

SAMSON

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SAMSON MAGAZINE 2008



Impulse

Black Sands, Big Boom

Report

Andes, Pampas and Economic Boom

Portrait

The Friendly Giant

Innovations

Boosting Performance



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Cover

Château Frontenac is a famous landmark and luxury hotel in Quebec City, the capital of Canada's French-speaking Quebec province. It offers a spectacular view over the mighty Saint Lawrence River and the city.

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Smart Main Valve Vendor

Dear Readers,

To be regarded as a main valve vendor requires valve suppliers to master the entire field of valve engineering. The SAMSON Group's product portfolio, which ranges from micro-flow valves to 60 inch butterfly valves, makes SAMSON a one-stop shop for all types of valves. This can only be achieved thanks to continuous development and additions to our globe valve series. The new noise-reducing trims for the oil and gas industry and the cryogenic valves for handling liquid natural gas are just two examples of our innovative strength. Our associated companies are working continually to enhance the range of rotary valves as well.

The common link between these different valve types is the valve positioner. SAMSON sped ahead successfully with the transformation from electro-mechanical to smart, mechatronic control valve units. Equipped with the auto-tuning capabilities for quick start-up, SAMSON's digital positioners can be optimally used with large valves hooked up to additional air capacity boosters. By the way, these boosters had to be purchased from other manufacturers until recently. The new Type 3755 Volume Booster developed by SAMSON put an end to that.

SAMSON, as a true main valve vendor, masters the integration of these smart valves into all common process control systems like no other valve manufacturer.

This requires extensive expertise and comprehensive in-house tests to verify interoperability, even though the process control interfaces have been standardized, e.g. by eEDDL or FDT/DTM technologies. These days, our customers rely on optimized process management, while expecting reduced life cycle costs with the help of maintenance data generated by the smart positioners.

The increasing popularity of such asset management and service functions fuel the creation of new ideas at SAMSON. The approach to certain matters will have to include the entire valve assembly in the future, for example linking positioner diagnostics with additional sensor signals. Wireless solutions will provide possibilities previously undreamt of. Our R&D engineers will continue to ensure that users benefit quickly and comprehensively from such innovations.

I hope you enjoy reading this magazine.

Dr.-Ing. Jörg Kiesbauer,
Member of the Executive Board


Boosting Performance

Most industrial processes do not require a particularly dynamic response in the control loops. However, an increasing number of control valves need to react extremely quickly to guarantee plant safety or increase operational efficiency. To handle high flow rates or differential pressures, valves must be operated using large pneumatic actuators. The air capacity required by the positioners on these actuators is quickly used up. Therefore, valve stroking is accelerated by the use of volume boost-

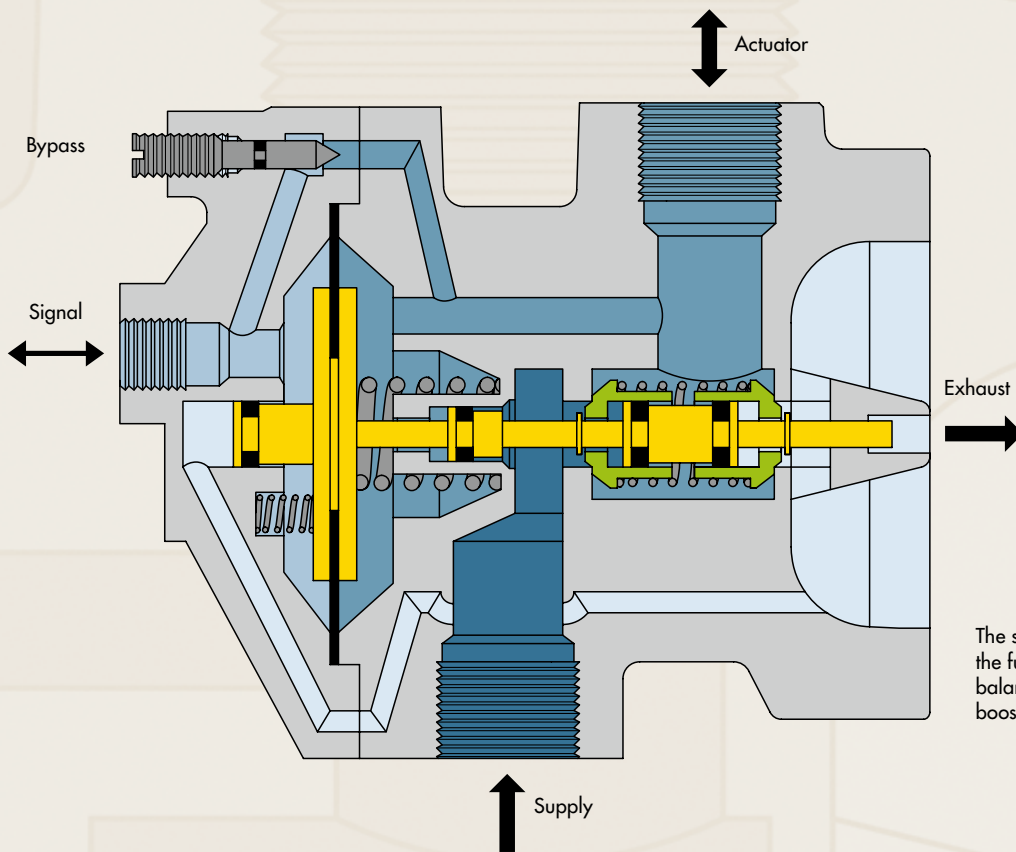
ers, which deliver a high air volume to the positioner. Combining digital positioners, which use piezo or solenoid valves to control the signal pressure to the actuator, with boosters sometimes leads to problems. The valves do not achieve the demanded stroking speed nor control accuracy. This is where the Type 3755 Volume Booster and the Type 3730 Positioner from SAMSON set new standards.

Plant safety and operational efficiency – Particularly fast reactions are required in power plants during load shedding, which may become necessary after a power network failure: Directly after load shedding, the speed of the turbines and generators rises rapidly. To prevent destruction by the arising centrifugal force, a large control valve must completely open within three seconds to allow the entire steam to be diverted to a condenser. With the anti-surge control of a turbocompressor, dangerous, unstable operating conditions that cause surges must be avoided. In this case, a certain portion of the pumped medium is fed back by a relief valve to the suction side when the outlet pressure is too high or the flow rate is too low. The relief valve has to stroke very quickly and precisely without overshooting to ensure that the compressor can operate with high efficiency close to the surge onset.

The Parex™ process to recover paraxylene, which is used for the production of polyester and resins, functions in a similar way. The adsorption of paraxylene from mixed xylenes works optimally at certain pressures and flow rates. The switching times between



The optimal tuning of the positioner, volume booster and actuator helps achieve the best control response.



