SAMSON worldwide

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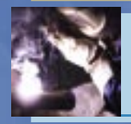
Anniversary Edition 2007

MAGAZINE

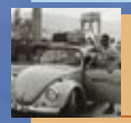
100 years – a flourishing company

The path of succession

Developing for the market



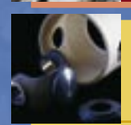
Craftsmanship and
state-of-the-art technology



Help close at hand

Organizational efficiency

A company in full flourish



A valve range second to none

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2007-02 HD . WA 178 EN

Anniversary Edition 2007

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Acknowledgements
We thank all SAMSON employees for their support as well as BASF, Bayer, BP, Krupp Uhde, R. Oldenbourg Publishing House (W. Peinke: *Entwicklung der Prozeßautomatisierung in der Chemie*, 1995) and www.photocase.com for the photo material.

Confidently looking forward to **the future**

Chairman of the SAMSON Executive Board, Gernot Frank, (center) surrounded by his Board colleagues: Prof. Dr. Heinfried Hoffmann, Ludwig Wiesner, Hans-Erich Grimm and Josef Tonus (from the left)

Dear Readers,
When I started my mechanics apprenticeship at SAMSON in 1960, the company was still an instrumentation and controls company, specializing in self-operated regulators installed in steam and heating systems. The move towards process engineering had just been taken by starting to produce pneumatic control equipment. At the time, plans were being made to link electronics with the traditional mechanical instruments. Nowadays, we have got the interplay between digital data technology and our control valves down to a fine art.

Our business activities cover the control of all types of media flowing through pipes, regardless of their state.

Years ago, we started to focus our expertise on one area and specialize in our current core business of control valve technology. Various other companies have attempted to cover the entire market for process control engineering, and eventually failed.

Today, we are active across the globe and at the forefront of the control engineering sector. SAMSON has remained in family hands, the company being owned by a small group of dependable stock holders and not depending on foreign capital. The steadfast relationship that has evolved between stockholders and the Executive Board is indispensable for the independence and success of SAMSON AKTIENGESELLSCHAFT.

This business climate is also reflected in the strategy strictly observed in our personnel policy, which applies to the Executive Board members and managers as well as employees and trainees. All of them belong to SAMSON, similar to being one of the family. Even though SAMSON has undergone global expansion and has increased its production capacities abroad, the core competences including research and development, and the majority of the traditional production remain at the headquarters.

We have always rejected gearing our personnel policy to meet short-term requirements. This has been decisive in forming the continual mutual trust between top management and the works council, which can be truly regarded as exemplary. This is another reason why we endorse sustainable, solid growth.

Our expertise in control valve technology is, and will remain, at the focus of our attention as we advance towards tomorrow's markets, which promise great growth potential. In response to our customers' needs, we are continually working to achieve a better control loop performance, requiring an increasingly finer tuning of the process control system, sensors and control valves. In this area too, SAMSON is gradually advancing into fields of technology which are directly related to our core business to provide our customers with even greater benefits.

As expertly managed in the past, we will continue to integrate other companies whose valve expertise enhances the qualities of the SAMSON Group. SAMSON intends to branch out within its specialized field of engineering.

We regard globalization as a challenge and a great opportunity. SAMSON's activities have extended increasingly around the globe on the most dynamic marketplaces, yet without losing sight of our origins.

Fully aware of our past, we intend to continually modernize and develop SAMSON, while keeping in mind the ideals and philosophy of our founding father, Hermann Sandvoss, which we still follow closely. The way paved by Hermann Sandvoss and his successors will be continued regardless of what modern business trends may dictate. We can confidently look forward to the future and the next hundred years.

Gernot Frank
Chairman of the Executive Board
SAMSON AKTIENGESELLSCHAFT

Imperial symbol

The blossom of the Magnolia used to be reserved for Chinese emperors of the Tang dynasty. Regarded as a symbol of purity, the plant was cultivated exclusively in the grounds of the emperor's palace. Occasionally, the sovereign would award a few specimens of the majestic plant as an honor to his subjects who had served his empire in a special way. The blossoming of this gift could be observed by many people and the splendor afforded by its bloom each year also obliged the recipient to great loyalty toward the imperial palace.
No accounts exist to whether the founders of SAMSON had this oriental symbolism in mind when they had a magnolia tree planted on the works premises in the early days of the company's history. Since then though, this magnificent tree has grown and flourished on the company site in the eastern part of Frankfurt. In full bloom, the tree stands as a reminder that the loyalty shown by SAMSON employees constitutes one of the major mainstays of SAMSON. Thanks to these employees, SAMSON has become a flourishing company in more than just a figurative sense.

The **path** of **succession**

Family-owned companies excellently demonstrate that business organizations can achieve stability while still embracing change and new challenges. These businesses combine well-established traditional values with attentive market orientation. It is not just the next annual balance sheet that counts, but also ensuring that the line of succession is continued. Family-run enterprises do not tend to follow every new business trend; instead, their plans and reactions focus on long-term objectives. The personal involvement of the owners in a company's success forms the basis for the sound management of business affairs, yet still provides opportunities for developments that do not necessarily need to pay off by the next quarter.
Exactly one hundred years ago, SAMSON was founded by four brothers. Their descendants still hold stocks in the company. Their support secures business continuity, promoting the development of new ideas and business opportunities.

1871

Born on 23 April in Wispenstein in Lower Saxony, Hermann Sandvoss is the youngest of five sons.

1885

Hermann Sandvoss starts his carpentry apprenticeship. After successfully completing his training, he takes on a job at the Amme millwright business in Brunswick.

1905

In March, Hermann Sandvoss writes to his brother Ernst about his thermostat construction. He receives his first patent for it on 6 May. He immediately starts to concentrate on making control instruments for heating systems.

1907

Hermann Sandvoss founds the company VULCAN Technische Apparate Baugesellschaft mbH in a disused weaving-mill in Neuss on the river Rhine and starts production of self-operated temperature regulators.

1908

On 6 February, Hermann Sandvoss registers the trade name SAMSON, which is entered in the German Patent register on 30 May. The name originates from the biblical hero and stands for strength and power.

1909

A supplement is added to his first patent on 15 December, describing a thin-walled, corrugated metal tube used to seal the thermostats. The metal bellows seal is devised.

1910

His son Wilhelm Christian joins the company at the age of 15. The sons of Ernst and Carl Sandvoss have already entered the company.

The Sandvoss family and SAMSON AG

The millwright connection – At the turn of the 20th century, the hard-working, ambitious young man, Hermann Sandvoss, had worked his way up in the millwright business to become manager of the warehouse of a large mill located in Neuss on the river Rhine in northern Germany. He was in charge of the entire machinery at the mill as well as being responsible for monitoring the steam and heat supply. A constant temperature was essential for the mill to work properly, requiring a continual manual regulation of the machinery, which was a time-consuming job. This gave Hermann Sandvoss the impetus to design a device that would respond automatically to any deviation in temperature. His idea involved utilizing the phenomenon of thermal expansion of fluids to position valves and provide automatic temperature regulation.

A family with inventor spirit – After lengthy experimentation, Hermann Sandvoss succeeded in developing a thermostat that took over the wearisome task of regulating the temperature and draining condensate by hands. The thermostat consisted of a moveable piston suspended inside a brass cylinder filled with a temperature-sensitive liquid and sealed by rubber-like tubing. This construction formed the basis for his first patent (number 180 601) which evolved into his first product. Acting resolutely, he gave up his position at the mill works to dedicate his time to the production of control instruments for heating systems. He had identified a promising opportunity to sell vast quantities of his self-operated temperature regulators to the numerous steam-operated factory plants as well as rented houses, hotels and offices fitted with central heating. On 1 April 1907, he founded the company VULCAN Technische Apparate Baugesellschaft mbH, whose products were marketed under the brand name SAMSON in the very same year.

Hermann Sandvoss' idea to use the thermal expansion of liquids for temperature regulation was the basis for SAMSON's success.

