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ISSUE FIVE

Renewables
– The Sky *is* the Limit

Energy
– What the Experts Say

British Valve & Actuator Association

BVAA's New Chairman

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Did You Know?
As well a printed copy, VALVE user magazine is also available as an email attachment, and as a download from BVAA's website, www.bvaa.org.uk

BVAA an 'Exceptional Example of Good Practice'

Welcome to Issue 5 of BVAA's Valve User magazine! It is my great pleasure to announce that BVAA has recently been selected for inclusion in the Institute of Association Management's *"Good Practice Champions"* report. The report seeks to highlight and recognize *'exceptional examples of good practice in association management'*, to act as an example and inspiration to other associations. The report features BVAA in two categories - *"Membership"* (development) based upon our 65% increase in membership in three years, and *"Creating New Services"* (relating to the launch of our very own *Valve User* magazine).

by BVAA Director, Rob Bartlett

Praise by one's peers is praise indeed and we are delighted that the energy and achievements of all those involved at BVAA have been recognized.

New BVAA Chairman

BVAA has a new Chairman. We bid a fond farewell at the BVAA AGM in November 2007 to our outgoing Chairman, Mr David Caines. David has been deeply involved in the association for over 30 years, and his 'tour' as Chairman was the longest in our 70 year history. His steadying hand came at a time when the association underwent a number of radical changes, including a change of scope and name, staff changes and relocation of the BVAA HQ. In his retirement, David can look back at a rejuvenated, financially stable BVAA, with its highest ever membership – an enviable record!

As we move forward into 2008, we welcome our new Chairman, Rotork's CEO Mr Bill Whiteley, who will be BVAA's first Chairman from the actuator side of the industry. All the BVAA staff are very much looking forward to working with Bill, who recently commented,

'It is an honour to become chairman of the BVAA, an organisation I have been involved with since Rotork joined in the early 1990s. I have found it interesting serving as vice-chairman for the past 15 years and have been an enthusiastic supporter of David Caines' moves to re-energise the Association and broaden its appeal. It's been a pleasure working with David and I would like to thank him on behalf of the BVAA for his huge contribution to the organization, especially for the past six years as its Chairman. I look forward to working closely with Rob and serving the membership.'

Bill Whiteley, Rotork CEO

Filling the UK Energy Gap

Speaking of 'energy,' we are casting an eye towards some of the alternatives solutions that may shape our future. Here in the UK we have what is described as a 'wind rich' environment. However the UK has just a handful of wind farms and thus has yet to sufficiently harness this 'free' resource to make a significant contribution to our growing energy needs. As for solar power [see cover], there will need to be significant additional global warming before this ever becomes a realistic prospect in rain-lashed Britain!

The New Year has however already heralded two very significant developments in the field of UK energy.

The first concerns the *possibility* of the first new coal-powered power station to be built in the UK for decades. Approval for a new 'clean coal' plant at Kingsnorth, Kent, moved a step closer in January with the local council approving EON's proposed development. This must seem very insignificant to our readers whose Government's have more enlightened energy plans, but in the UK this is 'hot news' as our last new build was 24 years ago, and even that was in Northern Ireland! Several other high-technology coal plants are said to be planned for the UK in the coming years. The UK Government now has the lead in deciding the future of all these plants - let's hope they get on with it.

Secondly, the UK Government - at last - gave approval for the building of new 'Nuclear' power stations in the UK.* There will not be any Government funding for any such plants however - highly relevant when it is known that no nuclear power station has ever been built without such support. Energy supplier EDF has manfully stepped into the breach however and immediately announced plans for four new nuclear plants in the UK, hopefully coming on-line some time around 2017. EON and Centrica are rumoured to have similar plans for new builds. It is thought these will all be built on existing nuclear sites in England and Wales. There will, of course, be the usual legal challenges, but it's worth noting that by 2020 the UK energy scene will be nearly bereft of serviceable nuclear power stations due to scheduled closures, with many of our existing coal plants going the same way. With a third of all UK power stations nearing the end of their useful life, there's not much time for procrastination.

Finally, let's not forget the role of traditional and much-maligned coal-fired power stations. BVAA recently visited the Ratcliffe-on-Soar site, whose total life-span is now estimated at 65 years, where 80% of the fuel comes from job-creating UK coal mines, and where virtually every by-product is recycled and then utilized - in the *millions* of tonnes - by the construction and civil engineering industries. Now that *is* impressive.

**Editor's Note: BVAA played a role in appraising the UK Government's advisors as to the nuclear capability in the UK valve industry, and we would be delighted to discuss future valve requirements with any of the contractors and operators involved.*

Dinner Dance Success!

The November AGM at Wood Hall, Wetherby, also heralded the best attended BVAA Dinner Dance for many years, with a veritable 'who's who' of the industry present. The event was completely sold out, and members and guests were superbly entertained, firstly by the hugely impressive, show-stopping Band of the Kings Division, then afterwards by the equally talented 'Abba Gold'. The evening was rounded off with the ubiquitous 'disco' and dancing into the early hours.

The 2008 Dinner Dance will be at the splendid Ettington Park near Stratford upon Avon on 28th November 2008, with a nostalgic return to Claridges planned for the BVAA's 70th Anniversary celebrations in 2009.

We would thoroughly recommend booking now to avoid disappointment!

Bill (left) presenting David Caines with his BVAA-monogrammed cufflinks

BVAA at Ratcliffe Power Station

The BVAA Marketing Committee recently met at Ratcliffe-on-Soar Power Station. The day included discussions on BVAA marketing initiatives and a very impressive facility tour, which promoted the comment that *"everyone should be made to visit a power station"* so that they could appreciate not only the incredible work that goes into providing an energy source that we all take for granted, but also to see how virtually all the 'waste products' are recycled and put to good use. As part of the visit, members were also delighted to present the local Loughborough Rainbows Children's Hospice with a significant donation to their funds.

"Has industry forgotten how to co-operate in technological developments?"

BHR's Commercial Director Mike Butcher comments...

The British Hydromechanics Research Association was set up in 1947 to continue the "white heat" of technology of the war years. Steered by its members, the work was always industrially focussed and resulted in many of the British Standards that form the basis of many of today's design rules.

The question is where did this industrial co-operation go and how much has British industry lost? With the pressure on manufacturing, the first thing the accountants cut is research. This equally applies to politicians when times are hard. A quick fix but a long term decline. Established manufacturing industries rarely seek or can utilise the "Breakthrough or Paradigm Shift" technologies so beloved of the technical bureaucrats. It requires testing, consultancy and staged development on a time line ranging from immediate to two years. Significant changes in government policy in past years has meant no central R&D support and manufacturing has declined.

Contrast this with France and Germany that have industrially orientated Carnot and Fraunhoffer research institutes funded by central government and/or industrial levy and tied directly into their end user groups. They also still have a manufacturing industry.

However all the blame does not sit with government, the industry must carry its fair portion. With privatisation of R&D each piece of equipment must earn its keep. If industry fails to organise to use the facility it is scrapped. Hence at BHR Group we have scrapped facilities created for the pump and valve industry, which would cost millions in today's money to replace. The failure to use a facility is a self-fulfilling cycle, each company complains the price is too high because the rig has to be reconditioned or rebuilt each time. This is because the industry only uses it once every 3-4 years and because it's expensive, the development programme gets cut.

From our perception every UK valve and pump company is working in isolation and searching for technological assistance when they have a problem rather than at the outset of the design programme. Any business, especially a consultancy/service provider who uses capital intensive specialist equipment and highly qualified staff, cannot build an income on this basis - it needs stability. Strangely enough this is also what industry needs for its technical development. Especially looking forward to addressing future legislative, quality and cost pressures.

A classic example is ISO 15848 (fugitive emissions). The oil industry showed massive savings could be made in lost product and they gained significant green credentials by doing so, as well as pre-empting emissions legislation. LDAR became the buzz-word. Testing for field applications using 'sniffers' was totally adequate but for valve qualification testing it does not stand up to scrutiny. A funded EC project under the Standards Measurement and Testing programme showed the way to obtain unequivocal valve and seal qualification data. Valve and seal companies were intimately involved in the project which resulted in a technically defensible test procedure, which can cost effectively be implemented if the industry co-operates in a shared cost test facility. This means an ISO qualification on the product, opening many more doors than a single company standard. The

valve industry reaction at large was "it costs money, it's unworkable we cannot do it" - the oil companies had their own standards so were not bothered. The result is the valve and seal companies have to qualify for each end-user company's specific standard.

Most core technologies in the industry are common, and shared development or co-operation in establishing a project or test facility to which several companies are committed makes both technical and commercial sense. It also provides a route to knowing government thinking, influencing legislative development and accessing 50-75% funding from EC and DBERR (DTI) for product development. These programmes require expert assembly of R&D proposals, as one needs to know the Lexicon of the bureaucracy, but sometimes regional monies are available for assembling the bids.

The industry must not forget the only constant is that any technological advantage is eroded at an ever-increasing rate and someone somewhere can always make it cheaper.

BVAA 'Mad Hatters'

How far can you go wearing a BVAA Hat?

Quite a long way it would seem! Readers are stilling sending in photos of themselves wearing the free BVAA cap that is available to anyone who can match or beat the places visited so far. In this issue, BVAA Director Rob Bartlett is pictured in one of the world's busiest ports, but can you identify which one? The town's finest landmark is perhaps the Town Hall clock tower which can be seen at the extreme left of the picture. There's £50 to the charity of your choice if you are the first to name the location. Answers or free cap requests to rob@bvaa.org.uk

Royal Shakespeare

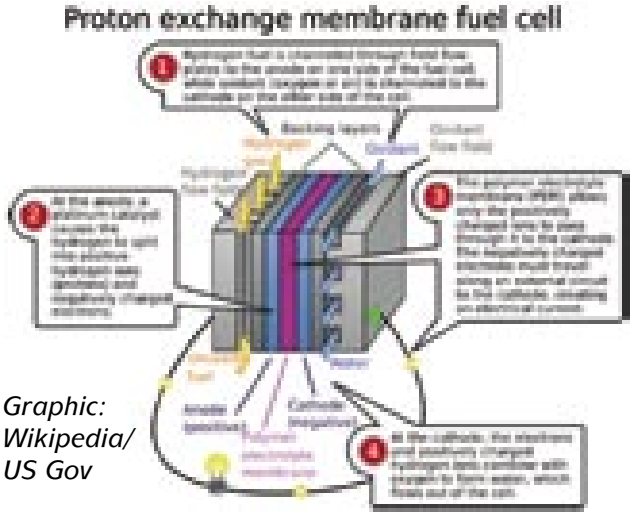
Congratulations to Graham Lomax of Polyflor who was first to spot that the picture in the last issue was taken outside the Royal Shakespeare theatre in Stratford upon Avon, England. £50 has been donated to the Macmillan Cancer Support' charity.