The schematic drawing shows the functioning and pressure balancing of the volume booster.

adsorption and pumping around the paraxylene are very short. The good control performance of the push-around and pump-around valves is directly responsible for a higher product yield. Besides the Parex™ process, a series of other adsorption processes exist in the field of petrochemical applications that place equally high demands on the dynamics of valve positioning.

Ingenious combination – These requirements are easily met by using a combination of a conventional electropneumatic positioner or a Series 3730 or 3731 Positioner and a Type 3755 Booster. Series 3730 and 3731 Positioners with hybrid technology use analog circuitry for the actual control loop, which reacts immediately. Thanks to its optimized bypass restriction, the rugged booster can be set exactly for its task and lead-sealed to

make trial-and-error tuning during start-up a thing of the past. As the booster is completely balanced, it works reliably and remains unaffected by changing pressure conditions. It supplies a one-to-one signal pressure with a defined hysteresis. At the development stage, considerable effort went into keeping noise emissions to a minimum. The variable control dynamics allow the SAMSON booster to provide a new all-round solution to a long-standing problem.

The cover on the exhaust port reduces noise emissions and protects the booster from harsh environmental conditions.



The Friendly Giant

Canada's name originated from the Huron-Iroquois word "kanata", which means "village" or "settlement." Despite this name, Canada is the world's second largest country by total area and has the world's longest coastline. Ten percent of the world's forests grow here and a number of smaller states could easily fit into the huge Canadian prairie. Nevertheless, the gigantic country also has one of the world's lowest population densities with no more than 33 million people populating the vast

land. As a member of the G8, Canada figures among the world's leading industrialized nations and has established a high-tech, primarily industrial and urban economy. The country is super-rich in natural resources and possesses enormous reserves in ores, minerals, oil and natural gas. To serve this affluent, still expanding market, SAMSON opened a subsidiary in Canada 25 years ago.

Château Frontenac offers a spectacular view over the Saint Lawrence River and Quebec City.





Multi-cultural roots – The first Europeans briefly settled in Canada around 1000 A.D., which was almost 30,000 years after the first indigenous settlements, but still nearly 500 years before Christopher Columbus set out on his voyages. Remains of the Norse settlement L'Anse-aux-Meadows in Newfoundland are a genuine piece of evidence for this early, yet brief contact between the Old and the New Worlds.

At the beginning of the 17th century, French and British settlers started to establish outposts of their respective countries in the territories along the Saint Lawrence River. They engaged in several disputes and wars until the British finally won supremacy over Canada in the 18th century. Later, while still under British rule, Canada even fought back two military advances of the United States, which had recently declared their independence. Under the Constitution Act of 1867, four Canadian provinces united to form the Dominion of Canada, trimming British influence. Having grown to include ten provinces, Canada finally gained formal independence from Britain as an autonomous consti-

tutional monarchy in 1982 under the Canada Act. Although her powers are limited, Queen Elizabeth II still serves as the head of state.

Canada's political history vividly illustrates how deeply the country is rooted in Europe. But European influence goes much further: The legal system is based on the British model. The highly developed social security system bears strong resemblance with the systems found in European states. And particularly the French-speaking province of Quebec, where most of the descendants of the French settlers continue to live, maintains strong cultural links with their Old World counterparts. Alongside the European influence, the indigenous peoples of Canada have also managed to assert their rights. Huge areas of northern Canada were put under Inuit self-government and their aboriginal languages were accepted as official in these areas.

Good neighbors – Despite initial conflicts, Canada is meanwhile on friendly terms with its only neighbor, the United States. It shares an 8,890-kilometer-long border with the US, the world's longest border not

Pristine beauty and adventure: Maligne Lake in Jasper National Park, Alberta, sits at 1,670 m above sea level and is a popular destination for fishing, canoeing and hiking.

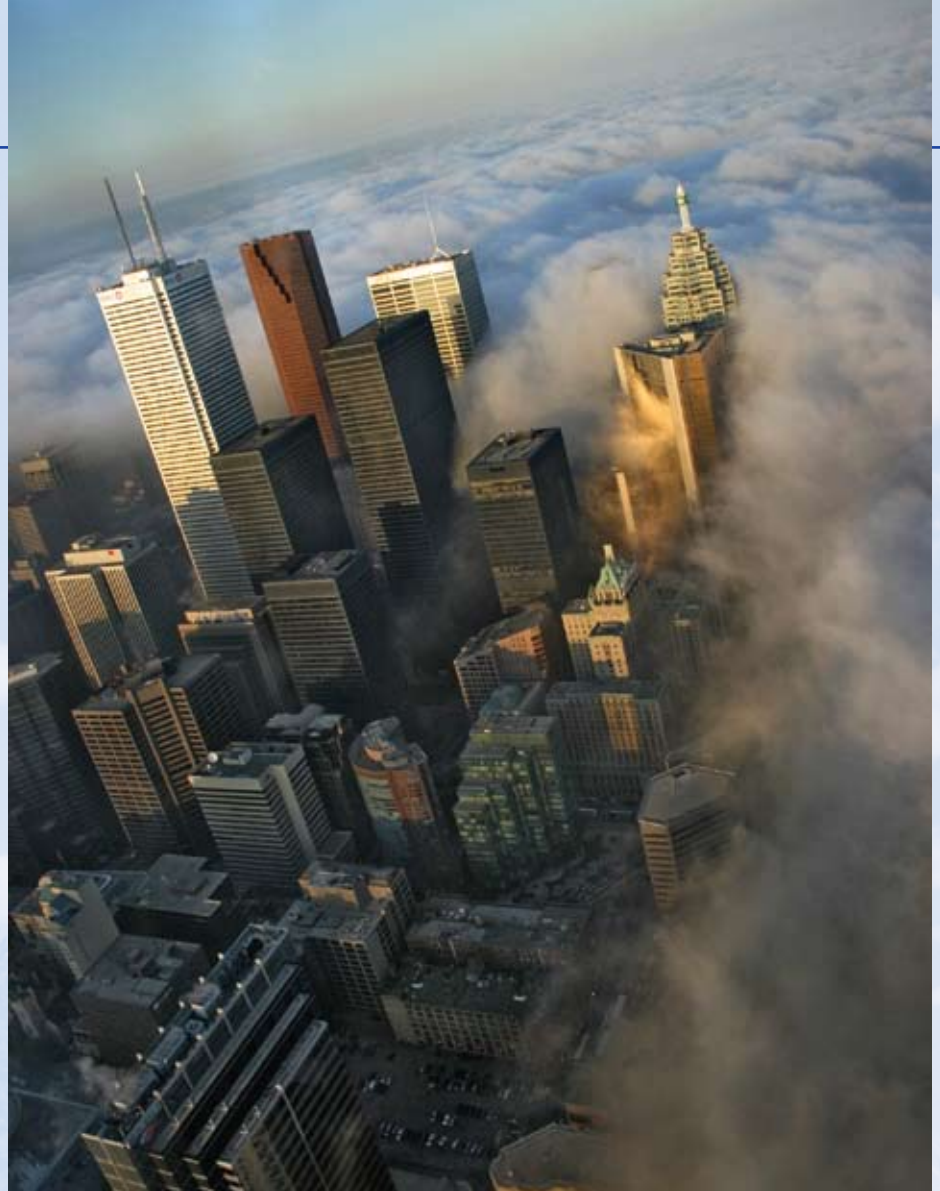
Portrait

Toronto is Canada's largest city and economic center.

