Issue 14

SAMSON

magazine

Where Innovation is Tradition

September 2010

Report
Dynamic Markets and Social Balance

Innovations
Putting Interoperability to the Test

Portrait
A Team Full of Energy

Special topic
Invisible, Yet Indispensable

SAMSON GROUP

Title
Rich oil and gas reserves in the North Sea:
successful structural reforms and smart economic policy decisions
ensured that Scandinavia's economies are under full sail.

Imprint

SAMSON magazine Issue 14

Publisher:
SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3 · 60314 Frankfurt am Main · Germany
Phone: +49 69 4009-0 · Internet: www.samson.de

Graphics and editing:
Public Relations and Technical Documentation Department

Photos:
SAMSON AG,
JadeWeserPort Realisierungs GmbH & Co. KG (p. 8),
Herzog & de Meuron (p. 9), Schott (p. 18–19),
Messer Group GmbH (p. 23–25)

Printed by:
Hinkel-Druck GmbH

Contents

Editorial
Communication and Integration 3

Innovations
Putting Interoperability to the Test 4

Portrait
A Team Full of Energy 6

Report
Dynamic Markets and Social Balance 10

Impulse
A Sunny Future 18

Special topic
Invisible, Yet Indispensable 22

Spotlight
Turn for the Better With Strengthened Structures 26

Communication and Integration

Dear Readers,

Our world is converging further and further. The ability to interact with each other is becoming more and more important, communication is the key. This does, however, not mean that we as individual persons lose our individuality. On the contrary, we can strengthen it by making differentiated use of the increasingly versatile opportunities of our time.

What is true for the globalized world can also be applied to the field of process engineering and control valves. Control equipment itself is becoming more individual; the number of possible configurations is unlimited. Our customers want the solutions we offer to be tailored even more specifically to the particular demands of their applications. As a specialist in this field, SAMSON – like no other manufacturer – has the know-how to supply the perfect control valve for almost any application. At the same time, all valves are expected to communicate with the process control system used in an individual plant as well as across an entire site. This vertical integration is indispensable.

Our positioners turn valves into smart mechatronic assemblies that are capable of doing far more than simply establishing a connection between the classic control valve and the control system: they contribute considerably to the efficiency of the entire plant. They control, monitor and measure, and perform diagnostic and safety functions. To do so, all components of the control valve need to be carefully tuned to one another and selected to perfectly fit the intended use. The decisive increase in plant efficiency is achieved by the various different functions and the uniform communication; this ultimately ensures the cut in cost, which becomes evident in the balance sheets.

To continue maximizing our customers' benefit, we have established the Smart Valve Integration Center (SVIC) at our Frankfurt headquarters, which allows us to perfect the interaction of our products with all common process control, engineering and asset management systems. As an independent supplier of smart valve assemblies, ensuring compatibility with the different process control and asset management systems is one of the key elements of our daily work. The following pages will give you an insight into the latest in compatibility, communication and valve technology engineered by SAMSON.

I hope you enjoy reading this magazine.

Stefan Erben
Head of R&D for Industrial Electronics

Putting Interoperability to the Test

SAMSON control valves set standards in control technology. Their wide range of functions covers practically all process automation demands. The full potential of SAMSON's valve assemblies can be put to use much more extensively when the valves are optimally integrated into the process automation environment. This is why SAMSON set up the Smart Valve Integration Center (SVIC) at its Frankfurt headquarters last year. At the SVIC, smart SAMSON devices are integrated into the commonly available process control, engineering and asset management systems to verify and optimize their interaction in the running process. The SVIC is used for research and development work as well as for running simulations of plants planned to be set up at the customers'. At the SVIC Academy, SAMSON offers hands-on training. Participants learn how easy it is to integrate and network SAMSON devices, and find out that almost any function can be implemented.

In the SVIC, communication with HART®, PROFIBUS® PA and FOUNDATION™ fieldbus can be experienced and entire control loops can be simulated on the controlled system.

Tested interoperability

The head of the R&D department for industrial electronics, Stefan Erben, enjoys telling the story about how one customer had chosen a competitor's process control system and then insisted that SAMSON products were not compatible with the system. SAMSON, however, was able to perform the integration without any problems. After demonstrating this, the customer was fully convinced. Quick to relativize the story, Mr. Erben comments that although gratifying, it was no big deal. The six process control systems running in the SVIC allow simulations of practically anything that happens in the field. Since SAMSON devices are designed to be interoperable right from the start, the outcome was fairly foreseeable.

The practical side of field device integration is taught at the SVIC Academy. This sort of training is standard for service staff at SAMSON. They learn how to work proficiently with the HART®, PROFIBUS® PA and FOUNDATION™ fieldbus protocols. Additionally, these employees complete an advanced positioner training, which involves extensive sessions practicing how to configure the smart positioners as well as to start-up and service the field devices.

Simulation with all the trimmings

Similar training is also provided to customers. This service has turned out to be very popular as, besides the commonly used process control systems, nine different types of engineering tools are available for planning purposes as well. Furthermore, the SVIC is linked to the SAMSON valve test rig and the EMC laboratory. This allows almost any likely automation scenario to be simulated realistically for any given process situation. A typical example of such a situation was the start-up of a new plant to manufacture thermoplastic elastomers, which had been built in China. Together with the SAMSON experts at the SVIC, the plant operator reconstructed the plant using real valves and valve accessories in combination with the process control system actually used at the plant. The safety aspect was particularly important. The simulation included testing the integration of on/off valves, on which partial stroke tests could be carried out. This required a special solution to implement visualization, automation and data archiving.

At the SVIC, customers benefit from the capability to experiment with all imaginable options. Then, during the real start-up on site involving many other disruptive factors, engineers no longer have to waste time on such technicalities. This saves a lot of time, money and hassle. It is even possible to make use of the services provided by the SVIC from far away China. Remote access makes the SVIC accessible from all over the globe. The principle of unrestricted integration and networking also applies to the SVIC itself.

Field components can be integrated into the control systems in the SVIC. While, at the same time, remote access to acyclic diagnosis data is also possible.

A Team Full of Energy

Rapeseed is processed in Europe's largest oilseeds crushing and refinery complex in Hamburg.

The German Reunification twenty years ago was a historical event engineered by key figures in world politics at the time. The actual reunification process, however, was brought about by people who approached each other in daily life and found common ground. The SAMSON team in northern Germany set off eastwards straightaway after the Berlin Wall fell. The products that they took with them were urgently needed there. The early contacts made then formed the basis for today's far-reaching network. This network has long since become an organic part of the mesh of business relations that stretches across the whole German shoreline from the North Sea to the Baltic Sea as well as the neighboring regions. The natural center of northern Germany is the city of Hamburg situated on the Elbe River. Hamburg is home to Germany's largest port as well as a diverse, high-output industry. The SAMSON office, set up in 1976 to take over the operations of the former representative Sandvoss & Fischer, is also located here.

Hamburg's towers symbolize the traditional affluence of the Hanseatic city. The port remains the economic motor of the city on the Elbe River.

Getting started

Around 1990, when the Hamburg office put out its feelers towards the northern regions of the German Democratic Republic, they initially targeted heating in apartment blocks. In East Germany, heat was mainly supplied over district heating networks. However, investment into upkeeping these networks had been neglected for many years. The ailing networks had only been patched up to keep them in service. SAMSON enjoyed a good reputation among the engineers working in the municipal utilities as countless instruments installed during the pre-socialist era still functioned perfectly well. They gladly accepted the offer from the Hamburg office to provide the spare parts for emergency repair and leave the technical consultation and modern control technology for renewing the networks until later.