Who's getting high on hydrogen?

IChemE Chem Envoy Prof. Keith Guy looks at one of the alternatives to fossil fuels and whether the hydrogen economy can ever become a reality

An increasing global population, rising standards of living, and more industrial production mean the amount of energy the world consumes could rise by 50-60 per cent in the next 25 years.

Today, the biggest forms of energy are fossil fuels – oil, gas, coal. But, that will change for at least two reasons: 'easy' oil and gas sources are declining; and emissions of greenhouse gases related to fossil fuels are rising to unacceptable levels given their potential impact on climate change. But, what are the alternatives and can they ever become a reality?



Graphic: Wikipedia/ US Gov

Hydrogen is already providing a growing alternative energy source for transportation in several countries, including the US and Japan. And, in a bold move, Iceland has set itself the challenge of becoming the world's first hydrogen economy, with hydrogen supporting all its energy needs by 2050. This means the total elimination of fossil fuels and should result in a cut in the country's greenhouse emissions of up to 50 per cent.

However, one could argue that Iceland's natural energy resources, its waterfalls and hot springs, give it an unnatural advantage over less well-endowed countries. So, what progress can other countries hope to achieve and what do they need to make the hydrogen economy a reality?

Let's start with a look at what progress the world is currently making towards the hydrogen economy.

Tiny leaps forward

The most obvious step that we are beginning to see is the introduction and take-up of fuel-cell-powered vehicles. These hydrogen-powered vehicles offer immediate benefits – they are about twice as efficient as current fossil fuel-based vehicles and can significantly reduce air pollution in cities and reduce carbon emissions, even if the hydrogen is made from natural gas. Even with current hydrogen prices the cost of fuel per mile is actually better than gasoline engines.

And, since 2000 when the first hydrogen filling station was set up in Dearborn, North America, we're also beginning to see growing numbers of filling stations opening up to meet the increased demand, most notably in the US, Japan, Germany and Iceland.

In Iceland, many public buses are already converted to use hydrogen and are refuelled by a filling station on the outskirts of its capital, Reykjavik. In addition, there are plans afoot to convert the country's entire fishing fleet over to hydrogen use. A small number of hydrogen powered buses are also running in most western European capital cities.

Small steps back

Unfortunately, whilst moves towards an increased use of hydrogen are starting to gather speed, as things stand this growth is restricted by a number of constraints at a political, commercial, technical and social level.

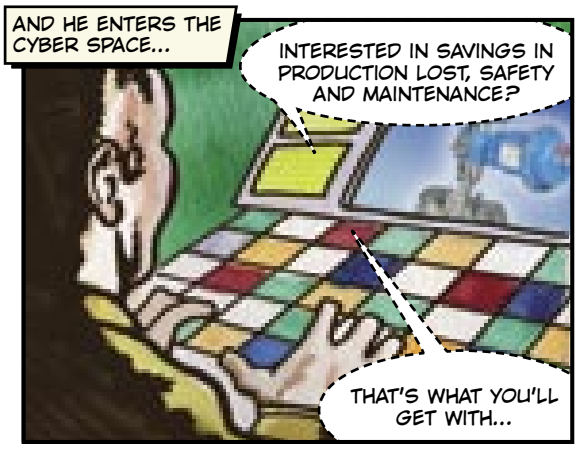
The public perception of the dangers around the transportation and distribution of hydrogen need to be addressed if we're to see widespread use in the future. The memory of the Hindenburg is still engraved on the public conscience *(see page 17)*.

At a practical level, there are real issues in terms of how we store and transport and use hydrogen safely and economically.

Hydrogen is a very light gas making it far more difficult to work with than the gasoline we're used to. However, hydrogen's big advantage as an energy carrier over renewable electricity is that it can already be stored more efficiently. The biggest current challenge is therefore to increase storage efficiency to maximise this advantage.

New technical demands will also be made on the quality of the components throughout delivery systems. Hydrogen leaks more easily than any other gas and valves and fittings have been developed

continued on page 12



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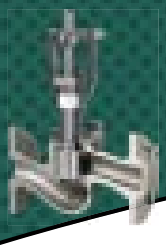

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to overcome this problem for industrial use. The challenges for the valve manufacturer, when valves are operated in a public environment are significant. Valves for hydrogen service will have to be reliable, intrinsically safe and 'idiot proof'.

From an economic point of view, the costs of switching over to hydrogen-based technologies are high. In the US for example, the investment required to convert existing gasoline stations to provide hydrogen to vehicle drivers will run into billions of dollars. Also, whilst fuel cells are getting cheaper they are still far more expensive than conventional engines.

And, the cost of producing the hydrogen itself from renewable resources is high, although the good news is that economies of scale do exist. As the supply increases so the filling costs will start to come down. It is expected that the same will apply to the associated costs of storage, transport and vehicles.

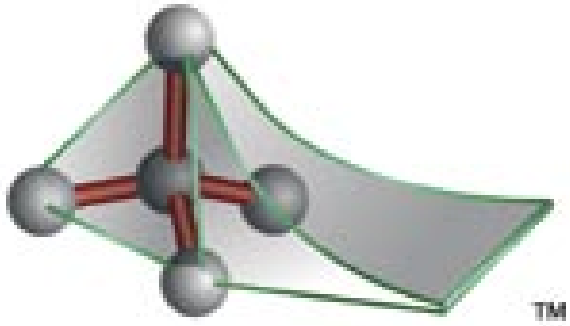
What we'll also need to see is a move from natural gas-based hydrogen, which is being used during the market development phase, to industrial-level hydrogen production using renewable resources on an economic basis. This will require further developments, both in the public and private sector, if we're to see any significant progress.

At a political level, there's a real need for a common worldwide approach to the adoption of hydrogen if we are to succeed along the path towards the hydrogen economy. For example, if a hydrogen powered truck, say, from Spain cannot refuel in France and is banned from the channel tunnel and the ferries, there will be little point in owning one.

Must work harder

So, the hydrogen economy is developing but more must be done if we're to see real progress in the medium to long term. The public and private sectors must work together, with government agencies providing the environment for research and development whilst industry focuses on the commercialisation of technology. Only then will the hydrogen economy cease to be theory and become a reality.

> **"Valves for hydrogen service will have to be reliable, intrinsically safe and 'idiot proof'."**



New ultra-hard coating reduces valve actuation force

Design engineers working to optimise the performance of their products are using their ingenuity to extend existing material properties by trialing and using a new ultra-hard material. Diamond Hard Surfaces Ltd is working with various valve manufacturers and petroleum companies to exploit the unique and unusually extreme properties of its new material; Adamant TM which combines the ultra-hard properties of sp3-carbon with a coefficient of friction approaching that of PTFE.

The material is a tetrahedral amorphous diamond-like carbon coating (ta-DLC) with all the low friction, ultra-high hardness properties one would expect, but unusual because it is thicker than existing DLC materials and as a result able to withstand high surface loads, for example particles of sand. Importantly, this material is inherently resistant to aggressive chemicals such as acids, alkalis and H2S making it attractive in the challenging conditions encountered in subsea environments.

The coating can be applied to a wide range of substrates including Titanium, Aluminium and hardened steels perfectly mirroring the surface finish provided. This eliminates the need for costly, supplementary, finishing processes which is often necessary with other types of coating. The low process temperature also means that the mechanical properties of the substrate are unaffected.

"We are excited about our valve projects and keen to engage with other OEM's, as well as end users to see how we can extend the performance of their products and reduce overall cost of ownership." says Chris Walker, Managing Director.

If you are reading this and have a challenging application problem you are seeking to resolve you can contact the company directly on +44 1865 784 466 or +44 7774 160327 to speak to Chris.

CLEAN COAL

Dr Mike Farley, Director of Technology Policy Liaison, Doosan Babcock

Rather than being phased out, today coal is being used in increasing quantities for power generation, particularly in parts of the world including the USA, China, India and Europe, which have large resources. There has also been widespread recognition of the necessity of clean coal as part of a balanced energy portfolio, reinforced by international bodies such as the International Energy Agency and the European Commission, as well as publications such as the Stern Review.

The UK 2007 Energy White Paper and the EU Energy Package each point to the need for a diverse portfolio of energy sources for power generation to achieve security of supplies. Both emphasise the vital importance of coal in the generation mix and recognise the integral role that cleaner coal plays alongside energy efficiency, renewables, and nuclear in reducing emissions.

On 23 January 2008 Jose Manuel Barosso, President of the European Commission delivered a speech to the European Parliament entitled "20 20 by 2020: Europe's Climate Change Opportunity". The speech outlined the Commission's goals to reach 20% of energy use through renewables and to bring about a 20% cut in EU greenhouse emissions – all by 2020. To reach the latter target Barosso announced new rules to stimulate carbon capture and storage, tomorrow's technology to cut emissions. On the same day the European Commission proposed a Directive on the geological storage of carbon dioxide.

Increased energy efficiency and renewable energy sources are important long-term solutions to reaching emission targets. However, we cannot reduce UK, EU or worldwide CO2 emissions by 50% in 2050 if we do not also plan to capture CO2 from industrial installations and store it in geological formations. In the EU alone, reductions of CO2 by carbon capture and storage from the power sector could reach 161 Mt in 2030 and 800-850 Mt (20%) in 2050. We welcome the European Commission's Energy and Environment package as it finally recognises the vital role of clean power generation from fossil fuels in the future global energy mix.

While some remain sceptical about the feasibility and economics of CCS, the process is proven; already millions of tons of carbon dioxide have been permanently stored underground. In addition, studies have shown that electricity from power plants with CCS will be less expensive than electricity from renewable sources. The phased introduction of carbon-abated clean coal is the lowest risk approach to meet all three Energy Review objectives relatively quickly. If the UK is to avoid the impending energy gap, a large number of new or replacement carbon-abated power plants will need to be operational by 2015 and need to be started between 2006 and 2011.

