

# NEWS @ SEVERN

Global valve news from the Severn Glocon Group

Winter 2014

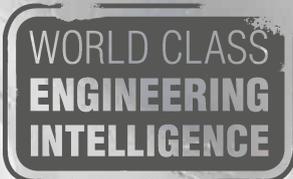


## Progressive engineering drives growth

Severn Glocon Group continues to strengthen its global presence with strategic acquisitions and investment, landmark contracts and breakthrough technologies. The control valve engineering specialist has reinforced its subsea oil and gas expertise by acquiring High Pressure High Temperature downhole tools company Calidus Engineering.

Now positioned as Severn Subsea Technologies, this arm of the business is focused on addressing future technical challenges associated with subsea production. In other news, the Group has secured a coveted contract with Rumaila Operating Organisation (ROO). This project focuses on improving output and reliability of established plant in the South Iraq oilfield through deployment of best-in-class valve technologies and local workforce training.

See inside for more detail on these stories, plus updates from around the Group.



P2 – HPHT acquisition



P3 – Advanced LNG testing



P7/8 – Solving subsea challenges





## Pioneering cryogenic sealing

Severn Leeds Valve is bringing an advanced butterfly valve sealing solution for cryogenic applications to market, rooted in its proprietary Oblique Cone Technology™ (OCT). It ensures the firm's cryogenic butterfly valves provide consistent leak-free performance and excellent control capabilities. The progressive metal-seated sealing technology is lightweight, fire-safe and tailored for optimum control and isolation performance in extreme conditions.



## Export excellence

Severn Unival has been awarded top prize in the HSBC Commercial Banking International Business of the Year category at the Huddersfield Business Awards. Judges praised the long-term vision of the firm's leadership team, as well as recent export performance. Separately, Severn Glocon was a finalist in the export category of the Made in South West Awards.

## Rumaila contract win

Established plant division Severn Valve Solutions is now working with Rumaila Operating Organisation (ROO) to improve output and reliability of the South Iraq oilfield.

The appointment follows an extensive market review by ROO and the contract has a three year tenure, with the option to extend by a further two years. Severn Valve Solutions' remit covers all valve maintenance, safety compliance support and technical services with a strong focus on nationalisation and localisation.

ROO is founded and organised by BP, China National Petroleum Corporation (CNPC) and Iraq's state-owned South Oil Company. Its objective is to manage the 20-year rehabilitation and expansion of the super-giant Rumaila field, for the benefit of the Iraqi people. A critical component is enabling local employees to oversee operations in collaboration with a small number of technical experts from overseas.

Colin Findlay, Executive Director of Severn Glocon Group, explains: "An understanding and appreciation of ROO's drivers played a vital role in our being awarded this contract. We will implement an improvement programme across all key valve activities to enhance reliability, performance and safety.

In partnership with Unaoil Group we have also invested in new workshops within the Rumaila field, which are fully mobilised to meet the needs of this and other contracts. And our defined training and mentoring programme has been carefully designed to bring modern skills and innovation to the local workforce."

# CHENNAI EXPANSION

Expansion of Severn Glocon's Chennai (India) facility is now complete. The premises, which are equipped to produce 6,000 highly-engineered control valves per year, occupy a 16,200 square meter plot.

Investment in the team is ongoing, with more than 300 skilled workers now employed at the factory. They are able to handle complex customer requirements associated with upstream oil and gas, LNG, nuclear plants, fertilizers and pipelines. A key strength of the facility is its negotiated approach between one-off production and bulk production.

The factory can produce a wide range of valves in sizes up to 30" bore and 22 tons in weight. Core capabilities include cryogenic and flow testing, automated stellite, special metallurgy and Inconel cladding.

New developments include radio frequency IDs for every valve manufactured, a customer training school and in-house corrosion and tribology studies.

Production is enhanced with parallel engineering, as well as non-destructive testing and specialised processing capabilities. Severn Glocon India has achieved compound growth of 70 per cent for the past ten years. These developments ensure it is poised to continue in this vein, delivering world-class engineering for the coming decades.