Quite a few engineers who had been involved in these projects later founded their own companies or filled positions in the private companies that succeeded the state-owned enterprises. The ties once made and firmly established thanks to successful business were maintained. In 1993, a local point of contact was established for business in north eastern Germany when a branch office was set up in Rostock.

From shipyards to foods

District heating still plays an outstanding role in the eastern part of Hamburg's sales region. Manufacturers of district heating substations and heating engineering companies feature among the key SAMSON customers, not only in this region. Other industries in this region underwent a severe structural change after reunification. Hardly anything remained of the notable shipbuilding industry of the former German Democratic Republic, which had been an important customer after reunification. Other industrial sectors also disappeared from structurally weak regions after state-owned businesses were wound up. Food processing with significant production units is the only sector still represented in the process industries.

Key customers of control valves and control technology also come from the food processing sector in the western part of the largest sales region in Germany, which extends from the Dutch to the Polish border. One of these customers is ADM, which

Almost three quarters of all crude oil shipments to Germany arrive at the port of Wilhelmshaven. In anticipation of an expected growth in world trade, a new container port is also being built in the JadeWeserPort.

owns Europe's largest oilseeds crushing and refinery complex in Hamburg. The facility not only processes and refines oils for foodstuffs, but is also the world's largest producer of biodiesel fuel. Heat supply and building automation have also played an important role in the northwest region.

To serve these markets effectively, the SAMSON workforce shares its Hamburg ofice with a VETEC employee as well as a dedicated team of five SAMSOMATIC specialists who take care of the planning and implementation of building automation projects. One of the numerous projects involved equipping Hamburg's new landmark, the Hamburg philharmonic hall (Elbphilharmonie), with the latest technology for heating and hot water supply.

Efficiency and service

Crude oil certainly plays a pivotal role on the North Sea coast. Oil from German offshore production is processed at the refinery near Heide in northern Germany. Oil is either delivered by pipeline or offloaded from tankers at ports on the North Sea coast. The city of Wilhelmshaven owns Germany's only deepwater port and also has the largest oil transshipment port in the country. 80 % of crude oil transshipments from all German sea ports and almost a third of German crude oil imports arrive at this port. In the coastal region around Wilhelmshaven as well as Brunsbüttel and Bremerhaven for example, a string of large complexes with crude oil processing and petrochemical plants has been set up. Instruments made by SAMSON work in a vast majority of these plants, ensuring the efficient and environmentally friendly flow of process media.

The crucial mainstay of the Hamburg engineering office, which maintains branch offices in Bremen and Schleswig as well as Rostock, is its workforce of 26 committed employees. A large team of experts with competence in various fields is at hand to advise customers right from the first planning stage to commissioning with proficient support and beyond, as the head of the Hamburg office, Konrad Hoch, emphasizes. "An order is not wrapped up after the invoice has been written. The intensive customer support is part of our service." He relies on the flexibility and all-round qualities of his staff who can consult and support customers extensively in all technical and sales matters. The office features a well-stocked warehouse and a service workshop where maintenance and repair orders can be performed quickly and not far away from the customer.

Significant energy sector

These aspects make the Hamburg team well prepared for working together with the largest category of customers in the northern German sales region: energy suppliers such as E.ON, EWE, Vattenfall, URBANA, FAVORIT and numerous municipal utilities. This region is home to six of the 19 German nuclear power stations. In addition to the countless gas-fired power stations, northern Germany contributes to the national power grid by generating electricity from coal. The region is especially attractive for coal-powered stations as imported coal is unloaded at the sea ports and fired to generate electricity nearby.

Renewable energy in the form of biomass power stations with combined heat and power (CHP) generation is starting to gain importance as well. This co-generation maximizes the overall efficiency as these power plants give off heat which is created as a by-product of the electricity which they produce. In power stations where factors such as ruggedness, precision and safety are imperative, many energy suppliers highly rate the control valves and control technology supplied by SAMSON.

Flexiblity and all-round qualities for perfect customer support: staff at SAMSON's Hamburg office

Leading Energy Supplier from the North

In 1899, the Royal Waterfall Board (Kungliga Vattenfallsstyrelsen) was set up in Sweden to promote hydroelectric power. During the course of the 20th century, the Board evolved to become the Vattenfall Group, which is now Europe's fifth largest generator of heat and electricity. In 2008, the Group had approximately 33,000 employees and generated consolidated sales amounting to SEK 164,549 million (around EUR 15,894 million) primarily in Scandinavia, Germany, Poland, Great Britain, Belgium and the Netherlands.

Unique architecture: the Hamburg philharmonic hall is located on top of a historical warehouse.

In the 2008 financial year, the Group produced 163 TWh of electricity in these countries from practically all forms of power generation – nuclear, fossil fuels, wind power, biomass and waste. Vattenfall additionally uses the heat produced in its power plants for district heating. For example, Vattenfall Wärme GmbH, successor of Hamburg's former electricity supplier (Hamburgische Electricitäts-Werke, HEW), supplies Hamburg's entire inner city with district heating.

Here, construction is under way to build the city's new landmark, the Hamburg philharmonic hall Elbphilharmonie. With its contoured glass façade, it will reach a final height of 110 meters. "The plan to connect the concert hall to the district heating network turned out to be an extraordinary challenge," explains Andreas Bode, responsible for this project at Vattenfall Wärme GmbH. Vattenfall solved this demanding task in cooperation with SAMSON, its favored partner for control technology and building automation. Vattenfall regards the installation as a pilot project for future expansion of the district heating supply network in Hamburg. Therefore, the competence of its control technology partner, SAMSON, which turned out to be excellent during the project, mattered even more than usual.

Dynamic Markets
and Social Balance

When comparing international income and education levels, career development opportunities, public security or social welfare – in short: standard of living indicators –, the Scandinavian countries always rank among the world's best. The countries in the north of Europe possess a level of wealth, political stability and social welfare that is regarded as exemplary the world over. One of the main reasons for this is the deeply rooted political culture of compromise and balance that Norway, Sweden and Finland have in common. In addition, the countries have very strong economies, which differ remarkably in their structures and focus, but share high dynamics and an adaptability which allowed them to weather financial crises. In all three countries, SAMSON is represented by subsidiaries well-equipped for the dynamic Scandinavian market.

The Lofoten islands were only one of the many places the Wikings stopped over in with their famed longships on their bold voyages. Today, the islands belong to Norway.

Warriors and merchants

Scandinavia – which, in geographical terms, only comprises the peninsula between the North Atlantic and the Baltic Sea but is commonly understood to include Finland and Denmark alongside Norway and Sweden – emerged slowly from the mists of history. It is still debated what the Greek explorer Pytheas really meant when he wrote of a fabulous island he named "Thule". On his exploration of northwestern Europe around 325 BC, Pytheas allegedly traveled to the ends of the world where he came across the island "a six days' sail north of Britain, near the frozen sea." He may have been referring to Iceland, Norway or the Shetland Islands, no one knows for sure. Despite this uncertainty – or because of the mystery involved –, Thule continued to be a synonym for a mysterious island in the north for many centuries.

