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## Integrated solutions across the hydrocarbon value chain from ABB

**W**ith oil prices hovering around the \$50 mark and challenging market conditions across the global oil and gas sector, operators are looking at ways to boost their profitability. While investment in capital projects has slowed, companies operating in the oil and gas sector are still looking for ways to increase uptime and raise productivity

**at their facilities while simultaneously reducing operational expense.**

ABB has a long and proud history of providing a fully integrated range of cost cutting, performance enhancing solutions in the oil and gas sector. The company offers products, systems and services across the entire hydrocarbon value chain. It provides its customers with an integrated approach for automation and electrical needs that reduces

cost, keeps customers on schedule, and minimises risk. ABB has a strong track record for execution in this industry while ensuring reliable operations, optimised safety, system availability and compliance with environmental requirements. In this issue of Pipeline Presents, we meet with ABB's senior leadership team for oil, gas and chemicals to get the inside track on how the company plans to grow its hydrocarbon business units.

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# The view from the top

Pipeline Presents spoke to Per Erik Holsten, ABB's Managing Director of Oil, Gas and Chemicals, to find out how the company is positioning itself to grow, despite the challenging market conditions

## What is ABB's strategy for oil and gas over the next 18 months? What plans do you have to grow the oil, gas and chemicals business?

If you look at how we operate the business today, you will see that there are 8 centers of execution sitting across a range of geographies - we also call these "hubs". One of those hubs is here in the UAE, which is the Middle East and Africa hub. So we have that hub located in the UAE but we also have a lot of strategic resources located in the countries around the UAE. In terms of how we are going to be conducting the business over the next 18 months, it will be focused on innovation, integration and standardisation. We believe these focus areas will drive success for our customers and ABB. ABB's broad portfolio for this industry covers automation, electrification, instrumentation and telecommunication - and we are continuing to expand that portfolio to meet new industry demands. Concentration on the market is key. With the current oil prices per barrel sitting at \$46 (at time of interview), behaviors in the market are changing. Companies are still finding new opportunities and they are doing that through focusing on innovations that help them be more efficient than ever. ABB has a huge installed base with clients around the world. We are running operations on plants which we serve on a daily basis. Making sure that these customers have reliable, safe, and efficient plants is one of the key elements that we are doing. So for the next 18 months, we will continue to focus on conducting business in the best way to serve our customers.

## Which new markets are particularly interesting to ABB Oil, Gas and Chemicals?



ABB looks at the market from a global perspective. I would also say that there are pockets of growth opportunities opening up. Africa is an attractive market. The Middle East is actually an extremely interesting market for ABB. It's interesting from the point of view that they have a lower break-even price for oil production, so there are still activities here in the upstream sector. On the downstream, chemical side the market is also seeing lower feedstock costs; opening up pockets for growth opportunities for players in this industry.

## How have low oil prices affected ABB's oil, gas and chemicals business units?

Some of the hubs have more exposure to the offshore upstream side of things, some of the hubs have more of a focus on downstream products and chemicals. Obviously there has been more of an impact on the business of the hubs

that have more exposure to the offshore upstream side of things. So it balances itself, in the way that the offshore upstream side is suffering, whereas the downstream and chemical side of things is still growing - maybe not a steep growth curve, but the growth is still there. So if you look at the different geographies, you have the Middle East which is a mixture of onshore and offshore, but if you take the North Sea then obviously that is very heavily affected by the offshore sector.

We have a clear growth strategy in place, which includes some interesting technology leads.

## Speaking of technology - how big a role do you expect the Internet of Things (IoT) to play in the oil, gas and chemical sectors?

I think that is a hot topic in the industry right now. It has been up and coming for a while, although maybe in the past it hasn't been quite as hot as it is now and will continue to be for the foreseeable future.

We have delivered quite a lot of digital deliveries, IOT services. You may have recently seen in the news that we have partnered with Microsoft to really drive digital industrial transformation. This partnership is going to accelerate digital solutions to improve customers productivity, speed and yield. ABB has decades of experience in digital and has delivered a lot of IoT projects and services over the last 40 years. Things like typical vibration monitoring, condition based maintenance type of programmes, shift and operator control alarms inside of processing sites. Our offering in ABB is the centre piece of digital processes because our automation systems connect all the key



data from the processing plant, including the safety data. So, we have access to all control systems offerings through that data and we can process them in the best way possible. The key for the Internet of Things services and people is "how do you make sure that you take the data, make it into interactions with the people, assign it to services that are meaningful to the company and bring value to our customers?"

I think there are a lot of different aspects, right the way from simple things like work processes, all the way to starting a greenfield project. There are important questions to ask like how do you deal with the data and the maintenance programmes that you have? How do you ensure that you get the most energy efficient plants possible? How do you make sure that you have the best productivity in the industry? All customers are striving for the answers to these kinds of questions.