At the beginning, things ran very well. The flourishing heating industry generated a constant demand for SAMSON instruments. Soon, however, it emerged that the sealing tubes made of Paradurit, a substance similar to rubber, could not withstand the deviations in temperature for very long. Another elastic material that could resist these temperature differences had to be found. Hermann's brother Ernst came to the rescue with the idea to corrugate a stiff metal tube in a concertina-like fashion. The resulting bellows seal, another SAMSON engineering idea, came into being, and the business soon began to pick up again. By 1912, nearly 250,000 steam traps and over 10,000 temperature regulators had left the workshop and had been fitted in heating and industrial installations, where they proved to work reliably.

The move to Frankfurt – On 1 May 1909, the company was re-established under the new name of SAMSON Apparatebau GmbH in Düsseldorf on the river Rhine. The founding members of the company included the Sandvoss brothers Hermann (Neuss), Carl (Hamburg), Wilhelm (Kehl/Rhine) and Ernst (Hanover). Carl and Wilhelm as well as two of Carl's sons, Hans and Carl junior, were involved in the sales side of the business.

On the lookout for the best possible location, the company initially moved from Düsseldorf to Mannheim at the end of 1913 and then finally to Frankfurt/Main in 1916 as the authorities there were willing to make generous concessions to Hermann Sandvoss, the hard-working entrepreneur. As well as relieving the company of its local business tax burden for the first ten years, the city was prepared to provide a piece of land, where a factory and office building could be built in line with the founder's plans.

Ernst Sandvoss also moved to the city on the river Main in 1916 to help build up the business and he died there in December 1924. SAMSON became a stock corporation in 1922. Hermann Sandvoss was elected the sole managing director. His brother and business partner Carl died in January 1923. By the mid 1920s, just two of the four brothers of the first generation originally involved in the family business were still alive. Fortunately, family members in the second generation joined the business. Ernst's two sons, Willy August and Karl Gustav Johann (better known as Hans), had meanwhile worked their way up into managing positions at SAMSON.

Third Reich and World War II – The company mastered the difficulties presented by roaring inflation in 1923 and by the Great Depression follow-

In the mid-1950s, SAMSON was still surrounded by countryside. Schielestrasse and Weismüllerstrasse streets still form the boundaries of the business premises.

1922

SAMSON is turned into a stock company. At the age of 51, Hermann Sandvoss is elected the sole managing director.

1923

Severe inflation paralyzes business activities. Despite the strong devaluation of the German Mark, forcing SAMSON to take harsh cost-saving measures, the company workforce is not laid off thanks to the flourishing business abroad.

1936

The son of Hermann Sandvoss, Wilhelm Christian, is named technical director and appointed to the Executive Board together with Heinrich Nothdurft, the son-in-law of Hermann's brother Wilhelm.

1941

Hermann Sandvoss retires at the age of 70 in October. The two board members, Wilhelm Christian Sandvoss and Heinrich Nothdurft, take over the company management.

1943

On 24 January, Hermann Sandvoss dies. The company workforce has risen to 610 employees in total. 125 of these staff work in a branch works in Silesia (now Poland).

A picture of the SAMSON's forefathers featuring Heinrich, Wilhelm, Ernst, Hermann and Carl Sandvoss taken on the occasion of a family get-together in 1905.

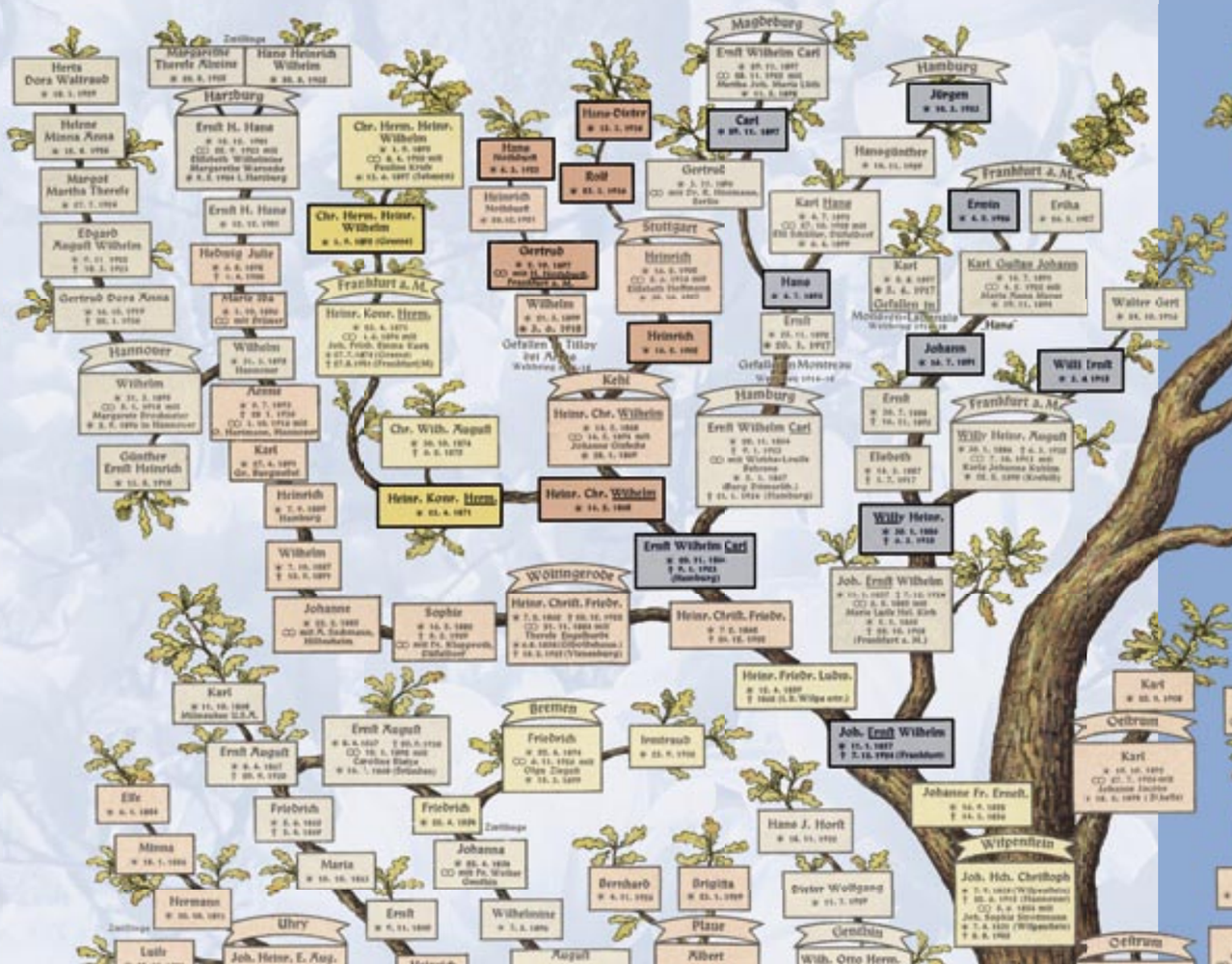
ing Black Friday in 1929. Consequently, it benefited from the boom experienced in the early years of the Third Reich. A total of 100 employees were employed in 1932/33. A few years later, in 1936, the workforce had risen to over 250 employees, and at the start of World War II in 1939, it had even grown to 340.

As a consequence of the National Socialists' racial laws passed in 1935, the management at SAMSON was compelled to dismiss several "non-Aryan" staff. Nevertheless, they maintained their business contacts to Jewish partners outside Germany, unimpressed by Nazi ideology. Heinrich Sandvoss, the son of co-founder Wilhelm, took over the branch office in southern Germany (Württemberg and Baden).

In November 1936, Wilhelm Christian Sandvoss, Hermann's son, was named technical director and appointed to the Executive Board together with his uncle's son-in-law, Heinrich Nothdurft. Hermann Sandvoss had brought him into the company in 1930 as head of sales. Ernst Sandvoss' sons had also assumed managing functions in the company: Willy August received full signing powers in 1932 and Karl Gustav Johann managed the engineering office for several years. After the sudden death of Willy August in 1935, his brother Karl Gustav Johann took on his position, having full signing powers in sales. In 1942, he moved to Hanover to manage the branch office there.

In October 1941, the SAMSON patriarch, Hermann Sandvoss, retired at the age of 70. The two board members, Wilhelm Christian Sandvoss and Heinrich Nothdurft, took over the task of managing the company. When Hermann Sandvoss died on 24 January 1943, he left behind a flourishing company with a workforce that had grown to 610 employees in total.