Whilst in the past, clean coal was considered to be synonymous with gasification or Integrated Gasification Combined Cycle (IGCC), it is now seen to include a number of conversion technologies (including advanced supercritical boilers, fluidised

beds and gasification) and a number of CO2 capture technologies (including post-combustion solvent absorption, oxyfuel firing and pre-combustion). All of these technologies are likely to have a role in the plant mix because clean coal technologies are needed for existing plant (including recent plant in China, USA and Europe) as well as future plant.

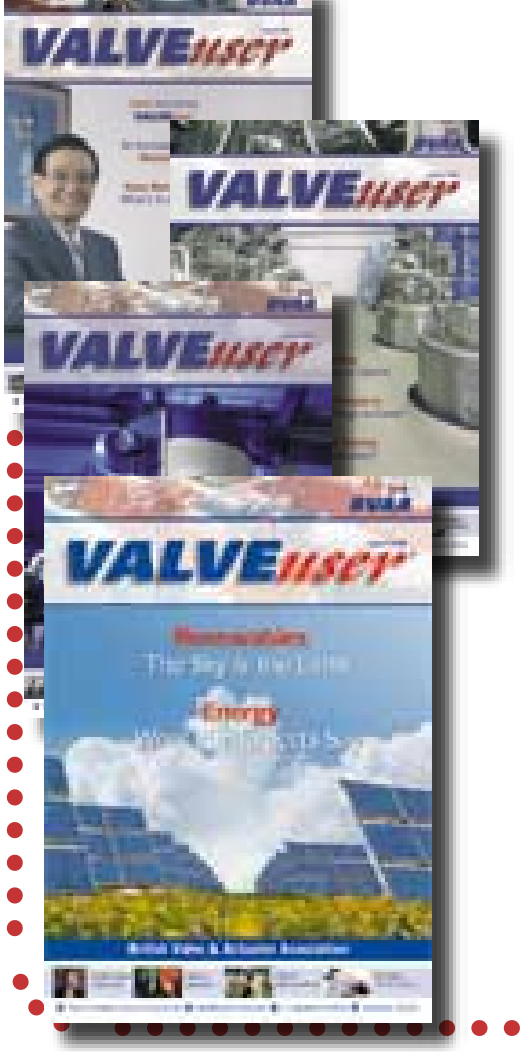
To maintain a diverse portfolio, it is necessary that a significant proportion (a third to a half) of the plant to be built in the UK for operation by the end of 2015 is coal and, to meet CO2 reduction targets, it will need to be suitable for CO2 capture. Many projects have to start soon before the best options for CO2 capture are finalised, and it is therefore likely that the plants will be in two groups:

(i) A small number of new build (or retrofit) plants with CCS fitted from the start. These demonstration projects would allow the best CCS options to be understood by 2012 to 2015. Ideally, these projects would include the three capture technologies and three different types of storage site (oil-field, gas-field and saline acquifer). The BERR competition winner will be one of these projects. It is recognised that incentives will be necessary to make all these projects happen. The current Emissions Trading Scheme does not yet provide the long-term certainty of carbon price to justify investment.
(ii) 5 to 8 GW of "capture-ready" new build or retrofits. These will bring short-term CO2 reductions, security of supplies, economic electricity and options for fitting CCS from 2012/2015 onwards.

In combination, this scenario would meet all three Energy White Paper (EWP) and EU Energy Package objectives. The technologies used would be capable of being used globally for existing plant (including capture-ready) and future new build. If Britain builds power plants (coal and gas) designed for CCS and demonstrates the technologies full scale it will set an important example to the world and, just as importantly, will be at a competitive advantage. The Prime Minister and the government have recognised this and should now back their ambitions with a support for a comprehensive programme of CCS projects which will prove engineering solutions capable of much larger scale carbon emission cuts than the "ethical consumerism" which many promote.

If the generation gap is to be averted, more urgency and ambition is needed by the government. Positive high level endorsement of the future role for coal must be given, including a target for the proportion of coal in the portfolio and timescales for the achievement of near-zero emissions for coal and gas generation. Incentives should be set for CCS sufficient to drive forward three or four demonstration projects covering the range of capture technologies and storage sites. The necessary funds should come from the auctioning of CO2 allowances which is to be progressively introduced.

More positive and consistent support must be given for research, development and demonstration on a scale commensurate with the global potential for clean coal technologies. Companies such as Doosan Babcock are just waiting for the green light from the government to deliver the clean coal technology needed to secure security of supply and reduce emissions in the UK.



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Musings of an ATEX Auditor

The Hindenburg disaster

By Roger Stillman, arcSIL Consulting

Meeting the requirements of the ATEX Directive 94/9/EC is mandatory for anyone placing on the market in Europe a product intended for use in potentially explosive atmospheres. The means for achieving this can vary, depending on the type of device and the level of risk in its intended use, from self-declaration to full-blown product certification by a Notified Body which includes periodic manufacturing audits to ensure on-going conformity of the products to their certified safety concepts. Failure in this respect can have dire consequences - remember Buncefield 2005?

As an independent consultant, I conduct such audits for two of the major Notified Bodies, Sira and Baseefa, against the requirements of the European standard EN 13980 which, itself, is an extension of ISO 9001 intended to meet the specific QA requirements of the Directive.

Over the years I have come across a number of problems which seem to be common to many manufacturers, some of which may strike a chord with readers of this article. They tend to fall into two main categories: interpretation of the Directive; application of EN 13980.

Aren't these the same? Well... not entirely! The writers of EN 13980 took the view that some aspects of the Directive were the responsibility of the manufacturer, since they are legal requirements rather than technical, and hence are glossed over or not covered at all.

Interpreting the Directive

- Many manufacturers have not read it (not surprising as one tends to fall asleep by page two) nor even have a copy for reference: "the Law says I must have my product certified in order to sell it in Europe, which I've done, so what more do I need to know?"
- Both the EU and the UK Government have published Guidelines on applying the Directive (or UK Regulations) but few people know that these exist nor how to find them.
- Those manufacturers who have made the attempt often miss some of the details buried deep within it but which, nevertheless, are legal requirements. Some examples:
  - EC Declarations of Conformity (D of Cs): must be drawn up by manufacturers for all certified equipment (components have an 'Attestation of Conformity') and should accompany each item (or batch) sold. The wording on this varies, depending on the equipment category, but should give confidence that the product conforms to the latest state of the art.
  - Technical 'State of the Art': manufacturers are required to take into account the latest technical knowledge regarding the safety of their product(s) and to apply it "immediately". This generally means applying the latest 'harmonized' protection concept standards, even when the products were originally certified to older standards appropriate at the time. In this case, the manufacturer should compare the old standard with the new and decide if the product still conforms. If not, he must submit it for further assessment and, possibly, re-certification, by a Notified Body.
  - Harmonized Standards: standards which provide a presumption of meeting the essential health and safety requirements of the Directive throughout Europe. These standards are only considered 'harmonized' once they are published in the Official Journal of the EU - which is not the same as being released by the standards-writing bodies (there can be a considerable time-delay in publication in the OJ).
  - Record-keeping: how often do I see a policy or procedure which just refers to 'records relating to certified products' (or some such wording) and which are to be kept for an 'indefinite' period. No! The Directive is quite specific about what records are to be kept for *"a period ending at least 10 years after the last equipment was manufactured"*. These include the technical documentation which defines how

the product meets its certified requirements and the certificates themselves, plus any additions, modifications etc. In addition, records must also be kept which demonstrate that the manufacturing processes met the QA requirements throughout the lifetime of production: description of the quality management system plus the decisions, reports and certificates from any external certifier as well as those from the Notified Body responsible for the issue of the Quality Assurance Notifications.

Application of EN 13980

Well, now, this should be easy as it is only ISO 9001:2000, plus some technical bits which are both good engineering practice and common sense. Isn't it? Essentially, yes, but the Devil is in the details (and 'common sense' seems to be the least common of all the senses!):

- The first problem is that, as stated earlier, this standard deals with the QMS requirements for production to ensure consistent product conformity. It does not address details of any of the requirements of the Directive listed above, for example: Control of Records. All of the above aspects of record-keeping are 'covered' by the single need to retain: "those [records] arising from regulatory requirements" - which few people seem to have read.
- The second problem is that, although structured as ISO 9001:2000, it harks back more to earlier versions of ISO 9000 in requiring large amounts of documented procedures; this at a time when many enlightened manufacturers are moving away from this practice to electronic operational and engineering process systems with minimal reliance on detailed documentation. As a result I often find that certain aspects of EN 13980 get overlooked or are dealt with poorly. Examples include:
  - Purchasing safety-critical components - inadequate verification that received items conform in every respect to certified requirements; over-reliance on 'certificates of conformity' from suppliers (often not worth the paper they are written on and rarely checked); no checks that the certification of pre-certified ATEX items is still valid; insufficient control over sub-contracted sub-assembly work especially when carried out overseas etc.
  - Internal auditing - concentrating on checking that procedures are being followed rather than exploring how effective the production processes are in ensuring the conformity of products to their certified criteria. For example: it is rare to find evidence of 'vertical product' audits which, by following the 'paper trail' from a finished product back through all the production records can check that all has been done competently, that the customer is going to receive what he asked for and which, by appropriate examination can show that it conforms to the certified design. The reason often given for not doing this is that "that is what we have inspectors for". Yes, but they usually look at only their section of work, not the whole picture, and what better way is there for ensuring that they do their job effectively?
  - Management Reviews - again it is rare to find evidence to demonstrate that reviews examine the effectiveness of the management system with respect to certified products. Often, certified products make up only a very small proportion of the output and so consideration of them tends to get 'lost in the noise'. The problem here is that, although small, it is this proportion that can land the company in a court of enquiry if something involving their product goes bang. Management need assurance that they can demonstrate 'due diligence' in meeting the requirements of the Directive. Even without this putative threat, there are financial implications to complying with certification, especially in respect of keeping up with harmonized standards etc, which may need tough commercial decisions to be taken.
  - Product recall - the objective of the Directive is to ensure that products not meeting its Essential Health and Safety Requirements (EHSRs) are not placed on the market - confidence in this fact being demonstrated by relevant CE marking supported by appropriate certification where necessary. Hence manufacturers have an obligation to recover any non-conforming products they have sold which they believe to be dangerous. In such a circumstance, they are required to inform the relevant Notified Body, as well as affected customer(s) and keep written records of all corrective measures for at least 10 years. Since such events are usually (thankfully) rare, most manufacturers I visit have not considered it necessary to enshrine this requirement in their policies and procedures. They must do so.

