Tyco ready to support all power initiatives

Here's a quick question: which company has just received the AREVA Top Supplier Award? The answer is Sempell AG, part of Tyco Flow Control. And the bonus question: which company won the award last year? Yes that's right, Sempell again. Hearing about this remarkable double achievement, Valve World decided to pay a visit to Sempell's premises in Korschenbroich, Germany. There we heard how Tyco is developing flow control products that facilitate the low carbon generation of electricity from a surprising range of sources.

By Joanne McIntyre and David Sear

As a business entity, Tyco Flow Control may only have been around for a few years, yet the company can boast a heritage that spans right back to the nineteenth century! Thanks to the shrewd acquisition of leading brands such as Dewrance (founded in 1844), Sempell and Crosby (both founded in 1874) and many others, Tyco can draw on a wealth of experience when meeting power customers' requirements for safety and productivity. Today, Tyco Flow Control has an unrivalled palette of products, staff and expertise and is ready to support all energy-generation initiatives, from nuclear to gas, and from coal to solar.

Set against that background, Tyco's managers are perhaps understandably reluctant to focus on just the achievements of the Sempell factory in Germany. Says Mr Frank Gilhooly (Director, Sales & Marketing Global Power Business, Tyco Flow Control): "of course we are very proud of having won two prestigious awards from AREVA for Sempell's nuclear offerings. However, I believe it is important to talk about the combined strengths of all the companies within Tyco Flow Control. For example, did you know that we have a global reach in the nuclear sector? Now, Sempell has very strong ties with Siemens and through them we have access to plants in Germany, Scandinavia, Brazil and Spain. GRISS in the north of France has enjoyed direct links to the French nuclear market ever since it first started and has also forged strong relationships in China. Finally in the US we have Crosby, another highly respected name in the nuclear business and a key supplier throughout North America."

Comments Dr Achim Trasser (VP & General Manager, Global Power Business, Tyco Flow Control): "with these three companies we can effectively meet the flow control needs of power plants wherever they may be located. One of Tyco's strengths is that individual locations can support each other to fulfil complex

projects with demanding technical specifications or tight timelines. For example, nuclear products from Crosby, GRISS and Sempell are being supplied for use in critical isolation and relief valve applications in the most modern GEN III Nuclear Stations currently being built in Europe, the USA, China and Korea."

During the lean years, Tyco continued to invest in its nuclear capabilities, keeping its nuclear stamps and affiliations and investing in its plants and personnel. This has put the company in an excellent position from which to serve the nuclear sector as and when demand picks up further. Comments Dr Trasser: "Tyco recently allocated EUR 25 million on a new factory for the assembly of nuclear valves at Sempell. This plant will be instrumental in meeting future demand for nuclear valves from throughout Europe. We are also investing USD 25 million in relocating the U.S.-based Crosby plant from Wrentham, MA to Mansfield, MA. The new plant has been designed for better productivity and will add extra capacity to meet future growth in demand for nuclear products. Leaving a factory with such an extensive history is never easy but employees are really proud of the new facility with its state-of-the-art testing equipment. So we have geared up in terms of manufacturing, engineering and QA – all key issues when supporting the nuclear business."

Photo inside Sempell's well-appointed clean room facilities.

Mr Gilhooly adds that Tyco has also been recruiting more staff to work in the nuclear business. In addition to undergoing a comprehensive training program, new personnel are sent to work at an engineering company as well as with the nuclear operators. "This experience means they can better understand the total setup of a nuclear power plant and appreciate why valves have to function in a certain way. With talented people we can capitalise on future growth. This is a very exciting time for us and we are seeing activity that we thought five years ago was really not possible," notes Mr Gilhooly.

Uprating to lower emissions

A common trend amongst operators is to uprate nuclear plants to generate electricity more efficiently and increase

Thorough testing ensures valves meet all the expectations of power users, from nuclear to gas and from coal to solar.

Using state-of-the-art test equipment, Tyco can evaluate new valve designs under realistic operating conditions.