War damage – During Allied bombing raids towards the end of World War II, the factory in Frankfurt was destroyed to such an extent that production could no longer be continued. Operations came to a complete standstill shortly before the US troops arrived in March 1945. Fortunately, Heinrich Nothdurft, who had been acting as the sole board manager since the end of 1944, was able to obtain permission from the Allied occupying authorities to restart production on 31 May 1945. However, in September 1945, he had to retire from his position due to poor health. His successor, Heinrich Arndt, was the first managing director in the history of SAMSON who was unrelated to the Sandvoss family. However, the family dynasty still played an important role in the company. Willi Ernst Sandvoss, a Sandvoss in the third generation, became head of the development department in the 1950s and later received full signing powers.



An excerpt from the Sandvoss family tree going back to Hans Sandvoss born in Oestrum in 1612, a direct ancestor of company founder Hermann.

1953

Erwin Sandvoss, son of Hans Sandvoss and grandson of Ernst Sandvoss, takes over his father's business in Hanover after his father's death.

1960

Rolf Sandvoss, the eldest son of Heinrich Sandvoss and grandson of co-founder Wilhelm, takes over management of Stuttgart branch office due the sudden death of his father.

1965

On 26 August, Rolf Sandvoss is appointed to the SAMSON Supervisory Board at the early age of 29. Later, in 1973, he is elected chairman of the board. His younger brother, Hans-Dieter, takes over the Stuttgart branch office.

1978

After the death of Carl Sandvoss junior, his nephew Jürgen is delegated manager of the branch office in Hamburg.

2001

Rolf Sandvoss voluntarily steps down as chairman of the board. He appoints Dr. Niklaus Hensel as his successor. Rolf Sandvoss is appointed honorary chairman of the board for life in 2003.

A family still committed – The graduate engineer Erwin Sandvoss, son of Hans and grandson of Ernst Sandvoss, took over management duties at the branch office in Hanover in 1967.

Meanwhile Heinrich Sandvoss, son of co-founder Wilhelm, had advanced the Stuttgart branch office into a profitable enterprise. On his unexpected death on 2 December 1960 at the age of 58, his eldest son Rolf Sandvoss, who had just studied business economics at Fribourg, Switzerland and Munich, was just 24 years old. Rolf took charge of his father's business with a personal loan from his own bank. After the death of his uncle Hans Sandvoss, he was appointed to the SAMSON Supervisory Board in August 1965. Despite his comparatively young age, Rolf quickly took on a leading role. In 1973, he became chairman of the Supervisory Board, greatly contributing to SAMSON's success for the next 28 years. After stepping down in 2001, the Supervisory Board honored his achievements by appointing him honorary chairman of the board in 2003. Apart from that, Rolf is still on the Executive Board of the French subsidiary in Lyon. His younger brother Hans-Dieter supported him at the Stuttgart branch office and held the position as manager of this engineering and sales office until very recently.

The first SAMSON chairmen of the Executive Board: Heinrich Nothdurft (left) retired in 1945 for reasons of poor health. Dr. Heinrich Arndt (right) is appointed as his successor.

Carl Sandvoss junior, who had managed the branch office Sandvoss & Fischer in Magdeburg in eastern Germany before the war, fled to Hamburg after 1945, where he took on management duties of the local sales office. After his death in 1978, his nephew Jürgen succeeded him. After the sales office was incorporated into the SAMSON company, Jürgen Sandvoss continued to manage the Hamburg branch office for several years. In 1972, he was appointed to the Supervisory Board and has been acting as deputy chairman since 1973.

Hans Nothdurft, the son of Heinrich Nothdurft and Gertrud Sandvoss, also entered the family business after successfully completing his physics degree. He was valued as the leading specialist for metal bellows. Later, he became head of the entire production and works maintenance departments at SAMSON and was appointed to the Executive Board.

Taking on responsibility – Many members of the Sandvoss family share an appreciation for the Arts and music, which has also left its mark on the company. The passion for photography demonstrated by Wilhelm Christian Sandvoss produced a fascinating wealth of photos taken during the company's early days. Owing to his initiative, a male voice choir and works orchestra were established in the 1930s, which included unemployed musicians. Over the past years, the Sandvoss family, together with members of both boards, have been committed to supporting cultural and scientific causes, such as the *Frankfurter Förderverein für Physikalische Grundlagenforschung*, an organization dedicated to fostering fundamental research in the field of physics.

The production workforce, together with Hermann Sandvoss within their midst, proudly pose for the photographer in 1932.

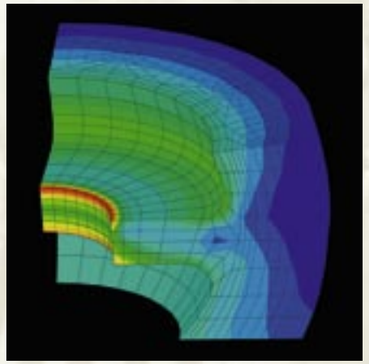
First and foremost, the Sandvoss family has maintained its commitments towards the future development of SAMSON AG. Numerous members of the extended family are still joint proprietors, holding shares in the company. Their personal ties to SAMSON, their serious responsibility taken towards SAMSON's employees and their long-term economic outlook all form a sound groundwork for the continued, flourishing development of this genuine family business.

Developing for the **market**

Innovation literally means "introducing something new" rather than simply developing a product further. Nevertheless, it still entails more than just a flash of inspiration in the mind of an ingenious inventor. Ultimately, market forces decide whether a newly introduced product is a true innovation that can establish itself in the marketplace. SAMSON also draws the main impulses for its own research and development activities from this very source. What is more, an environment has been created at the headquarters in Frankfurt where ideas are constantly evolving and the innovative advances are supported within a well-structured system. At SAMSON, the fundamental research activities are performed in the materials and electromagnetic compatibility laboratories, the flow simulation department and the test bench, which is unique of its kind. Specialists in the fields of CAD, technical information, standards and application engineering take care of implementing the research findings in close cooperation with the departments responsible for product management, field sales, production engineering, and most importantly, with the actual end users themselves. The main objective of SAMSON's R&D activities is of course to find additional benefits that the customer can profit from.

1856

The German Association of Engineers (VDI) is founded, uniting regional engineer organizations established at the end of the 18th century following the onset of industrialization.



1907

On 1 April, Hermann Sandvoss founds the company VULCAN Technische Apparate Baugesellschaft mbH, manufacturing his patented automatic steam traps and temperature regulators under the brand name SAMSON.

Combining strengths

The Series 3730 and Series 3731 Positioners excellently illustrate SAMSON's expertise. By combining electronics and pneumatics, the benefits provided by both digital and analog technologies have been incorporated into one device. The positioners can be commissioned at the press of a button and are able to position the valve precisely in near-record time. Integrated fieldbus capabilities allow the positioners to communicate with a process control system. Moreover, on-board diagnostics enable the positioners to monitor the valve performance. All in all, their excellent functions and reliability make them fit for the tough conditions usually found in industrial processes.

1909

Hermann Sandvoss registers an additional patent to protect the design of the thin corrugated metal tube used to seal his steam traps and temperature regulators.

1910

The first boiler regulator, a steam pressure regulator, is launched. Since then, millions of these regulators have been sold. A modified version is still sold as a temperature regulator.

1925

SAMSON extends its wide range of temperature regulators, adding an engine coolant regulator.

1930

SAMSON's self-operated and pilot-operated devices are able to regulate water and steam pressure in addition to temperature.

1935

A solenoid valve and a temperature controller are the first electrical devices developed by SAMSON.

From meat roasting to fieldbus technology

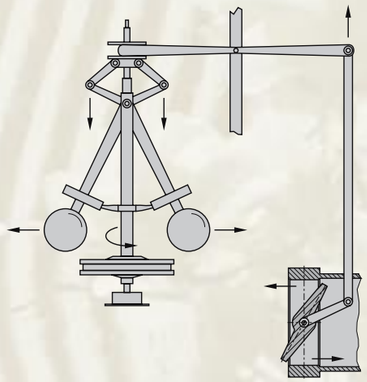
Laying the foundations for automation technology – The tax lists created by the Sumerian temple scribes around 5,000 years ago belong to the oldest known forms of writing. These scripts were written using hieroglyphs, which developed into wedge-shaped characters known as Cuneiform and later formed the basis for many alphabets used today. The Sumerians in ancient Mesopotamia were also able to measure water flow needed to distribute water for irrigation. 5,000 years later, instrumentation and controls has evolved into a complex technology.