## HPHT acquisition

Severn Glocon Group has strengthened its subsea credentials with the acquisition of High Pressure High Temperature (HPHT) downhole tools company Calidus Engineering. Now renamed Severn Subsea Technologies Ltd, the company provides research, development and test facilities.

A former subsidiary of Badger Explorer (Norway), multi-discipline engineering firm Calidus developed innovative subsea and downhole technologies for harsh HPHT environments. Severn Glocon Group's acquisition is a strategic move to align its operations to better meet future technical challenges in subsea oil and gas production.

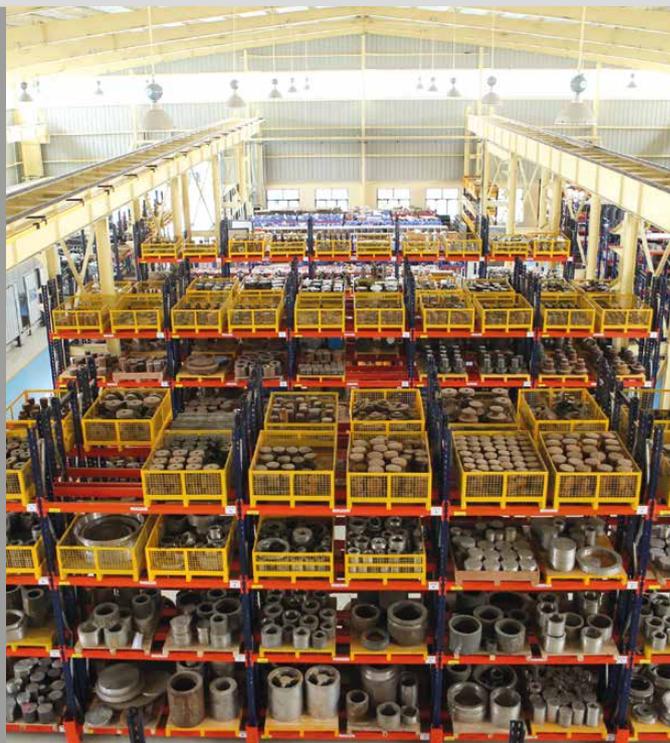
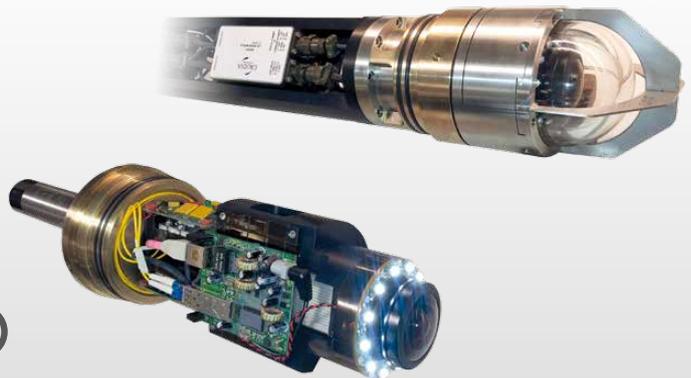
In addition to modelling and engineering design services, Severn Subsea Technologies' Redruth (UK) facility has a machine shop equipped for manufacturing prototypes.

The business is now the nucleus of Group subsea R&D and systems integration activity, operating in partnership with small bore subsea valve sister company LB Bentley and the Brighthouse Valve Innovation Centre.

Chief Executive Maurice Critchley says the acquisition underlines Severn Glocon Group's ambitions to be at the forefront of technical developments for the oil and gas industry.

“ As offshore operating conditions become more extreme, hardware engineers and manufacturers need to invest in developing breakthrough technologies. The industry has a duty to collaborate and innovate. At Severn, we're using intelligence-led R&D to identify potential technology gaps and focus our engineering expertise in the right places. ”

Maurice Critchley | Chief Executive | Severn Glocon Group



## Verifying flow coefficient

As the scope and scale of LNG megaprojects increases, valves playing an important safety function – such as blowdown and gas-to-flare – are coming under closer scrutiny.

