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Engineering with confidence



David Brown,
Chief Executive,
IChemE

IChemE
Institution of Chemical Engineers

In the chemical and process engineering industries, the demands placed upon engineers are becoming more rigorous with each passing year. Against a background of economic uncertainty and the need to combat climate change, engineers have to achieve an almost impossible balance between the constraints under which they operate and the business pressures of their companies and customers. They need to be multi-skilled but expert in their specialist areas. They must be integrators and team workers across different fields, and be aware of the commercial, safety and environmental implications of all that they do.

This is a big ask, and increasingly companies, governments, regulators and the public are recognising the value of a solid and trustworthy benchmark that will mark out those engineers that can meet the challenge. At the top of the tree is chartered engineer status, a tough level to reach but one that among IChemE members, well over 80% continue to recognise as valuable as they move on through their careers.

This 'gold standard' is increasingly important to individuals for several reasons. In a more fragmented industry, companies are often no longer able to provide the levels of long term career support and development which were once common; the need to keep abreast of technical knowledge requires a wide and up-to-date awareness of new developments; while a portable professional qualification gives access to wide opportunities geographically and sectorally. It makes a financial difference too. IChemE's research points to a salary differential of up to £9,000 a year associated with chartered status over the first couple of decades of an engineer's career.

Meanwhile for employers, chartered status gives confidence in the competence, professionalism, and ethical standards of individual engineers - a vital asset that not only adds economic success depending on technical excellence but maintains the confidence of customers, regulators and the public.

So why not go for it? For more information about becoming a chartered chemical engineer, visit www.icheme.org/membership

Alarm management project at Ballylumford power station

Keeping the lights on



ABB Engineering Services have recently completed an alarm management project with Ballylumford power station in Northern Ireland.

Ballylumford power station recognised that their existing alarm system at was not able to comply with the requirements of the standard and looked to ABB to provide an independent, expert view on how to improve performance as efficiently as possible, whilst also minimising operational impact from the work.

The alarm system design now follows the good practice guidance in EEMUA 191, meaning that ‘high priority’ really mean ‘high priority’ in terms of



Ballylumford power station, Northern Ireland.

response from operators as over 8,500 unnecessary alarms were demoted to

events and do not announce as alarms.

BAT assessment at BP’s Sullom Voe terminal

Best Available Techniques



The effluent treatment system at BP’s Sullom Voe Terminal has minimized the environmental impact from terminal activities over the past 30 years. The Environmental Permit for the Terminal required BP to compare existing operations with current Best Available Techniques (BAT).

ABB Engineering Services worked with BP to carry out a BAT Assessment of the terminal’s effluent treatment system. After assessing which of Scottish Environment Protection Agency (SEPA)’s numerous guidance documents were relevant, the team worked with several BP departments to gather information and compare with the guidance. A variety of methods were proposed to further improve compliance and assisted with the investigation work that BP chose to carry out on the plant.

ABB’s cost effective approach combined an on-site presence with remote support and the report was submitted to the regulator in line with the timescale requested by BP. The review provided a comprehensive review



BP’s Sullom Voe Terminal.

of the gaps between the effluent plant design and the BAT guidance and assessed the requirement for upgrades in a practical manner.

“The support I’ve received from ABB has been extremely professional and competent.”

- Laurence Little, Process Technical Authority, BP Sullom Voe Terminal

Benefitting from process safety studies on existing assets

Process safety studies

Operating risks are only **reduced** once the review **actions** are successfully **completed**.



Paul Alton,
ABB Engineering Services

An increasing number of assets across most process industry sectors including oil & gas, power, chemicals, metals and pharmaceuticals now operate beyond their original design life, potentially in an operational and regulatory environment for which they were not originally designed.

In the current difficult financial conditions, this trend is set to continue. Operation of assets under these circumstances presents additional risks due to both the effects of ageing and the possible existence of deterioration mechanisms that were not foreseen at the time the process was designed. This creates a strong incentive for a periodic, thorough review of process safety hazards. This is also being driven by the increased focus on process safety as a result of a number of major industry incidents.

A number of techniques are in use for existing assets, including repeat-HAZOP, HAZOP revalidation, repeat HAZID and Process Hazard Reviews. Regardless of the technique employed these studies invariably produce large numbers of

actions, in many cases this can be into the hundred's. This can often seem like the end of the process but a key point to consider at this point is that until the actions are addressed no improvement in process safety is achieved.

Such actions can require modification of the production process / equipment, further technical studies or changes to procedures, maintenance routines or inspection regimes. Study teams disperse after the exercise leaving a large work load on an already burdened site team. There may be site or corporate deadlines to meet for action completion or regulatory pressure to implement improvements in a timely way because, until implementation has been completed, the benefits of the study will not be realised.