Philon's magic lamp – The idea to make life easier through automation has been around a long time. Some early examples of automatic regulating mechanisms go back to ancient times. For example, around 220 BC, Philon of Byzantium used the atmospheric pressure to design an oil lamp that always had a constant level of oil. The lamp contained a dish that was connected to a closed oil container by a tube. The lower end of a tube was exposed to the atmosphere when the oil level in the dish fell below a certain level. The top of the tube was connected to the oil container where the oil flowed through a second tube into the dish until the bottom of the other tube was covered again with oil. The principle of the closed-loop feedback control was put into practice with this invention. The tube in this case acted as both a sensor and actuator, detecting the drop in oil level below a set point and replenishing the level again by compensating the pressures.

Despite its ingenuity, this simple device was forgotten in Europe during the Middle Ages. It took until the Renaissance for automation to reappear when the pioneers of modern engineering started to study the subject. The automated meat roasting spit studied by Leonardo da Vinci helped simplify work in the kitchen by using the rising heat from the fire to drive the spit. The mechanism is also based on closed-loop feedback control: the larger the fire, the faster the spit turns, preventing the roasted meat from getting burnt.

James Watt and the millwrights – The crafty exploitation of physical conditions with the aid of ingeniously simple contraptions gave way to increasingly complex mechanisms in the 18th and 19th centuries. The father of modern industrial control engineering, James Watt, developed a centrifugal governor in 1788. As was the case with the steam engine, the device was not his own invention, but instead he managed to improve familiar processes and combine them to produce a groundbreaking creation. The centrifugal regulator, now often known as the Watt governor, was connected to the drive of the steam engine by a belt drive. If the engine gained excessive speed, the centrifugal force drove the balls outward in wider circles. This raised the arms that restricted the steam valve, thereby reducing speed. If the engine slowed, the balls lowered and the valve admitted more steam.

Watt had borrowed the idea from millwrights who had been using centrifugal governors for decades. Mill construction was a pioneering industry in the 18th and 19th centuries, acting as initiator for many key engineering developments. Therefore, it is no coincidence that the founder of SAMSON, Hermann Sandvoss, began his career as a millwright. The thermostat that he developed had its origins in Watts' ideas and was a forerunner of modern process control engineering whose actual starting point is dated to the time after the World War I by industrial historians.



James Watt used centrifugal force to regulate the steam supply.

The beginnings of process control – At that time, the chemical and oil industries had reached new dimensions and started to count as the key factors in a world economy starting to globalize. Production plants assumed gigantic proportions while the diversity of developed products grew, too. While just a few decades before, aniline and soda seemed to be the only products of the chemical industry, a diverse industry for paints, varnishes and fertilizers was expanding at terrific speed. Consequently, larger quantities of crude oil were being processed into fuels and raw materials. The few unvarying processes evolved into complex processes with an increasing number of variables. Power plant and heating engineering had also reached new heights. Plants were required to handle much larger flow rates of liquids and gases.

The first control stations were built around that time with measuring lines filled with the product for remote measurement. The valves were installed with their stems leading through the wall of the control station, allowing the operators to adjust the valves with a handwheel. This technology was the onset of central plant control. The control rooms were still very large and it took many plant operators to keep the process under control. The proximity to the production process itself was also very unpleasant for production staff. Many of the processes obliged the control room to have complete explosion protection measures taken, which meant that the electrical instruments

Hermann Sandvoss put the principle of liquid expansion to use in combination with a reliable metal bellows to regulate the temperature.

1940

The first directive covering instrumentation and controls is issued by VDI in Germany, later forming the basis for a DIN standard.

1946

The steam trap, a forerunner of the Type 13E, is launched. It has been sold over a million times and is still a big seller.

1949

NAMUR, the association to represent users of process automation technology in the chemical industry, is established.

1950

The first differential pressure regulators for district heating networks are developed to provide stable plant operation.

1953

The STP 703 model, the first pneumatic positioner in Germany, is introduced by SAMSON.

that were becoming more common at that time could not be put to use.

Pneumatics on the rise – The advances of pneumatics after World War II marked the opening for real remote operation and automation in process engineering. A fast-growing demand for this type of technology was created by the continuing economic boom that many countries experienced in the 1950s and 1960s. Dynamic growth in a wide variety of technology sectors and the increasing demand for consumption goods gave rise to innumerable new products. The production industry flourished and the gigantic production plants could not have been operated without compressed air technology.

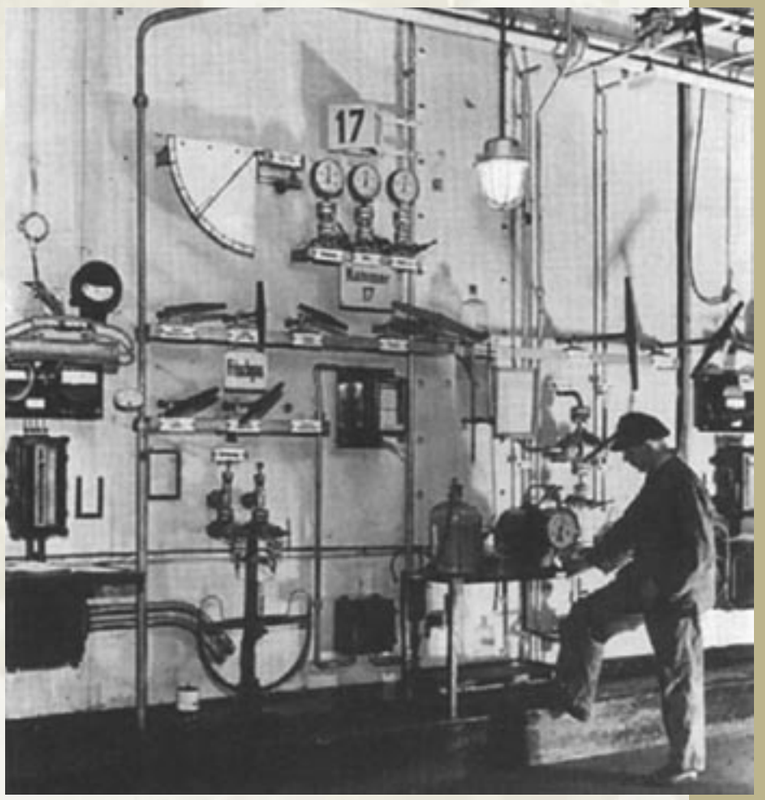
SAMSON made a major contribution to this progress with the introduction of its STP 703 positioner in 1953, the first pneumatic positioner in Germany and one of the first worldwide. Thanks to pneumatics, sensor signals and the energy required to operate actuators could be transferred over longer distances. An additional benefit of pneumatics is that they can easily be used in potentially explosive atmospheres as well, unlike electrical equipment or electronics, which were just beginning to gain ground.

Yet, control rooms still required a lot of space even though product-filled measuring lines had disappeared and signals were merged on indicating panels. Processes were now reproduced in graphical flowcharts. Dials and control switches were arranged in the control room the same as in the production line. Plant engineers no longer needed to tour the plant to monitor the production process. However, the control rooms took on hall-like proportions, obliging staff to frequently pace up and down the long walls equipped with instruments to monitor the process.

New technologies – As the distance between the controls and the production process grew, so did the demands on sensors and control valves concerning their accuracy and reliability. Plant engineers had to rely upon the validity of the indicated readings. New measuring principles were introduced in the field of instrumentation and controls. Numerous physical properties, such as capacitance, magnetic induction or ultrasound, were put to use to accurately monitor the flow and supplies of products.

Valves could be used in a growing number of applications thanks to new materials and constantly improved engineering practices, optimizing the valve response and service life, too. The increasingly stringent environmental protection demands in the valve engineering sector were satis-

The first SAMSON devices were designed at the drawing board. At that time, the standard tools of the engineering trade still included a slide rule, logarithm tables and a steam table.



Operating rig in front of the high-pressure chamber of an ammonia plant in Ludwigshafen, Germany. Dials and control switches were arranged in line with the production process.