patrolled by military forces. The overwhelming majority of Canada's population lives within 300 km of the border, and this not only for climatic reasons. Both countries cooperate intensively, for example under the North American Free Trade Agreement (NAFTA) signed in 1994, which eliminated barriers to trade between Canada, the US and Mexico. Almost 80 % of Canadian exports go to the US; a huge proportion of Canada's industrial production used to be aimed at the US market only.

However, since the Canadian dollar has gone up in value compared to the US dollar, things have changed slightly between the neighbors: US demand for Canadian industrial products has dropped, driving several suppliers, mainly in the most densely populated province of Ontario, out of business. Nevertheless, the Canadian economy handled this setback fairly well and compensated the losses quickly as it benefited from increasing prices and a growing US demand for raw materials, such as ores and oil. In particular when it came to crude oil and petroleum, the US were looking for a politically stable supplier, which allowed Canada to outperform Saudi Arabia as the major energy supplier to the US in early 2004.

Cross-border expertise – The history of SAMSON's Canadian subsidiary – the first ever to be opened in North America – is closely linked with the US as well: A very active sales representative, Alpha Controls, had successfully prepared the ground for the SAMSON products in Canada and the US when, in 1983, SAMSON



Controls Inc. was established in Markham, Ontario near Toronto. Strategically located in the country's largest metropolitan area, the Markham site could perfectly serve the chemical industry on both sides of the border, then the major customer. Even now, the northeastern regions of the US still belong to SAMSON Canada's sales area. And thanks to NAFTA, all cross-border transactions can be handled almost as if they were domestic.

Over the past 25 years, the business of SAMSON Controls has changed considerably. In the first years, the Markham staff spent much of their time adapting the products from Europe to the North American ANSI standards. It was mainly thanks to their efforts that SAMSON estab-

lished itself firmly in both the DIN and ANSI worlds. Having overcome these initial technical obstacles, SAMSON Controls targeted new customer groups beyond the chemical industry. Today, SAMSON's products are used in all sorts of industrial processes.

Westward shift – The changes that Canada's economy went through over the past years were mirrored by SAMSON. Gradually, business shifted from the traditional industries centered in the eastern provinces of Ontario and Quebec – chemicals, pulp and paper, food processing, pharmaceuticals and water treatment – towards the prospering oil and gas sector located further to the west of the country. SAMSON Controls was quick to sense this shift

and positioned itself perfectly in the market. Apart from the Markham headquarters and a branch office in Montreal, Quebec, SAMSON opened two additional offices in the oil province of Alberta.

The office in Edmonton, the capital of Alberta, supplies the extraction facilities and refineries located in the enormous Athabasca oil sands near Fort McMurray. Equipped with an assembly workshop and relying on highly specialized service engineers, the Edmonton branch ensures the smooth supply of valves and accessories to the oil plants often found in the remotest of locations. It sometimes takes the service staff up to three days just to get to the plant and back. In winter, it gets even harder since specially prepared ice roads are often the only passable way.

The branch office located in Calgary mainly cooperates with the numerous plant engineering companies active in oil and gas all across the world. Due to the rough climate, oil plants in Canada have always been designed to cope with extreme climatic conditions, which allowed the engineers to gain particular expertise with challenging operating conditions. This superior know-how gives Canadian-designed plants a competitive edge, making them the prime choice in other parts of the world as well. Thanks to SAMSON Controls, more and more of these plants in Canada and across the world are equipped with SAMSON products that are up to any task.



Mike Espey, head of SAMSON Controls Inc. (front, 4th from the right), with his successful team.



Balanced Mix

In 2007, Apache Corporation drilled 348 wells in Canada, with 287 completed as new sources for oil and gas. The exploration and development activities are centered in the provinces of Alberta, British Columbia, Saskatchewan as well as the Northwest Territories. Apart from conventional oil and gas, Apache has also been involved in producing shallow gas, such as CBM (coal bed methane), which is mainly found in fields on the eastern flanks of the Rocky Mountains. Canada possesses huge reserves in CBM and Apache has emerged as one of Canada's largest CBM producers. Apache also has a leading acreage position at Ootla, in the emerging Horn River shale gas play in northeast British Columbia.

Apart from Canada, Apache also runs operations in the US, Argentina, Australia, Egypt and the North Sea. It is this geographical diversity as well as a strategic product mix, which includes both oil and gas, that help Apache spread the entrepreneurial risk. Apache's worldwide acreage portfolio, built over two decades, now provides a strong foundation for growth through exploration drilling.

In 2007, Apache recorded revenues of US\$ 9.9 billion. Over 561,000 BOE (barrels of oil equivalent) were produced daily, an increase of 12 % compared to the previous year. Proved reserves grew to 2.4 billion BOE, with future growth expected in Canada's shale play and exploration activities in Australia and Egypt. At the end of October 2008, Apache published the results of the first test production on the WKAL-C-1X oil field – the westernmost production in Egypt's Western Desert. The well flowed 4,746 barrels of oil and almost 125,000 cubic meters of gas per day from a depth of 4,450 meters.

In Apache's facilities for oil and gas production and processing, numerous SAMSON control valves are used to ensure that all processes run smoothly and efficiently.

Andes, Pampas and Economic Boom

The road system known as the Pan-American Highway runs across the Americas (almost) without interruption, from Alaska in the north to Tierra del Fuego in the south. In South America, the main section of the fascinating highway links five countries: Colombia, Ecuador, Peru, Chile and Argentina, with the Pan-American Highway not being the only connection between them. They also share the same language and parts of their history. Yet, a closer look reveals that they are totally different. Each country has a cultural and economic diversity of its own with distinctive peculiarities. For many years, the region was at the periphery of world economy and experienced political isolation. Having gone through an

era of military dictatorships, the countries in South America now follow a path of political stabilization and economic growth. Even though the path is still bumpy at times, the growth rates registered up to the financial crisis figured among the highest in the world. Thanks to an enormous, still unexploited potential, the long-term prospects for the region and the companies active there look fantastic. SAMSON has been providing the South American markets with highly specialized products and its well-known service, convincing more and more customers of its valve expertise.