Customers want data that is reliable. Reliability and safety are key. But they also want to find out how to produce more out of their existing installations. As I said, there are many different aspects to IoT technology.

To make an analogy, it's a little bit like the data that is collected by your personal sports watch. The software collects all kinds of data – GPS, heart rate, how long you have been asleep. After collecting all that data it gives you guidance on when you need to exercise,

when you need to eat, how much you need to drink. This is similar to the way that IoT helps customers monitor their plant and to make sure that they are not losing out on productivity compared to their competitors.

The Internet of Things and digital transformation of this industry is happening. ABB is leading this transformation with our large installed base of connected industrial devices. It's all about turning data insights into the direct action that "closes the loop" and generates customer value in the physical world.

#### **How can ABB help companies improve their operational efficiency and why is this important?**

Let me mention one or two examples from the many that we have on offer. First are the integrated operations solutions. This means putting together a package of solutions that make sure that the operators operate in a safe and efficient manner, while fully interacting with each other. Also, things come into play like an onshore remote operations centre. It doesn't have to be a full operation centre per se, given that everything is done remotely but you can move those activities from the plant itself, whether that is onshore or offshore, away from areas where infrastructure doesn't support having a lot of people on site. You can move those operations back

to a digital centre. That's what integrated operations can do for a business.

Another element of this is a more automated example, process power management. Here, the automation technology takes care of your safe, reliable and efficient power. So, if you encounter a power outage, if a generator stops working, if something is causing a bleeding of the power, you can automatically offload the unimportant power from your power network or grid. You can take out the operations that are not required to run the plant, such as auxiliary or utilities power, and then you focus the power on the critical systems which help to maintain your production.

#### **What trends are you noticing in the Oil and Gas Sector?**

When we speak to our customers, there are a few things on their mind. Half of it is about cost –how do we make sure that the cost level in the industry stabilises at a level where investments are still taking place and where they can defend the break-even price that they have. We are already seeing examples of companies in the oil industry being able to lower their break-even price because they have taken the necessary measures. Then there is an element of standardisation and reusability. The industry has previously tended to offer bespoke types of solutions but I think that now customers are looking at standardisation as a way of getting the cost down.

I think if we summarize ABB's strategy going forward, it is about innovation on industrial digital transformation and standardisation & optimisation of processes to best serve our customers in a changing market. A lot of our customers are also talking about digital. How do you make sure that all of the different pieces of equipment speak together in a way that is plug-and-play. Our ability to integrate across multiple products and systems is key to helping the industry with this topic. Combining ABB's integrated portfolio with our installed base of connected devices is already helping this industry uncover hidden value and 'close the loop' with data insights.



# Integration is essential for oil, gas and chemical operators

ABB's Global Head of its Next Level Programme for Oil, Gas and Chemicals, Allen Burchett, talks about the importance of deep reaching integration across the breadth of the hydrocarbon value chain.

## Tell us about the scope your role with ABB?

I head the Next Level Growth Programme here at ABB, for oil, gas and chemicals. As part of this programme, I am responsible for uncovering areas to drive growth in this important sector. We have a long history in oil, gas and chemicals and we see a real opportunity for growth despite difficult market conditions. My job centres specifically around three major areas – increasing our market penetration, getting a relevant portfolio and improving our service position.

## What opportunities for growth do you foresee in the global oil, gas and chemicals sectors for ABB?

Oil companies are slashing their budgets right across the globe as a result of the harsh reality of \$50 oil. However, global demand for liquid hydrocarbons will continue to grow. When you look at the projections to 2030 and 2040, we foresee solid growth.

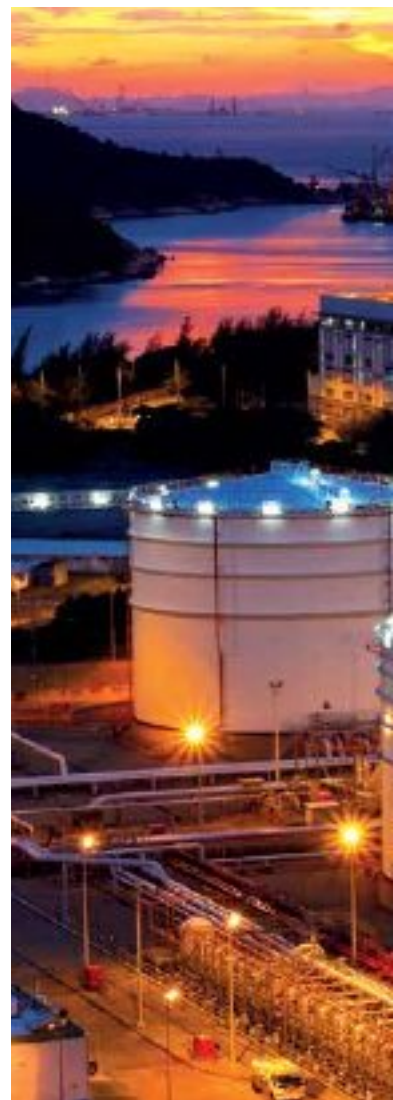
I recently visited the North American Gas Forum in Washington D.C. and I spoke to a lot of LNG producers. Their attitude is that everybody knows that this is a tough time, with strong headwinds, but when you look at the longer-term, you start to realise that the demand will grow. So growth for liquid hydrocarbons is going to be strong. Whether that ends up being demand for LNG or for crude itself remains to be seen, but the overall macro-economic indicators are strong.