1954

SAMSON develops its first pneumatic control valve, the Type 201 VP. Air-to-close and air-to-open versions are available.

1957

The Type 402 Pneumatic Controller is added to SAMSON's product range covering the whole control loop. The Type 39, a cost-efficient steam pressure reducing valve, is introduced, which is sealed by just one bellows and pressure-balanced.

1958

INTERKAMA, the international exhibition for instrumentation and process automation, takes place in Düsseldorf for the first time. SAMSON has been active right from the start as a founding member.

1962

The production of electronic controllers starts. One of the first highlights is the Type 310 Heating Controller with pushbutton operation.

1968

SAMSON introduces the light-weight, compact Type 241 Valve. Since then, its design has been constantly refined. Over 500,000 of these valves have been sold, and it still sets standards in its class.

fied by improving fugitive emissions control to levels unknown until then. Intensive research and development in the field of noise emissions led to drastically quieter valves.

Coinciding with these improvements, signal processing reached new heights. The simple closed-loop feedback control as implemented by Philon and Da Vinci were inadequate for new control tasks and engineers could not be expected to monitor and control everything themselves in a modern, well-planned control room.

The increasingly complex processes required automated control functions to be accomplished by electromechanical and pneumatic logic components that were created to perform simple arithmetical operations, paving the way for programmed process control.

Yet, pneumatics reached their physical limits for signal transmission as compressed air could only be used to bridge a certain distance and its maximum transmission speed literally hits the invincible sound barrier. The triumphant advance of electronics traveling at the speed of light was therefore unavoidable in instrumentation and controls. The great breakthrough in complete process automation was initially seen with the introduction of micro-electronics used in control systems for the first time in the 1970s. As a result, processes with a large number of variables could be controlled without human intervention constantly being necessary. This technology also formed the technical basis for digital signal transmission and processing. The mid-1970s also marked the beginnings of the first bus systems being introduced in process engineering – the next logical step. Smart sensors and control valves were able to communicate with the control room over the bus using ring architecture and standardized signals.

The workplaces in a control station with process control system around 1975. Control desks with monitors and keyboards had replaced the long walls of instruments.

Intelligence in the field – In modern plants, plant engineers hardly need to leave their chair as the control station often incorporates just one computer. In many cases, a higher-level control system is not even involved. Centralized control has changed since the integration of small microprocessors in measuring instruments and positioners, allowing them to contribute to process control or asset management. In smaller plants, the process control even fits into a directory on the computer of the plant manager, where the process is coordinated rather than controlled. Thanks to the intelligence in the field, the production can be regulated much more easily and precisely.

More than 1,000 SAMSON control valves, working with medium temperatures ranging between –200 °C and +500 °C, are installed in one of the world's largest steam crackers at Antwerp, Belgium.

But where actual production ingredients flow instead of digital data, the essential part of control still remains unchanged. Despite precise control characteristics and intelligent diagnostic functions, control valves still need to carry out the mechanical part of their work even under the most adverse conditions: regulating flow rates at the right point in time and to the right amount. The constant further development in material and construction means that SAMSON valves continue to fulfill this task with a great deal of reliability, always ensuring a minimum in plant downtime thanks to state-of-the-art technology – a modest, yet not insignificant contribution to the advance in process engineering.

1969

The test bench for flow and noise emission measurements starts operation with a pump capacity of 150 kW.

1970

Series 240 valves are available with metal bellows seals and insulating sections. The attachment rib developed by SAMSON to attach valve accessories is recommended by NAMUR.

1973

SAMSON launches an i/p and a p/i converter functioning as the linking element between pneumatics and electronics. The System 5000 for building automation is presented, which is the first system at SAMSON, in modular 19" rack-mounting design.

1974

The first electropneumatic positioner from SAMSON, Type 3762, goes into production. It works without an i/p converter, using a plunger coil and direct force balancing system.

1975

SAMSON astounds the European market with the seat-guided V-port plug, replacing the parabolic plug in large seat bores which are prone to vibration.

Commitment to valve engineering

Start in process control – The course was set in the late 1960s when SAMSON management made the decision to go ahead with the development of control valves for the process engineering sector. At that time, only workshops were experimenting on a small scale with this type of engineering, while large competitor companies committed themselves only hesitantly. SAMSON seized the unique opportunity and laid down the foundations for R&D activities and industrial production within a short space of time. The two prevailing factors in favor of developing valves were the experience gained in heating engineering over a few decades and the proximity to the customers in the chemical industry, whose demand for precise automation equipment was growing at a particularly rapid rate. Right from the start, SAMSON recognized that close cooperation with the end user played a key role in the ability to satisfy the demand for valves at the highest quality level by developing practice-oriented instruments.

The rise of automated control valves was closely linked to the development of the first pneumatic positioners, which made accurately working valves even more important. Guaranteeing the specified valve functions over a long service life, while ensuring that the valves remained unaffected by unfavorable pressure and temperature conditions as well as resistant to a wide variety of media was not an easy task to accomplish. Furthermore, the valves must meet particularly stringent requirements stipulated in environmental protection, occupational health and safety standards. Valves are expected to be leak-tight, not cause any disturbing side effects and yet still be affordable.

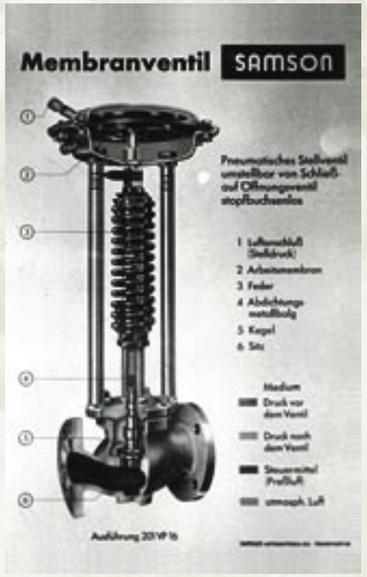
Modular design – The response of the R&D engineers to these demands was to develop the Series 240 valves, which were the first valves on the market based on the modular-assembly principle. The multi-spring actuator was not only much more compact in size than the usual actuators with an outside positioned central spring. The cold-forged springs also worked much more evenly, making them more precise than the heat-formed central springs. What is more, the new self-adjusting packing took up less room than other packings, as did the integral positioner attachment, which also made valve mounting easier and valve operation safer.

Perfect match – Yet SAMSON's commitment to creative engineering did not stop at developing products. The test bench, the first of its kind, was used to examine control valve functions on a scientific basis as part of fundamental research. The combination of practical field experience and experimental data measured on the test bench repeatedly gave rise to decisive impulses leading to improvements and innovations.

The combination of the various valve components has always been a major factor. The R&D engineers at SAMSON apply their expertise to tune individual factors as well as the overall effect. This sort of tuning requires consistent refining of the modular parts of a valve series. Therefore, control valves in various nominal sizes and materials and for different fields of application have the same construction platform, reducing the number individual parts needed and cutting costs for the manufacturer and end user. The accomplished combination between precise-working mechanics and state-of-the-art electronics from one source is another benefit provided by SAMSON as well as the high level of proficiency in the engineering field of electronics; allowing SAMSON to provide the best control valves with the latest communication options for all conceivable applications.

The course taken from the first 201 pneumatic control valve series to the compact, modular-designed Series 240 is just one of the success stories at SAMSON.

Nowadays, SAMSON's products are developed with the aid of 3-D CAD software on powerful computers. Sound engineering skills and valuable experience form the basis of a successful valve design.



1977

SAMSON is the first manufacturer to introduce a mechanical safety temperature limiter that meets DIN standard requirements. The Type 2430 Thermostat, functioning according to the adsorption principle, with an excess temperature safeguard is also launched.

1978

Self-operated combined regulators from SAMSON for compact transfer stations that regulate various control variables such as differential pressure and flow rate come onto the market.

1979

The DDC System 4000, the first control system controlled by microprocessor for building automation, is presented at the ISH Fair. The control accuracy of self-operated regulators is improved by using rolling diaphragms.

1981

The S4000 Control Unit from SAMSON is the first device with integrated monitor on the HVAC market.

1984

SAMSON develops valve trims made of ceramic and tungsten carbide to handle high pressure drops and abrasive process media.