It was not until the arrival of the Vikings in the early Middle Ages that the mist around Thule and the legendary northern end of the then-known world lifted and the rest of Europe took notice of Scandinavia. Heathen hordes from the north started to launch onslaughts on Europe's coastal areas, spreading fear and terror, but also establishing a vast trade network thanks to their exceptional talent in commerce. The Vikings laid the foundations for Scandinavia's future as a part of Europe, even though its development deviates considerably from the continental mainstream in certain areas.

Energy in excess

Visitors to Norway, particularly to the capital city of Oslo, often frown at heated sidewalks and electric lights left on for hours and days on end. In fact, Norway has one of the world's highest electricity consumptions per capita, yet without burning a single barrel of the valuable oil extracted off the country's Atlantic coast. The reason for this is that Norway's electricity production relies almost exclusively on hydropower generation. As a result, almost the entire oil and gas extracted can be exported. Since the first actual well was drilled in 1966, the oil and gas sector has become the most important industry in Norway and driving force behind the country's prosperity. It allowed the Norwegian Government to establish the Government Petroleum Fund in 1990, which is designed to support long-term management and investment of the petroleum revenues even after the oil reserves have run dry. At the end of the first quarter of 2010, the market value of the fund amounted to approx. 346 billion euro, with the value forecast to grow to just under 600 billion euro by the end of 2014 – a nice nest egg.

Oslo's electricity is generated by hydropower.

North Sea oil made Norway prosperous.

Maritime tradition

In addition to oil and gas, fishing has always played a major role in Norway's economy, still accounting for around 5 % of the country's exports. Further indicators of Norway's maritime tradition are that the fjord-fringed country has the world's fourth largest merchant fleet and an influential shipping industry. The latter has figured among SAMSON's customers for around 90 years. A representative began trading SAMSON products in Norway back in the 1920s. In 1989, MATEK A/S took over sales and service. In 2000, the company was renamed to MATEK-SAMSON REGULERING A/S and has since been headquartered in the town of Skien, about 140 km to the southwest of Oslo. Ten employees at Skien take care of the typical SAMSON customers, e.g. in the food, pharmaceutical and chemical industries and in ship technology.
Even though Norway, like many other countries, had to cede most of its shipbuilding industry to competitors in Southeast Asia, it still figures among the top spots for equipping tankers and freighters with the latest in ship technology. This applies in particular to specialized vessels used in oil and gas extraction, such as FPSO (Floating Production, Storage and Offloading) vessels and FSRUs (Floating Storage and Regasification Units). The oil and gas market is also an important field of activity for MATEK-SAMSON. According to Magne Bjerva, head of MATEK-SAMSON, Norway has very strict safety and environmental regulations to be observed during extraction and processing. As a result, the technical requirements placed on the equipment used as well as on testing, approvals and documentation are extremely high. Thanks to the first-class resources of the SAMSON headquarters in Frankfurt, MATEK-SAMSON is well placed in this market, according to Mr. Bjerva.

Innovative opportunities

MATEK-SAMSON also used this excellent placement to excel in an entirely new technological field: CO_2 capture and storage. Norway has a pioneering role in this sector, e.g. by separating the carbon dioxide from the natural gas extracted offshore from the Sleipner gas field and storing it in geological layers several hundred meters below the seabed. In 1996, Sleipner became the world's first offshore CO_2 capture plant. Meanwhile, Statoil, the Norwegian operator of the field, is also applying the same technology in other gas fields, e.g. in Algeria. Even more challenging in terms of technology is the project that Statoil is carrying out together with power plant constructor Alstom: the flue gases produced by the gas-fired combined heat and power plant as well as the Statoil refinery in the North Norwegian town of Mongstad are to be treated to capture the contained carbon dioxide and store it below ground. Plans are that the world's first plant of this kind will capture 100,000 metric tons of carbon dioxide per year.
A further technology that provides growth opportunities for SAMSON in the future is the liquefaction of natural gas: LNG (Liquefied Natural Gas) can be transported across large distances without requiring costly pipelines, which is favorable both for remote extraction sites and comparably small amounts of gas extracted.

Usually, large-scale pipeline projects connect large storage facilities with the industrial centers. In the scarcely populated regions of Scandinavia, however, the minimum amount required to operate a pipeline cost effectively is often not achieved. As a result, the natural gas produced in Norway is liquefied and transported to Sweden by sea almost directly to the Swedish capital.

Magne Bjerva (fifth from the right) and his team of MATEK-SAMSON.

LNG tankers will play an increasingly important role in Sweden's gas supply.

Stavanger-Stockholm connection
Construction of the LNG terminal at Nynäshamn, a town some 60 km south of Stockholm, the Swedish capital, is in full swing. The sea terminal owned by AGA Gas AB is designed for smaller, specially built double-hulled tankers importing 250,000 metric tons of LNG mainly from the Norwegian harbor of Stavanger. The first delivery to the terminal is scheduled for May 2011. Amongst other uses, the LNG will replace petroleum in the city-gas production of Stockholm. The necessary control valves will be supplied by SAMSON.
For Roland Ericsson, head of SAMSON Sweden, the Nynäshamn project is very interesting as the terminal will be the first of its kind constructed in Sweden, but others are planned in Sweden and around the Baltic Sea. Mr. Ericsson also welcomes the technical challenges involved: high pressures, high pressure drops, extremely low temperatures down to –196 °C, stringent quality and safety regulations, tight schedules and short delivery times. According to Mr. Ericsson, it was the good solutions tailored to the customer's demands that won SAMSON this order.

Roland Ericsson (third from the right) and his team of SAMSON Sweden.

Timber, iron ore and high tech
Even though Sweden, the Scandinavian country with the highest population, does not possess any oil deposits, it is rich in other raw materials. Thanks to its huge forests, Sweden figures among the most important suppliers of timber as well as pulp and paper. In addition, iron ore, copper, nickel, lead, zinc, gold and silver are found in the north of the country, which made the mining industry the origin of Sweden's industrial development at the beginning of the 20th century. Today, Sweden's industry is dominated by a number of large multinational corporations, which generate up to 90 % of their sales from exports.
Sweden's economic ascent established a capitalist system interlarded with substantial welfare elements. This system was regarded by many as the role model of a social welfare system. In the 1990s, however, high unemployment challenged the system. Consequently, the government cut taxes and streamlined the welfare state, enabling it to weather the vagaries of a globalized economy. This also helped Sweden to considerably improve its international competitiveness, e.g. by reducing engineering cost to the lowest level among the industrialized countries. A company that considerably benefits from this is Tetra Pak: planning and manufacture of packaging machines are the main business of Tetra Pak. In Sweden, the company is also actively involved in the actual food production itself. In both fields, Tetra Pak relies on SAMSON valve technology.
Mr. Ericsson sees another competitive edge typical of Sweden in the mutually respectful social climate where the cooperation between employers and employees is highly fruitful. He underlines: "The members of our team are used to assuming responsibility for their work and taking the initiative to achieve the best-possible result for our customers."
SAMSON MÄT-OCH REGLERTEKNIK AB, SAMSON's Swedish subsidiary, was founded in Gothenburg, the country's second-largest city, 30 years ago. Branch offices exist in Stockholm and Malmö in the south. Since the opening of the Øresund bridge, which connects Malmö with the Danish capital of Copenhagen, the Malmö metropolitan area has experienced a dynamic development. The better connection to mainland Europe, the LNG terminal project and increased investment in the northern mines are only some examples of the long-term trend that opens up numerous opportunities, not least for the process industries. Mr. Ericsson emphasizes that SAMSON Sweden has considerably extended its presence in the markets and strengthened its customer relations in the last few years to take full advantage of this development for SAMSON.