We expect that growth to come from a range of sectors, certainly in terms of transportation for China and India. One study I saw suggested that the growth in demand from China would be mainly for diesel that would be used for transporting food. As it stands, they don't have that established logistics corridor and system to move food from the east of the country to the west, and they are trying to promote growth in the west. So there are a lot of macro and microeconomic drivers to understand on this topic. In North America, it's a whole other story. We've seen an increase in North American oil production, particularly from the shale fields. Shale oil is

interesting. You could ask why it has been such a success in North America when shale oil is present in many locations across the world. The answer is that North America has over 40 years' experience with this technology and they know the geology. We also have a strong investment climate underpinned by the rule of law.

There is shale in Argentina, in Algeria, in Saudi Arabia, even in Poland, but it was North American operators who went after it and invested in the fracturing technology. As other countries build a better understanding of the geology of shale, you will see shale reserves starting to be developed there, too. In terms of opportunities for ABB, we are firm on our projections for growth and we see lots of opportunities in North America in particular.





“ABB is one of the few companies in the world who can provide a truly integrated solution across both the electrical, power and automation portfolio.”

On the gas side, based on the data, we are confident that gas consumption is going to grow faster than oil consumption. One unknown quantity there is the Russian gas going into Europe. We are also looking at established, mature producers of oil, such as

Russia. There is a real opportunity for us in terms of equipment and software upgrades to help build up their infrastructure to get more production out of those brownfield sites. The new technology that is available for brownfield sites offers genuine opportunities for modernisation that will really help those producers. From ABB's point of view, I see a lot of opportunities for midstream pipelines. We are currently involved in several

pipeline projects around the world, and we have a great value set for those projects.

**Tell us a little about your downstream activities?**

Chemicals, especially with the abundance of shale feedstock in the

US, will be a key area for us. I am based in Houston and I have around 1,500 chemical plants within a short drive of my office and there are still more being built. At this point we are seeing a lot of mixed-feed crackers being used across the globe. If you look at the opportunities in Egypt with their recent oil and gas discoveries, you see that they are trying to create a chemical industry that is similar to what has been achieved at Sadara. It really depends on the geography and what feedstocks are available. In the US it is predominantly a liquids-based industry, with a lot of NGLs being used. So when we look at the whole of the hydrocarbon industry, we can see that it is an industry that is facing some substantial headwinds. However, we see bright spots in midstream pipeline projects, in petrochemicals and in refinery upgrades.



# Strong customer relationships are key to success

Jean-Luc Raphet, PG Manager Onshore, talks about the solutions ABB offers to reduce both CAPEX and OPEX by working closely with its customers in the onshore oil and gas sector

## What trends are you noticing in the onshore sector?

When we look at what has happened over the last few years, particularly since 2014, we have seen that a number of IOCs and NOCs have started to cut their CAPEX and their OPEX and they have done this across the globe for almost all activities that they had in their scope of work.

Onshore midstream has followed this impression. Maybe not at the same level as we saw for the offshore upstream sector but it has been similar. What we see now, from that time, is that the customers we have are focusing on reliability of the equipment that they have. They are focussing on cost reduction, particularly when it comes to CAPEX, but for OPEX as well. So everything has been impacted by the challenging markets of the last two years, not only in the region but across the whole global industry.

## What countries are you most heavily involved with in the onshore sector?

The Middle East region is really key for ABB. We have a strong presence here. We have sales competence here, we have engineering competence here, we have production competence and we cover almost all the countries in the region. If we think about the UAE, Saudi Arabia, Oman, India and Qatar, we have over 1,200 employees here in the region, so it's a huge operation. This is an indication of the size of the investment that we are making in the region.

## What opportunities are there for asset optimisation to help customers reduce their bottom lines and become more profitable?

We can look at this in two distinct pillars.



The first is to do with CAPEX; the second is to do with OPEX.

If we look at the CAPEX, we can see that customers want to have on time delivery, at the defined price and very often this defined price is lower than what they were paying in the past.

If we look at the OPEX on brownfield sights, we see that customers want to increase uptime and reduce the amount of lost hours. They want to reduce production loss and to increase the availability of their assets and extend the lifespan of their plants.