Fast response times

Tried and tested – The foundations for SAMSON were successfully laid by its founder Hermann Sandvoss in 1907 with the production of self-operated regulators, such as automatic steam traps and temperature regulators for heating systems. Since then, the underlying design of these purely mechanical self-operated regulators has practically remained unchanged. Naturally, the regulators have been subjected to regular engineering refinements by the R&D Department responsible for self-operated regulators. The second field of activity dealt with in this department involves the development of electric actuators, which at first glance hardly match the solid regulators belonging to the oldest branch of automation engineering. Yet, on closer examination both areas complement each other very well, and new successful products and applications have arisen from combining them.

Self-operated regulators function by comparing forces and draw their energy from the process medium itself. This method utilizes the difference in pressure between the medium at the inlet and outlet of the regulator to actuate the valve. A change in differential pressure causes the forces in the actuator to change, moving the valve until it reaches the set point again. In temperature regulators, the liquid expansion caused by the temperature rising in the sensor moves the valve. In this case, the energy is also drawn from the medium itself. The response time of these types of regulator is practically unbeatable as they can react to any change directly and do not have to wait for a signal to be processed.

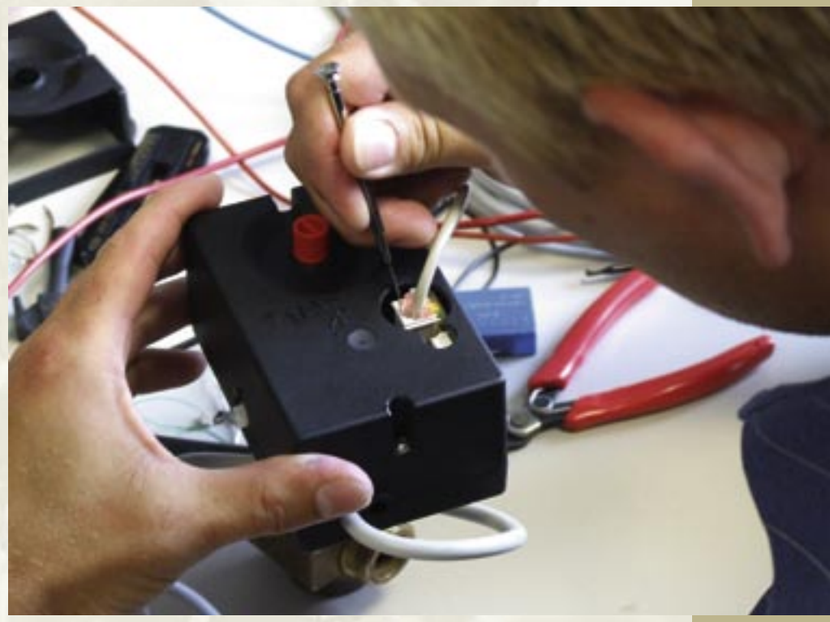
The development of this instrumentation sector has continued over the past years without experiencing any major leaps in engineering. Special materials for various applications, actuator mechanism reacting to the smallest difference in pressure or temperature, and increasingly finer tuning are among the improvements already made. Recently, the department developed a regulator especially designed for tank blanketing, reliably controlling differential pressures below 10 millibar to minimize the consumption of blanketing gases covering critical fluids in large tanks.

Tests under process conditions on the test rig have always been part of SAMSON's R&D work to ensure customer satisfaction.

A typical self-operated regulator constructed by SAMSON: A Series 41 Pressure Regulator.

Fundamentally new – In contrast, electric actuators have often undergone fundamental alteration. The extremely low-friction ball screw actuator, for instance, employed by SAMSON in its electric valve actuators, converts the rotary motion of the motor into a linear motion with over 90 % efficiency, resulting in particularly precise valve positioning. A completely new special actuator, which has a much more compact size than ever achieved before, has been designed from scratch to fit smaller valves. The torsion spring arranged centrally in the actuator provides a direct, exceptionally reliable emergency shutdown function achieved by a torque switch, which acts directly on the planetary gear to restrict the force of the motor.

SAMSON has managed to bring together its expertise from both areas to create a new product tailored to applications involving domestic hot water being heated in an instantaneous flow system. Traditionally, self-operated regulators are used in such systems. The new electric actuator with integrated electronic controller reacts particularly fast and precisely to fluctuations in temperature and the quantity of tapped water. Numerous parameters can be configured over the TROVIS-VIEW software. As in the past, SAMSON has managed to extend the scope of application within its product range by further developing existing solutions, providing the user with additional functions at low lifecycle costs.



Currently, electric actuators with emergency shutdown function and integrated control technology are among the promising developments at SAMSON.

1986

As part of a collaboration between several companies, SAMSON takes an active part on defining a fieldbus for automation engineering, the basis for PROFIBUS. Pressure regulators for building up the pressure of cryogenic gases stored in tanks are developed.

1987

SAMSON introduces integral positioner attachment with internal air routing, setting new standards in valve engineering. The small and medium nominal sizes of Series 240 Valves are also available in forged steel.

1988

The Type 2488 Flow Regulator with additional electric actuator is presented for indirectly connected district heating compact stations. The System 6500 for building and process automation is developed.

1989

The first worldwide prototypes of a fieldbus positioner are exhibited by SAMSON at INTERKAMA fair and ISA Show.

1991

Self-operated pressure regulators are introduced for tank blanketing, a key industrial process in environmental protection, which work precisely in the millibar range.

Controlling philosophy

The power of air – *Pneumatics* is derived from the Greek word *pneuma*, which means wind, air or breath. The Stoics in ancient Greek philosophy associated this word with a vital, all-persuasive power. Perhaps it is therefore no coincidence that the introduction of pneumatic control systems was a decisive step towards smart process control. Where previously plant operators had recorded the key parameters on their clipboards and then adjusted the controls, compressed air was used to transmit pneumatic signals and to operate valve actuators. SAMSON has played an active part in the development of this technology right from the start.

Positioner engineering has a strong tradition at SAMSON. It goes back as far as the first positioner on the German market. Current work concentrates on bus-capable devices involving hybrid technology.

Automation with the aid of compressed air emerged during the long-lasting economic boom after the end of World War II. It allowed automatic control over the whole plant for the first time, making new kinds of instruments necessary that needed to be rugged and reliable and could be connected to the pneumatic control system. In 1953, SAMSON introduced its first positioner under the model code 703 – a first in Germany and one of the first worldwide. Torsion springs and bellows inside the instrument converted the set point and actual measured pressure into forces. Any imbalance between the forces caused the pneumatic booster, which amplified the signal, to supply the actuator with the right amount of air. The Type 703 was the breakthrough in fully automatic, precise valve positioning technology. Its market launch was a major advance in automated control engineering.

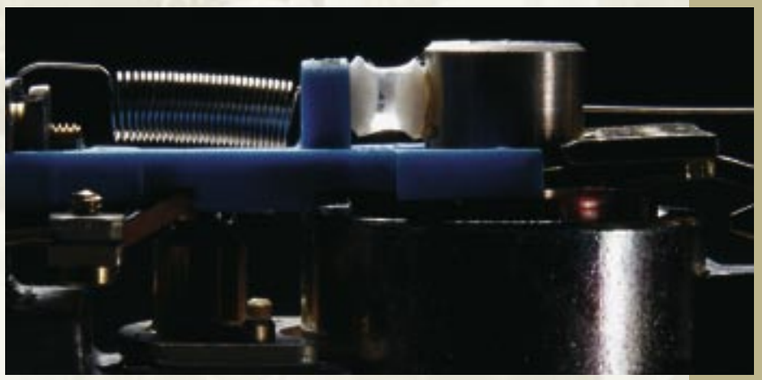
The first pneumatic positioner: Type STP 703

Ingeniously simple – The 1970s marked the onset of electronics in the process automation branch. Pneumatics were ousted from many fields by this new trend. Control systems with pneumatic logic elements, that had dominated the scene for a while and of which SAMSON were a principal supplier, were completely abandoned. Compressed air was however still used as a power source for actuators in combination with electronics. This technique involving the conversion of an electric signal into a pneumatic one turned out to be a tricky feat as oscillation proved to be a hard nut to crack. This problem was ingeniously solved by simply placing a drop of silicone oil on the balance beam of the electropneumatic converter unit in the positioner to provide the necessary damping and prevent the device from oscillating. The material scientists were absolutely certain that the drop of oil would remain in place, but the R&D engineers spent many a sleepless night before they could be convinced by seeing that the trick worked in practice.

