solutions

Life extension studies

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Looking ahead...

Welcome to the second edition of the new format Solutions newsletter.

This edition includes articles from pharmaceutical, chemical and oil & gas companies with process safety, asset ageing and integrity being key themes. Two of our articles, PTT and Springfield Fuels, focus on technical training and competency where ABB Consulting continues to see a high demand from our customers.

During 2011 well over 2000 delegates attended ABB's lunchtime talks, seminars, training courses, conferences and webinars. We also provided an increased amount of bespoke training at customer sites / offices.

We continue to develop this offer with lunchtime talks now running in Yorkshire in addition to those in Humberside, the North East, the North West, Aberdeen and Grangemouth.

We have also increased the number of our IChemE approved courses and our Pressure Relief training course is now running in Singapore and Australia.

Best wishes for 2012 to all of our readers.

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Don’t ignore your first line of defence

In principle, modern alarm systems provide process operators with an essential tool in managing plant operations and minimising unplanned abnormal events, such as plant outage or equipment damage. In the multiple lines of defence of any process plant, they provide an invaluable layer of protection, combining the flexibility and adaptability of the plant operator with the power of technology.

However in practice, poor initial design and lack of effective alarm management have resulted in alarm systems that are not “fit for purpose”. In many cases the system ceases to be a decision support tool and becomes a noisy distraction to be ignored, or in the worst case, may distract or confuse the operator and compromise his response to an abnormal situation.

Over the years, the most extreme cases of this have led to a number of incidents in which poor alarm management has been seen as a key contributing factor e.g. Texaco Milford Haven, BP Texas City and Three Mile Island.

Good alarm management not only reduces the risk of a major plant incident by enabling good decision making in complex and stressful situations, but also brings a host of other benefits:
- Increased production and equipment availability
- Reduced equipment maintenance costs
- Smoother run ups / run downs
- Reduced outage for maintenance
- Reduced equipment damage
- Reduced demand on protective systems
- Lower risk of incidents with serious safety, environmental or financial consequences

Realising that you have a problem with your alarm system may be the first step to achieving these benefits. An alarm review will establish compliance with recognised good practice such as the EEMUA 191 guideline and ISA 18.02 standard. It provides a ‘where are we now’ analysis and represents the benchmark phase of a total alarm management initiative.

Although it is effective as a stand-alone exercise it can also serve as the first step in a larger alarm improvement programme, which should comprise the following elements:
- Integration of alarm management principles into new projects and plant modifications
- Improvement project to remediate alarm issues on existing systems
- Establishing a framework for ongoing alarm management
- Building a team with clear responsibility and motivation to deliver and maintain an effective alarm management system and the associated benefits

Companies that treat their alarm system as a key production asset; seeing the need for ongoing management to identify any problems and working to continuously improve their system are on the journey to improve. ABB Consulting has significant history of successful alarm improvement projects based on our experience and a broad range of professional skills.
Asset life extension

Maersk FPSOs develop, build, install and operate Floating Production, Storage and Offloading units (FPSOs) tailored for oil production in demanding environments.

These vessels are among the most technically complex vessels in the world, and Maersk FPSO is a supplier to some of world’s leading energy companies. Maersk FPSO recently commissioned ABB Consulting to undertake three separate projects in relation to ageing and life extension.

The first project was for the Curlew Field, which is developed via subsea facilities feeding into an FPSO owned by Maersk FPSO. The field partners are Shell (50%) and Esso (50%), with Shell as the operator. As part of an internal Curlew Status Review project, ABB were asked to undertake a study to identify the major issues and areas of capital expenditure required in order to extend the life of the FPSO through to 2019. The study was focused on the topsides pressure systems, rotating equipment and fire protection safety systems. The study involved an initial workshop with key operations and maintenance personnel to identify the scope of the study and understand existing life limiting issues.

This was followed by a structured review of the original design data for the systems as well as the operational history, inspection reports and maintenance records. This allowed the multidiscipline ABB team to identify the life limiting issues, quantify the risk in terms of health, safety, environment, reputation and production as well as develop pragmatic recommendations to eliminate the issues or reduce the risks.

The cost for individual recommendations was then estimated, together with proposed implementation dates. This facilitated the development of an expenditure profile for the asset through to the revised cessation of production date.

The second project was also for the Curlew Field and involved undertaking an audit of the integrity management systems associated with ageing and life extension ahead of a forthcoming Key Programme 4 (KP4) audit by the Health & Safety Executive. This audit involved on site structured discussions with the main operations staff and main engineering disciplines together with a review of sample documentation across the five principal elements of the KP4 audit programme.