In this respect we offer a number of different solutions that cover this spectrum. These needs represent a real opportunity for the application of asset optimisation technology.

The most important thing is to understand what your customers want to have. The best way to do this is to work as closely

as you can with them. This is why partnership is such an important term – because it allows you to get close to your customers and to understand their needs, making it as easy as possible for them to work with us to overcome the challenges they are facing together. With this in mind, we are developing a number of elements. First we need to think about the questions our customers might have: how do we monitor our plant; how do we increase plant efficiency; how do we increase our production rate in a safe manner? To answer these questions we start working with the customer as early as possible – on the conceptual phase or the FEED phase. This way we are able to gain a deep understanding of what the customer wants and are able to share our expertise on technology, project knowhow and project management. So it's really important to get that early engagement.

Secondly, we use our technology and product knowledge. We can use the process control and safety solutions that we offer, which permit our customers to understand early on what they can do and they are able to use it from a remote location also.

We are able to offer a number of solutions for electrical management, where we help the customer to prevent blackouts and to improve the efficiency of their electrical systems.

What customers want is to work with a partner who is the single interface working across a range of disciplines. We offer the opportunity to work on the electrical, instrumentation, telecom and control systems side of things through one single contact. To achieve this, we utilise the wide range of strengths that we have across the ABB brand.



# Subsea leads the way for offshore development

Stein Guldbrandsøy, PG Manager Offshore for ABB, gives an insight into the emerging trends that are affecting the offshore sector

## How is the offshore sector coping with the low oil price environment?

We have seen falling investment and operators are cutting costs, on both the OPEX and CAPEX side of things. So, we have to follow that trend as a service company both for ongoing projects and for new projects. The pricing levels are certainly being challenged.

What you are also seeing now is companies managing to reduce their break even costs. For example Statoil on the Johan Sverdrup field have reduced their break-even point from \$70 to \$40. That is a massive achievement.

I think the industry needed a reset, but this was a hard one. Nothing can last forever, so a reset of the industry was certainly needed. I think it echoes with [the oil price crash of 1987], where we had a similar situation that lasted for a long time.

## What kinds of innovative solutions are on offer to overcome these challenges?

If you look at our current portfolio, for example electrification and telecommunications, we are looking towards more standardised solutions. That is becoming more accepted. In the past a lot of tailor made solutions were on offer and that involves a big cost. In terms of integration there is more and more interest in our EICT model, which means that we take responsibility for everything in the Electrical, Instrumentation, Control and Telecommunications remit - the whole package.

In addition there is also the issue of standardisation across all disciplines. We have several initiatives in this field which have been very well received.

“Subsea and deepsea are pillars of ABB’s growth strategy in the offshore sector. Currently we are the market leader in the subsea installation of electrical equipment”

## What are the main growth areas in the offshore sector at the moment?

We are currently doing a joint industry programme with Statoil around the subsea sector. Subsea technology is changing the way we think about offshore. ABB is developing new technologies to electrify the subsea factory- looking at everything from controls, power distribution, drives and motors. The target is to put everything sub-sea. So that is a big project that we are running at the moment with Statoil. It involves working at depths of over 3000 metres and we expect a lot of good things to come out of this project.

Then of course we have the deep shale oilfields, where we have been a player for many years. We have a whole range of solutions in this field, from operational support and maintenance support right through to operations. The operations part is a little bit more difficult to implement but that depends on exactly what the



operator wants to run the field. In our most recent project we are implementing the full portfolio of solutions. This is beneficial for the operator because when you deal with one provider, the integration is better, so you deliver the project quicker. Even during installation and start-up we can provide remote support, meaning that you don't have to fly in all of these experts to the site.

## How is ABB involved in the region for offshore projects?

The North Sea is very important to us. It has been like our laboratory. A lot of our solutions began their lives in the North Sea and were then moved on to other geographies. When I say the North Sea I mean both the UK and Norway.

We have a real focus on South East Asia, Australia, both East and West Africa, and of course the Gulf of Mexico will continue to grow - especially when Mexico has stabilised its political situation. Last but not least Brazil – that is the big market. Once they have sorted everything out politically, that will be a huge market for us.

Just talking about deepsea and subsea, we are trying to increase our exposure in that arena. Subsea and deepsea are pillars of ABB's growth strategy in the offshore sector. Currently we are the market leader in the subsea installation of electrical equipment. We have pioneered "power from shore" technology through one of our projects in the North Sea and currently have 100 percent of the market in the North Sea.