The endless forests of Scandinavia paved the way for a successful and prospering pulp and paper industry.

Helsinki Cathedral is a landmark of the Finnish capital and visible from far when arriving by boat.

Different in many ways

Strictly speaking, Finland does not belong to Scandinavia. And there are certain ways in which Finland is a little different from its neighboring countries. For example, Finnish does not belong to the Germanic languages like Swedish and Norwegian do, but to the small family of Finno-Ugric languages linked closest to Hungarian and Estonian. While there was never a doubt that Norway and Sweden belonged to the West, Finland became an autonomous grand duchy of the Russian Empire in 1809 and did not win full independence until after the Russian October Revolution of 1917. During World War II, Finland fiercely defended its newly gained freedom against seemingly overpowering opponents, even though it figured among Europe's poorest countries well into the 20th century.

In the post-war decades, Finland went through a remarkable transformation from a farm and forest economy to a modern industrial economy. At the time, Finland's greatest asset were the endless forests, which cover about two-thirds of the country. They produced timber, tar and later also wood for pulp and paper. In many places, sawmills were the first industrial companies to be founded. Up until the 1970s, the timber as well as the pulp and paper industries accounted for over 50 % of Finnish exports. No wonder that Finnish companies still figure among the market leaders in these sectors.

Transformation on target

During its economic transformation, Finland benefited greatly from its geographical and political location as a neutral country wedged between the opposing ideological systems. After the collapse of the Soviet Union in 1991, however, several factors caused the Finnish GDP to plummet by 13 %. Presented with such challenges, the Finns again showed their characteristic national strength of will commonly referred to as "sisu": state-owned companies were privatized, training and research received massive funding and university education was geared towards high-tech fields so that a cutting-edge electronics sector, spearheaded by the Nokia Corporation, soon became the driving force behind Finland's economic upswing. In 1995, Finland became a full member of the European Union and is still the only Nordic state to use the euro as its national currency.

The strongly diversified economy rests on competitive companies active in the telecommunications, petrochemical, chemical, metals and timber industries as well as in mechanical engineering and power plant construction.

Petrochemicals, chemicals, steel production and district heating provide particularly good growth opportunities for SAMSON's business according to Matti Kuusivuo, head of OY SAMSON AB. The Finnish subsidiary was founded in the country's capital, Helsinki, in 1979. A branch office exists in Lempäälä near Tampere. Of the six members of staff, three are active in field service and constantly on the road, covering long distances in the thinly populated country. In addition to the high product quality and the extensive product portfolio, a major argument in favor of SAMSON's products during their customer visits is that SAMSON Finland has large storage facilities: "They enable us to supply over 200 different control valves at extremely short notice," says Mr. Kuusivuo.

Matti Kuusivuo (first on the right) and his team of SAMSON Finland.

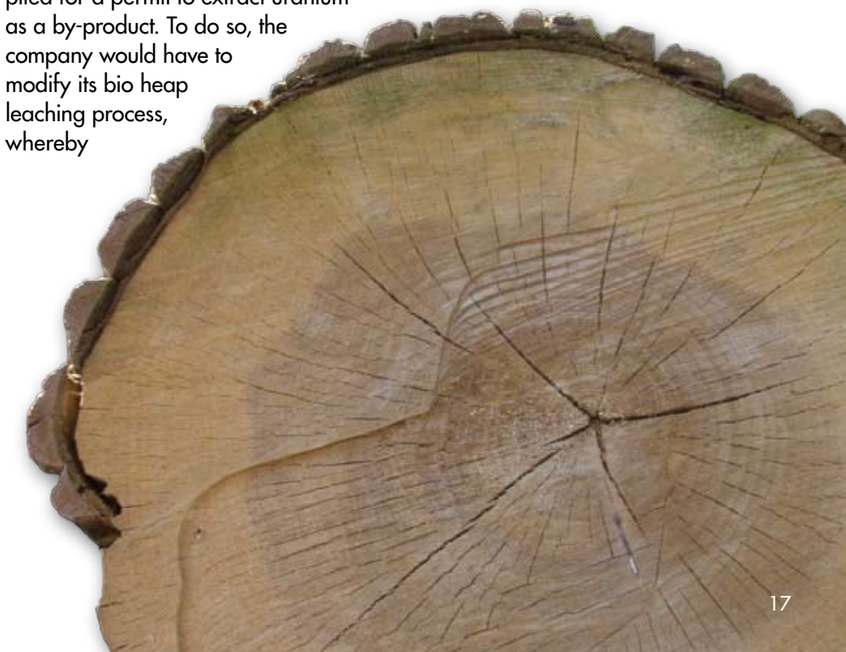
Orders placed with SAMSON Finland do not necessarily have to be intended for use within Finland as export-oriented power plant constructors and engineering businesses figure among the subsidiary's major customers. They highly value SAMSON's worldwide service network when selecting valve technology for their cross-national operations. The same also works the other way round when the subsidiary acquires new customers as the result of a new plant equipped with SAMSON products, e.g. for the food industry, being imported to Finland.

Eco-friendly oil regeneration

As in the neighboring Nordic countries, environmental engineering and technology play an important role in Finland too. A flagship project is the used lubricant oil re-refining facility built in the harbor of Hamina in South-East Finland. The plant produces base oil for the lubricant industry from different types of waste oils collected in the Baltic region. As by-products, the process generates light fuel oil and bitumen. The control valves for the complex plant are supplied by SAMSON.

A further interesting project furnished with SAMSON equipment is located near Sotkamo in eastern Finland: the Talvivaara nickel mine built to exploit one of Europe's largest known nickel sulphide deposits. The average waste to ore ratio is nearly 1:1, which enables cost-effective exploitation. Talvivaara has applied for a permit to extract uranium as a by-product. To do so, the company would have to modify its bio heap leaching process, whereby metals are leached from ore by bacterial action. The uranium project is still at the permission stage. But when it goes through, SAMSON has prime opportunities of supplying the necessary valve technology for two good reasons: firstly, SAMSON products are already being used in the nickel recovery process. And secondly, SAMSON has just the right equipment to meet the challenging requirements for such an operation.

Before the paper era, Finnish timber was exported mainly as a construction material and raw material for the pitch production.



A Sunny **Future**

A family barbecue in a garden near Badajoz in Central Spain: lamb chops are sizzling on the electric barbecue grill, music sounds from the stereo carried outside and patio lights create the right atmosphere. The electricity required for this family get-together is provided by the sun, more precisely by the SAMCASOL 1 solar thermal plant. Thanks to its sophisticated storage facilities, it can provide electricity well into the evening hours. In sunny Spain, solar power generation has become quite popular. Major investment is being made in utility-scale solar thermal power plants with capacities between 20 and 50 MW. SAMSON prepared itself early on for this promising green market. Control valves were supplied for SAMCASOL 1 and several other Spanish plants, where they ensure optimum functioning and the smooth running of processes.

Thanks to their storage facilities, solar thermal power plants can also supply electricity at night.