Tyco is currently building prototype valves to meet some very demanding technical specifications.

output. A key benefit is said to be the relative reduction in greenhouse gas emissions, but careful consideration is required to ensure safe operation at the attendant higher flow rates or pressures. This is just one more area where Tyco can provide active support, explains Dr Trasser. "Firstly, we can check the implications for the plant's pressure protection devices, advising if changes are required to ensure installed valves continue to meet safety requirements. In addition, we can also assess third-party valves and use our expertise to make certain they too meet the codes. This service is greatly appreciated in the nuclear industry which has seen the disappearance of many valve makers, leaving users with no obvious support infrastructure."

In that respect, Mr Gilhooly notes that in the US Tyco has a very active programme to support customers with obsolete valves. "We have the skill set required to maintain or even upgrade existing third-party valves. That can be a cost-effective option for clients. If necessary, we can of course design a new valve, and test it under representative conditions at our state-of-the-art facilities. Replicating the operating conditions gives the plant operator full confidence in the valve design."

Solar thermal

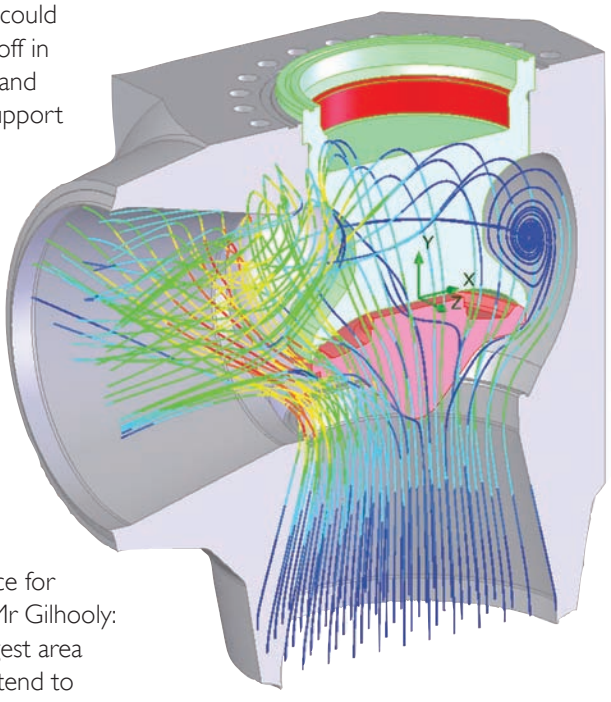
In addition to its nuclear capabilities, Tyco continues to work hard to support other low-carbon initiatives, such as thermal solar power. Dr Trasser: "A technology called concentrated solar power (CSP) has been generating massive interest recently. With the use of molten salt as a heat transfer fluid and storage medium, CSP plants can generate electricity even when the sun stops shining. There are some interesting technical challenges to overcome, such as making sure the salt does not cool down and crystallise which could block pipes and valves. We are therefore investigating special valve designs and materials in conjunction with various OEMs and design engineering companies in Spain, Germany and the Middle East."

Although CSP is currently a niche market, Dr Trasser is confident that it can become a main-stream technology. "We could start to see the industry taking off in about ten to fifteen years' time and Tyco will be fully prepared to support developments. CSP is especially viable in countries in southern Europe, the Middle East and parts of the US, where the key parameters are met: abundant sunshine and sufficient areas of sparsely populated land."

Better reliability for gas turbines

With high conversion rates and few pollutants, natural gas has long been seen as a green source for generating power: Comments Mr Gilhooly: "gas is currently the second largest area within our power business. We tend to work through frame agreements with OEMs and turbine manufacturers to support innovations in that industry as well."