# The Middle East sharpens its focus on specialty chemicals

Joerg Theis, PG Manager Chemicals, talks about the issues that are affecting chemical producers in the downstream hydrocarbon market

## How is the downstream sector reacting to the current low price environment?

I think that when the oil price started to go down, it provided a nice little boost for the chemical production sector. You could really see that margins were improving, especially in the refining sector. But I would say that there is also a correlation between the oil price and the economy, so in the current market with oil hovering under \$50 per barrel, you can see that the economy is holding back a little. This in turn has a knock on effect on global consumption and this is now starting to put chemical companies under pressure. This pressure is going from the feed, to the chemical and on to the petrochemical and to oil and gas sectors. This is part of a trend that is emerging whereby our customers have to improve the way they are working if they want to secure better margins. So, in terms of trends that are emerging, we will see smaller plants shutting down. Mega plants with manufacturing parks will begin to dominate.

We also expect to see a sharp rise in all types of efficiency improvements, with much more automation than ever before. We are talking about the use of robotics and of the use of new service concepts. We will also see a much deeper degree of integration. These are the tools that our customers will be using in order to boost their efficiency and profitability.

## How is the Middle East region making use of liquid feed and mixed feed crackers?

I think that the Middle East is a real trend setter and early adopter of new technologies. It's always nice when you are able to build greenfield sites rather than updating your brownfield sites. On the flip side of this, the region doesn't have the cheap gas, so the feedstock issue is something that you have to learn to cope with.



If we look at the Sadara complex, Sadara represents the future. It is a world scale complex which is comprised of many different interconnected plants. These range from the refining and cracking plants right the way through to the plants which produce the more specialised chemicals, and there you see the benefits of balancing your feedstocks and using mixed feed crackers. Obviously Sadara is a greenfield site, so they are using the most up to date technology.

We are hearing a lot now about oil to chemicals technologies with operators like Sabic who are looking to get involved with this. I believe that this new type of cracking is something that everyone will look to make use of in the future. Previously, operators were very focused on refining but now I think they want to go further in the chemical production market in search of higher value products that they can sell.

## How will the Middle East raise its production levels of specialty chemicals?

I think this will be achieved through a lot of activity in the mergers and acquisitions market. I really believe that Saudi Arabia and all the other key players in the region

“We expect to see a sharp rise in all types of efficiency improvements, with much more automation than ever before.”

will definitely move from commodity petrochemicals to those higher- value specialised chemical products. The Middle East could be a perfect export hub for China. China's economy grew at 6 per cent last year and it will come back and will have a huge demand for these chemical products.

## How important is the Middle East Region for ABB Chemicals?

For us the Middle East is a very important region. As a company, ABB is very strong when it comes to EICT (Electrical, Instrumentation, Control and Telecoms), historically in the offshore sector. With Sadara we were operating as the Main Automation Contractor (MAC) and we believe that this is an area where ABB can really add value. There are quite a lot of trends emerging that are all geared towards making your plant more efficient, especially here in the Middle East. We believe that we can help companies reduce their CAPEX in the region's chemical sector by around 20 percent just by working with ABB. In addition to this, we can also help them reduce their OPEX by 10-15 percent, simply by reducing the amount spent on maintenance.



# South Asia an up and coming market for IOTSP

Paul Singh, Senior Vice President for South Asia, looks at the key markets emerging in this crucial region

## Which countries are you involved in, in the South Asia Region?

The majority of our business concentrate around Singapore, Malaysia, Thailand and Indonesia, including EPCs in Japan. In addition, we cover business development for Vietnam, Bangladesh, Brunei, Myanmar and Philippines.

## Which countries do you see as particularly exciting growth markets?

The emerging economies in Asia Pacific are potentially driving growth of global chemicals market. We see huge potential in Indonesia and Thailand for chemicals market. PTT, Thailand-based company engaged in the gas and petroleum businesses, has major projects planned in the next five years, for example, to

develop a large refining and petrochemical project in Vietnam's Binh Dinh province. Pertamina, Indonesian state-owned oil and natural gas Corporation, has also rolled out their Refinery Development Master Plan (RDMP) to upgrade four refineries. Also, there are great opportunities with EPCs in Japan which does projects globally.

## What new technologies are you particularly interested in at the moment?

The whole world is talking about IoTsp (Internet of Things, Services and People) and cyber security. The industry landscape is changing as digitalisation takes on a bigger role. Hence, any such related technologies are of particular interest to me. Even as a company, we are moving in a big way on digitalisation.



## What are the key challenges facing the region and what solutions can ABB offer to help overcome them?

Naturally, the current oil price has an impact on the region. End-users are looking at lower CAPEX and Operators are looking at lower OPEX. Hence, I see greater focus in cost saving measures, faster turnaround in project execution and enhancement of plant efficiencies, reliability and sustainability. ABB has broad offerings for our Oil, Gas and Chemicals customers to address these issues. We are able to provide complete containerised electrical and instrument houses solutions, commonly known as e-house or advanced solutions, just to name a few.