Question: how much of this is applicable to a simple mechanical device such as a valve? **Answer**: very little to the valve itself since, generally, it can be considered a device which is incapable of causing an explosion through its own potential source of ignition *(there are exceptions however, see Peter Churm's article on page 25).*

However, it becomes a different story once actuators and monitoring devices are attached, especially those powered by electrical means. This now becomes *an assembly* within the meaning of the Directive, of which the valve is a component, and this assembly falls into one or another category requiring CE marking under the Directive.

The IECEx Scheme (a footnote)

The ATEX Directive only exists for products sold for use in potentially explosive atmospheres within the member states of the EU. Outside Europe it has no legal meaning, although certification to it is sometimes demanded by organisations in other countries as a means of demonstrating a benchmark for safety.

Organisations in other countries, notably the mining community in Australia, decided that this benchmark was too low for their purposes as it only gives presumption of meeting the ATEX EHSRs for marketing. An approach was made to the International Electro-technical Commission (IEC), who set up a certification scheme for Ex products based on the applicable IEC standards.

The IECEx Scheme is similar to most product certification schemes in that, of itself, it has no mandatory legal requirements but is voluntary. Little known at first, the Scheme is gradually gaining more widespread recognition in terms of both rigour of application and international acceptance. Under the Scheme, unlike ATEX, **all** products undergo type-testing and certification, irrespective of their intended use, and **all** production facilities are subject to their quality management systems being subject to periodic audit by the Scheme's approved certifiers. CE marking, along with the associated ATEX zone coding, is irrelevant (although the protection coding is not!) and there is no requirement for EU Declarations of Conformity.

It is interesting to note that, whereas ATEX certification can be awarded on the basis of IECEx certification plus a few additional assessments against the ATEX EHSRs, the reverse is not accepted. It is also interesting to note that the most recent EU harmonization process brings the European Norm standards in line with those of the IEC.

Roger Stillman regularly lectures at BVAA Training courses on the subject of Safety Integrity Levels (SILs), and can be contacted via e-mail: rstill@tinyworld.co.uk

References

Links to sources of information on the ATEX Directive, its guidelines, harmonized standards, the IECEx Scheme can be found on the Sira and Baseefa websites:

www.baseefa.com (access 'Links' near the top right-hand corner)

www.siracertification.com (access 'Downloads and Further Ex Information' at the top of the page and follow 'Useful Links' on its drop-down menu)

www.iecex.com will take you directly to the Scheme's homepage, but navigating to useful information can be quite tricky.

BVAA has produced its own ATEX guide for the valve industry.

Need safety or isolation valves? Think Curtiss-Wright

Solent & Pratt is a manufacturer of high-performance and triple offset butterfly valves. Founded in 1961 Solent & Pratt has been a leader in the design, development, and manufacture of high-performance and triple offset butterfly valves specialising in exotic materials, high-pressure classes and larger diameters.

These valves are used in severe service operations in the oil and gas,petrochemical, power and utility industries.

Butterfly valve product scope

The standard scope of the product encompasses sizes from 2" (50mm) through 84" (2200mm) with flange ratings from ANSI 150# class through ANSI 2500 # class with larger sizes manufactured to customer specifications. Flange standards available include ANSI, API, BS, PN and ISO. A full range of materials of construction are available, which include bronze, monel, titanium, zirconium, and aluminum-bronze.

The product design includes Double and Triple Offset with field removable zero leakage metal to metal and resilient seat and seals. A recent addition to the product line is a Triple Offset, Metal to Metal Twin Seal design, which offers a double seal with cavity and drain. All models can be fitted with levers, gearboxes or actuators.

Farris Engineering product scope

Farris Engineering is one of the world's leaders in the design and manufacture of pressure relief valves. We produce a complete line of valves in a variety of sizes, materials, pressure and temperature ranges. Our current product line ranges from small 1/2" valves with screwed connections to large flange types with up to 20" inlets. These valves have pressure ranges from 2 PSIG up to 10,000 PSIG depending on the valve size and design.

Our standard product line includes valves made from carbon steel, stainless steel, monel and hastelloy C. As previously mentioned, we manufacture both spring loaded and pilot operated valves. All of these valves are built in conformance to either A.S.M.E. Code Section VIII which covers unfired pressure vessels or A.S.M.E. Code Section I covering power boilers. In addition to these listed materials, we also design and modify valves to meet specific customer requirements of design and material. As an example, we have built valves made from titanium and zirconium.

Farris Engineering has established a global network of independent assembly, repair and service centres to support the owner and user of Farris Valves. These companies maintain an inventory of new valves, and exchange product via our Web-based Assembler Exchange Program which gives access to, and exchange of inventory, on a 24/7 global basis. These assemblers have the authority to apply the National Board of Boiler and Pressure Vessel Inspectors V and UV stamp for assembly and VR stamp for repair of pressure relief valves. In addition we have factory-trained independent organisations as recognised repair centres. These organisations give us the ability to provide total after sales support of our products as well as to provide customers with local factory approved source of valves for quick delivery.

When ordering from Farris Engineering, you can trust that our expertise, history and extensive product line will be placed at your service to fulfill our mission: to provide innovative process system solutions. ●

The Importance of Reliable Valve Torque Measurement for Predictive Maintenance

by Rotork Controls

Rotork IQ intelligent electric valve actuators are designed with the benefit of fifty years' worldwide operating experience in industries including oil, gas, power generation and water treatment. The compact and rugged mechanical design is combined with innovative solid state control and instrumentation technologies, providing a very high degree of functionality and reliability in the harshest of operating environments, combined with a minimum requirement for maintenance.

Experience has shown that a single-stage worm and wheel gear design in a sealed oil bath provides the greatest mechanical reliability and durability for the actuation of valves in all ambient temperatures – from the deserts of the Middle East to the northern slopes of Alaska. Oil does not exhibit the problems of 'tunnelling' and decomposition associated with grease, which can cause a lack of lubrication and premature wearing on the gears. The use of an aluminium bronze material for the worm wheel provides a tough, wear resistant performance and, when required, special oils are available to suit extreme temperature conditions. This combination of material of construction and oil lubrication delivers a proven long service life in the most demanding and arduous applications.

The accurate measurement of the actuator output torque is also a function provided by the worm and wheel. The axial force of the worm shaft is always proportional to the torque produced by the worm wheel and this is not affected by changes in the efficiency of the gearing caused by long-term operation.

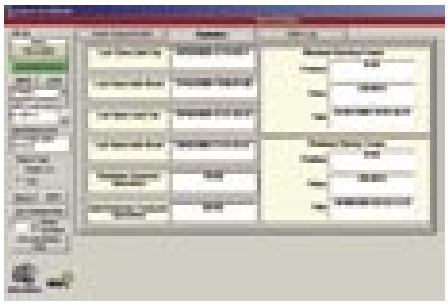
In Rotork's case, the torque is measured by a force transducer rather than disc springs or any other mechanical devices that can wear and change their characteristics over time. The force transducer is entirely unaffected by usage and temperature, therefore the accuracy of the indicated actuator torque can be relied upon throughout its service life. This is very important, as the torque profile of the valve operating stroke is recorded by the actuator data logger as a 'footprint' during commissioning and subsequently recorded during every valve operation. As described below this data forms a crucial part of the information that can be downloaded from the actuator by means of Rotork IQ-Insight software for maintenance purposes. Using this data, maintenance can be planned for only when it is really necessary, removing the requirement for over-cautious, regularly scheduled shutdowns.

Cutaway of Rotork IQ actuator, showing the worm and wheel gear at the hub of the mechanical design.

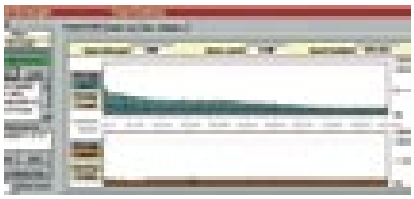
Communication with the actuator is performed 'non-intrusively' by means of a hand-held setting tool. This begins with commissioning, when a multi-language enabled menu on the actuator's display window guides the operator through the programming of end of travel limits, torque setting, the number of turns, remote indication requirements, alarms, interlocks and all the other commissioning data demanded by the valve duty. This data is recorded on the actuator data logger, together with the footprint of the valve operating torque profile in both the opening and closing directions. Subsequently, torque output on every valve operation is recorded in historical order, giving the actuator the ability to monitor the condition of the valve.

Rotork's single stage worm and wheel gearing.

Communication with the IQ actuator is performed 'non-intrusively' using the hand held setting tool.



One of the actuator data logger read out screens available from IQ-Insight software.



Valve operating torque profile displayed by Rotork's IQ-Insight software.

Using the 'non-intrusive' link, this data can be periodically downloaded and then uploaded into a PC or laptop computer running Rotork IQ-Insight software. The software enables the historical record of valve operating torque profiles to be analysed and in this way the trend of valve wear can be established. With this information it is possible to accurately predict when the valve will require maintenance and plan accordingly, ruling out the need for laborious and inefficient maintenance schedules, which are often rigidly planned at frequent intervals "just in case", resulting in a lot of unnecessary work, expense and disruption to operations.

New Managing Director for Rotork Fluid Systems

Alex Busby has been appointed Managing Director of Rotork Fluid Systems, the specialist designer and manufacturer of pneumatic, hydraulic and associated heavy duty pipeline and process valve actuators within the Rotork Group.

Born and educated in Rotork's home city of Bath, Alex (48) has over twenty years international sales, engineering and business management experience of the fluid power actuator industry. Having worked for Rotork in the 1980s he re-joined the company in 2003, becoming Business Development Director for Rotork Fluid Systems in 2005. As Managing Director he will guide the Division's continued global expansion with the right products and approvals in existing and new key markets. With three manufacturing plants supported by a growing network of strategically sited Centres of Excellence, Rotork's fluid power actuator activity is experiencing impressive growth and now accounts for a significant proportion of the Group's total business.