The third project was for the North Sea Producer FPSO which is currently located on the MacCulloch Field and is operated by ConocoPhillips. This project involved the design and facilitation of a one day workshop to identify potential ‘gaps’ in the integrity management systems associated with ageing and life extension ahead of a forthcoming KP4 audit by the Health & Safety Executive. The output from this workshop was then used to develop an ‘improvement roadmap’.

All three projects were completed in a short time frame to the overall satisfaction of the client.
“ABB’s Asset Integrity Management team carried out an Asset Life Strategy Review and a KP4 gap analysis audit for our unit Maersk Curlew. Both studies were carried out on time and to the approved budget and we were satisfied with the reports produced as the final outcome of the studies.”

Niels Poulsen, Mechanical Engineer, Maersk FPSOs.

Maersk FPSOs contributes to global energy supply by delivering safe and reliable floating oil and gas production services. Maersk FPSOs develop, build, install and operate FPSOs (Floating Production, Storage and Offloading units) tailored for oil production in demanding environments. FPSOs are among the most technically complex vessels in the world, and Maersk FPSOs is a proud supplier to some of world’s leading energy companies.
Retrospective HAZOPs

The HAZOP technique has been in use for many years and has proven to be an excellent tool to help identify process hazards, allow companies to control major accident risks and prevent operability issues.
The technique has traditionally been applied during projects and modifications. However, an increasing use of the HAZOP technique is to apply it in a ‘retrospective’ manner to existing facilities and not only on new projects or for modifications. BP require HAZOPs to be conducted on their existing assets in order to ensure that they are operated to the highest safety standards.

ABB Consulting were approached by personnel at the BP CATS gas terminal to conduct a retrospective HAZOP. This involved utilising an experienced HAZOP leader and scribe from ABB, BP process and mechanical engineers, senior operators and other specialist disciplines. The study was conducted over a number of months utilising a highly structured approach to HAZOPs.

BP have set new, higher standards for conducting HAZOPs. HAZOP is a rigorous, searching technique and when applied utilising a multi-disciplined team can help identify many issues that the original designers may have overlooked. Similarly, personnel who have operated and maintained such processes can highlight problems they have faced during day to day operations.

Many recommendations are generated from such an in depth, critical review of production facilities. The recommendations are aimed at continually reducing risks to as low as reasonably practicable levels such that incidents are prevented and companies continue to operate successfully.

The partnership between ABB skilled HAZOP resources and BP’s experienced operations personnel can yield significant business benefits for successful continued operation.

A retrospective HAZOP provides BP with a new ‘baseline’ study which can further be used and kept ‘evergreen’, as future process improvements are identified and subjected to the HAZOP methodology. The HAZOP report thereby becomes a living document that reflects current understanding of hazards and risks.

ABB is now supporting BP CATS in the close out of the actions. This is a prioritised programme of work to ensure that the risk reduction benefits of the HAZOPs are fully realised in a timely manner.

Pressure systems training

Springfields Fuels Ltd (SFL) manage the integrity of their process plant using a risk based approach. This requires a consistent and appropriate level of technical competence relating to design features, legislative compliance, modes of deterioration, fitness for service and other key aspects of equipment integrity.

In setting up a Skills Development Programme, SFL recognised that the technical and professional development of their professional engineers is particularly important to the success of the business. The company identified a need to develop their ‘Responsible Engineers’ at their site near Preston with a wider and deeper knowledge on legislative compliance relevant to SFL areas of operation, particularly in relation to National and International codes in such areas as pressure systems, piping integrity and management of deterioration.

SFL required a focussed technical training programme to be delivered by experts in the necessary technical areas. They recognised ABB’s technical expertise and long-standing experience of developing and delivering technical training. SFL commissioned a series of three two-day training courses covering pressure equipment integrity.

This tailored training programme will be followed by appropriate hands-on experience, coaching and mentoring to support and embed the learning. This training will also form the basis of development of new engineers.

“By working with the consultants at ABB we were able to tailor the course content to meet the specific needs of our business. I have received many positive comments from the engineers who attended the three two day courses, and as an engineering community we have benefited greatly from the training.”