The ancestors of the Incas bred alpacas for their wool.

Gappy beginning – The South American section of the Pan-American Highway starts with the only interruption in the over 25,000-kilometer-long road system. The Darién Gap, an approximately 69-kilometer-wide stretch of natural rainforest named after the Panamanian region it is located in, obstructs the road between Panama and Colombia. Declared a Natural World Heritage Site and Biosphere Reserve by UNESCO, the isthmus between Central and South America is one of the last ecosystems on Earth still relatively undisturbed. Apart from offering a wide range of habitats, the Darién region is still home to various indigenous groups, amongst them Emberá, Wounaan and Kuna. As a result, not only conservationists and the indigenous peoples are strongly against bridging the Darién Gap. Subliminally, Panama, which was a Colombian province until 1903, also fears the influence of its big neighbor to the south. In addition, Chocó, the Colombian region adjacent to Darién, is covered by wild, undeveloped rainforest where drug trafficking and crimes flourish. Panama wants to ward this off.

The Government in Bogotá – the Colombian capital – and the booming Colombian economy, however, would love to see the Pan-American Highway completed rather sooner than later. They aim at getting direct access to the world market through the Panama Canal. The Government is convinced that completing the highway would eliminate exactly those dangers that Panama fears. Legal business would get a chance to replace the illegal sources of income and create a basis for stable conditions.



Safe climb – In fact, Colombia has gained very good experience with this approach. Well into the 1990s, the country was considered the center of worldwide cocaine trade. Crimes and political violence were widespread and dominated entire regions. A consistent policy of economic liberalization and restoration of security within the country allowed for a Colombian miracle to happen. Drug trafficking has lost its importance and migrated to frontier areas or has vanished from the country entirely. Particularly since the spectacular liberation of Ingrid Betancourt, the former presidential candidate held hostage, the last active guerilla organization, FARC, has lost its former strength. For years, the economy has experienced a yet unprecedented boom. Colombia figures among the leading producers of agricultural products, such as bananas, potatoes and coffee. In the last 20 years, the industries for consumer goods and raw materials have expanded. Today, textiles and food processing play the most important role.

The Pan-American Highway, which starts again in no man's land some 30 km behind the Panamanian border, soon leads to two Colombian

The blue poison dart frog lives in the tropical rain forests of the Amazon Basin. It releases potentially lethal toxins from its skin and uses its vibrant colors to warn predators.



Gas and water are separated from crude oil in separators. SAMSON control valves are installed in this plant located in the Amazon.



boomtowns on its way south: Medellín and Cali. Still infamous for their drug cartels 15 years ago, the country's second-largest and third-largest cities have become centers of a dynamic and diversely structured economy. Amongst others, the breweries of the Bavaria Group, which figure among the largest in South America, are located there. In Colombia, they are among the major buyers of SAMSON products marketed and serviced by the representative in the area, Steamcontrol S.A. Many of the food-

processing plants in Colombia came from Europe and were delivered with SAMSON control valves already installed. Steamcontrol used this door into a previously untapped market and today services a constantly expanding number of customers in different industries.

Oil from the Amazon – From Cali, the Pan-American Highway leads across the Ecuadorian border to the country's capital, Quito. This is where Energypetrol S.A., the local SAMSON

representation, is located. The name already indicates the company's major field of activity and the country's most important industry: oil and gas. Approximately 60 % of Ecuador's exports come from the local fossil energy resources mainly found in the Amazon lowlands in the east. Typical applications for SAMSON control valves are the separators, which separate the mixture coming from the oil wells into oil, gas and water.

SAMSON and Energypetrol have been cooperating since 1993. The cooperation also outlasted the dramatic economic crisis that the country experienced between 1998 and 2000. The collapse of several banks caused a national currency crisis. For two years, Ecuador was knee-deep in economic chaos. In 1999, the GDP slumped by a dramatic 30 % from US\$ 20 billion to US\$ 14 billion.

Popular drink, not only in Chile and Peru

Pisco Sour

Ingredients:

- 3 parts Pisco
- 2 parts lime juice
- 1 part simple syrup
- 1 egg white

Shake hard and long with ice. Alternatively, mix all ingredients in a blender. Strain into a tumbler or champagne coupe. Use a dash of angostura bitter as garnish. Also add a dash of cinnamon, making it ride jauntily in the center of the foam.





Finally, the national currency, Sucre, was abolished and replaced by the US dollar as legal tender. Since then, the national economy has stabilized, also thanks to increasing oil prices.

Avenue of Volcanoes – From Quito, the Pan-American Highway follows the Avenue of Volcanoes, as it was named by the German explorer Alexander von Humboldt on seeing the chain of partly still active volcanoes. This section extends over a distance of around 200 km south from the Ecuadorian capital of Quito to Riobamba. This route passes more than 50 volcanoes, which belong to the highest of their kind, and include the famous Chimborazo, which, at 6,310 meters, is Ecuador's highest summit. Humboldt and his companion Aimé Bonpland set out to climb the mountain on 23 June 1802. Although they had to turn around at around 5,920 meters before reaching the summit, they had climbed

higher than anyone else before them. It took another 30 years before this record was broken.

On the trail of the Incas – The contract to create the Pan-American Highway, or *Carretera Panamericana* as it is known in Spanish, was signed at the International Conference of American States on 23 December 1936 in Buenos Aires. Two main routes already existed in the Inca empire which, like the Pan-American Highway, ran along the Cordillera mountain ranges through the present-day states of Colombia, Ecuador, Peru, Bolivia, Argentina and extended to central Chile. The rulers of the Sun Empire, as the Incas called their imperium, had a road network built, which consisted of main and branch routes with many connecting trails stretching over 30,000 kilometers. Urgent messages or instructions could be conveyed quickly by messengers. Similarly, duties, trade goods

The 6,310-meter-high volcano Chimborazo is the highest summit in Ecuador.

and army supplies could be transported on the backs of bearers or on llamas into every last corner of the empire.

The most important camino inca (Spanish for Inca trail) ran along the ridge of the Andes mountains. A second route ran parallel to this route alongside the Pacific coast, which the Pan-American Highway follows today. The oldest part of the Inca empire, which expanded over a gigantic area within a few centuries before the Spaniards arrived, was located in modern Peru. The images of the breath-taking ruins in Machu Picchu are famous as are the legends of the last Inca sovereign emperor,

Atahualpa, who allegedly offered several rooms filled with silver and gold to regain his freedom from Spanish captivity. The cultural achievements of the Incas are all the more impressive considering that they established an extensive empire without working animals to pull carts or ride on, without the use of the wheel or knowledge of iron mining.

Similar to many other Latin American countries during the 20th century, Peru partly experienced tumultuous political events including drastic state intervention in the economy. With the onset of the new century, the political and economic situation stabilized. The policy of cautious privatization has

added additional impetus to the economy. Since 2000, the annual growth rate of the Andes state has been between 3 and 6 %.