Commenting on his appointment, Alex said: *"I am looking forward to the exciting and challenging task of fulfilling the high expectations of the Division, a task in which I am fortunate to be working with the most experienced team in the business."*

As Managing Director of Rotork Fluid Systems, Alex replaces Peter France who has been promoted to Managing Director of Rotork Controls and Rotork Group Chief Operating Officer. Peter France will become Group Chief Executive Officer in May 2008.

Rotork Fluid Systems,
Tel: 0113 205 7223

David Dunbar named as European President for Emerson Process Management

Emerson Process Management has announced the appointment of David Dunbar as their European President. Dunbar will lead the European sales and marketing activities for Emerson Process Management, which specialises in innovative technology and services that enable businesses like oil and gas facilities, refineries, power generators, chemical plants, pharmaceutical companies and other enterprises to automate their operations.

"We are sure David will prove to be an outstanding leader of the European Emerson Process Management team." said John Berra, president of Emerson Process Management. *"We have seen tremendous growth within Europe over the last few years and David's experience and strong leadership qualities are key to meeting the demands of this exciting and challenging marketplace."*

Dunbar takes over a role previously held by Jim Nyquist who has been promoted to the position of president of Global Sales for Emerson Process Management. Dunbar and his family will relocate to Emerson's European head office in Baar, Switzerland, from Ohio in the USA, where he was the president of Emerson Climate Technologies, Refrigeration division. Dunbar brings a wealth of international process industry experience and is well known within Emerson Process Management from a previous position within the Asset Optimisation division where he was responsible for Machinery Health Management technologies and services.

"I am very pleased to have been offered this important position" said David Dunbar. *"Emerson offer industry leading technologies and has a deserved reputation as a leader in all the markets they serve. This, coupled with Emerson's continued success and growth in this region makes this an exciting opportunity."*

NEW MD FOR HARDIDE COATINGS USA

Hardide Coatings, Inc. has appointed Ken Siddall as Managing Director of its tungsten carbide-based coatings manufacturing facility in Houston, Texas.

Mr Siddall joins from Cerbide, Inc. in New York where he was president since 2004, leading its launch and development as a manufacturer of a patented polycrystalline tungsten carbide. He previously spent more than 15 years with Emerson Electric progressing through various positions from industrial engineer to general manager of a Control Techniques Division in 1995. He spent 10 years as general manager creating a highly profitable organisation which was established as a benchmark within Emerson for customer service, support and profitability.

Samantha Mitchell, VP operations of Hardide Coatings, Inc. said: *"We are delighted that Ken has joined the team at Hardide's growing business in the US. This is a key appointment and Ken brings a powerful combination of 20 years of relevant engineering and general management experience together with an understanding of our coating technology and markets."*

Hardide Coatings has developed Hardide-T, a unique tungsten carbide based coating which offers an unprecedented combination of ultra-hardness, toughness, low friction and chemical resistance when applied to components made from steel, alloy and other materials. Hardide report that unlike most ceramics and carbides, Hardide-T is not prone to chipping or flaking, as it will flex with the substrate under severe impact. Together with features such as its ability to coat internal surfaces, the coating is proven to outperform competing technologies across many measures. It is widely used around the world in aggressive wear or chemical environments primarily in the oil and gas, valve, pump and aerospace industries, and was recently approved by the Food and Drug Administration for food processing applications.
The Houston plant opened in September 2006 to service the North American and Canadian markets. Customers include multi-national oil service companies such as the Expro Group and Weatherford International. Hardide Coatings, Inc is a Hardide plc company. The company has a manufacturing facility in the UK as well as Houston, Texas, USA. www.hardide.com, UK Tel: + 44 (0) 1869 353830, USA Tel: + (1) 713 221 9020

Aeon International Ltd

have moved to:
Lion Court, Hanzard Drive
Wynyard Business Park, Billingham TS22 5FD
Tel: 01740 661236, Fax: 01740 661237

European Directives Confusion

By BVAA Technical Consultant, Peter Churm

Compliance with the Essential Safety Requirements of both the Pressure Equipment Directive 97/23/EC and the ATEX Directive 94/9/EC has been a mandatory requirement for industrial valves, manufactured for use in Europe, for approximately 5 years now. British valve manufacturers have addressed these requirements and issue declarations of conformity with the CE marked product, where appropriate, to verify compliance.

Interpretation of the Essential Safety Requirements of both directives proved to be difficult upon their introduction, so much so that it was necessary for the publication of European Directive Guidelines in an effort to assist with a consistent application of the requirements across Europe. It is not surprising therefore that there remains a significant confusion in the market place with regard to the scope and requirements of these directives and of their application to industrial valves for use in process plants.

Valve manufacturers frequently receive demands for valves to be CE marked in compliance with the PED, when particular valve sizes and service applications prohibit CE marking as they are outside of the scope of the directive or are subject to the requirements of Article 3, Para 3 of the PED (Sound Engineering Practice).

The supply of process application information from users (which is often not supplied) is necessary for the valve manufacturer to conduct risk assessments to determine the PED Category that will apply, mark the essential max/min allowable limits on the label, CE mark and declare conformity, if appropriate. This process is complicated if valves are to be provided to an end user via a valve distributor, from stock in some instances already CE marked via a manufacturers Module H PED conformity approval.

Similarly, CE marked valves in compliance with the ATEX directive are being demanded by users since the Worker Protection Directive 99/92/EC came into force. This directive is concerned with the health and safety of workers with relation to potentially explosive atmospheres and it has been mistakenly interpreted that all equipment used in these areas must be CE marked in accordance with ATEX 94/9/EC. Some valve types do not have an ignition risk and are outside the scope of the ATEX directive and as such should not be CE marked, whilst other valve types do have an ignition risk, so must comply with ATEX and must be CE marked. It cannot be assumed that all equipment must be CE marked.

It is clear that this confusion exists and that valve users are demanding CE marked valves inappropriately, often where it is not legal to do so. There is a need for closer liaison with valve users to resolve this costly and time consuming misunderstanding.

BVAA Guidelines on several European Directives are available on our new DVD, email enquiry@bvaa.org.uk for your free copy.

Peter Churm is currently delivering a training course on interpreting the requirements of the PED and ATEX Directives, see page 37 for further details.

NORTHVALE KORTING & WATER WIZARD

Leicester company awarded manufacturing and distribution rights to Water Wizard by American heat exchanger giant

Northvale Korting is a respected manufacturer and distributor of valves specified by a wide range of industries around the world. The Leicester-based business has just been appointed by Aerco International Inc. of Northvale, New Jersey, USA to manufacture and distribute its steam to water Aerco and Angelery brands of heaters and valves in the UK and Republic of Ireland.

Stephen Wright, Managing Director of Northvale Korting Ltd, commented: *"We are delighted to have secured this agreement which includes the rights to sell & manufacture Aerco's WaterWizard™, renowned as the most efficient, low maintenance water heater ever created. Northvale Korting has in fact been manufacturing Aerco units for over thirty years, but the distribution rights lay with another organisation. Now we are able to provide the entire package across a number of territories."*

Aerco's WaterWizard™ has proven popular for fifty years because of its robust, low maintenance properties. Now that we all seek to reduce our carbon footprints it is expected to become even more sought after as this latest iteration of the design significantly reduces energy consumption and loss. This further underlines its credentials as the world's most efficient steam to water heater.

"The award of both the manufacturing and distribution rights to Northvale Korting is based on the company's commitment to high standards of quality and performance and, as such, is thoroughly deserved," commented Fred Campagna, Aerco Vice President, International Sales & Marketing. *"The **WaterWizard**™ has long enjoyed a reputation for being a military grade product suitable for use in industrial and commercial applications, offering highly efficient, frugal energy consumption. The new Aerco B+**II WaterWizard**™ model builds on that, boasting longer condensate pump seal and impeller life and, depending on steam pressure, up to a 15% reduction in energy loss from flash steam. In addition, return piping heat losses are reduced as are boiler feed water and the need for costly treatment chemicals, while the condensate orifice diminishes the need for maintenance-intensive mechanical traps."*

Northvale Korting will also manufacture and distribute Aerco Control Valves, including a comprehensive range of control valves offered with the Angelery Heat Exchanger. *"The traditional customer base for these high performance, resilient products includes hospitals, schools, hotels, food processing and chemical plants,"* added Stephen Wright. *"I fully expect that the news that there are new models offering significant energy efficiencies and manufactured in the UK will further enhance our order book. I look forward to working with Fred and increasing product penetration and market share in our territories."*

www.northvalekorting.co.uk – Tel: 0116 266 5911

Shipham Valves make significant investment to machining and pressure test facilities

As a further commitment to their customers and markets, during the course of 2007 Shipham Valves have made further exciting and significant investments in their manufacturing facilities at their site in Kingston-Upon-Hull.

In order to support the core objectives of the business, to deliver a top quality product, first time, on time, the addition of two new CNC Machining centres and three new fully automated valve pressure test units, has ensured increased manufacturing capacity and further improved product quality and repeatability. This has taken the capital spend for the year to well over £750k at the Hull site. The investments have been made in conjunction with a 'lean manufacturing' programme which has been running at the site throughout 2007.

New CNC Machining Centres

- DAH LIH MCH - 630 Twin Pallet Horizontal Machining Centre fitted with Renishaw probe and Fanuc 0iMC CNC System and D`Andrea boring and facing heads - Servicing components for valve sizes ranging from 2" through to 8". Run and set up times have been reduced to increase productivity.
- Dorries Scharmann Solon 4, 6-AXIS, 4 pallet, CNC Horizontal Machining Centre fitted with Renishaw probes and Siemens 850 control system - Sister to the existing Shipham Valves Dorries Scharmann Solon 4, this machining centre will perfectly compliment and run in tandem to increase machining capacity, particularly for large sized valves ranging from 8" up to 42".

New Pressure Test Units

All three new test units are state of the art machines, with the latest cutting edge features like fully programmable PLC controls which enable all test procedures to be loaded at the point of order processing. This programme is then accessed by the operators at the point of works testing or factory acceptance test (FAT). Full traceability can be recorded by the system right through to the preparation of Pressure Test Certification.