Small and efficient – The drop of oil stayed where it was supposed to. Its damping properties are still used today in many other pneumatic instruments at SAMSON, contributing to their particularly light and compact design. The instrument size reduction and minimization of the power consumption have been among the prime objectives prioritized by the engineers right from the start. For instance, the first intrinsically safe solenoid valve developed at the SAMSON headquarters in Frankfurt consumed just 0.1 Watt instead of the 40 to 50 Watt required by conventional valves thanks to a pilot valve connected upstream to provide pneumatic pilot operation. The lower power consumption meant that it was possible to use the solenoid valves in a wider variety of applications. Nowadays, electropneumatic instruments from SAMSON work reliably in numerous fields of applications and can be connected to all common fieldbus communication networks thanks to the constant further in-house development work completed to deliver state-of-the-art technology.

The integral positioner attachment without external piping, patented by SAMSON in 1987, has become state-of-the-art technology for small and medium-sized actuators.

The ingeniously simple damping construction with the aid of a drop of silicone oil is just one of the ideas that contributed to the market success of SAMSON's electropneumatic converters.



1992

The first smart positioner worldwide is shown at INTERKAMA. As a member of the HART Communication Foundation, SAMSON continues its pioneering work.

1993

The newly introduced Type 3510 Valve is specially designed for very low flow rates. The first distributed automation system for building and process automation, TROVIS MODULON, is launched.

1995

Production of the digital positioner with HART® communication, Type 3780, starts.

1999

TROVIS-VIEW a user interface to configure and operate all SAMSON electronic products is introduced. The Series 41 Pressure Regulators are also available in stainless steel and with control lines for tapping the pressure directly at the valve body.

2000

The Type 3787 FOUNDATION Fieldbus Positioner contributes to SAMSON's success on the world market.

A new era in process automation

Electronics on the advance – An electric current flows through wires incredibly fast, allowing the transmission of large amounts of energy or fine signals with low conduction losses. The invention of the transistor in 1947 set developments in motion that revolutionized automation engineering. The revolution took a while since some time passed until electronics were also fit for common industrial applications. SAMSON got involved in this new technology in the early 1960s with the first electronic heating controllers. The first electronic circuits in actuators quickly followed. This is where the origins of the R&D Department for Electronics Development are rooted.

In the early days, engineering developments in this field focused mainly on the electronics inside the instruments themselves. Circuits for heating and ventilation controllers, electric time switches, thermostats, pressure switches and control elements for servomotors were at the center of R&D activities. Signals could only be transferred using analog techniques. Digital control systems did not exist yet. The first control systems were initially analog systems like the System 5000 from SAMSON introduced in the early 1970s. The age of digital technology started at the beginning of the 1980s, initiating a technological revolution.

User interfaces and software modules designed for controllers and control systems are developed in close cooperation with end users.

Pioneer in process control – The System 4000, a control system controlled by microprocessors, was introduced by SAMSON in 1979. Just one year later, the first plant equipped with this technology was commissioned to control the cleaning process in an ice-cream factory fitted with 400 valves. To fully benefit from this technology though, the confusion caused by the inability to interoperate had to be overcome. In those days, each manufacturer developed its own protocol for communication with field devices, meaning competitor devices were incompatible.

SAMSON took an active part right from the start in the development of the Profibus, FOUNDATION Fieldbus and HART protocol fieldbuses, resulting in networking standards that brought interoperability in the whole plant. SAMSON presented the first fieldbus-capable positioner in 1989 at the Interkama trade fair in Düsseldorf and the ISA Show in Philadelphia.

Field devices grow smart – The advancement of fieldbuses finally placed software in the focus of electronics development. These days, two thirds of the forty SAMSON R&D electronics engineers are exclusively occupied with programming work. Their job partly involves equipping field instruments with additional and refined diagnostic modules, which allow smart instruments to constantly check their own functioning, comparing set values and reporting maintenance alarms in case a fault occurs. Communication over the Internet and wireless technology is another future-oriented field of technology that the electronics department is already intensely working on. The process industry market anticipates improved wireless technology in a more rugged and cost-effective modular system than currently available. The challenge also includes integrating device functions into process control systems. SAMSON's R&D undertakings are running at full steam in this field, too. More data, more communication, lighter and lower-cost instrumentation are the chief trends in electronics development. Yet, it is not an end in itself. New functions generate process plants that can produce more cost-effectively thanks to faster response and precise control of the final control elements.

Optimization of individual components and extensive testing of all device functions are essential in attaining reliable products with a long service life.

2001

Series 3730 Positioners with hybrid technology and integrated valve diagnostics are presented at INTERKAMA. A digital positioner with neural control algorithm is provided for the Type 3374 Electric Actuator.

2002

The anti-cavitation trims, AC-Trims, are introduced to prevent cavitation and reduce the sound pressure level in valves at high pressure drop ratios.

2003

SAMSON sets up a specially equipped measuring cabin to inspect the electromagnetic compatibility of its products to meet CE conformity requirements.

2005

The TROVIS 6600 Automation System is developed to succeed TROVIS MODULON. The development of industrial controllers using neural control technology is almost completed. Valve diagnostics are integrated into positioners.

2006

Production of flameproof Series 3731 Electropneumatic Positioners is launched, opening up a new market segment for SAMSON.

Finding out exactly what happens

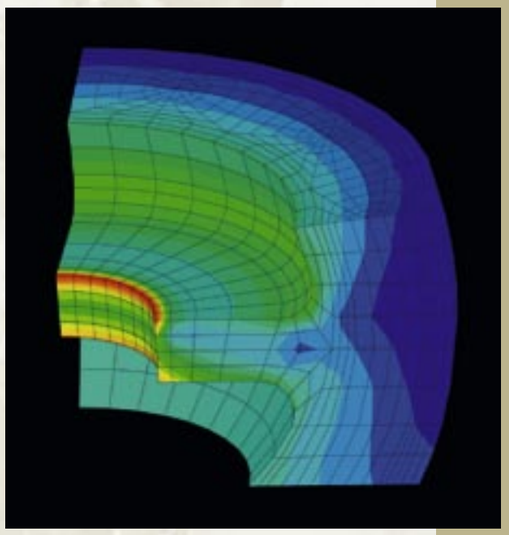
Interaction – The list of physical effects that can affect a valve is fairly long. Conditions arising in the process that can interact and disturb the process decisively are even more numerous. Experts at SAMSON had long since considered the findings acquired from typical industrial applications to be insufficient when analyzing valve behavior under varying physical and chemical conditions and developing automation equipment. "Finding out what really happens inside the valve" is the maxim at the flow test bench in Frankfurt, which is unparalleled the world over. These test facilities form the focal point of the R&D Technology and Logistics Department (E9). The main objective of this department is to get to the root of the matter and provide all the facts.

Defining standards – In 1968, the test bench was put into operation and has since then provided decisive impetus; not just for product development within SAMSON. Since certain physical variables involved in valve service were investigated here in detail for the very first time, the Frankfurt test facilities also provided characteristic data that have meanwhile become part of many standards published worldwide. For instance, engineers working in the R&D Technology and Logistics Department excel in the field of noise prediction on an international scale. Their complex experiments have resulted in an exact method to precisely predict noise in valves, providing SAMSON valves with guaranteed noise levels. International standards dealing with noise prediction in valves controlling fluids mainly originate from their findings.

These engineers were the first to measure noise inside the pipeline itself, which is decisive as noise development varies depending on how the pipeline is sized. Furthermore, disturbing noise factors from outside the pipeline can also be ruled out, achieving absolutely true results.

Besides the test bench, test workshop and specialists for standards and information technology, the R&D Technology and Logistics Department also includes a materials laboratory to get down to the root of problems posed by materials. Scientific investigations are performed in the laboratory to find out which materials are compatible for use with process media flowing through the valve, which temperatures and pressure they can bear, and most importantly, how long they can withstand the strain of a typical process.

The positioners with bus communication are tested together with control stations and sensors under conditions similar to those in the process.