Mark Britt, Inspection Group Manager, SFL
Prestigious health and safety prize win

ABB Consulting’s 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 2010 to one of many projects undertaken by the group. The joint ABB / Esso demolition and remediation project team have been awarded the RoSPA Gold for the fourth year running and the 7th RoSPA award in total. This is recognised as a fantastic achievement by the project team who are setting the industry 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 complex city centre environments, 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 legacy issues. In delivering the project, ABB has overall responsibility for decommissioning, CDM coordination, land remediation and project management. ABB applied their five stage demolition methodology to the project to offer Esso a safe, cost effective and complete solution.

Ageing plant assessment

The integrity management of ageing plant has become a key issue for much of the process industry in the UK, as an increasing number of assets are operated beyond their original design life.

The leadership team at Shasun Pharma Solutions’ Cramlington site are developing and implementing a proactive and consistent approach to the management of ageing assets. In support of this initiative, ABB Consulting were engaged to carry out an ageing plant ‘health check’ for the site.

The health check consisted of an audit and a criticality analysis. The audit included a review of the current asset integrity management systems and an assessment of the vulnerability of the site’s assets to ageing. The criticality analysis took into consideration both the findings from the audit and the Health, Safety, Environmental and production consequences of equipment failure.

The study highlighted that the site management team already have in place a number of effective systems and policies for the management of ageing plant. Opportunities for improvement were also identified. These opportunities were prioritised by means of the criticality assessment and corrective actions recommended.

Shasun Pharma Solutions found the health check to be a value adding process and plan to use the output of the study to optimise their integrity management programs.

Shasun Pharma Solutions is the vertically integrated chemistry partner for the pharmaceutical industry. Its services include innovative process research and development, rapid response small scale manufacture for clinical trial supply and full scale commercial manufacture of advanced intermediates and APIs, all with seamless technology transfer and under cGMP.
Pressure relief conference Edinburgh

ABB hosted its second conference and exhibition on “Pressure relief” in Edinburgh. There were 80 delegates with guest speakers from Lucite, FujiFilm, Syngenta, Fike, Sabic, Dow Corning, Colin Deddes, BP, Gaynor Woodford and John Walkington, ABB.

Asset integrity management Aberdeen seminar

Andy Hollins, ABB, presented at the asset integrity management seminar in Aberdeen. His presentation, entitled ‘Life extension of upstream assets - managing integrity and process safety’ was very well received by over 60 delegates from companies such as BP, Total, Centrica Storage Ltd, Marathon Oil and Maersk Oil.

Alain King, ABB, presented a paper entitled ‘SIL determination in the hazardous area’ at the HazardEx conference 2011 in Harrogate, UK.

Launch of 2012 Improving Business Performance Annual conference

This one-day conference, run in association with the Chemical Industries Association (CIA) will be held on 29th February 2012 at the Thorpe Park Hotel in Leeds. This conference will explore the key attributes of resource efficiency and promote sharing of the lessons learned by those that have started on the continuous improvement path. Delegates will learn from organisations that have taken varying approaches to business improvement. To find out more please contact Debby Law - deborah.law@gb.abb.com or visit: http://bit.ly/ibpc2012

IQPC offshore safety summit Aberdeen

ABB exhibited at the IQPC offshore safety summit in Aberdeen. Rob Turner, ABB, gave a presentation entitled ‘Alarm management: A key element of Process Safety Management (PSM)’. There were delegates from ConocoPhillips, Hess, National Grid and GDF Suez.

Hazards Asia Pacific Symposium Kuala Lumpur

ABB Consulting were the headline sponsor of the first HAZARDS AP symposium in Kuala Lumpur. It was jointly organised by the Chemical Industries Council of Malaysia (CICM) and the IChemE. During the event, ABB presented four technical papers by Ken Bell, Allen Ormond and Jon Cook. With over 230 attendees, the symposium was very well attended with delegates from companies such as Petronas, Syngenta, Shell, BASF, DuPont, Talisman, Huntsman, ConocoPhillips and Orica.
5th annual global refining summit
Rotterdam

ABB Consulting sponsored and had a joint exhibition stand with ABB Process Automation at the 5th annual global refining summit in Rotterdam. Gerry Brennan, ABB, gave a presentation on ‘Process Safety Management and the potential shortcomings in your layers of protection’ which was very well received. The conference was well attended from companies such as Total, Saudi Aramco, Shell and BP.

Discover Energy Efficiency
Yorkshire, UK

ABB sponsored the Yorkshire Chemical Focus event entitled ‘Discover Energy Efficiency’ held in Huddersfield. Colin Board, ABB, gave a presentation on ‘Creating the energy aware organisation’ to delegates from Unilever, Heineken and Croda amongst others.