They need to have a proven flowrate to show they would safely and effectively depressurise the process area of a plant in an emergency situation. Severn Glocon is collaborating with neighbouring Gloucestershire (UK) firm ABB to subject LNG control valves linked to safety functions to high-precision flow coefficient testing, of a standard typically associated with specialist flow meters. Flow coefficient is a relative measure of a device's efficiency at allowing fluid flow. It describes the relationship between the pressure drop across a valve and the corresponding flow rate.

Many blowdown and gas-to-flare valves for LNG applications are fitted with highly-engineered trims to control flow rate precisely and safely. Severn Glocon typically uses its own custom-engineered multi labyrinth trims (MLTs) for this purpose. Testing the flow coefficient of these control valves enables them to be optimised and provides evidence that they perform exactly as intended.

ABB's Stonehouse facility is home to one of the world's largest, UKAS-accredited, flow test rigs with a main sump holding approximately 1,000,000 litres (264,000 US gallons) of water - the equivalent of two Olympic swimming pools. Its pumping capacity enables this water to be drawn from the sumps and cycled in just three minutes. What's more, the firm holds 100 years' experience in the complexities of flow testing derived from assessments of its own flowmeters. Together ABB and Severn Glocon have developed a best practice procedure for assessing the flow coefficient of LNG safety valves. The protocol is rooted in the guidelines outlined in BS EN 60534 concerning the flow capacity of industrial process control valves, specifically sizing equations for fluid flow under installed conditions.



## MLT investment

Several recent contracts such as the Ichthys LNG megaproject have involved a high number of valves requiring Severn Glocon's custom-engineered multi labyrinth trims (MLTs).

MLTs are precisely designed and manufactured to reduce the velocity of a process medium by splitting its flow into many smaller streams via multiple passageways. Each flow stream is made up of many right angle turns which remove kinetic energy while lowering pressure in a controlled manner.

The manufacture of MLTs is complex, requiring the bore to be produced to an extremely close tolerance without creation of burrs or debris. In order to keep pace with the surge in demand, and cope with larger trim sizes associated with LNG megaprojects, Severn Glocon has invested in a wire-cutting EDM. This advanced machine uses a metallic wire (electrode) to accurately cut programmed contours in the trims. Costing almost £200,000, the tool has boosted efficiencies and enhanced core capabilities at the Gloucester factory.





## Advanced performance testing

Severn Glocon has invested in Profiler technology, an advanced system for superior testing of valve performance.

Senior Fitter Scott Lawrence is the principal Profiler operative at the Gloucester (UK) manufacturing facility. He says the increasing complexity of valve specifications, coupled with higher performance demands, is driving a need for more sophisticated in-factory testing and calibration.

The test process involves a dynamic scan of a valve to generate key information. Typically, readings are taken for hysteresis, frequency response, friction, repeatability and stroking time, giving a detailed profile of performance characteristics. This enables actuator accessories, such as the smart positioner and volume boosters, to be fine-tuned for optimum performance before the valve is despatched.

Establishing a detailed footprint of a valve's performance in the factory also facilitates more targeted maintenance throughout its life. Every anti-surge valve manufactured in Gloucester undergoes a Profiler test, with independent customer or inspector witnessing arranged as required.

Advanced technical services division Severn Unival uses the same technology in the field to evaluate the performance of valves on established plants.

“ Profiler is an innovative tool that underlines the capability of our valves,” explains Scott. “As operating conditions become more extreme and technical requirements more challenging, it is vital to provide evidence that valves perform exactly as intended.”