A top down structured approach to safety study action close out should be employed to address recommendations in a prioritised, efficient and timely way. The focus should always be on finding appropriate solutions that are safe and simple, avoiding plant modifications where possible.

This is best achieved by a small dedicated team (often of process engineers) operating under a project manager that can then draw upon specific functional expertise in areas such as mechanical, instrument /control, electrical, rotating equipment, pressure relief, vessels and risk assessment as required. The project manager should work against KPIs agreed for the action close out programme to ensure they are delivered to meet the required deadlines. The key benefit of this approach is a team that is operating away from the normal operating environment and day to day issues.

ABB Engineering Services' experience is that getting the quality of the safety study right is key in terms of agreeing very well defined actions. This should be followed by a structured action management program as detailed in the diagram below.

To date ABB has supported a large number of companies in all sectors close out actions rapidly and cost effectively. The result is a real and measured improvement in process safety.



ABB's demolition and remediation team win safety award

RoSPA Gold award



ABB Engineering Services' demolition and remediation team have won a top safety certificate awarded by the country's Royal Society for the Prevention of Accidents (RoSPA) for the rigorous safety management standards applied in 2009 to one of many projects undertaken by the group.

The joint ABB / ExxonMobil demolition and remediation project team have been awarded the RoSPA Gold for the third year running and the 6th RoSPA award in total.

This is recognised as a fantastic achievement by the project team who are setting the standard for safe demolition and remediation projects, through their leadership, dedication and commitment to delivering health and safety excellence.

The work associated with the award winning project is predominantly located within city centres, where reducing petrol retail margins and rising land prices have made the sale of land financially attractive. To enable the land to be sold, it needs to be remediated to eliminate any potential historical environmental issues. In delivering the project, ABB has overall

responsibility for decommissioning, CDM coordination, land remediation and project management.

“The RoSPA Gold award is recognition for all involved in the project for their continued hard work and commitment in helping achieve an excellent safety performance working in the potentially hazardous environment of demolition and land remediation.”

- Steve Andrews, ABB.



Steve Andrews, ABB receiving the RoSPA Gold award from RoSPA Vice President Lord Brougham & Vaux.

This award builds on the excellent feedback ABB received from Judith Hackitt (Chair of the Health & Safety Executive) who visited another Demolition and Remediation project managed by ABB.

Judith told an audience of employees,

“The approach I saw being taken by ABB to dealing with health and safety issues in demolition and remediation was impressive. Not only was the site a first class example of safe demolition, it was also clear that the work was being done more efficiently because of the way it had been organised.”

Energy from Waste (EfW) project at INEOS ChlorVinyls in Runcorn

Energy from Waste



ABB Engineering Services in North West, England have completed the Front End Engineering Definition (FEED) for the electrical connections required for Phase 1 of the Energy from Waste (EfW) project at INEOS ChlorVinyls' Runcorn site.

In phase 1, external generation capacity of 38MW is to be connected into the existing INEOS electrical distribution system and will require extensive modifications to accommodate the connection.

The EfW plant is external to the Ineos site and the export cables are two



Existing INEOS ChlorVinyls site in Runcorn.

kilometres in length.

The cable route will be on existing pipebridges and under existing roadways. The FEED has provided INEOS with a detailed scope as well as

identifying all long lead items.

Specific work areas have also been prioritised to enable the challenging programme to be achieved.

Recent conferences ABB have sponsored, exhibited at or attended

Conferences

Process Safety Management (PSM)

ABB Engineering Service hosted the annual PSM conference at The Lowry Hotel, Manchester. There were over 60 attendees at the event, run in conjunction with the Chemical Industries Association (CIA). Senior leaders from the HSE, CIA, BG group, Centrica Storage, Lucite International, Total and PPG Industries spoke at the conference.



From left: Peter Hunt, ABB, Peter Baker-HSE, Andrew Brydon-PPG Industries, Mark Austin, ABB, Phil Scott-CIA, Liz Thomas, ABB, Chris Marsh-Centrica Storage, Carol Pickard-Total, Mike Sellers-Lucite International, Graeme Ellis, ABB, Peter Bamforth-BG Group, Dai Richards, ABB.

IMEchE fluid machinery congress

ABB sponsored and exhibited at the IMechE fluid machinery congress held in Edinburgh. The event showcased the latest technology and provided a forum for sharing valuable design and operating experiences. Among the companies attending were SABIC, Shell UK, DuPont and Dow Chemicals.



Process safety in Dubai

ABB sponsored a process safety conference in Dubai. Rob Turner delivered a workshop on alarm management, Steve Sherwen did a workshop on hazardous area classification.



Rob Turner of ABB delivering his workshop on alarm management to the delegates in Dubai.