Asked for an example, Mr Gilhooly discusses how increased steam temperatures are impacting desuperheater valves. "The desuperheater is a device that accurately controls the steam temperature before it is delivered to the turbine. Basically, small amounts of vaporised water are injected to cool the steam down. The metallurgies for this application require careful study, especially as clients want higher and higher temperatures. One of our valves has just passed five



Tyco's engineering credentials are second to none.

years of operation with zero problems, which is most satisfactory. To our knowledge this is the first desuperheater valve of this type to achieve such an operating period without any damage to either the desuperheater itself or the surrounding pipework. This represents a huge economic value to the customer, so we are now talking to suppliers and users about this breakthrough and how it can give them more confidence in the reliability of their systems."

Going ultra critical

Coal may be considered by some to be an obsolete or 'dirty' fuel, but used wisely it can be a valuable component of a power strategy. Mr Gilhooly: "during the past few years for example, both the Japanese and German markets have been focussing on delivering and installing ultra supercritical coal-fired power plants. These units operate at the highest temperatures and pressures seen globally. It is very exciting for the team at Sempell in particular as we are able to use our expertise of metallurgy, engineering, science and codes to deliver high pressure isolation and specialty control valves into this market. Currently these types of coal-fired power plants are reaching efficiencies of 45% and designers are now seriously talking about hitting the 50% mark. We are proud to be at the forefront of this technology as Sempell is one of just two companies that can manufacture valves made from materials necessary for elevated temperatures, such as high nickel alloys."
Mr Gilhooly confirms that Tyco are active partners in an EU R&D project developing equipment for the power generation sector. "We are currently building prototype valves to meet some very demanding technical specifications. And of course we want to make sure these valves will be cost-competitive."

Generating trust and reliability

Whatever the fuel source, electricity plays such a major role in our modern society that supplies need to be safeguarded. Tyco underscores its responsibility in this respect with its global network of after-sales and service capabilities. Central to Tyco's European operations are the Sempell and Sabo companies in Germany. Whilst Sempell mainly serves its own-brand valves in the nuclear and conventional markets, Sabo can maintain all brands, including third-party products. With a combined service team numbering some 250 personnel, Sempell and Sabo have the resources to meet the top service levels demanded by more and more clients. Dr Trasser: "The 'mom and pop shop' approach is no longer adequate as plants look for fast response and extra capabilities from their suppliers. For example, we can deliver preventive maintenance, valve asset management and similar services, all geared to identifying and resolving problems so that they do not lead to a shut-down. That is especially important in a power plant, where many key valves are welded in place making replacement a time-consuming and expensive undertaking."
Tyco is currently looking to widen its service network in countries such as Italy and the UK. Mr Gilhooly: "in the nuclear service arena a local presence that understands regional needs is everything. We have seen that at our centre of excellence in Singapore, where multi-lingual staff enjoy the confidence of clients spread throughout Asia."
The importance of being a trustworthy supplier is the topic Mr Gilhooly stresses in his closing thoughts about the power industry. "According to reports, European Union countries will need to build some 360,000 MW of power stations by the year 2022. By any standards, that is a huge target. Achieving it will almost certainly require governments and other parties to adopt a broad strategy involving natural gas, coal, nuclear and renewable energy sources. We have shown ourselves to be strong partners in all these areas. Tyco Flow Control has the long-term commitment, proven expertise and unrivalled industry knowledge to help our power customers meet the challenges ahead."

EUR 25 million was recently allocated on a new factory for the assembly of nuclear valves at Sempell.

About Tyco Flow Control

Main business	manufacturer of flow control products
Products	• valves (ball, butterfly, control, check, gate, globe, instrumentation, knife-gate, pressure & safety relief, rotary process, sampling) • actuators (electric, pneumatic, hydraulic, as well as actuator positioners and actuator controls) • water and environmental systems (pipes, pumps, fittings, meters, instrumentation, valves, controls) • thermal controls (heat tracing, floor heating, fire and performance wiring, snow melting and de-icing)
Brands	over 90, including Anderson Greenwood, Biffi, Clarkson, Sempell, GRISS, Crosby, Vanessa, Tracer, Raychem, etc.
Network	worldwide sales, service and distribution centres