- **Ventil HC7.5-3SA Triple Station** Pressure Test Unit: 1/2" ~ 3" - Capable of Pneumatic Air Test up to 14 Bar; Hydraulic liquid Test up to 250 Bar
- **Ventil HC75-2SA Double Station** Pressure Test Unit: 3" ~ 8" - Pneumatic Air Test up to 14 Bar; Hydraulic liquid Test up to 250 Bar
- **Ventil HC600-SA Single Station** Pressure Test Unit: 8" ~ 40" - Pneumatic Air Test up to 7 Bar; Hydraulic liquid Test up to 250 Bar

Operations Director, Syd Williamson, sees the investment in manufacturing facilities as the most significant to date by the company. Due to large growth in the demand for large numbers of medium to large size valves, machining and pressure testing of high volumes in these sizes was beginning to become a constraint to the business and a bottleneck in the manufacturing cycle at Shipham. Syd and his team are delighted to have addressed this issue with these new investments and the commitment to Shipham Valves by its parent Flow Group Limited.

Shipham Valves,
Tel: 01482 323 163

Rotork actuated discharge valves are Blackhall's largest to-date

Rotork electric actuators have been specified within the terms of the company's framework agreement with Thames Water to operate two very large and highly specialised sleeve valves for critical safety-related duties at one of London's main reservoirs.

Designed and manufactured in the UK by Blackhall Engineering Ltd, the Series 3200 submerged discharge valves facilitate the rapid draw down of reservoir water levels in order to safeguard the integrity of perimeter retaining walls and dykes. Weighing more than 22 tonnes and standing 13 metres tall, each of the custom-designed valves has a maximum flow capacity 13 cubic metres (tonnes) a second. Designed using state-of-the-art computer flow modelling, the valves occupy a small footprint and deliver very high discharge capacities at low noise levels, a combination of features making them particularly suitable for populated and built-up environments.

To open the valve an internal sleeve within the 1600 mm diameter valve base is raised, allowing the water to discharge radially without creating the large plumes of spray that are associated with linear fixed cone or needle valves on similar applications.

Each valve is equipped with a top-mounted Rotork IQM modulating electric actuator and IB10 bevel gearbox, operating a stainless steel non-rising screwed stem to raise and lower the radial sleeve. The 'intelligent' Rotork actuator is programmed to operate the sleeve in stages that take account of the falling water level to maintain a constant flow rate. A data logger fitted as standard in each actuator keeps a historical record of valve operating data that can be downloaded and compared with the valve commissioning data footprint to analyse operating trends and help to minimise the requirement for routine maintenance.

The two 1600mm valves for Thames Water are the largest of their type built to-date by Blackhall Engineering Ltd, who have been supplying similar designs throughout the world for over forty years. They will be installed on the Queen Mary Reservoir, one of London's largest man-made reservoirs, covering 700 acres in the Staines and Sunbury area and lying approximately 12 metres above the surrounding landmass.

Rotork Controls,
Tel: 01225 733 200
Blackhall, Tel: 01484 713 717

Neil Kirkbride new Chairman of NOF Energy

We are delighted to report that Neil Kirkbride, CEO of BEL Valves has recently been appointed Chairman of NOF Energy (formerly known as the Northern Offshore Federation). Neil also recently became Vice Chairman of BVAA, and we all very much look forward to the opportunity of sharing ideas and working together.

Blackhall Engineer Wins Award

Post graduate design engineer, Richard Saul, who works for specialist valve design firm Blackhall Engineering based in Brighouse, W. Yorks, has recently won a top national award from NOF Energy, for 'Most Promising Newcomer' to the energy industry in 2007.

Shortly after joining Blackhall Engineering in July 2007, following his graduation from the local University of Huddersfield, Richard was immediately bought in to the acquisition team for assessing the potential takeover of local valve manufacturing company, Taylorshaw. Having worked there for 12 months as part of his degree, Richard was ideally placed to provide information. During his time at Taylorshaw, Richard experienced a broad cross section of the company including the drawing office, sales and shop floor, as well as assisting in the planning and moving of the offices and machine shop from the Shaw Valves Lockwood site to the Taylor Valves Milnsbridge facility.

Managing Director James Blackhall said *"Richard's insight into the firm's profitability, systems and personnel proved invaluable at a time when information was not forthcoming and eventually led to our successful offer which saved many local jobs and a world renowned company".* The judges cited Richard's enthusiasm for the industry as one of the key reasons for him standing out over and above the other entrants as well as his impressive assistance in the team organising the extraction of the firm from the old Milnsbridge site to a modern facility in Huddersfield.

Pic: Award winner Richard Saul (second from left) with representatives from sponsors BERR and NOF Energy

The award has won Richard an all expenses paid trip to Houston, Texas for the 2008 OCT energy conference and capped off a record year for Blackhall Engineering. James later said *"We are now expecting great things of Richard but I would like to take the time to say thank you to all staff at both companies for the extra effort they have made during 2007 and I hope for more success in 2008".*

Comid Valve Services

A New Look... A New Logo... A New Era...

The name COMID has been synonymous with Valves and Valve Repair for almost 30 years. In the late seventies Comid had offices and workshops the length of the country from Manchester to Southampton.

The Valve Industry however has without doubt seen its highs and lows, its good times and bad times. The Valve Repair Industry has not been exempt and did not escape without its casualties. Many of the pedigree UK and Internationally known manufacturers and repair companies have closed shop for various reasons which the writer will not address in this article. Those who have managed to remain competitive have done so by streamlining their organisation and adopting efficient quality procedures and systems.

Comid have managed to survive the rocky ride through the past two decades and have maintained their position as one of the few remaining independent Valve Repair companies competing in what could be described as a diminishing domestic market.

A recent article by Rob Bartlett of BVAA indicates that the UK market paints a brighter picture than many of us who have been in the industry for the last thirty years would believe. Comid share that view. There are opportunities both within the export and UK markets. Repairs and service activities are by nature mainly confined to the domestic market place.

Not only has survival been on the agenda, Comid has always looked for continuous improvement, growth opportunities and ways of maintaining their position as a leading Valve Repair Company.

The year 2006 saw Comid enter the Saudi Arabian market with a joint venture operation with a prestigious Saudi Arabian company Saudi Pan Gulf and the formation of Pan Gulf Valve Services Ltd (PGVS) based in Jubail. Regular readers of the BVAA magazine may have read the article. Comid now supply a significant quantity of new valves

and actuators to the Middle East and the Valve Repair and Service division (Valvserve) grows from strength to strength.

However the domestic business remains priority. From a growth point of view Comid in 2007 tried, in vain, to purchase one of the few remaining Huddersfield based valve manufacturers. All was not lost though, the migration of that company's Sales Manager has opened doors and given an even wider outlook for the way forward to the next decade and beyond.

Recognising that there still remains a requirement for skilled maintenance engineers and technicians Comid have been forward thinking and embarked on a recruitment drive. This has led to another chapter and in February 2008 another branch of Comid Valve Services opens its doors.

A new branch of Comid Valve Services is to open at Walsall in the West Midlands. The workshop has been designed with the Valve Repair business as its core discipline. Catering for both in house and site activities Comid intend to increase its penetration into all sectors of Industry. Isolation Valves, Safety Valves and Control Valves all fall within the repair scope.

Another recent development is the entry into the IN-SITU testing (Veri-Test) of Safety Valves.

Future plans include the introduction of On-Site Machining, Leak Sealing, Bolt Tensioning and in-situ Live Gland Repacking (Veri-Pak). These are to be introduced as either direct disciplines or in conjunction with partnership and associated organisations.

A new look, a new logo, a new era. The future's bright, the logo's orange!

Numatics 2005 Series

Numatics 2005 Series valves, some fitted with pressure regulators, shown with a multipole sub-base.

Dual 3-Ported, 2-Position Valve Provides 'Two Valves in One' for a Compact and Cost Effective Solution

ASCO NUMATICS has introduced the Numatics 2005 Series dual 3-ported, 2-position valve. The new valve comprises two air pilot actuated valves in a common body, providing versatility and flexibility for the user. The space-saving design enables the 2005 Series valve to be used in many applications where installation would otherwise prove difficult due to a lack of space. Furthermore, using a dual valve instead of two separate valves usually provides a more cost effective solution.

The dual 3-ported, 2-position valves can be used with the Numatics valve island manifold to provide many options and protocols. This includes multipole connections on the sub-bases with two common fluid supply ports, two output ports, and two exhaust ports. The air is centrally channelled from one "source" to both valves which are integrated in a common aluminium die cast housing. The solenoid pilot actuated valves incorporate two 'O' ring sealed spools, mounted opposite each other. These open and close independently releasing compressed air to devices such as cylinders or clamps. The valves are also available for vacuum operation.

The new valves have a standardised width of 18mm and are mounted on sub bases which allow an easy plug-and-play assembly.

Simply plugging the valve into the sub-base establishes the pneumatic and electrical connections.

Numatics 2005 Series dual 3-ported, 2-position valves are based on the VDMA standard 24563. They are also available with a mounting footprint to the international ISO standard 15407-2, making them suitable for global use – and in particular the US markets. ASCO NUMATICS continues to develop its products to meet the requirement of the both the VDMA and ISO standards.

Also available is the Numatics 2002 Series of miniature double 3-ported, 2-position valves, which have a width of 10mm. Both the 2005 and 2002 Series of valves can be controlled by fieldbus systems such as Profibus and DeviceNet.

ASCO NUMATICS is one of the leading manufacturers of pneumatic components and accessories with a range of more than 30,000 products for use in compressed air systems. As a member of the Emerson group, ASCO NUMATICS has manufacturing plants and distributors in more than 30 countries, and also benefits from the networked know-how of a worldwide technology group.

Tel: 01695 713 600

Rotork IQPro electric valve actuators with the SIL (Safety Integrity Level) option

"If something is to do an important job, it needs to be reliable, and the more important the job, the more reliable it should be."

Reliability has always been the overriding priority for Rotork valve actuator design, and now Rotork IQPro intelligent electric valve actuators are available with a Safety Integrity Level (SIL) option for applications requiring SIL2 and SIL3 levels. Rotork's SIL qualification has been certified by T V, the leading international organisation providing testing, certification and qualification services.

What is SIL?

Safety Integrity Level (SIL) is defined as a relative level of risk reduction provided by a safety function.