Valves in continuous service – The Incas were true Andean highlanders. The present-day capital Lima on the Pacific coast was founded by the Spanish conquistador Francisco Pizarro. Lima is also home to the Peruvian subsidiary of the Japanese Ajinomoto Group, world leader in the production of amino acids. The products are processed by the company into foods, cosmetics, pharmaceuticals, nutritional additives, industrial chemicals and animal foodstuffs or sold on as base ingredients to other manufacturers. Ajinomoto del Perú S.A. has been active on the Peruvian market for over 30 years and is the market leader in the production of food seasonings. The fermentation processes used at Ajinomoto as a basis for their products are integrated into a recycling system. The byproducts are returned as fertilizer to the fields used to cultivate the plants for amino acid production. Numerous SAMSON control valves are used in these processes. An additional 100 SAMSON control valves have been in continuous service for 20 years at the acrylic fiber producer Sudamericana de Fibras S.A. Additional key customers include companies from the extractive and metal industries, such as Siderperu, the largest foundry in Peru that owns the only blast furnace in the country.

Flourishing regions – The Peruvian capital is exceptionally dry with an average rainfall of just 13 mm every year. It gets even drier further south



The most famous ruins of the Inca Empire are at Machu Picchu. According to the latest findings, the construction of the city was never finished due to the Spanish conquest.

along the Pan-American Highway. Across the Chilean border, the Highway leads through the Atacama Desert, the most arid region on Earth. On its way from the Antarctic, the ice-cold Humboldt Current hits the coast in this region with particular force, preventing the development of rain clouds at sea. Only when the current is stopped in its track every six to ten years by the climatic phenomenon El Niño, torrential rains cause the desert to flourish for a short time.

In contrast, the Chilean economy is constantly flourishing thanks to the largest copper deposits worldwide. Around 40 % of all international deposits of this key raw material are found in Chile. Electric and electronic industries would hardly be conceivable without copper. The best part of the copper ore is excavated in open-cast mines, for instance in the world's largest man-made pit at Chuquicamata. This pit is currently around 4,300 meters long, 3,000 meters wide and goes down to a depth of 850 meters. Approximately 1.5 % copper is contained in the mined ore. The ore is crushed and ground to recover the metal from the rock before being concentrated in a flotation process. The copper is then placed in an acid bath. The subsequent electrolytic refining of the solution achieves a purity of 99.99 %. A wide variety of SAMSON control valves come into play in the gigantic plants to control the flow of fluids. They are built to withstand corrosive solutions and abrasive flows as well as to hold out against the severe vibrations that arise at many points in the plants.



Stability and openness – Copper is indeed the most important export commodity, yet Chile is by no means a mere supplier of raw materials. The country has a very diverse modern economic infrastructure. For example, the city of Concón situated not far away from the capital Santiago is home to one of the most important chemical factories in South America. On this 50 hectare site, BASF Chile S.A. produce chemicals for processing in the leather, paper, construction, paint, packaging and textile industries as well as for agricultural products with the use of SAMSON valves. A majority of these products is exported to other countries on the continent.

The Chuquicamata copper mine is around 4.3 km long, 3 km wide and 850 meters deep. Its depth is planned to increase to 1.3 km within the next few years.

Roberto Vargas (left), head of SAMSON Chile, with his staff.



Report

The houses at Caminito in La Boca, a district of Buenos Aires, were built from materials found or discarded in shipyards.



Since the end of the Pinochet government, Chile has enjoyed a great deal of political stability. Chile regularly figures among the top 20 in the Corruption Perceptions Index annually published by Transparency International, in front of European countries like France, Spain and Italy. The rate of unemployment is comparable with the European average. These days the Chilean national economy is regarded as one of the most open in the world. It also belongs to the most dynamic economies with annual growth rates of around 6 % in the past few years. Companies in the mining, chemical, food and pulp industries are among SAMSON's customers in Chile. SAMSON control valves are even used in the Chilean wine growing industry, an otherwise unusual business for the valves. Several of the large Chilean winegrowers use state-of-the-art processing plants, especially in the production of white wine where exact temperature control plays a decisive role.

Immense distances – The greatest challenge for the Chilean subsidiary, SAMSON CONTROLS S.A. based in the Chilean capital of Santiago, is the vast distances that have to be overcome. A visit to a customer in Atacama entails a long flight followed by a trip across the desert in a rented 4x4 vehicle that also takes several hours. As a result, the service

technicians and sales team only ever get to spend a small part of their time in the office. Nevertheless, the subsidiary office remains an important base as its warehouse contains supplies of SAMSON valves and spare parts for both Chile and Bolivia, whose market is also served from there. The representatives of the other three South American countries on the Pacific coast – Columbia, Ecuador and Peru – can also call upon the SAMSON resources based in Santiago should their own supplies run out. Not least of all thanks to this close cooperation, SAMSON overproportionally benefits from the economic progress in these countries.

Turbulences on Rio de la Plata – At Valparaiso, the Pan-American Highway abandons its previous route southward along the coast and the Andes mountain range. Taking a bend almost at a right angle eastwards through Santiago, the route crosses the Andes and runs straight through the Pampas to the Argentine capital of Buenos Aires, where it reaches the Atlantic coast for the first time. Similar to Chile, Argentina, the second largest country in South America, had to endure military dictatorships until returning to democracy in 1983. However, even this did not bring continual stability. The country has undergone political and economic turmoil several times since

then. Around the end of 2001, five different presidents held office within ten days. Several financial crises arose. In the past 20 years, the inflation rate fluctuated between -1.2 and 3079 %. The unstable circumstances caused the Argentine economy to shrink by 10.9 % in 2002.

Convincing customer support – Since then though, the economy has rebounded at growth rates between 8 and 9 %. VALTROL-SAMSON S.A., founded in 1997, profited from the positive economic trend and achieved far above average growth in sales and market shares. The neighboring countries of Uruguay and Paraguay, which are also served by the subsidiary, contributed to this success as well. Gaining access to the market was not only impeded by shifting economic and political conditions. As in all other South American countries, the field of process engineering in Argentina was dominated by US companies and ANSI standards. SAMSON initially unheard of had to find access to promising customers first. Many a time, chemical and food-processing plants often originating from Europe provided first opportunity to establish contact. Many of the plant operators were unaware that their plants were already fitted with SAMSON valves. Typically, operators told SAMSON representatives when they pointed out one of

The Perito Moreno Glacier is part of a gigantic ice field in Southern Patagonia. It flows into the Lago Argentino.



the beige control valves in the plant on a tour round the factory that they had not noticed the valves as they had never had any problems with them.