Process Safety Management for chemicals and petrochemicals conference

ABB presented and exhibited at the Process Safety Management for chemicals and petrochemicals conference in Prague. Phil Eames of ABB gave a presentation entitled

'Human factors and the impact on successfully managing process safety'. There were representatives from SABIC, BG Group, BP and Tata Steel.

CIA occupied buildings conference

Graeme Ellis of ABB gave a presentation entitled 'Examples of handling recommendations and maintaining assessments' at the occupied buildings conference held in Leeds. This was a joint event hosted by the Chemical Industries Association and Yorkshire Chemical Focus which was sponsored by ABB.



Graeme Ellis, ABB giving his presentation at the occupied buildings conference.

ISPE sustainability conference

John Springell and Keith Beresford of ABB exhibited at the ISPE Sustainability - Principles in the pharmaceuticals industry conference in London.



Pressure relief conference launch

This one-day conference will be held on 29th June 2011 at the Radisson Blu Hotel in Edinburgh. It will provide the opportunity for all those involved in the design, operation and maintenance of pressure systems to discuss and share the latest best practice on issues associated with the pressure relief life cycle and how it affects process safety. The conference format will consist of presentations discussing the design, operation and maintenance of pressure relief systems. The aim of this conference is to bring together experts and practitioners in pressure relief and process safety to present and discuss the latest developments. We would be interested to hear from you if you wish to present at the conference.



To find out more please contact Debby Law - deborah.law@gb.abb.com

Pressure relief conference flyer.

Recent events or training courses ABB have attended

Events / training

CIA awards dinner

ABB Engineering Service hosted a table at the CIA awards dinner 2010 in Liverpool. There were representatives from Syngenta, GlaxoSmithKline (GSK), Cargil, GrowHow, Huntsman and Fine Organics. ABB also sponsored

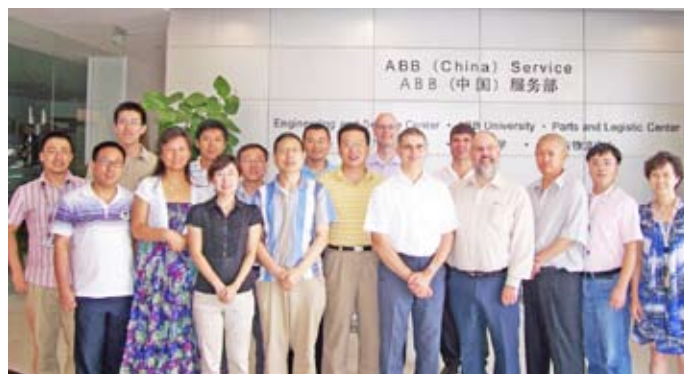


From right: Peter Hunt, ABB and Steve Elliott, CIA presenting Dale Curless, GSK with the Manufacturing and Resource Efficiency Award 2010.

the prestigious Manufacturing and Resource Efficiency Award, this years winner was GSK based in Montrose. Paul Everard of ABB led the judging panel for this award and Peter Hunt presented the award.



day workshop facilitated by Chris Greaves of ABB to discuss delivery in the Chinese market.



Tony Atkinson and Rob Turner, ABB (front row middle), Jon Cook, ABB (back row middle) and the ABB China Service team.

HSE Key Programme 4

Kevin Walls, Brian Hudson and Iain Wright attended the launch of the HSE Key Programme 4 'Ageing and life extension inspection' in Aberdeen for the offshore oil and gas industry. There were over 100 attendees and good contacts were made with a number of customers (BG, BP, Centrica etc). Further discussions are planned with the HSE and duty holders to discuss ABB's learning from onshore ageing plant audits and how ABB's 'Asset Life' product can identify the priorities and solutions to this common issue.



Gas Processors Association (GPA) annual meeting

Gerry Brennan of ABB gave a presentation to the GPA annual meeting in Lisbon, Portugal. Gerry's presentation entitled 'Contrasting techniques for periodic review of process hazards' was very well received. ABB also exhibited at the event which attracted companies such as BP, BG Group, Johnson Matthey and Total.



Gerry Brennan, ABB giving his presentation at the GPA annual meeting.

Safety Award for flawless execution

ExxonMobil have awarded ABB's Steve Andrews and his fuel station remediation team their first Safety Award for flawless execution. This is a new ExxonMobil award and is for achieving a year without any corporate reportable injury / illness.



Steve Andrews, ABB receiving his award from ExxonMobil.

IChemE awards dinner

ABB hosted tables at the IChemE awards dinner with guests from industry. ABB were short-listed in the Health and Safety Award category for the joint entry with ExxonMobil on Demolition and Remediation. Neil Blackhall, ABB presented the Sustainable Technology Award.