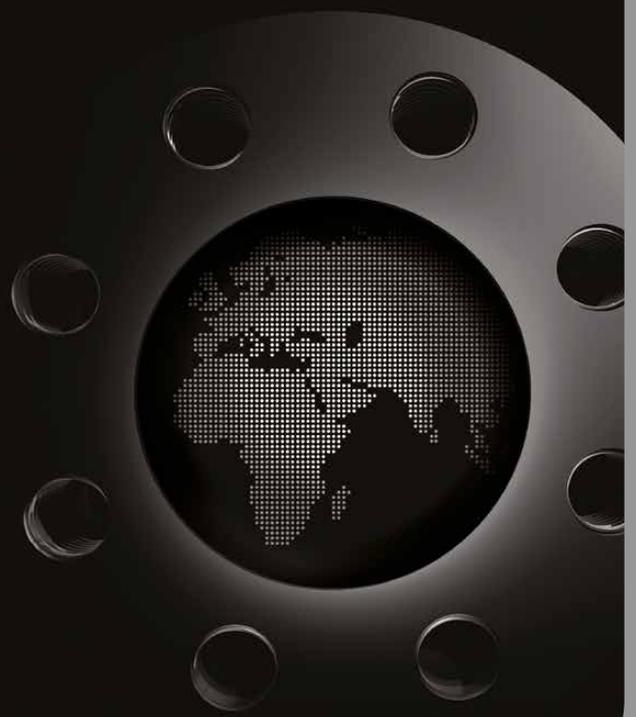
Scott Lawrence | Senior Fitter | Severn Glocon Group

## Severn Ball Valves eyes global growth

Escalating global operations will be the focus of Severn Ball Valves in 2014, following a year of consolidation to develop its supply network for enhanced delivery of products.

Operated primarily from Aberdeen, Severn Ball Valves' trade in quarter and multi-turn isolation valves now represents around 15 per cent of annual Group turnover. Since the business was established in 2010, its customer base has extended to include all primary North Sea operators.

Over the past 18 months important inroads have been made to the Middle East and Australia. These markets are poised for further growth throughout 2014. Severn Ball Valves is introducing a new subsea ball valve to its portfolio and has secured landmark projects delivering to Rumaila Operating Organisation in Iraq and Carnegie Wave Energy in Western Australia.



Severn Glocon Group holds more than 50 years' experience  
Today, we provide advanced valve products and services to



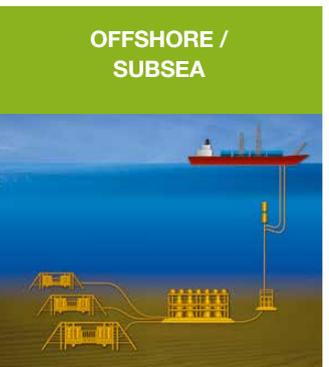
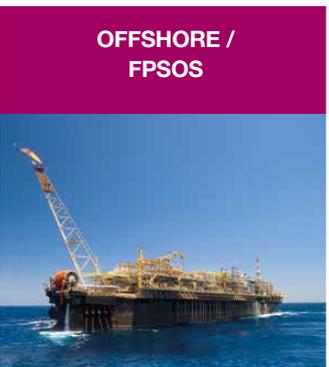
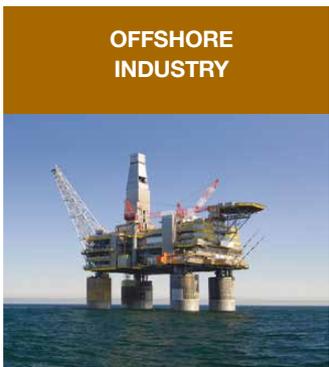
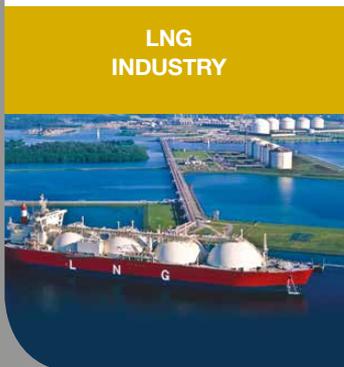
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...ce in control valve engineering and manufacture at its core.  
...o onshore, offshore and subsea operators around the world.



Advanced technical advisory services to improve control valve performance through intelligence-led valve management, repair, failure analysis, custom design and inventory management. Home to the Brighthouse Valve Innovation Centre.