CIA awards
Birmingham, UK

Peter Hunt, ABB, (left) and Steve Elliott, CIA (right) with award winner Ian Williamson, Syngenta.

ABB were the Chemical Industry Association (CIA) awards headline sponsor and also sponsored the prestigious Manufacturing and Resource Efficiency Award. This years winner was Syngenta, based in Grangemouth.

IChemE registered safety professionals

ABB are pleased to announce that Graeme Laughland has recently been appointed as a registered safety professional by the IChemE. Demonstrating competence in the field of process safety is a topic that many of our customers are interested in. For more information on how to become a safety professional contact the IChemE. Website: www.ichem.org
Conferences and events

Forthcoming events for 2012

**Conferences**

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<td>Improving Business Performance</td>
<td>Leeds</td>
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<td>30th May</td>
<td>Integrity Management</td>
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<td>Delivering Projects in a Live Operating Plant</td>
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<td>7th March</td>
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<td>Alarm Management - ISA 18.2 vs EEMUA 191</td>
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<td>Living with Corrosion</td>
<td>Grimsby</td>
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<td>Automation Legacy Migration - How to Start</td>
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<td>After the Energy Audit - Where Next?</td>
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<td>3rd February</td>
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<td>17th February</td>
<td>Inspection is More than PSSR</td>
<td>Hull</td>
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<td>23rd February</td>
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<td>24th February</td>
<td>SMART Decommissioning</td>
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**Webinars**

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<td>18th January</td>
<td>Growing Old Gracefully! - Challenge of Ageing Assets</td>
<td>Internet</td>
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<td>22nd February</td>
<td>Making Change Work</td>
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<td>21st March</td>
<td>Is Your Electrical System Discriminating?</td>
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<td>HAZOPs Only Reduce Risks When the Actions are Done!</td>
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**Training courses**

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<td>Human Factors Incident Investigation</td>
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<td>31st January</td>
<td>Hazard Study Awareness*</td>
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<td>8th February</td>
<td>Electrostatics Ignition Hazards*</td>
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<td>Mechanical Legislation Awareness</td>
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<td>16th February</td>
<td>SIL Awareness for Control / Electrical Technicians</td>
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<td>Essentials of Pressure Systems*</td>
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<td>7th - 8th March</td>
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<td>13th - 14th March</td>
<td>Achieved SIL</td>
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<td>21st - 22nd March</td>
<td>Project Management in the Process Industries</td>
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<td>Pressure Relief*</td>
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<td>26th - 28th March</td>
<td>Pressure Relief*</td>
<td>Singapore</td>
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<tr>
<td>27th - 29th March</td>
<td>Human Factors in the Workplace</td>
<td>Manchester</td>
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Conferences

Conferences are major industry forums focusing on key topic areas. Please contact us if you would be interested in presenting at any of our 2012 conferences.

Seminars

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

Lunchtime forums

Lunchtime forums provide an update on key industry topics and share best practice.

Webinars

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

A full list of all the above events is available at: www.tinyurl.com/es-seminars

Technical training

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

A full list of training courses is available at: www.tinyurl.com/es-courses

* IChemE approved training course
Further news

Continued support to PTT Group

ABB Consulting continue to support the PTT Group with consultancy services through our Thailand office. PTT have recently developed a growth plan which may include acquisitions and mergers both in Thailand and overseas.

ABB were engaged as a technical advisor to PTT for a potential target in the United States. Our process technology and asset integrity expertise combined with significant experience in Technical Due Diligence (TDD) were the major factors associated with the award of the contract.

PTT Chemical (PTTCH) also has a growth strategy and wish to be able to act with more independence in future TDD activities. PTTCH commissioned ABB to create a bespoke training event for TDD for the PTTCH organisation. There were two separate events for different levels of the organisation.

Vice presidents and senior managers attended an awareness event which highlighted the corporate issues whilst the senior engineers were provided with more technical training on the topic. The events were a combination of formal training, practical examples and specific workshops created for the PTTCH business. In total, over 60 people attended the events over 5 days.

ABB Consulting provides technical consulting and engineering services to improve performance in the areas of compliance, operations and engineering to customers in the chemical, petrochemical, oil & gas, power, pharmaceuticals, metals and consumer industries worldwide.

We offer expertise in the following areas:

- Environmental services
- Functional engineering
- Industrial energy efficiency
- Inspection
- Integrity management
- Operations improvement
- Process safety
- Project services
- Technical software
- Technical training

www.abb.com/consulting