Enormous potential

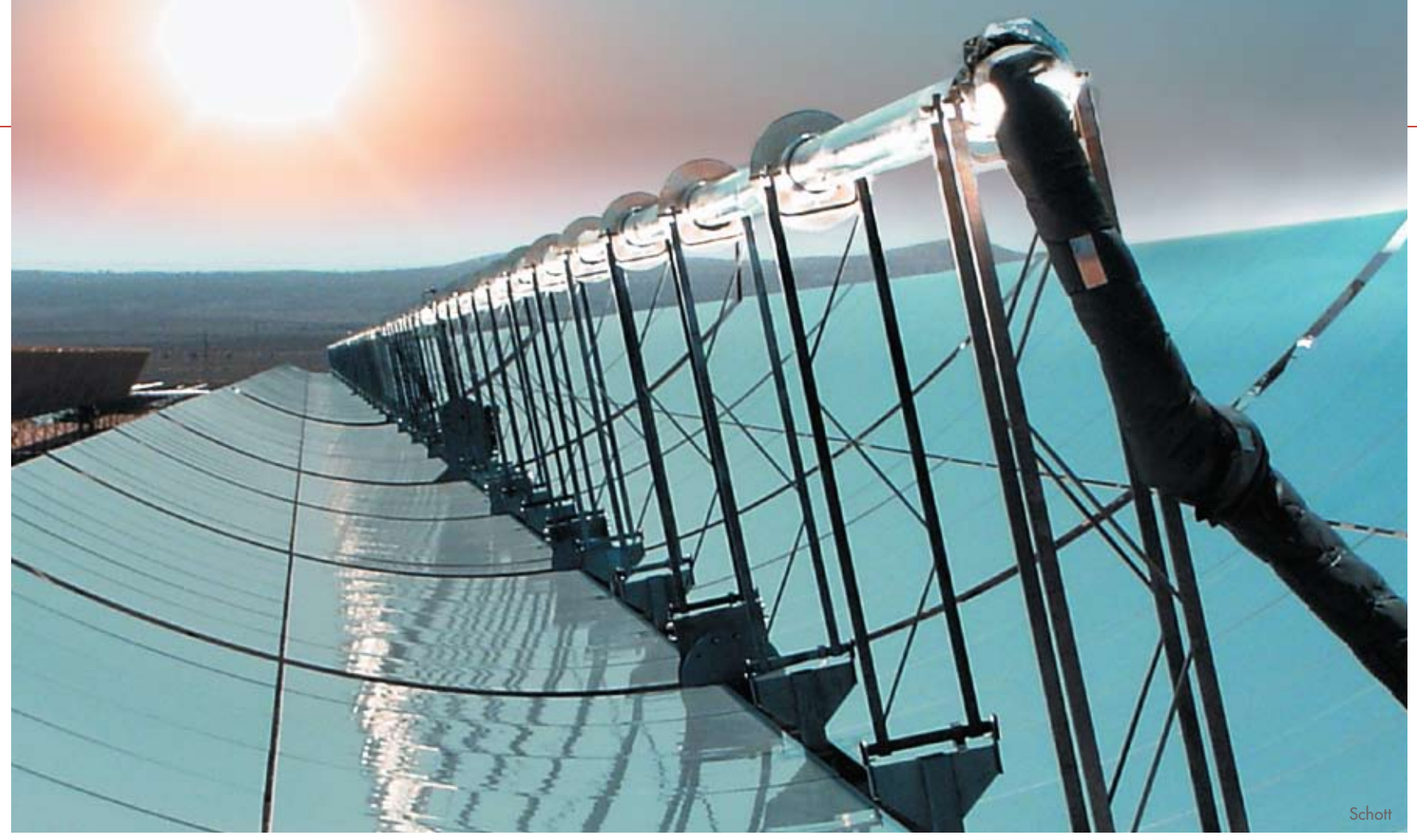
In the past five years, solar thermal energy production has experienced a rapid growth. At the end of 2008, solar thermal power had a worldwide capacity of 0.4 GW, with the U.S. representing 80 % of that production. Meanwhile, Spain is competing with the U.S. for world leadership in this sector. By 2011, the plants currently being constructed will supply at least an additional 1.7 GW, of which 0.96 GW will be produced in Spain alone. In the U.S., plans are being made to build plants with a total capacity of 7 GW, while Spain plans to add a further production capacity of 10 GW until 2017. Apart from tourism, solar power and research in the associated technologies could be set to become an essential economic factor for Spain.

Based on an ambitious development outlook and high energy efficiency, experts estimate that solar thermal plants could cover up to 7 % of the global electricity demands by 2030, and up to 25 % by 2050. Solar thermal plants use the unlimited supply of the sun as an energy source and combine it with the proven technology used in conventional fossil fuel power generation. Yet, they are less damaging to the environment, produce very low levels of greenhouse-gas emissions and reduce fossil fuels consumption, making them a key technology with huge growth potential.

Within merely six hours, the world's deserts receive the amount of solar energy that corresponds to the global annual fossil fuel consumption. No wonder that there is general agreement in the EU and the Union for the Mediterranean about the need to use renewable energy sources. As a result, large corporations including Siemens, RWE, E.ON, Deutsche Bank and Munich Re, have joined forces to create a detailed technical plan for the implementation of the multi-billion-euro Desertec project to turn desert sun into electricity. Based on a concept by the Club of Rome, a global think tank for international political issues, Desertec was drawn up as part of the Club's agenda to propel the use of solar energy to unprecedented levels. Desertec will make extensive use of solar and wind energy in the deserts of North Africa and the Middle East to produce electricity, which will be supplied, at first to the neighboring countries, and from the year 2020 also to Europe, via a super grid of high-voltage DC cables.

Well focused

To produce electricity, solar thermal power plants use CSP (Concentrating Solar Power) systems: these systems use hundreds of mirrors to focus the sun's rays on a liquid that, when heated, drives a steam turbine to produce heat or electricity. A benefit of CSP systems is that they can integrate thermal storage and are suitable for hybrid operation, e.g. in combination with natural gas combustion as a backup. As a result, CSP



Schott

The parabolic trough collectors are up to 400 m long and track the sun's radiation. The thermal oil in the central receiver pipe transports the received energy to the power station unit.

Sunny outlook for renewable energy: the sun shines longer in Spain than in any other European country.

In the SAMCASOL plant, the flow rate and temperature of the heat transfer oil, which is routed through the entire solar field to the power plant, are regulated by a LEUSCH LTR 43 Butterfly Valve and a SAMSON Type 3241 Valve in split-range operation.

plants can supply the base-load power as well as function as a reserve for times of peak demand. Even though CSP power plants are always based on the same functional principle, the technological specifics may differ from plant to plant: how the collectors are shaped, whether the receivers are fixed or mobile, how the collectors track the sun's radiation throughout the day, whether irradiance is focused on a linear receiver or at a single-point receiver, and how the solar energy is converted into electricity.

The bulk of commercial solar power plants now in operation or the planning stages uses parabolic troughs with linear receivers. At the moment, this technology is the most mature and provides the highest efficiency. The sun's rays are focused on linear absorber tubes filled with a circulating synthetic oil that acts as the heat transfer fluid. This fluid transfers the heat to heat exchangers where water is superheated. The resulting superheated steam drives a turbine, which in turn drives a generator that produces the desired electricity. Excessive heat not needed during the daytime is stored in molten salt tanks.

Technology and service

With its tailor-made valve solutions for the specific process requirements in these solar power plants, SAMSON has already acquired considerable experience and expertise in this evolving market and is heading towards a sunny future. Credit for this has to be given mainly to the staff at SAMSON Spain, whose high commitment opened the doors for SAMSON's involvement. They recognized the enormous market potential early on, made important contacts and promoted the technological exchange between manufacturers and operators.