Quarter and multi-turn isolation valve stock and supply, underpinned by in-depth technical knowledge and robust procedures for assured quality and dependability.



Technical specialists in control and isolation butterfly valve design and manufacture. Range includes large diameter, HPHT valves in exotic materials for severe service applications.

**SEVERN**

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**WORLD CLASS  
ENGINEERING  
INTELLIGENCE**

**SEVERN**  
...A TECHNOLOGIES

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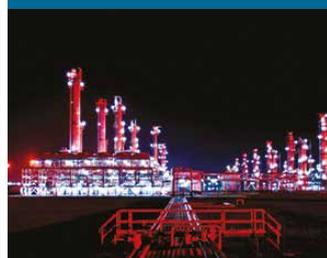
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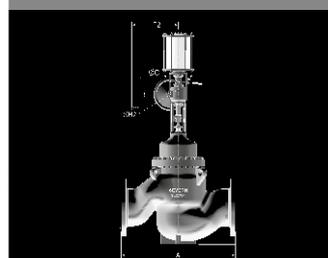
ONSHORE  
OIL & GAS  
(New projects)



ONSHORE OIL & GAS  
(Existing plant,  
engineering services)



ONSHORE OIL & GAS  
(Local training)



OTHER INDUSTRIES  
(Power generation  
& refining)



## Extra-long stems solve subsea valve challenge

R&D experts at small bore subsea valve specialist LB Bentley have developed fully-qualified stem extensions of up to 6.3 meters to overcome space and location restrictions on Christmas trees.

The extended stem innovation was prompted by a challenge LB Bentley faced for a North Sea subsea project. Hydraulic split gate valves and dual manual rotary gate valves needed to occupy positions some distance from where they would be controlled by a Remote Operated Vehicle (ROV).

Stem extensions ranging from 1 meter to 6.3 meters in length were required, bringing significant design challenges.

Material selection demanded particular attention. It involved a detailed assessment of tensile strength since the extensions needed to be robust and non-flexing, but not brittle. The team also looked in detail at the design of existing valves to identify potential changes needed to accommodate the longer stems.

They considered the interface between valve and extension, the required angle for turning and the relative indicator rod position. An important feature of these valves is the indicator rod's shear point, enabling the valve to remain operational even if the indicator rod should lock.

Ultimately mild steel was the material of choice for the stem extensions on this project, although stainless steel would be suitable in other scenarios. This breakthrough solution greatly enhances the flexibility and versatility of LB Bentley's valves; they have a wider window of potential locations and can fit into a smaller space envelope if required.

A modular design ensures the stem extensions are suitable for back stock as well as new valves. They have also been fully approved and FAT tested.



# Severn Subsea Technologies expands production facilities

Severn Subsea Technologies is investing over £100,000 in new Directional Control Valve (DCV) production and test facilities at its headquarters in Redruth, Cornwall. The company is spearheading the development of new subsea valves and systems for the global oil and gas market.

Increased levels of subsea processing are prompting the development of next generation DCVs capable of handling higher pressures and temperatures, and greater water depths. DCVs are a key component in subsea processing safety systems. In the event of an Emergency Shut Down (ESD) initiation, the DCVs can be set to delatch at different pressures, ensuring tree and manifold valves close in the correct sequence.

Severn Subsea Technologies is establishing a DCV production unit, for the manufacture of Bi-Stable DCVs comprising two control cell pilots. This includes the installation of a Class 7 (ISO 14644-1) cleanroom for assembly and flushing of the DCVs, and a hyperbaric chamber for proof testing the valves' delatching pressure.

“ DCVs are a key component of subsea processing systems. Our range of DCVs will reflect the latest developments in the technology for these safety-critical systems. ”

Brian Green | Managing Director | Severn Subsea Technologies



## Rising to the challenge of subsea processing

Severn Subsea Technologies' MD Brian Green is presenting a seminar at Subsea Expo focusing on the 'field of the future' and associated technical challenges for valves.