These days, SAMSON is represented in all branches of the Argentine process industry, which is mainly concentrated around the cities of Buenos Aires, Cordoba and Rosario. Besides the high quality of SAMSON products, a particularly strong sales argument in favor of SAMSON valves has proved to be the customer support: a small quantity of standardized spare parts, which are easy to handle. Plant operators benefit greatly from the straightforward servicing. The acquisition of supplies and assignment of external service technicians can be very expensive and time-consuming

in this vast country. This is especially true at the southern end of the Pan-American Highway on the island group of Tierra del Fuego. Large drilling platforms have been constructed there to exploit the oil fields at the southern tip of the continent, which are far away from any mainland infrastructure. A brief visit from Buenos Aires to this inhospitable wilderness easily takes up a week. SAMSON products enjoy increasing popularity there as they save an enormous amount of time where servicing, plant downtime and technician visits are concerned.



Jorge Meszaros (standing, 4th from the right), head of SAMSON Argentina, with his staff.

Black Sands, Big Boom

Even conservative estimates rank Canada second behind Saudi Arabia in global oil reserves. While conventional crude oil in the Middle East is simply pumped from the ground, Canada's major resources are trapped in layers of oil sand that require complex production methods. Taking such efforts has proven worthwhile since skyrocketing crude oil prices and improved extraction methods have made it more profitable in recent years to exploit the sands. The largest oil sands deposit can be found in Alberta, underlying an area of around 140,000 square kilometers - twice the size of the Republic of Ireland. Fort McMurray, the once sleepy little town in northern Alberta on the Athabasca River, has become the heart of Canada's oil business and experiences an economic boom similar to the one of the famous Klondike Gold Rush. Currently, billions of dollars are being invested in Alberta to further expand production and processing facilities. These facilities need to be equipped with control valves that are rugged and highly efficient, even in the remote wilderness. And this is where SAMSON as a seasoned supplier comes into play.



Buried treasure – Oil sands are a mixture of water, sand, clay and bitumen – an extremely heavy form of crude oil that needs to be heated or diluted to make it flow. Canada's indigenous peoples found out early how to benefit best from the rich oil sand deposits at the eastern foothills of the Rocky Mountains: They used the thick black mass, which spills out onto the surface in some places, to waterproof their canoes. Alberta's Athabasca oil sands, named after the largest river in the area, are believed to hold 1.7 trillion barrels of bitumen, of which 173 billion barrels are proven reserves that can be recovered using current technologies. As a result, Canada's exploitable oil sand reserves would suffice to meet the current energy needs of the entire world for a few years to come.

The deposits in Canada's mid-western region were long neglected by the oil multinationals since the first attempts by local companies at developing the oil sands did not prove to be economically viable. The soaring oil prices, however, have meanwhile outweighed the high production costs. While extracting one barrel (159 liters) of crude oil costs between one and two US dollars in Saudi Arabia, mining or *in-situ* recovering the Alberta oil sands, separating the bitumen from carried-along deposits, and upgrading the bitumen to synthetic oil came to over US\$ 20 per barrel



Alberta's oil sands contain about 10 % of bitumen. Sand, clay and water make up the rest of the sticky black mass.

in 2004. As a result, oil sands production did not become truly profitable until the crude oil price constantly exceeded US\$ 30 per barrel after the summer of 2005. Big money has been made in Alberta lately, even though the break-even price per barrel continues to rise.

Excellent outlook – In 2007, Canada produced roughly 1.2 million barrels of crude oil from oil sands per day. By the year 2020, moderate growth estimates expect the daily output to almost triple to about three million barrels. In 2006, Canada ranked seventh among the world's top crude oil producers. By 2015, it is projected to have reached the number four spot. Growth is slowed by several factors, a decisive one being that completing one of the huge production facilities takes up to eight years. The companies active in Alberta, such as Shell, Syncrude, Suncor, Canadian Natural Resources and Petro-Canada, have

A SAMSON Type 3251 Control Valve provides back pressure control on a natural gas separator.





Approx. 20 % of Alberta's oil sands are suitable for open-pit mining.

proposed investments of up to 125 billion Canadian dollars between 2006 and 2015.

Challenging production – Basically, there are two production methods for oil sands: *in-situ* recovery and open-pit mining. For reservoirs where surface mining is not economically viable, various methods of *in-situ* (“in

place”) production are used. Thermal energy in the form of steam is applied to the viscous bitumen to heat it and make it flow to a well bore from where it can be recovered like in conventional oil production. Oil sands covered by less than 75 meters of overburden are mined in open-pit operations. Under 20 % of the Alberta sands can be mined, particularly the

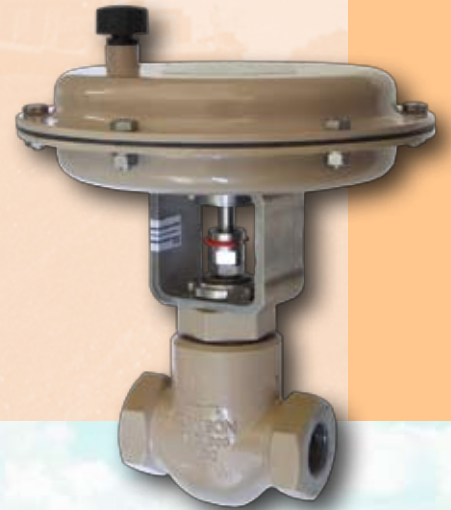
reservoirs around Fort McMurray, Canada's oil capital. There, the oil sands are transported by shovels and three-story-high off-highway trucks to cleaning facilities, where the excavated material is mixed with warm water and extraction agents to separate the bitumen from the sand. To convert the bitumen to synthetic crude oil, oil sand mines are usually linked with upgraders. In such plants, hydrogen or other catalysts are added to the heated bitumen to crack the long-chain hydrocarbons and make them ready for refining.

Rugged innovation – Natural gas is essential to the extraction and upgrading processes. It is used to generate heat, ultimately to produce the required steam and run the separation process. Gas collecting stations are widely spread across the entire Athabasca region, frequently situated in remote locations, just like the cleaning and upgrading facilities themselves. The stations usually collect gas from several wells. The gas arrives with a pressure of around 100 bar. Before the sand, water, wax and other deposits carried along by the gas can be removed in settling tanks, the gas pressure must be reduced to around 20 bar. Apart from the high pressure, the control valves used in this process are also exposed to extreme abrasion. To match such severe conditions, SAMSON specifically developed the Type 3525 Dump Valves. The valves are certified for applications down to -40°C , are extremely rugged and present a tailor-made, yet low-cost solution for a highly specialized application: Since the costs for servicing the valves installed in the remote gas

stations are far too high, the complete valves are simply replaced with new ones at regular intervals. Certification for temperatures down to $-50\text{ }^{\circ}\text{C}$ has already begun because, north of Alberta, in Canada's subarctic regions, there are further oil and gas reserves still waiting to be developed.