# The North American perspective

Brandon Spencer, Senior Vice President, North America, looks at the trends that are affecting the North American market

## Tell us a little about ABB's main focus in the North American oil and gas sector.

Our focus in North America is to serve as a trusted advisor to our customers across the entire hydrocarbon value chain. We can add value from the earliest design phase and throughout the life cycle to reduce risk, improve schedules and sharpen the capital costs of projects. We are fortunate to have opportunities in all the chemical, oil and gas markets, and in particular with customers looking to invest in assets due to the attractive feedstock price of natural gas that we have in the U.S. While the market in Canada has slowed with lower oil prices, several pipeline

projects are under consideration in the country. We have signed letters of intent for some of these projects to be a major provider of the infrastructure required once they go forward. In Mexico, there is significant activity due to the energy reform that is taking place.

## How have low oil prices affected business opportunities in the US, especially with the decline in shale production levels?

We have seen shale gas as fairly resilient and highly innovative in driving costs down and efficiencies up. Drilling rig leases have been increasing over the last few months, and while not a definitive trend, it is an encouraging one. Several



of our short cycle businesses are seeing an increase in activity, and our customers have been asking about standardisation, modular solutions and connectivity of the field. All of these topics are part of what ABB calls "the field of the future."

# Excellence in automation in the MENA region

Christian Cravedi, Senior Vice President MEA, region, talks about the importance of process automation in the Middle East

## How are the India, Middle East and Africa regions adjusting to the new era of lower oil prices? What trends are emerging in the region?

With the price of oil still searching for a new floor, the region's OGC operators are looking for ways to overcome a range of new challenges, as the world adjusts to the new reality of \$48 oil (at time of interview). Just a couple of years ago, this idea would have been all but unthinkable as crude continued to trade comfortably around the \$100 mark. While analysts refuse to be drawn on when, or even if, the price of crude will return to its previous levels, the dramatic price drop has made one thing abundantly clear that operators need to ensure that they are doing everything within their power to increase efficiency and boost their slender profit margins.

## How can process automation help this process?

Process automation is the first step in

a journey towards a new generation of ultramodern, high tech refineries and petrochemical plants that will breathe new life into the region's downstream industry, dramatically sharpening its competitive edge. As countries look to refocus their export portfolios on value added downstream products, process automation will allow for far better integration across the full spectrum of the Oil, Gas and Chemicals sector. The exacting requirements of the industry include productivity, efficient utilisation of resources, quality work environment and minimal adverse effects on the environment.

ABB founded in 1883, is today one of the world's leading players in power and automation technologies. In the oil and gas market, ABB has more than 50 years of experience in delivery of complex projects. Our integrated EICT solutions combining engineering, consulting, products and services permit to reduce CAPEX by 20-30 percent with 2-3



months improved delivery time. Through collaborative operations, we use digitalisation and analytics to improve the operational performance and energy efficiency of a broad range of chemical processes, from the smallest batch plant to the largest continuous petrochemical complex. Our global team and service centers supports customers with highest availability, quality, risk reduction and information flow for a safe operation improving the total cost of ownership over the complete lifecycle of the plant.

# Supporting the UK's oil and gas sector

Martin Grady, Senior Vice President for the UK, talks about the impact of Brexit on the UK's oil, gas and chemical sector

## Tell us a little about the ABB's main focus in the UK's oil and gas sector?

ABB's oil and gas focused business in the UK serves customers both locally on the UKCS and internationally from the Caspian sea to Australia.

We have supported the oil and gas industry in the UK from the very early years, having an established office in Aberdeen from 1975, helping to bring major offshore assets online and running in the north sea. Since then ABB has built a significant installed base in automation and electrical systems; approximately 50 percent of North Sea production (UKCS and Norway) is controlled by these systems. We're continuing to provide systems and support to expand



production, improve operations and ensure safety and security on operating assets. Some of our customers include BP, ConocoPhillips, Nexen CNOOC, TAQA, Total and Centrica. The UKCS is a mature basin, we are increasingly helping operators overcome challenges

associated with ageing assets or looking at decommissioning.

## How has Brexit affected ABB's operations in the UK?

Since the announcement in June that Britain had voted to leave the EU, we have been watching developments closely. It's clear the process still has a long way to go before the impact on UK companies will become clear. From our perspective, ABB will remain fully committed to our UK customers and employees. ABB has a significant and very robust business in the UK, employing around 3,000 people across 20 locations. The business supports a large range of UK customers and customers in other EU and non-EU countries.



# Norway: Europe's oil and gas powerhouse

Borghild Lunde, Senior Vice President, Norway, gives an insight into how ABB is flourishing in Norway's oil, gas and chemical industry

## Tell us a little about ABB's main areas of focus in Norway's oil and gas sector?

The main focus is to provide our customers with complete electro, automation, instrumentation and telecom systems, including subsea electrification and power from shore. We seek to optimise the system through early involvement with studies and improve uptime and reliability with services focusing on condition monitoring of critical equipment, production optimisation and maintenance planning.