The core theme will be the trend for topside equipment and functions to move subsea, and the consequences of this. The 'field of the future' will be a complex infrastructure capable of carrying out higher levels of separation and processing. Coupled with the challenges of deepwater and HPHT environments, the demands on subsea equipment become all too apparent: increasing pressures, higher temperatures, greater water depths and the need for enhanced reliability.

Traditional perceptions of small bore valves as a commodity are changing as design engineers grapple with optimising processing conditions in difficult environments, while pushing the limits of existing valve materials.

A key focus of valve research and development is bringing simplicity to the complex needs of the subsea industry. Designing valves with minimal moving parts and uncomplicated operating mechanisms reduces the risk of failure. LB Bentley and Severn Subsea Technologies hold this philosophy central to development of small bore subsea valves. Brian Green will explore how it can also be applied to processes such as specification and overarching industry qualification standards.

The presentation will review emerging challenges facing design engineers and valve manufacturers, underlining the benefits of greater collaboration to address technical issues earlier in the design stage.



## Australia developments

Activity surrounding aftermarket support in Australia is gathering pace.

Severn Glocon Australia has employed control valve expert Don Moran as Technical Support Engineer. The UK expat is permanently relocating to Perth to provide assistance for the Group's major projects in the region. His initial focus will be receiving principal valves for the Ichthys Project onshore LNG facilities, ensuring they are commissioned effectively prior to the processing plant's start-up.

This role forms an important link in the Group's overall world-class engineering intelligence positioning. Offering specialist support during the commissioning phase ensures EPC and EPS activity is joined up, enabling a more cohesive long-term approach.

One of Don's tasks is to lay foundations for the Group's innovative established plant services in Australia. An initial focus will be introducing proven Severn Unival assets such as Performance+ and Opera Valve Management to the market. In addition, he will explore opportunities for LB Bentley to make inroads to the region with its small bore subsea valves.

## Severn Glocon Group's established plant businesses



It's all  
about  
tomorrow

With overarching responsibility for the Group's established plant ventures, Colin Findlay always has one eye on the future. We asked how his Group Director role is evolving in this dynamic sector of the business.

## Utilities ripe for aftermarket growth

Severn Unival is unveiling ambitious plans to grow aftermarket activity in the power, industry and water sectors by 70 per cent over the next three years.

There are significant prospects for the firm's advanced engineering services, with the power industry offering immediate possibilities. Recent market activity and conglomeration in the sector is leading to a surge in multi-site asset management initiatives. This is unlocking potential for sophisticated intelligence-led strategies to optimise performance of valve populations, with multiple benefits for the end-users.

Factors such as commonality between sites, better materials management and potential service exchange programs offer opportunities for an enhanced approach. This can have a considerable impact on lead times for parts and replacement valves, which is hugely advantageous during time-critical maintenance shutdowns.

“Maintaining performance is not enough for Severn Unival, we offer superior technical expertise to significantly enhance performance,” Andrew explains. “What’s more, our customers can work with us in confidence, knowing that they are reducing financial, operational and safety risks.”

Andrew Davidson | Severn Unival

Severn Unival's total valve care, covering both mechanical repair and actuation, reduces the number of contractors or disciplines required onsite during maintenance. Benefits of this include improved efficiency and reduced risk in terms of health and safety.

The firm has appointed Andrew Davidson as a dedicated aftermarket sales manager for the UK power, industry and water sectors. He says that Severn Unival's technical capabilities as an OEM manufacturer and provider of maintenance solutions means it is poised to corner the market.

### Q Describe your role, in a nutshell

A I ensure our established plant businesses operate properly and with a consistent, joined-up strategy. That involves leading and challenging the business managers, as well as giving them space and opportunity to develop new ideas. My role has a widening focus, driven in part by the success of Ron Baker and his Severn Glocon sales team in new global territories and industries. When I joined the Group in 2006 as MD of Severn Unival, we were mainly providing technical support to North Sea operators. Today we have a stronger global presence, multiple established plant businesses and a broad portfolio including advanced consultative services as well as traded products.