Superior use of resources – Apart from their ruggedness and cost-efficiency, SAMSON's pneumatic control valves have a further benefit, which has become a major competitive factor in the oil and gas sector: The positioners used with the valves have a low demand for auxiliary energy. Since providing compressed air in the Canadian wilderness means additional costs, the recovered natural gas with its innate pressure is used to operate pneumatic control equipment.

While the competitors' products have been very generous in their use of materials and auxiliary energy, SAMSON's pneumatic valve technology has always been designed to use the available resources economically. Natural gas has become a valuable resource, whose price is closely linked with the oil price. In addition, the natural gas consumed in the plants is converted into CO_2 equivalents for which the plant operators must possess the corresponding emission permits. Devices developed by SAMSON consume only about 10 % of the auxiliary energy usually required by comparable devices from common North American manufacturers. It is therefore no surprise that increasing numbers of SAMSON's pneumatic devices are ordered when building or upgrading oil and gas plants in Alberta as well as in the rest of the world.



Gigantic off-highway trucks can carry loads of up to 400 tons, transporting the oil sands from the extraction sites to the processing facilities. · The Type 3525 Dump Valve is a low-cost solution for severe operating conditions in oil and gas plants.

Access Anytime Anywhere

SAMSON's current product portfolio comprises more than 85,000 individual components and assemblies, which are continuously modified and improved by the R&D departments. As a result, construction drawings and technical specifications change almost daily. The valid laws and regulations as well as ISO 9000 quality management processes prescribe that such modifications are to be documented in up-to-date records. Apart from being a legal obligation, a well organized management of technical documents also ensures

trouble-free production processes and consistent product quality. As a result, SAMSON started to use digital archives for technical documents back in 1990. Since then, archives for 3-D construction plans and a web-based access management system have been added. Today, web technologies make it possible for all employees around the globe to conveniently access the latest technical specifications at any time of day.



A member of SAMSON China's quality assurance staff checks a component.



Mr. Anton Wächter, head of Technical Information at SAMSON, designed the digital archive.

Time is key – The night shift at the Frankfurt site is scheduled to manufacture a batch of valve seats. There is, however, a deviation between the dimensions specified in the drawing that came with the order and those entered in the machining center. To solve this problem, the shift manager can log into the archive to check the latest drawing version. After a few mouse clicks, the valid dimensions are available and production can begin. While the production and sales departments mostly need the latest specifications, After-sales Service requires data from the past as well: When servicing a 15-year-old valve, the technicians need to know the specifications that were valid at the time of manufacture. As a result, the archive also lists all previous versions of a document so that the technicians can find exactly what they need.

Clear and complete – Usually, searching the archive starts in IFS Applications, the ERP (Enterprise Resource Planning) system used at SAMSON. IFS contains the article number for each individual component and assembly, which is used by the archive to find the associated documents. The archive itself is divided into two levels: The first level contains a structure similar to a table of contents with comments. Users are provided with the existing documents, their latest revision and cross-references to other article numbers in text format. This level gives an overview and assists users in selecting the file required for their specific task. The

second level contains the documents themselves. They are all conveniently saved in PDF format. While the first level of the archive can be viewed by all members of the SAMSON staff, access to the second level is restricted to registered users only.

Free, yet safe – It is crucial, not only to the Frankfurt night shift, that the archive can be browsed within just a few minutes at any time of day (or night). As SAMSON has production, sales and service staff working all across the world, different time zones and long distances have to be bridged. Thanks to the digital archive, staff can access the technical data they need from any PC with an Internet connection, regardless of their location.

Safety and security play important roles when using such transcontinental networks. Consequently, a sophisticated access management system has been implemented to ensure data consistency and prevent unauthorized access to the archive. Construction plans and data can only be modified by the R&D departments, while the production, sales and after-sales service staff as well as the subsidiaries are granted access to the data relevant to their specific tasks. Each day, the archive handles between 500 and 700 queries, even though the number of queries per user and day is limited. As a result, the data in the archive can be accessed freely as required, but their safety and security are guaranteed at all times.

Highlights of Worldwide Success

For SAMSON, 2008 was both a successful and eventful year: Booming business, successful projects, innovative products, enhanced service, new activities and fresh faces marked the year. The following sections deal with the most notable events and achievements that stood out among SAMSON's worldwide operations.

New board member – After nearly 30 years at SAMSON, Prof. Dr.-Ing. Heinfried Hoffmann went into retirement at the end of September 2008, vacating his seat on the Executive Board of SAMSON AKTIENGESELLSCHAFT. Prof. Hoffmann had been responsible for research and development at the SAMSON Group for the past 15 years. His efforts helped set the course for major innovations, such as initiating the development and manufacture of smart positioners. He also made a great contribution to SAMSON playing a leading role in the

key international standardization bodies. Prof. Hoffmann will go on with his teaching activities and continue to give regular lectures at Kaiserslautern University.

Prof. Hoffmann's position on the Executive Board was taken over by Dr.-Ing. Jörg Kiesbauer on 1 October 2008. Mr. Kiesbauer has been with SAMSON since 1992, filling several positions in



Dr. Nikolaus Hensel, Chairman of the SAMSON Supervisory Board (right), said that the people were the key to SAMSON's success when bidding farewell to Prof. Heinfried Hoffmann (left) and welcoming the successor, Dr.-Ing. Jörg Kiesbauer (middle).

R&D. In addition, Mr. Kiesbauer was actively involved in drawing up several international standards for control valves and published numerous scientific articles in renowned specialist magazines. His publications revolved around topics like noise reduction and prediction in control valves, valve diagnostics and asset management. In his last position, Mr. Kiesbauer served as director of R&D Technology and Logistics. He is also active in research and teaching at Technische Universität Darmstadt.

New subsidiary on the Gulf – By founding a new subsidiary in Dubai, United Arab Emirates (UAE), SAMSON brought its presence in the Middle East to new heights. SAMSON Controls FZE resides in the Jebel Ali Free Zone, at first only with a sales office. However, storage facilities and a fully fledged workshop to perform all common repairs, will be added soon. The new subsidiary serves the UAE as well as Saudi Arabia, Oman, Qatar, Kuwait, Bahrain and Pakistan. The cooperation with the former representatives of SAMSON in the area will be continued. However, the customer service is to be expanded and intensified considerably. In addition to oil and gas, which naturally are the major local markets, plant engineering, district cooling and building automation are promising sectors that the new subsidiary focuses on.

Coal projects in China – Experience has shown that the demand for methanol runs parallel to the growth in a country's gross domestic product. In China, however, the methanol



A symbol of the economic boom on the Gulf: the Burj Al Arab hotel in Dubai.