Left and right: Co-hosts Ray Stubbs and Mark Lawrenson. Middle from left: Neil Blackhall, ABB with the 'Sustainable Technology Award' winner, Axion Polymers.

Alarm management in Beijing

Tony Atkinson and Rob Turner of ABB visited Beijing to deliver training on alarm management to the ABB China Service organisation as part of the globalisation of the alarm management consultancy service. This was followed by a one

Conferences are major industry forums focusing on key topic areas.

Conferences - a full list is available at www.tinyurl.com/es-seminars

2nd March	Improving Business Performance	Leeds
15th-16th March	Shutdowns and Turnarounds	Edinburgh
16th June	Occupied Buildings	Manchester
29th June	Pressure Relief	Edinburgh
17th November	Process Safety Management	London
30th Nov - 1st Dec	Shutdowns and Turnarounds	Manchester



Seminars are focused on industry 'hot topics' and include inputs from external speakers.

Seminars - a full list is available at www.tinyurl.com/es-seminars

10th March	Hot Topics for Power Generation	Edinburgh
15th March	Automation System Upgrade	Manchester
29th March	Alarm Management in Practice	Teesside
5th April	Asset Ageing and KP4	Aberdeen
10th May	Delivering Projects in a Live Operating Plant	Edinburgh
10th May	Practical Reliability Improvement	Edinburgh
12th May	Process Safety	Aberdeen
17th May	Human Factors in Practice	Aberdeen
26th May	Asset Closure and Demolition	Teesside



Webinars are focused on industry 'hot topics' and are accessed over the web.

Webinars - a full list is available at www.tinyurl.com/es-seminars

16th March	COMAH - for Recent Entrants	Internet
13th April	Water Management	Internet
18th May	Pipework Remediation	Internet



Training courses provide in-depth knowledge on key subjects as part of an engineer's professional development.

Technical training - a full list is available at www.tinyurl.com/es-courses

2nd - 3rd March	IEC 61508 / 61511 and SIL Determination *	Frodsham
8th - 10th March	Pressure Relief *	Birmingham
22nd - 23rd March	Maintenance and Reliability Improvement	Edinburgh
22nd March	SIL Awareness for Control / Electrical Technicians	Manchester
23rd March	Process Safety Management Leadership	Grimsby
23rd March	Alarm Management	Belgium
29th - 30th March	Essentials of Pressure Systems *	York
30th - 31st March	Project Management in the Process Industries	Teesside
31st March	An Engineers Guide to DSEAR	Manchester
6th - 7th April	Design and Operations of Piping Systems *	Edinburgh
9th - 13th May	Hazard Study Leaders	Edinburgh
16th - 20th May	SIL Awareness and Hazard Assessment *	Frodsham
17th - 18th May	Area Classification *	Edinburgh
23rd - 27th May	Process Safety Management Best Practice	Manchester
25th - 26th May	Managing Deterioration of Plant Equipment *	York

* IChemE approved course.



All of the above events are organised and delivered by ABB Engineering Services.

For more information on: Seminars please telephone: +44 (0)1642 372029 or E-Mail: deborah.law@gb.abb.com

Training courses please telephone: +44 (0)1642 372121 or E-Mail: jackie.kendall@gb.abb.com

Manufacturing improvement at Aesica pharmaceuticals

Manufacturing improvement



Aesica is a leading supplier of active pharmaceutical ingredients (APIs), formulations and custom synthesis solutions to the global pharmaceutical and biotechnology industries.

As part of their continual improvement processes the Queenbrough site is embarking on a series of manufacturing improvement initiatives designed to deliver both continued sustained production and improved plant availability in order to meet ever increasing growth requirements.

ABB Engineering Services assisted the site manufacturing teams in assessing the current manufacturing processes and the associated capacity constraints for issues such as cleaning and preparation time between campaigns.

ABB conducted an investigation into the current operational performance of the production lines as the first step in improving the throughput of the manufacturing systems. A major focus



Inside Aesica's Queenbrough site.

of the investigation was the cleaning between campaigns. The next step was an engineering feasibility scoping study for utilising the adjacent plant and equipment line to immediately increase manufacturing capacity.

The work allowed ABB to provide suitable recommendations for improvement which have resulted in an

impressive 50% reduction for the end of campaign clean down or put another way some 50% additional operating availability.

The skills and learning acquired during this team effort are being applied to other campaigns and products with commensurate improvements expected.

If you have any comments or feedback in the ABB Engineering Services newsletter please contact: Graeme Collings - graeme.collings@gb.abb.com

ABB offices in UK and overseas:

- | | | | |
|--------------|----------|---------------|---------|
| Warrington | Aberdeen | Derby | |
| Billingham | Hull | Middlesbrough | |
| South Africa | Ireland | UAE | Norway |
| Malaysia | Thailand | Saudi Arabia | Denmark |



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