Four SIL levels are defined, with SIL4 being the most dependable and SIL1 the least. A SIL is determined through the consideration of quantitative factors in combination with qualitative factors such as development processes and safety life cycle management.

The international standard IEC 61508 defines SIL using requirements grouped into two broad categories – hardware safety integrity and systematic safety integrity. A device such as a valve actuator must meet the requirements for both categories to achieve a given SIL.

A full description of SIL requirements would take up too much space in this article. Suffice to say that hardware safety integrity is calculated by performing a failure modes and effects analysis (FMEA). The actual targets required vary depending on the likelihood of a demand, the complexity of the device and the types of redundancy adopted.

The SIL requirements for systematic safety integrity define a set of techniques and measures required to prevent systematic failures (through 'bugs', for example) from being designed into the device or system.

Rotork's SIL qualification is certified to IEC61508 with the addition of IEC61511, which is a specific adaptation of IEC61508 for the process industry. This standard is used in the petrochemical and hazardous chemical industries, among others.

Rotork IQPro actuators are certified for SIL2 and SIL3 levels of safety. SIL2 applications relate to a 1 out of 1 (1oo1) actuator installation, whilst the increased safety level inherent in SIL3 demands a 1 out of 2 (1oo2) configuration.

Rotork IQPro has a multi-lingual communication capability

How does it work?

Rotork's IQPro actuators with SIL certification are equipped with the Rotork SIL safety PCB assembly, which monitors the standard IQ/IQT control board and provides diagnostic coverage and redundant control in order to perform the desired safety function if an invalid command signal is generated and/or if the standard actuator control system fails. A safety function status relay provides indication of the actuator availability and redundant safety function operation, with the same status duplicated locally on the actuator display. The SIL safety PCB can be specified with any new IQ or IQT actuator or retrofitted to existing actuators supplied since 2000.

Safety functions – Stayput and ESD

The two safety functions applicable to valve actuators are Stayput (High Demand) and Emergency Shutdown (ESD) (Low Demand).

Available with IQ and IQT actuators, the Stayput function dictates that the actuator shall not move without a valid remote open or close command signal. If an internal failure is detected the actuator will give an alarm signal.

Dual hardwired control input signals are required for remote control. Signals must be maintained "push to run" only.

Available only with IQ actuators, the ESD function will ensure that the actuator will perform the commissioned ESD action (open, close, stayput) if an ESD signal is active. Again, if an internal failure is detected the actuator will give an alarm signal.

The ESD signal must be derived from a contact breaking and must be maintained during ESD.

Combined Stayput and ESD safety functions can also be provided with IQ actuators only. In this configuration the actuator will Stayput or else perform the ESD function, with the ESD having priority.

SIL commissioning settings are programmed into the actuator using the hand held setting tool and "non-intrusive" infra-red link, following the dedicated SIL menu on the actuator's display screen. Once set, SIL actuators must only be operated by remote control. Local controls are therefore padlocked in the "remote" configuration and hand-auto levers similarly padlocked in the neutral position to prevent the handwheel being operated.

KEYSTONE VALVES OFFER A COOL SOLUTION AT CHILL FACTOR®

The recent opening of Chill Factor® in Manchester, UK marks the successful completion of Tyco Flow Control's third project with refrigeration specialists, Cryotech. A range of Keystone valves and actuators, chosen because of their certification to operate at temperatures as low as -15.5 degrees C, are at the heart of the UK's biggest indoor, real snow Alpine Ski Village.

The package of nearly a hundred Keystone valves comprises F320 butterfly valves controlled by Premitork electric actuators, F40 commissioning valves and F85 check valves. Some are fitted with EPDM seats to suit the glycol water mix in the cooling circuits. The products perform an important role in the operation of the blast coolers which are positioned around the slopes.

At night, when the ambient air temperature within the closed complex is lowered to -6 degrees C, a mixture of compressed air and chilled water is fired into the air which then falls as snow. During the day when the centre is open the temperature is maintained at around -1.5 degree C. Typical snow depth on the slopes is around 400mm.

Tyco Flow Control was able to document the products' compatibility with low temperature operation as a matter of course – something that a number of other potential suppliers were unable to do. Refrigeration specialists Cryotech Systems Ltd are based in Derby.

This £31m development, will include the UK's longest and the world's widest real snow indoor ski slope (180 metres long and 100 metres wide at the base), as well as a climbing wall, a cresta-inspired luge run and a children's winter wonderland.

Austrian craftsmen have advised on styling in the Alpine village, which has been designed to appeal to the widest range of visitors. Proficient skiers and snowboarders looking to brush up their technique, beginners seeking tuition and a first time experience, families wanting a weather-reliable alternative day out and people simply wanting to relax and socialise in a unique setting will all find just what they are looking for.

For Keystone contact Tyco Valves & Controls Distribution (UK) Ltd
Market Harborough, Tel: 01858 467 281

Intelligent reliability with Life Cycle Services

Metso Automation recently celebrated the opening of new service centres in Brazil and Russia, and another is currently being established in China. New service managers and service personnel have been recruited. These are just some of the actions being taken by Metso Automation to strengthen their local presence in order to provide even better customer services.

By being close to their customers they can offer services that meet their real needs. Their local sales and service people are the channel through which their customers can benefit from the technology and expertise of the whole Metso Automation organisation.

In many cases, the new service centres have been created to give comprehensive support to those customers who have signed a Customer Advantage Agreement with Metso Automation. The contents of this agreement can range from on-site services to inventory management services whereby Metso Automation takes care of customers' field equipment inventories. However all Life Cycle Services offered by Metso Automation, whatever their scope, are always individually tailored to meet the customer's specific situation and needs.

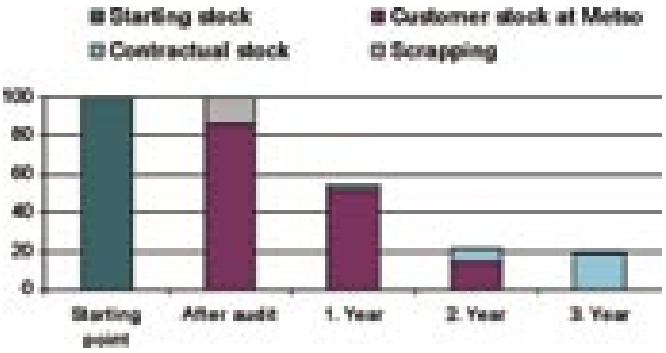
Full scope of Life Cycle Services

To simplify the lives of customers in their daily on-site operations, Metso Automation provides a wide range of life cycle services, which offer the following advantages:

- A reduction in the cost of ownership by providing a reduced, yet up-to-date, inventory which more accurately corresponds to the installation needs;
- Lower maintenance costs and the avoidance of unplanned shutdowns, thanks to predictive maintenance based on diagnostics;
- Smooth commissioning, start-up and shutdown because they use qualified, safety and ATEX-trained service technicians during the critical phases of the plant's life, to ensure fast ramp-up to production;
- Professional repair and maintenance services carried out by either Metso Automation's Service Centres or by authorised subcontractors;
- The provision of genuine, high-quality spare parts and a warranty on repaired products;
- High quality training that is tailored to the customer's needs to improve the skills of the customer's operators and technicians.

Get rid of your excess stock

Example of inventory value development:



Typical situation in a process plant

In many cases, keeping records of the installed base up to date is a challenge. For example, information in the maintenance system may be corrupted or the condition of the field devices may not be known. As a result, the ordering of spare parts or replacement products is time-consuming and the maintenance actions are based on guess work rather than the diagnosed condition of field equipment. For these reasons, inventory levels may be high when the data in the systems is not up to date.

Optimized inventories to match the needs of the installed base

Providing an inventory management service is an answer to these challenges. Metso Automation's specialists help the customer to analyse the installed base, either by a physical installed base audit or by evaluation based on the inventory lists. At present they have about 50 Inventory Management Agreements globally, covering an installed base of over 50 000 TAGs. Interest in this service is increasing, and new agreements are under negotiation. Many of Metso's global customers are promoting this service within their own organizations, after seeing the good results that are achieved with active inventory management.

You can reduce your inventory value by up to 90% within 5 years

The objective of the inventory management service is to match inventory content precisely to the needs of the installed field equipment. This means that the equipment in the inventory is always up-to-date and available for use. The current inventory is compared to optimal inventory content and a plan is devised to reduce or modify the inventory content to its optimal level over a period. Typically, this takes about 5 years to achieve, but the inventory reduction can be as high as 90% of the original value. The agreed, optimized inventory is owned and managed by Metso Automation, who also take care of the old inventory usage and manage the inventory towards a contractual stock owned by Metso Automation.

Metso state that it has been possible to achieve such outstanding results from their Inventory Management services by fine-tuning the service together with their customers over a number of years. Their local service centre always carries out the service, which means that the customer's installed base is very well understood. The required equipment is stored as components and assembled on the basis of need, which keeps the inventory value low.

Reliability and availability via on-line condition monitoring and diagnostics

For monitoring the condition of installed field equipment Metso Automation has developed a service whereby a specialist analyses the data collected by Neles FieldCare and reports back to the customer. This monitoring is carried out on-line in the customer's network, either locally or by using a remote connection.

The aim of the service is to integrate condition monitoring as a daily tool and as a basis for predictive maintenance. Once condition monitoring has become a part of the daily routine for the customer, the content of the condition monitoring support service can be tailored according to customer needs. The customer gets the best results in cases where both Inventory management and on-line condition monitoring are included in the Customer Advantage Agreement supported by the local Metso Automation Service centre.

Metso, Tel: 0870 606 1478

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KKI to tap into velocity control market in 2008

With a bulging order book 70 per cent ahead of budget for 2007/08, severe service valve design and manufacturing company Koso Kent Introl Ltd is going from strength to strength and has big plans for 2008.

It is three years since West Yorkshire based Kent Introl Ltd was acquired by Japan company Koso and renamed Koso Kent Introl Ltd (KKI), and major signs of development are now clear to see. KKI has just enjoyed one of its best ever years with orders expected to reach 70 per cent over budget for the financial year. This has been largely credited to the success of a major frame agreement contract with one of Europe's leading gas and oil companies and focus on strategic markets.