The Datang MTP plant (model) is designed for an annual propylene output of 460,000 tons.



demand has grown above average, the reason being the high propylene consumption. Propylene serves as the basic material for many chemical compounds and can be extracted from either crude oil or methanol. China itself has only small natural oil and gas reserves; its coal reserves, however, are among the world's largest. To make better use of the available coal in petrochemical applications, numerous new plants for coal gasification and liquefaction have been established, which ensure methanol production and sometimes also methanol processing.

SAMSON supplies large amounts of products to several of these projects. As part of a project by Datang International Power Generation, for example, a methanol-to-propylene

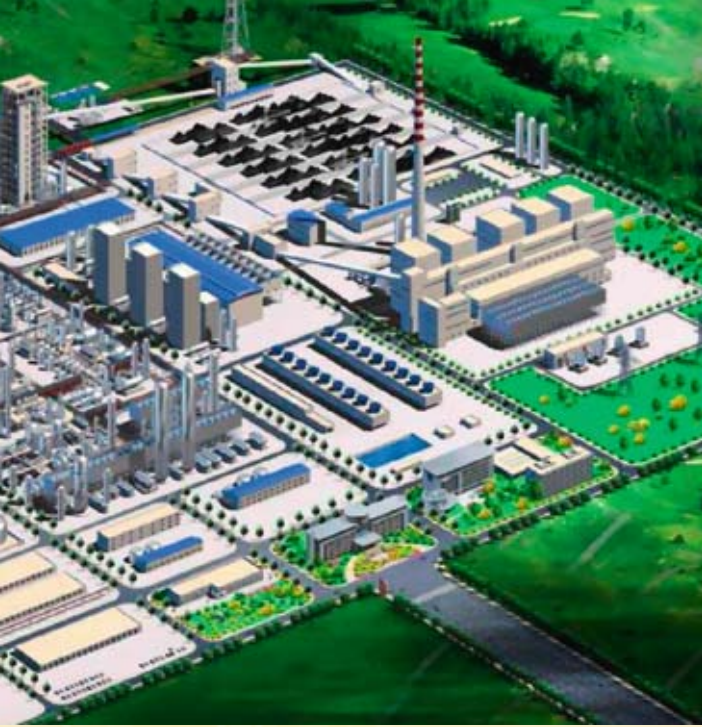
(MTP) plant with an estimated annual propylene output of 460,000 tons is to be established. A similar plant will be constructed in the Shanxi province by China's largest coal mining company, Shenhua. Shenhua is also constructing a coal-to-olefins plant in Baotou that will provide a further important basic material for the chemical industry. All mentioned plants will be located in Inner Mongolia, some more than 1,000 meters above sea level, where they will be exposed to demanding climatic conditions and temperatures down to -38°C . SAMSON equipment will be used in different sections of the plants, such as coal gasification, the conversion of methanol to olefins (MTO) and methanol to propylene as well as in air separation. The MTP[®] process at the heart of the plant, which was

originally developed by the engineering company Lurgi, gives SAMSON a decisive competitive advantage: SAMSON is one of very few suppliers whose products meet the strict specifications for this process.

10 years of SAMSON China – It was in May 1998 that SAMSON's subsidiary in China, SAMSON Controls



Hans-Erich Grimm (head of the Sales Division), Dr. Nikolaus Hensel (Chairman of the Supervisory Board), Ying Tao Zhang (head of SAMSON China) and Ludwig Wiesner (Chairman of the Executive Board) laid the foundation stone for the new SAMSON building in Beijing.

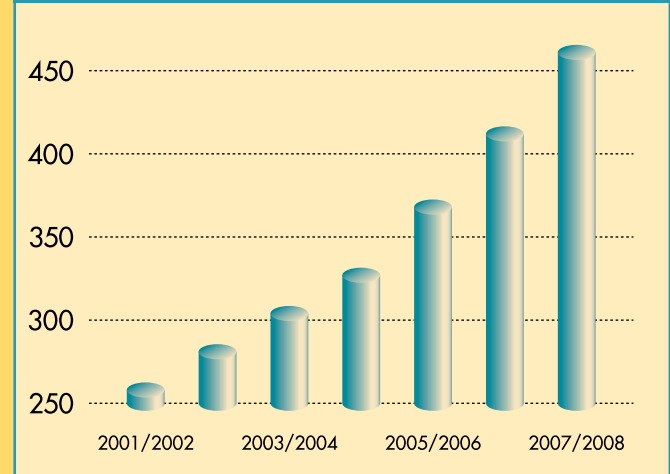


Financial year 2007/2008

(China) Co., Ltd., was founded in Beijing. Since 2003, the subsidiary's headquarters have been located in a newly constructed building in the Beijing Economic-technological Development Area (BDA). The 4,500-m²-large facilities offer space for component manufacturing, electroplating, assembly, powder coating, after-sales service, storage, administration and a test bench. Amongst other things, the subsidiary manufactures tailor-made products for the Chinese market. In speeches given at the anniversary celebrations in Beijing, well-wishers spoke of "ten golden years of reform and opening", which brought enormous growth to both the country and SAMSON Controls: In the past ten years, the subsidiary already opened branch offices in Shanghai, Chengdu, Guangzhou, Shenyang, Nanjing and Wuhan as well as service centers in Caojing and Nanjing to be close to customers in all important business centers. Over 120 members of staff work at the seven facilities. They managed to position SAMSON China in a leading role in the process control sector and maintain tight, long-term relations with many important companies in this field.

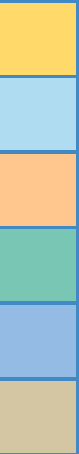
On the occasion of the subsidiary's 10th anniversary, the foundation stone for a new building was laid at Beijing that will provide 8,000 m² of space for further production facilities, workshops, storage areas, offices and training facilities. This will further strengthen SAMSON's good position on the important Chinese market in the long term.

Net turnover in million euro



The past financial year was still much influenced by a booming world economy. Yet again, SAMSON benefited enormously from the good economic situation. Recording an increase of 11.9 %, consolidated group sales grew to EUR 461 million, with Western Europe still figuring as the region with highest sales. The export-centered plant and mechanical engineering sectors contributed greatly to the good result. In Eastern Europe, oil and gas as well as petrochemicals have become interesting segments. Asia ranks second among the regions with the highest turnover. The subsidiaries in China and India, in particular, show an excellent development. They manufacture a major share of the SAMSON products sold on their domestic markets themselves. In the United States, SAMSON was involved in a number of exceptionally large projects. As a result, sales remained on a high level, even though the growth rate was comparatively smaller. In Canada, SAMSON managed to open up an important market in the booming oil and gas sector in the country's west. SAMSON's subsidiaries in Latin America achieved considerable growth rates. The further expansion of our worldwide service facilities goes down very well with our customers and is emerging as a further successful segment.

SAMSON worldwide



SAMSON

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