## What new technologies are being deployed in Norway's offshore fields?

We are seeing a lot of remote monitoring, control and operation of offshore installations, as well as a lot of Subsea technology and power from shore. We are also seeing services and software seeking to optimise production, energy usage and reliability.



## What are the main challenges associated with working in Norway's oil and gas sector?

One of the main challenges is that operators are working in increasingly more remote areas, for example in the Barents Sea. In addition to this, Norway is a high cost country with high costs associated with the workforce. We are also seeing a rise in development costs and over time lower productivity. Norway takes its safety, emissions and

environmental concerns seriously so it is important to know how to get the best out of these areas.

The final challenge we face in Norway is distributed projects, e.g.. Construction in South-Korea with the end-customer in Norway, interface to other suppliers worldwide.

## What solutions does ABB offer to help overcome these challenges?

ABB offers a wide range of solutions in this arena, including:

- Remote monitoring and control rooms and corresponding services enabling a reduction in workers offshore/on-site, thereby enabling safer, faster and cheaper production.
- Automation of operations and safety systems, increasing the ability to optimise production, reduce likelihood of incidents damaging people, environment or the installation.

# North Asia focus

Zeng Tao, Senior Vice President for North Asia, looks at how Chinese EPC firms are making their mark across the North Asia region

## What trends are you noticing in the North Asian oil and gas market?

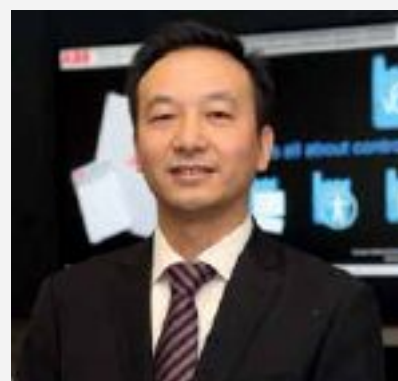
In China, domestic oil production is seeing a reduction in output. Gas production in China is also reducing. Of course we have a lot of imports, via pipelines for gas. A lot of Chinese EPC firms are getting involved in international projects, particularly in the Middle East, as well as in Central Asian nations, such as Turkmenistan and Kazakhstan. This is one of the main trends in the Chinese oil and gas sector.

## How much of a factor is the slowdown of China's economy to business in the area?

Previously, there were a lot of very ambitious projects in the pipeline, for the import of gas and oil to power the industrial sectors. Due to the slow down in industrial utilisation of the gas, demand is beginning to slow and some of these projects have had to be put on hold. Domestic gas consumption is quite stable, but of course this has less of an impact on these types of mega projects.

## What projects are you currently working on and what excites you most about them?

There are still a lot of coal-to-chemical and coal-to-liquid projects going



on in China. We are seeing a lot of activity from this point of view in other locations too. We are able to bring the expertise we have perfected in China to these projects.

I am responsible for projects across the region, including China, Taiwan and Central Asia. We are not that involved in Japan or Korea, but actually our Norwegian division is providing their expertise in a number of offshore projects there.

# Next generation IoT technology combines with services and products

Otto Preiss, Global Managing Director, Motors and Generators at ABB looks at how technical innovation is helping companies remain profitable during challenging market conditions

## What are the key challenges that Chemical, Oil and Gas producers face?

Since the end of 2014 we have faced a long period of low oil prices and there is possibility that the price of a barrel will stay at this level for some time to come. This market condition exposes producers to severe financial pressures. As a consequence we have observed a reduction in capital expenditure on green field projects and an increased focus on extending the lifetime of existing plants with high pressure on the supply chain. Despite the low oil price, the global demand for energy is still increasing and so is production.

## What trends are you noticing in the motors, generators and drives sector, particularly with reference to their application in the oil and gas industry?

Motors, generators and drives are used at the core of Chemical, Oil and Gas processes in key applications (turbine, pumps, compressors, fans...). All the challenges that producers face, as we have just mentioned above, also apply to our sector. We see a clear demand and emphasis from operators to support them with solutions and products that will improve their equipment utilisation, enhance output quality, reduce cost of production and extend asset monitoring and management.

A very important aspect is that environmental concerns and potential legislation continue to create significant uncertainties for our industry. Finally, we are convinced the key route to success is to continue closer collaboration between equipment suppliers and operators to develop disruptive technology to reduce CAPEX.



“Today we’re seeing the fourth industrial revolution, the era of Industry 4.0.”