A specialist in standard and severe service control valves and high technology surface choke valves, KKI became one of only a select few companies in 2007 to be the preferred supplier for the industry-leading European gas and oil company, and the contract is now reaping great rewards.

"These are very exciting times at KKI and at our parent company Koso, with major developments taking place within the company in a physical sense and also strategically," said KKI Managing Director Denis Westcott. *"By December 2007 - the ninth month of the financial year - we were 65 per cent ahead of budget on orders, and by April we expect to be very close to 70 per cent ahead of schedule. Koso has confirmed it will expand its manufacturing plants in China and India, and construction work to treble the size of its operations in India started in mid-January."*

KKI has set its sights on establishing itself in the 'velocity control trim' market with a tactical push to drive forward its VeCTor range now it is supplying the Koso product from its West Yorkshire base. Koso has over 30 years experience supplying the VeCTor Labyrinth Velocity Control Trim design and held the license to manufacture this type of technology for over 14 years. This was a cross licence agreement with a leading global severe service provider. The license expired some years ago and Koso was able to continue manufacture in the form of the VeCTor.

"One of the key areas we've highlighted for the immediate future is to target the velocity control trim market by making a concerted effort to promote Koso's VeCTor range," added Westcott. *"KKI is supplying Koso's VeCTor D and M designs and financially it's such a big market that we hope it will see us push the company on to the next level."*

The VeCTor multi-stage trim provides accurate control and long-life, which is free from cavitation erosion, high vibrations and noise problems, whether the fluid is compressive or non-compressive. Its improved performance and durability make it cost-effective and simpler to use with ancillaries such as diffusers, baffle plates and silencers becoming redundant. The VeCTor trims are specifically designed to control the potentially destructive effects of high velocities experienced in some control valves, but unlike conventional designs, it ensures fluid velocity never exceeds the threshold that could damage critical valve components. It does this by limiting harmful velocities by separating the flow mass into smaller individual channels and staging the full pressure drops across multiple 90° turns in the fluid path.

The standard trim sizes range from 2" up to 14" and the number of turns from one to 24, although more are available through special designs. Long and short stroke options are also available and up to 40 turns have been supplied.

A KKI Severe Service Choke Valve

The flow after each turn increases by 7 per cent whether it be gas or liquid, which means that after 10 turns the flow area for turn one to turn 10 has doubled. This lets any solids entrained in the medium pass through.

Characterised disk stacks can be designed to handle the high velocities on low flow and start up conditions (0% to 50% open) and then the disk stack can be altered to have less number of turns on the 50% to 100% portion of the disk. This will accommodate increased flow requirements for end of field-life full flow requirements.

More information

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Armytage Road, Brighouse,
West Yorkshire, HD6 1QF
www.kosokentintrol.co.uk
+44 (0)1484 710311
control.valves@kentintrol.com

Faster Refuelling of Compressed Natural Gas

By Dave Graham, Fluid Control Product Specialist, ASCO NUMATICS

Generating fewer exhaust and greenhouse gas emissions than petrol or diesel, Compressed Natural Gas (CNG) is becoming a more popular vehicle fuel, leading to a growing demand for CNG service stations. Essential to the viability of these stations is faster refuelling dispensers that match the speed of their petrol equivalents. Always at the forefront of new technologies, ASCO NUMATICS has recognised this up and coming CNG market and developed a solenoid valve with special features to fulfil the needs for this interesting and special application.

It is the declared aim of the EU to increase the market share of alternative motor fuels. Alongside ethanol, global interest is being focused on the use of natural gas for this purpose. Because natural gas has a simple chemical make-up, CH_4, it burns cleanly, and emissions of carbon monoxide, sulphur dioxide, soot, and particulates are almost completely eliminated when used as a motor fuel.

Compressed Natural Gas (CNG) is natural gas compressed into a high-pressure container. The benefits of using CNG as a motor fuel include lower costs, increased performance, and reduced emissions. CNG costs 15 – 40 percent less than petrol or diesel fuel. In addition to the increased performance experienced by CNG vehicles, drivers also get a longer lasting, more reliable vehicle. Emissions reductions are significant at approximately 90 percent lower for CO, 35 – 60 percent lower for NOx, and 50 ~ 75 percent lower for HC. Of course it should be noted that large global reserves of natural gas exist.

No fewer than 5.7 million natural gas vehicles (NGV) are currently in use, and the number is expected to rise to 12.7 million by 2011. Fuel for these vehicles is currently supplied by some 10,000 CNG filling stations throughout the world. By 2011, this number is predicted to increase to about 20,000.

Multi bank dispenser (cascade system) gives a filling speed which is comparable to petrol dispensers.

Natural Gas refuelling systems

The principal components of a natural gas filling station are a metered gas supply, a compressor, a storage unit, and a dispenser. Refuelling of a vehicle can actually be accomplished directly by a compressor unit. However, this operation takes several hours, and is usually performed overnight. In order to permit faster refuelling, most filling stations are therefore equipped with single bank or multi bank dispensers.

A single bank dispenser is operated by a single, first level solenoid valve. Its hydraulic system communicates with a single storage unit which stores the gas at high pressure. A multi bank dispenser (cascade buffer storage system) is operated by two or three solenoid valves (first, second and third level). Its hydraulic system communicates with two or three storage units which store gas at different pressures. A three level system is generally divided into three 'banks' containing low, medium, and high pressure gas.

During refuelling, the storage banks are automatically connected to the vehicle according to the pressure in the tank. When the vehicle tank pressure is low it is connected to the low-pressure bank. As the pressure in the two tanks equalises, the flow rate decreases. Once it reaches a minimum value, a solenoid valve switches the connection to the medium pressure bank, and then to the high-pressure bank. The order is reversed when the signal comes to refill the banks; first the high pressure bank is filled, then the medium pressure bank, and finally the low pressure bank.

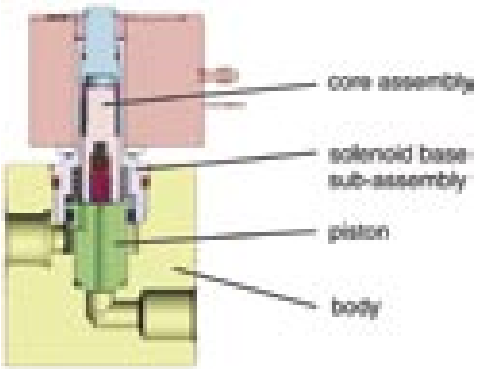
Valve for dispensing Natural Gas

Specially designed solenoid valves are required to control the flow of the Natural Gas to and from the dispenser. ASCO NUMATICS has introduced a compact solenoid valve specifically to cope with the high pressure levels within the multi stage buffer storage system and the rigorous demands of Compressed Natural Gas (CNG) dispensing applications.

The 303 stainless steel body can withstand high pressures, with the maximum bursting pressure four times the maximum allowable pressure drop.

The ASCO NUMATICS Series 291 CNG Solenoid Valve is suitable for differential pressures of up to 5000 psi (350 bar) and the flow rate is optimised to attain a high filling speed (Kv value of up to 2.3 m^3/h). This compact rugged valve is available in 3/8" (8 mm) and 1/2" (12 mm) sizes and is suitable for use in temperatures of -40 °C to +70 °C and in restricted spaces, especially important as pump sizes continue to be reduced.

The ASCO CNG valve can be supplied with numerous explosion proof solenoid operators making it appropriate for Zone 1/21 - 2/22 applications, according to ATEX 94/9/EC. Enclosures according to NEMA are also available. The valves are available with ISO 228 and SAE threads.



Thanks to a large number of available explosion-proof solenoid operators and threaded connections, the CNG refuelling valve can be used in most countries.

The valve itself functions as an internally piloted valve with a pilot orifice in the piston, which is one of the most important components of the valve. In order to withstand the high pressure, the piston is produced from a single piece of special plastic. This ensures reliable operation and keeps maintenance costs low. Another critical component of the valve is its housing. The 303 stainless steel body can withstand high pressures, with the maximum bursting pressure four times the maximum allowable pressure drop.

ASCO NUMATICS has gained considerable experience in petrol vending applications and has applied this knowledge to the dispensing of "clean" fuels such as Liquefied Petroleum Gas (LPG) and CNG. In both applications the fuels are stored in pressurised tanks and this has led to the development of an innovative three stage delivery system for LNG applications, and the introduction of the new high pressure valve for CNG applications.

ASCO NUMATICS,
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Hydraulic actuators for South Atlantic floating production vessel

Photographed during installation at the Maua Jurong Shipyard in Rio de Janiero, this Rotork GH range heavy duty hydraulic failsafe actuator will operate a Tomoe Tritec 24inch double flanged Class 1500 Triple Offset Butterfly valve handling liquid hydrocarbons on the giant new Petrobras P54 floating production storage and offloading vessel (FPSO).

Rotork Fluid Systems has received orders for GH range actuators from valvemakers including Tomoe in the UK and Cooper Cameron in Italy for this significant project, which will produce oil from thirteen deep water wells in the Campos Basin, off the south eastern coast of Brazil. The huge vessel will have a daily capacity to produce 180,000 barrels of oil and compress 6 million cubic metres of natural gas from the Roncador Field.

Pictured with the valve and actuator is Neil Harden, Tomoe's General Manager Sales & Marketing.

Rotork acquires Remote Control Sweden

Valve actuation specialist Rotork has announced the acquisition of Remote Control Sweden.

Remote Control Sweden has been trading since 1961 and, under the ownership of Per Larsson, the company has developed a worldwide reputation for quality and service as a manufacturer of pneumatic valve actuators and associated control systems.

Remote Control Sweden (RCS) is the latest acquisition in Rotork's expanding Fluid Systems division, providing it with a range of complementary products and market opportunities. RCS products will continue to be marketed through their existing sales channels and integrated into Rotork's extensive international sales network.

Commenting on the acquisition, Alex Busby, Managing Director of Rotork Fluid Systems said:

"RCS complements Rotork's existing medium to heavy duty range of pneumatic and hydraulic actuators and brings with it a reputation for quality and service, strengthening our reputation as the actuator company of choice. The acquisition increases our ability to provide a single source for these products and enhances our presence in existing and new market areas."

Remote Control RC200 Series actuators with manual overrides.

Remote Control actuators installed in the pulp and paper industry.

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