### Q What's your priority at the moment?

A Over the past 12 months I have spent a lot of time in the Middle East developing Severn Valve Solutions. This division provides dedicated technical support to Iraqi oil and gas operators seeking to improve the performance of existing plant while developing their local workforce.

In our first year we have been contracted by Shell Majnoon and Rumaila Operating Organisation where we are working on long-term strategies to boost productivity. Alongside this we have devised a strategic framework of recruitment and training that will enable locals to take on progressively higher levels of responsibility.

### Q What's on the horizon?

A I'm mindful of where Severn Glocon's installed base is growing, and seek innovative ways to use it as a foothold for our established plant businesses. Developments in Australia and South America are providing us with bridgeheads into these regions.

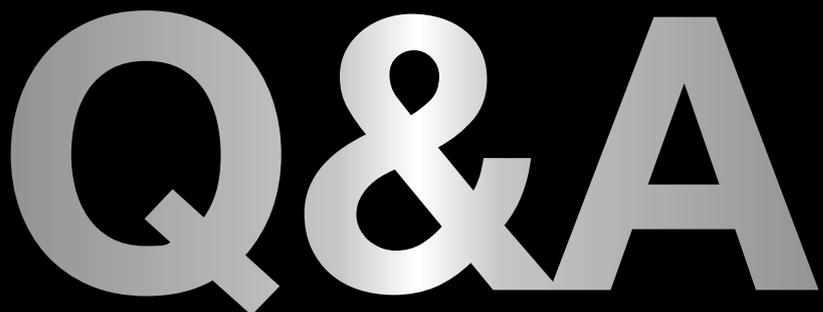
We are currently evaluating the markets and looking at ways to develop opportunities. We also anticipate a surge in demand for innovative cryogenic valve support, following Severn Glocon's recent successes with LNG projects.

### Q Where do your ambitions lie?

A My aim is to secure the ongoing growth and success of Severn's established plant ventures. Our goal will always be to help end-users improve performance with intelligence-led, well-targeted valve supply, maintenance and support. Where and how we do that inevitably shifts in-line with market trends and emerging technologies.

### Q What's the highlight of your career so far?

A Facilitating the Group's successful application for a Queen's Awards for Enterprise was a true highpoint. We were recognised in the International Trade category. Many people have put a lot of effort into developing our export credentials and capabilities. It was an honour to play a part in helping the Group receive this accolade.





## Future skills

Cultivating engineering talent of the future is a responsibility that Severn Glocon Group takes seriously. We are increasing our dedication to apprenticeships in line with an industry-wide drive to close skills gaps.

There are currently 23 apprentices across the Group, working in the Gloucestershire, Brighouse and Aberdeen facilities. Our world-class engineering intelligence ethos is apparent in the way they are nurtured and supported throughout the four-year programme. Manufacturing Manager Martin Slade oversees the progression of apprentices located at head office in Gloucester.

He says the Group-wide objective is to ensure that each apprentice has the opportunity to become a proficient all-round engineer. They may specialise in a particular area, but the aim is to ensure that they are versatile enough to work across valve machining, testing, assembly and inspection as required.

For apprentices who have the drive and aptitude, there are options for relevant further education such as BTEC or HND courses in engineering. And there are opportunities for ongoing career development, with several former apprentices now occupying senior engineering positions.

“Ultimately, we want to build a strong up-and-coming team of talented engineers,” Martin explains. “The industry as a whole realises that there is a growing need to invest in new blood. We are playing our part by taking on more apprentices and giving them excellent foundations for a career in engineering. Some of today’s apprentices will undoubtedly be working side-by-side with engineering graduates in years to come. They will play an important role in developing innovative yet practical new ways to overcome the future technical challenges that will face our customers.”

### Apprentice award

Gloucestershire Engineering Trust recently presented LB Bentley apprentice Phillip Mott with the Oldham Foundation Cup. This award recognises Phillip as the association’s ‘most improved apprentice’ during the 2012-13 period.

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