## What are the key innovations taking place in the oil and gas facilities?

Today we’re seeing the Fourth Industrial Revolution, the era of Industry 4.0. The Internet of Things or IoT is about physical objects – such as devices like electric motors – that have sensors, software, and network connectivity built-in so they can collect and exchange data. For more than four decades we’ve been working on IoT technologies through our control systems, communication solutions, sensors and software. The overall aim is to provide technology and services that will enable customers to use data more intelligently, optimise their operations, increase productivity and achieve greater flexibility. Our Smart Sensor condition monitoring solution is part of our ABB Ability™ digital

solutions offering developed to create real business value for our customers.

## How is technology helping to make motors, generators and drives more environmentally friendly?

Industry consumes about 40 percent of all electricity generated. That means that the energy saving potential in industries is enormous just in electric motor-driven systems alone. Nearly 70 percent of all electrical energy consumed by industry is used by the millions of electrical motors installed worldwide. And every year, several more million electric motors are added. Pumps and fans have the greatest energy saving potential, and targeting those applications is a great way to begin an energy saving initiative.

Since 28 to 30 percent of electrical energy is converted to mechanical energy in electric motors, special attention is devoted to their efficiency and all industrialised regions have minimum efficiency performance standards (MEPS) for them. In addition to the wide range of induction motors with efficiency class up to IE4 we have developed the Synchronous Reluctance Motor (SynRM) design to reach up to the IE5 Ultra Premium efficiency level.

The majority of industrial motors either cannot adjust their speed or use very crude methods to do so. Many of them always run at full speed, regardless of the actual output needed. However, in many applications, energy use can be cut to one-eighth just by reducing the motor speed by half. Using energy more efficiently with readily available and proven technology is the most immediate, cost-effective and practical way to address the energy challenge. Our drives and motors can help lower energy use by reducing power consumption and losses, and improving productivity through better management of equipment.



# Real-time monitoring and data management technology for transformers



Pipeline Presents talks to William K Mao, Head of ABB's Transformer Business in Oil, Gas and Chemicals about the impact of new technologies on demand for transformers

## How has the transformer market evolved over the years and what changes have you seen since you took this role with ABB?

Transformers are one of the original pillars in the electrical industrialisation which began more than 100 years ago. While theory and physics have changed very little over the period, the design and manufacturing processes of power transformers have evolved dramatically. A similar comparison can be made with the old Model T and today's Ford F-150 truck. I started my career as a young sales

engineer for Westinghouse Electric and came up through the sales engineering training program in the 1980s. Innovation in key areas such as insulation material, bushings, electrical grade core steel, mineral oil and natural esters as well as changes in design software tools that I have seen in my career are truly amazing.

## What new technologies are you particularly excited by at the moment and how can they help companies become leaner and more efficient?

One exciting area in Transformers is real-time monitoring and data management. With IoTSP (Internet of things, services

and people) being deployed as part of Industry 4.0, it is a natural progression to monitor electrical and transformer assets remotely. Current technology requires little or no on-site field personnel to know the condition of your asset fleet.

## What next generation technology will help to transform the industry in the coming years?

ABB continues to drive technology and innovation by utilising state-of-the-art materials and continuously optimising design and manufacturing processes, enabling it to supply the most reliable and efficient transformers on the market, with the lowest losses.

# ABB targets growth in Middle East's electrical sector

Thomas Schmidtchen, Segment Manager, Oil Gas and Chemicals, looks at the key trends affecting the industry

## Which geographical locations form the core of your business focus?

ABB has a long history and strong heritage in supporting the oil, gas and chemical industry with medium voltage products and solutions. We are active in and focusing on all regions. We have supported Sasol for example in its Secunda petrochemical plant in South Africa to minimise process downtime for routine maintenance with a range of medium-voltage solutions. Together with Sasol, we have implemented an innovative and flexible ABB solution

utilising the power of UniGear Digital switchgear, Relion® protection relays and sensor technology installed in a lightweight E-House, which was mounted on a mobile truck trailer.

## Which areas are you looking to expand into?

We are looking to further penetrate all regions, especially the Middle East, North America and Asia Pacific. We've introduced innovative technologies in the last couple of years that fit perfectly the needs of the OGC segment and can be



customised according to customer needs in the regions I mentioned. Maximising safety and reliability with smart and efficient solutions, that save time and costs during project execution and in operation, is the core of what ABB does – and this is reflected strongly in our medium voltage electrification products and solutions for the OGC segment. We have technologies like digital switchgear, the Ultra-Fast Earthing Switch or the smart application of the Is-Limiter, which are examples of true game changers.



Partner in achieving higher plant performance?

Absolutely.

ABB offers you service and support that will enhance your project from the first concept to commissioning. We as your strategic partner contribute to lasting improvements across your project's life cycle by bringing special expertise to the integrated engineering team, including multi-disciplinary experience and in-depth product and system integration knowledge. We operate locally while drawing support from our vast ABB resources around the globe. Our integrated solutions offer the industry's best availability, quality, risk reduction and information flow.

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