this for a job

When Barry-based Lion Laboratories needed more consistency in the bellows seal of the breathalyser units they supply to UK police forces, our name naturally came up for consideration.

After reviewing the design specification, refining the material composition and producing special moulding tools, our new seals were successfully trialled by Lion and consequently put into production.

Weighing just 0.12 gms, and with dimensions of 9 x 7.5mm, the barrel-shaped bellows seal is made from silicone rubber which provides the flex and hardness required for the breathalyser to secure a precise, uncompromised sample.

The bellows itself doesn't come into contact with the alcohol breath sample. Instead, it creates the suction motion and fires the sample through a tube attached to a fuel cell, then an outlet which feeds into a pressure transducer. The bellows then opens and closes after drawing the air through the tube and the breath sample is captured and analysed.

Lion MD, Alan Holloway, said,

"The bellows are an extremely important and delicate product, and if they're inert, the resulting false samples are totally unacceptable to both



ourselves and our customers. Both the bellows design and the finished product from DP Seals were very accurate and we feel they fully understood our objectives and design specification from the outset."

Our MD, Andrew Piper, added,

"Having supplied over 80,000 bellows over the past four years, their resilient performance has reaffirmed our reputation as a leading supplier of high-precision custom seals and we've now forged a healthy and productive partnership as one of Lion's most reliable and trusted suppliers."



Rudimentary demonstration of the compression action performed by the bellows seal.



Two of Lion Laboratories breathalyser units that incorporate the bellows and are in active use, especially over the Christmas period!



Strong support for our MD

Having joined us in July, Giles Strong has now settled into his important role of providing technical support on both internal and external projects, as well as taking some of the load off the shoulders of our increasingly busy MD, Andrew Piper.

Giles came to us from BAT, where he spent two years as a chemical analyst and senior technologist, and his CV after graduating with a BSc from Plymouth University not only includes a few years in analytical laboratories but also a stint as a lifeguard (so we're expecting everything to go swimmingly now that he's here).

Giles has been getting a full in-depth, hands-on education in everything that goes on at DP Seals, including the operation of presses on the factory floor, so you'll find him well versed in all production techniques.

"The move to DP Seals is a great opportunity for me," said Poole-born Giles, "enabling me to widen my range of analytical skills and also learn more about the management and business side of things as Andrew's right-hand man."

Why not email him at giles@dpseals.com and put him to the test!

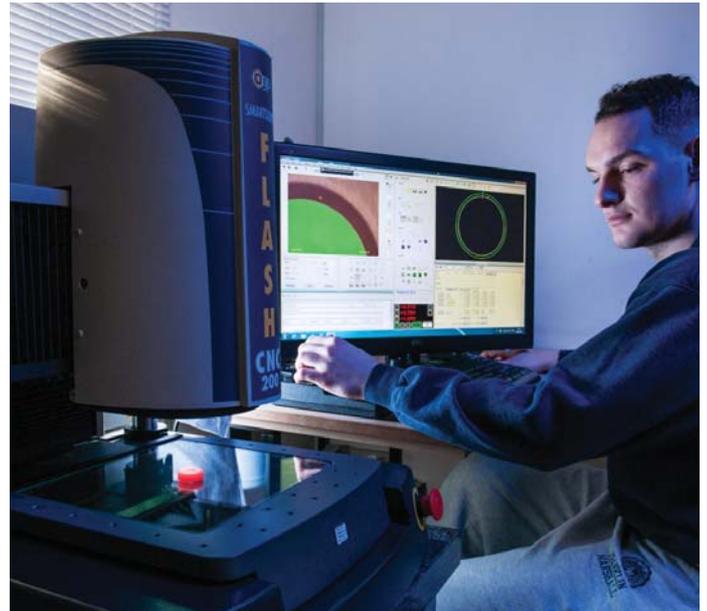
...and finally – just for good measure

With absolute precision critical to everything we do, we're always looking to improve our measurement and inspection still further – and the latest addition to our CNC resources will help us do just that.

The aptly named SmartScope from OGP is a start-of-the-art multi-sensor system with an outstanding specification that includes computer-controlled LED lighting, high-definition graphics and simple touch-screen operation.

From our point of view, it means we can deal with even more complex components in the minimum of time, enabling us to get through more work and deal with bottlenecks without ever compromising on the quality by which we're rightly judged.

The machine the SmartScope replaces has now moved to our dedicated sub-sea facility – and that also gives us the additional benefits of eliminating potential contamination if we were to move parts between units and speeding up the whole process into the bargain.



Love it or hate it...

...Social Media can be a valuable way of getting content and important, relevant information out to a wide audience quickly. We understand that not everybody has the time in the day to spend checking their phones and computers, so we don't clog up our digital environment with meaningless twaddle.

Our releases are kept to a sensible, informative level and as such we have seen our community grow accordingly.

If you haven't joined up yet, please do.



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<https://www.facebook.com/pages/DPSealsLtd/293100584033656?ref=ts>

email us at info@dpseals.com

Of course, most importantly, we're available face to face, so feel free to call on **01202 674 671** and we'll be pleased to arrange a time to meet up with you to discuss requirements.

Win a Kindle Fire

A smart new Kindle Fire tablet with 7" HD screen is the great free prize in our current prize draw. And all you have to do to be in with a chance of winning is fill in our marketing questionnaire as soon as you can.

<http://www.dpseals.com/dpmarkform.html>



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