SAMSON's product portfolio provides the entire control valve technology for solar thermal plants: proven control valves suitable for use in the thermal oil applications, the solar collectors and the steam circuit as well as special valves able to handle the molten salt heat storage system. The latter are equipped with graphite-free packings to withstand the extremely corrosive molten salt atmosphere. Nevertheless, SAMSON supplies more than the "naked" equipment and technology. Valuable expert services are provided as well. Plant constructors are given any support necessary, from valve selection during the planning stages, valve configuration, on-time production and delivery, installation and start-up to servicing and maintenance.

Sunny outlook

Solar technology has come a long way. Yet, there is still huge potential for improvement in terms of efficiency, capacity utilization and production cost. As a result, science and industry are working on collectors with better performance, more efficient storage methods and alternative heat transfer media. For example, thermal oil can only be heated up to 380 °C, which limits the yield from this medium. Possible alternatives under investigation are molten salt and air.

Solar thermal plants are also being considered for use in fields other than energy production, for example further using the generated process heat or coupling solar thermal power plants with desalination units. Naturally, regions with relentless sunshine also suffer from water supply shortages. SAMSON, as a one-stop shop for instrumentation and controls, already possesses the control technology and expertise required for such applications in the proven SAMSON quality.

The trough collectors heat the transfer oil up to reach temperatures of 400 °C. 168 Type 3251 Control Valves in NPS 3, Class 600 with bellows and electric actuators ensure optimum flow.

Invisible, Yet Indispensable

The fizz of a soda can being opened is full of promise. It may well be that this alluring sound is caused by Gourmet C, the pure carbon dioxide marketed especially for the food industry by the industrial gas specialists at Messer Group. Industrial gases are found everywhere in modern industrialized societies, not only in carbonated drinks: they also fill the voids in lamps and insulated window panes, inflate airbags in cars, harden steel, foam plastics and are indispensable in modern medicine, welding and cooling. Large proportions of the gases are extracted from the ever-present atmosphere surrounding us. Yet, complex technology and state-of-the-art know-how are needed to efficiently separate the air into the different gases contained in it. A decisive component in this air separation process are the control valves, which Messer has purchased from SAMSON for many years.

Carbon dioxide by Messer adds the fizz to fizzy drinks.

Gas vs. liquid

It is common knowledge that air is a mixture of gases, composed of approximately 78 % nitrogen, 21 % oxygen and 0.9 % of the noble gas argon. The residual 0.1 % is made up of carbon dioxide, hydrogen and the noble gases neon, helium, krypton and xenon. To separate these gases from one another, their different boiling points, which are all very low, are used. For example, oxygen liquefies at –183 °C and nitrogen at –196 °C. To achieve such cryogenic temperatures, the air is first compressed in 60-meter-high air fractioning plants. After that, the gases are gradually cooled down to their boiling points until liquefied gas can be separated from the still volatile components.

Not just cold

It takes an expert in gases to refer to the exchange taking place between the rising gas and the icy-cold liquid streaming down the separating columns as "heat" exchange. Even plants erected in Siberia and working in the midst of winter would have a process temperature way over 100 °C lower than the outside temperature. Referring to such applications as cryogenic – from the Ancient Greek word *kryos* meaning "cold" – seems almost trivializing the matter. Of course, it is necessary to prevent that such enormous temperature differences between the inside of the process and the outside are compensated physically. As a result, constant cryogenic temperatures are a must for the process. No wonder that the inside pipes of the process plant are routed in a so-called "cold box", which is filled with a perlite insulation after installation.

The bellows seal on SAMSON's cryogenic valves keeps the cold in the cold box and reliably prevents the outside parts from icing over.

Long-term reliability

In many production facilities and particularly in hospitals, a constant, uninterrupted gas supply is vital. Nobody would want to experience the hospital's oxygen supply faltering while on the operating table. In steel production, an oxygen supply failure can cause enormous loss. Hence, Messer not only delivers the final product (nitrogen or oxygen) to its large customers, it often also operates a dedicated air separation plant directly on site on the customers' premises. Moreover, Messer customers are given a long-term production guarantee as the separation plants are expected to supply gas for a long time without interruptions. The plants are designed for a service life of around 30 years, during which they are to run with the minimum amount of maintenance. This is understandable considering the ordeal involved in draining and refilling the perlite insulation for servicing the cold box.

Tailored design

When controlling extremely cold flows, control valves play a decisive role. As pneumatic actuators and positioners only function reliably down to –40 °C, they are installed outside the cold box. An extremely long extension piece connects them to the valve mounted inside the cryogenic area. The valve parts subject to wear, such as seat and plug, must be easily accessible from outside to allow regular maintenance. To minimize the heat exchange over the extension piece, it has thin walls made of materials with low heat conductivity. A bellows seal mounted above the lower plug guide keeps the cryogenic medium inside the valve body. Thus, the extension piece is always filled with air at atmospheric pressure, which is an excellent insulant. Thanks to this setup, the SAMSON valves are the only ones that can be installed in a horizontal position, which is a huge advantage as the pipelines in the cold box must always be vertical. "The ex-

tremely low temperatures make special demands on the technology used", explains Wolfgang Dietrich of Messer Engineering. He says that only few materials can be used at temperatures down to –196 °C. According to Mr. Dietrich, cryogenic valves require tailor-made solutions when it comes to combining the right materials and handling temperature transitions, pressure stages and specific flow conditions. "Reconciling all these different requirements calls for a highly specialized know-how, which SAMSON has acquired and refined over the past decades", commends Mr. Dietrich.

Clean design

This know-how covers all the little details, such as the surface finish: as the oxygen produced during air separation is highly reactive, even the smallest traces of oil or grease would create the risk of an explosion. Mr. Dietrich speaks highly of SAMSON's certified clean-room production, which ensures that surfaces are free of oil and grease: "We at Messer use only SAMSON valves because we can rely on them in every respect." The same is true for after-sales service where the cooperation has proven fruitful over many years, according to Mr. Dietrich. He admits that valves are damaged from time to time during transport or at a construction site. Nevertheless, the deadlines need to be met. Therefore, he is glad that SAMSON can provide competent assistance anywhere in the world at extremely short notice.

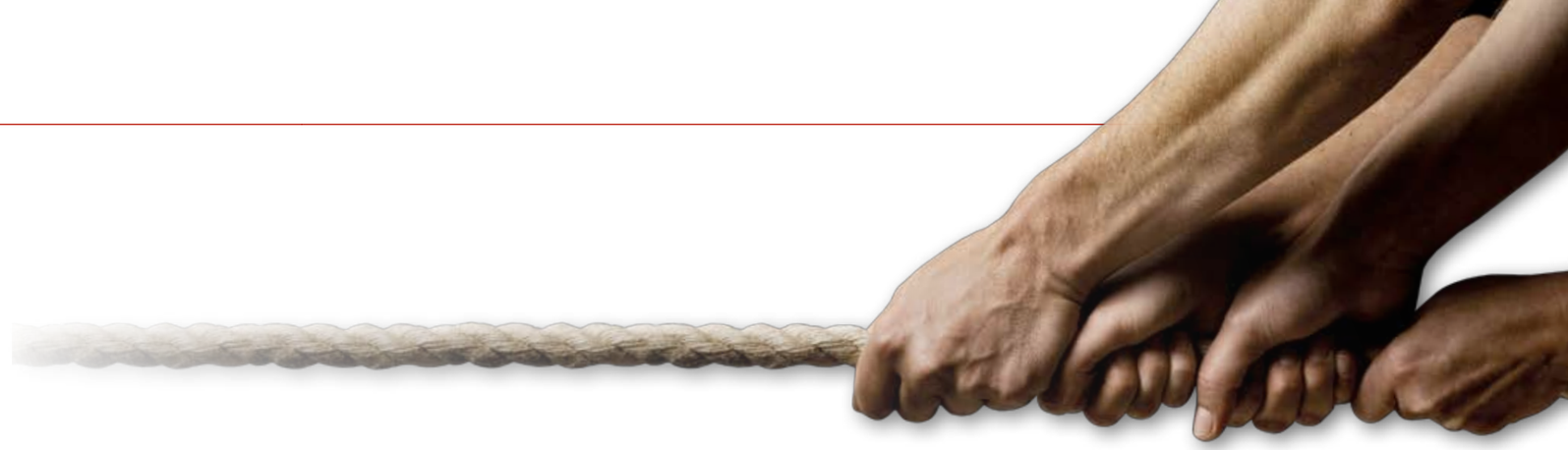
Experience creates expertise. As a result, Messer thoroughly relies on SAMSON equipment to handle liquefied gases in air separation, storage and transportation.

With a height of 60 m, the air separation plant on the premises of Lonza AG at Visp is the highest building in the Swiss canton of Valais. Messer invested around 20 million euro into the on-site production of industrial gases and medical-grade oxygen.

Smart supply management

Understandably, not all customers need their own on-site air separation plants. And not all gases are produced from air separation. As a result, Messer also delivers liquefied gases by tanker truck to vacuum-insulated tanks at the customers'. In such cases, SAMSON equipment also plays an important role. If customers need the gas in gaseous rather than liquid form, the fluid's physical state must be changed before the gas can be fed into the pipeline. To do so, an evaporator is used. Pressure stability is ensured by a control valve that exactly regulates the fluid's flow rate.

Regardless of the evaporator, the pressure drop created while gas is withdrawn from the tank's consumer side is measured by a differential pressure meter from SAMSON's Media series. The meter measures the tapped amount and calculates the liquid level remaining inside the tank. Before delivery, SAMSON calibrates the meter's scale to match the specific tank. Often, smart, communication-enabled transmitters are used to indicate on time that the gas in the tank is running low. Their signal is transmitted by a process control system or by text messaging to Messer's remote monitoring system, which automatically triggers a refill order. Not surprisingly, reliability is key in this area as well. The Media equipment is regarded as the industrial benchmark for such applications, just like the SAMSON products set the standards for the entire industry. Mr. Dietrich concludes: "Anyone dealing with gases relies on SAMSON for good reasons."

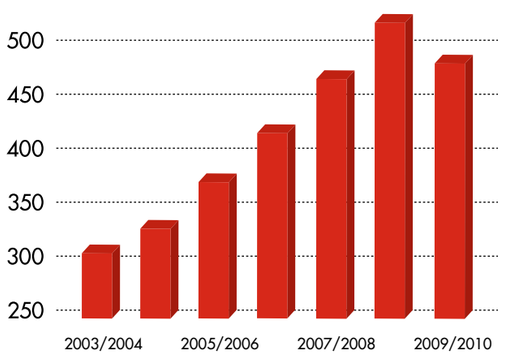


Turn for the Better With

STRENGHTENED STRUCTURES

Market activities in the past financial year were characterized by the global economic and financial crisis. Following the slump experienced in the fall of 2008, numerous industries and regions remained caught in the economic tailspin for quite some time. In the European Union, the gross domestic product decreased by 4.2 %. This general weakness also affected some of the markets of particular importance to SAMSON. The chemical industry for example, experienced a considerable decline in capacity utilization and sales. However, SAMSON not only managed to weather the vagaries of the crisis without losing substance, it also used the business breather to strengthen and further develop its corporate structures.

Financial year 2009/2010



Net sales in million euro

Naturally, SAMSON did not remain unaffected by the poor economic situation. Consolidated group sales dropped by 8.4 % in the past financial year. Yet, the sound corporate structure stayed intact as the second-highest sales in corporate history of 470.7 million euro, which SAMSON generated right in the midst of the crisis, clearly show.

Meanwhile, global economy has fallen back into step and already records strong growth in important regions. The worldwide economic recovery is expected to continue in 2010, even though business will probably not yet reach the same level as before the crisis. Over the first months of the 2010/2011 financial year, SAMSON received incoming orders whose value clearly exceeds that of the orders received during the same period last year.

SAMSON is well equipped for future growth. SAMSON's management made a conscious decision against laying off staff in response to the considerable decline in business. As the number of employees was not reduced, SAMSON can continue to provide its continuously extended technical expertise without any loss in quality. Consequently, sufficient reserves have been accumulated to respond quickly to a growing number of orders at any time. In addition, the time of a reduced work load was used to strengthen the corporate structure of the SAMSON GROUP, optimize processes and further extend the technical and logistic capacities.

By constantly furthering the development and diversification of its control valve technology, SAMSON managed to open up additional markets and niches even in a difficult environment. Largely unaffected by economic fluctuations, renewable energy and energy-saving technologies are experiencing a constantly growing demand. SAMSON was involved in these markets early on and has established good contacts in the industry. For example, many biofuel production plants have been equipped with SAMSON products. SAMSON was also involved in the solar thermal energy production sector at an early stage and now benefits from the enormous potential of this evolving market.

One of SAMSON's traditional markets is also enjoying a revival thanks to the eco boom: district heating. The existing networks and infrastructure help protect the environment and save valuable energy resources. Demand for district cooling is increasing considerably as well. As its generation and distribution often go hand in hand with district heating and largely use a similar technology, SAMSON is also well positioned in this sector.

Safety and service

The Deepwater Horizon incident dramatically showed how essential technical safety is in our industrialized world. With the high quality standards of its products, SAMSON has laid the vital foundations for the safe operation of large plants. In connection with this, more and more importance is being attached to maintenance and service, which SAMSON can provide on a high level. A growing number of customers relies on extensive maintenance schemes and well-tailored on-site service, which allow them to optimize both plant safety and plant efficiency with SAMSON's help. During routine maintenance for example, valves are checked and worn parts replaced, if necessary. As part of plant turnarounds, which usually require one year of preparations, SAMSON service technicians ensure that overhauling of all valve components is completed smoothly and without delay.

The SAMSON GROUP is already well positioned with its 55 subsidiaries all across the world. Together with the countless engineering and sales offices, the subsidiaries provide a tight-meshed network that allows SAMSON to provide customers at nearly any location across the world with quick and competent support. This net will be knotted even more tightly as the opening of new engineering and sales facilities in further countries is scheduled for this year yet again.
It transpires that SAMSON will be able to use its strong position in Western Europe to benefit from the economic recovery and further penetrate the market. In regions with exceptionally high economic dynamics, amongst them Eastern Europe and Asia, additional growth opportunities are to be expected. Prospects for North America are also looking good.

SAMSON has used the crisis to optimize internal structures and procedures.

Valves for large-scale power station
Wilhelmshaven with Germany's only deepwater port is suited for the particularly cost-effective supply of coal by sea. This fact played an important role when the energy supplier GDF Suez started planning its new coal-fired power plant. The new base-load plant is scheduled for connection to the grid in 2012 with a capacity of 800 MW. The power plant constructor Hitachi decided to cooperate with SAMSON for control valves and ordered valves in nominal sizes DN 80 to DN 300 with nominal pressures between PN 16 and PN 250. Most valves will be fitted with welding-neck ends, i.e. pipe expanders or reducers that protect the valves against thermal stress while being welded into the pipeline so that the valves can be adapted to pipe diameters as large as 450 mm. The valves are intended for use in certain sections of the water and steam circuits.

Such applications are characterized by high flow rates and pressure drops. A decisive requirement to be fulfilled by the valves was to prevent cavitation and noise emissions. In addition, they are expected to reliably cover a wide control range, yet provide sufficient safety reserves. Dharam Vir Rehani, the Hitachi project manager in charge of the mentioned plant sections, underlined that SAMSON not only sized the equipment to perfectly match the specifications. He also pointed out that SAMSON showed exceptional flexibility when it came to project handling: "Due to the strict safety regulations, we required extensive documentation, including special certifications of the foundry that made the valve bodies. We received all the necessary documents from SAMSON in record time."

Some of the control valves for the new coal-fired power plant at Wilhelmshaven are ready for the final acceptance test by the customer.

Machine protection for axial flow compressors
In standard operation, the blow-off valves are closed; and they may remain closed for years. But when a fault occurs, they must respond immediately and with absolute reliability. The valves perform this important task in axial flow compressors used in the steel production. The compressors act as air blowers and inject oxygen into the blast furnaces. To achieve sufficiently high combustion temperatures, the compressors must produce 3 to 6 bar pressure. If, for any reason, the pressure on the outlet side increases, a backflow is created within a split second and the pressure in the compressor surges. The compressor responds immediately to the backflow and starts pumping, i.e. to move cyclically, which can destroy the machine's blades.

To prevent such a disastrous chain reaction, the blow-off valves must react in under one second upon demand. At the same time, they must handle high flow rates on the spot and ensure a high control quality. The company that fitted the Indian steelworks at Rourkela, MAN Diesel & Turbo, decided in favor of hydraulic control valves manufactured by SAMSON to reliably guarantee that this safety function is performed. The valves in nominal size: DN 600 (NPS 24) were developed specifically for the application and manufactured completely at SAMSON. The project manager Dr. Oliver Wöll explained that they esteemed SAMSON as a competent partner who helped them find the right technical solutions thanks to its extensive know-how. Dr. Wöll added that they knew they could rely on the SAMSON equipment, which is of utmost importance in the axial flow compressors: "There is no second chance in this process."

From component testing during incoming inspection...

...to final assembly: manufacture of the blow-off valves specifically designed to protect the axial flow compressors in the Indian steel plant at Rourkela was entirely performed by SAMSON.

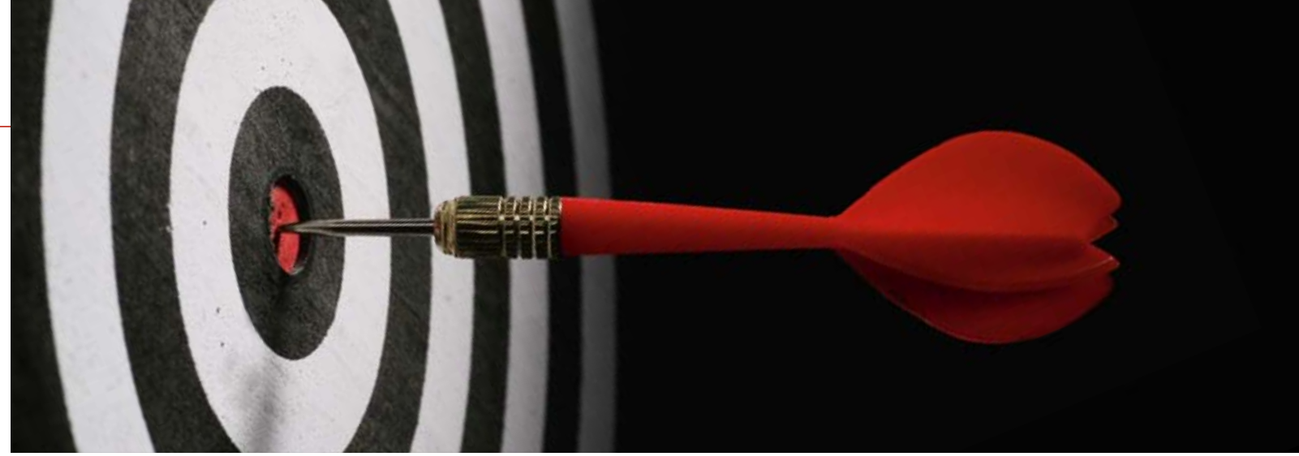
SAMSON CONTROLS at Santiago de Chile before...

...and after the earthquake of 27 February 2010.

Earthquake in Chile

On Saturday, 27 February 2010 at 3.34 a.m., an earthquake shook Central Chile. Measuring 8.8 on the Richter scale, the earthquake figured among the world's ten strongest quakes ever recorded and was the strongest ever experienced by the tremor-prone country in South America. The epicenter was located near Chile's second-largest town, Concepción. The massive quake and resulting tsunami wave killed over 700 people and destroyed approximately 500,000 houses, numerous hospitals, roads and bridges. The total damage amounted to around 22,000 million euro. SAMSON CONTROLS S.A., SAMSON's Chilean subsidiary located in Quilicura, a suburb of the capital Santiago, was also struck by the earthquake, which recorded an 8.0 magnitude there. Even though the building itself remained standing, many walls and parts of the roof had crashed in. The data server and important documents could be retrieved from the building merely hours after the catastrophe. That same morning, the Chilean management found a different, still intact industrial building and signed a new lease agreement the following Monday. The SAMSON staff started relocating immediately, also removing the undamaged equipment from stock with utmost care as the old building was in danger of collapsing. As phone and Internet lines were interrupted at the time, mobile phones and the private computers of the staff members were used to communicate with customers and the Frankfurt headquarters. Thanks to the enormous efforts and commitment of all persons involved, operations of SAMSON Chile were back to normal already a few weeks after the earthquake.

It took the staff only a few days after the earthquake to restart operations at new premises.



Diversity and unity

Extensive expertise in the different fields of control valve technology is the forte of the SAMSON GROUP. This expertise stems from the highly specific know-how that the motivated staff members in the different specialized group companies have accumulated over the years. Such competence can only develop in independent specialized companies acting on their own account. At the same time, markets call for open and transparent structures to allow clear allocation. It is in the midst of this struggle between diversity and unity that the outside presentation of all large corporations with independent associated companies is caught. Corporate identity is of fundamental importance in this situation. It helps combine the different units to form a whole, underlining the connection within the corporation and to the outside. As a result, the Executive Board of SAMSON AG decided to strengthen the perception of the SAMSON GROUP as a whole and create a uniform marketing presence, which has been laid down in the corporate design style guide of the SAMSON GROUP. This magazine is already published according to the new style: clear, uniform and recognizably SAMSON.

The new SAMSON GROUP corporate design style guide serves as the basis for a targeted appearance within the group and to the outside.

SAMSON AG · MESS- UND REGELTECHNIK
Weismüllerstraße 3 · 60314 Frankfurt am Main · Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
E-mail: samson@samson.de · Internet: www.samson.de

2010-09 HD · WA 240 EN