In the materials laboratory, the crystalline structure of fractures and tensile test specimens are analyzed under the microscope.

The suitability of fabrics for compound material reinforcement is investigated by subjecting them to strength and tensile tests.

The finite element method is used to analyze and improve temperature, tension, and deformation distribution of complex valve body structures.

Application-specific developments – In addition to the theoretical work, the R&D engineers in this department still maintain close customer contact to be familiar with applications. R&D activities also involve developing custom-engineered solutions in cooperation with other departments to match a particular application. The engineers were on the spot, for example in the case of a large petrochemical company in Texas which required a particularly complex valve for its paraxylene production. This base product to manufacture clear plastics is contained in crude oil in varying proportions and must be separated from the other components, which have very similar boiling points, at constantly changing pressures. This critical application calls for control valves in large sizes that respond precisely and extremely fast to make a continuously running process at all possible. The factors that had to be taken into consideration and tuned to match the requirements ranged from the valve body material and actuator technology to precise control.

In addition to the uncompromising basic research activities performed, the department is committed to achieving the best results in material quality, flow mechanics, electronics, software, communication technology and correct valve sizing. SAMSON's strength is based on leading in all these fields, in both theory and practice.

1907

The first thermostatic traps, later succeeded by steam traps, are manufactured from semi-finished components and cast parts.

1910

The product range already includes steam traps, air vents, boiler regulators and self-operated temperature regulators working with bellows made of tombac.

Craftsmanship and **state-of-the-art technology**

The objectives pursued and achieved on a daily basis in the valve production at SAMSON, including flawless quality, the fast completion rate, the observance of customer requests, no matter how unusual they are, and top technological performance are all considered to be equal in importance. Thanks to the broad range of in-house manufacturing capabilities, the Production Department can respond particularly fast to customer orders. They also contribute to the constant advancement in expertise and experience already extensively at hand, which extend right down to the smallest details in valve engineering. The Production Department at SAMSON can rely on complex computer-aided processes, the excellent networking between the R&D, purchasing, production and sales divisions, consistently applied quality assurance as well as excellently trained and highly dedicated staff to always achieve the best results. All this is reflected in the high standard of SAMSON's products.

Hugely accurate

The noteworthy accomplishment mastered at SAMSON in combining high precision with the gigantic dimensions of large-sized valves is a feat shared with the CNC machining centers where SAMSON valve bodies are manufactured. These enormous machines reaching up to 7 meters in height and weighing as much as 35 tonnes are capable of handling workpieces up to 5 tonnes in weight. Such a heavy burden requires a special foundation similar to those used for high-rise building constructions. The CNC machines are able to select fully automatically one of the 120 tools from the tool magazine to perform all turning, milling and drilling operations, transforming a blank into a complete precision-shaped valve body ready for assembly. The maximum machining diameter of 1400 mm allows even the largest flange to be milled with such precision that the smooth finish of the flange does not need to be machined any further.

1918

SAMSON sets up its own production to make Bourdon tubes and metal bellows.

1925

Compensators, strainers, automatic steam traps and pressure reducing valves are added to the product range.

1928

Connection to the district steam supply network allows SAMSON to test its instruments under practice-oriented conditions.

1940

The scope of production at SAMSON is enhanced by adding electroplating facilities and a non-ferrous metal foundry.

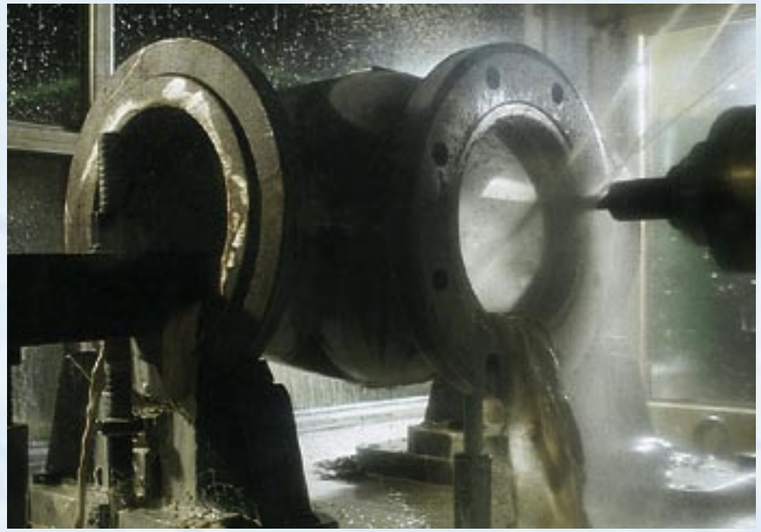
1952

Production of the first pneumatic controllers and transmitters is launched.

In-house production

Theoretical benefits – Globalized business has led to an advance in just-in-time manufacturing and delivery. In theory, the most successful suppliers on the modern marketplace must have a distinctive competence in a particular area and concentrate on their core business activities. All unrelated activities should be acquired from an external source since outsourcing is regarded as the key to success. Free market doctrine advocates that outsourcing is the permanent cure for an efficient production and this may well be true for mass-produced goods. Yet, there are always two sides to the coin.

A different set of rules applies for highly complex technologies involving individual customer specifications or products that must operate reliably over a long service life even under the severest operating conditions. In this case, the widest possible range of in-house manufacturing capabilities is absolutely necessary to be able to respond quickly to a wide range of customer requirements, without any deficits reducing the high quality of the product. Mastering all the key processes independently in-house and possessing the necessary background knowledge to do this are essential to accomplishing this.



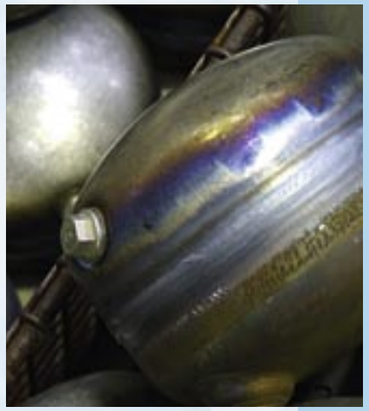
CNC machining center with high positioning precision and cutting capacity is able to handle the complete machining process required to produce valve bodies.

Expertise and background – This is the reason why practically all the essential parts are manufactured at SAMSON's own facilities, including some components that to the untrained eye would be hardly regarded as such. There are the bodies used for control valves and self-operated regulators to begin with, for which a diverse range of materials is available. Picking the right materials calls for precise knowledge of their special properties at all the following production stages. On the ultra-modern, high-tech CNC machining centers, the valve body blanks are normally machine-cut in a few work steps. These fully automated multiple-axis machines are true multi-taskers, completing several work processes such as turning, milling, drilling and thread tapping. The machine is responsible, for example, for machining the flange contours, milling the flange faces and drilling the necessary bolting patterns. Workpieces ranging from the smallest valve body to the heavy blanks weighing a few tonnes for 20 inch valve bodies only need to be loaded into the workholder a few times. The newest CNC machining center at SAMSON has drastically reduced the processing times as transportation and standing times no longer exist.

Naturally, a high level of precision is required during the machining process. In the precision part production, where often the discarded material is larger than the actual component itself, permissible tolerances are within the range of one to two thousandth of a millimeter! The secret behind all the speed, precision, fine-tuned work processes and, not least of all, cost efficiency is the perfect programming of the CNC machines. This is not a task for just anyone; highly skilled operators possessing product-related knowledge are trained to operate these machines. In this case, SAMSON is able to rely on its own staff who have acquired extensive proficiency in this field and, more often or not, are trained at SAMSON.

Rare combinations – In view of the wide diversity of materials that need to be joined together, there is a real art to welding. For instance, valve stems are commonly made of steel alloys containing chromium, nickel and molybdenum. Yet, in special cases, customer specifications necessitate the valve plug attached to the end of the plug stem to be made of Monel, a nickel and copper-based alloy highly resistant to corrosion. The combination of these two alloys is exceptionally rare and welding them together presents a challenge. First of all, it entails verifying numerous details, such as ensuring that the materials are heated up to the correct temperature and are cooled off at the right rate as well as that the proper weld filler metal is chosen. Additional requirements to be taken into consideration include drawing up welding schedules and the strict adherence to the specifications recorded in detail in the product documentation, which is handed over to the customer.

There is a real art to welding regardless whether it is performed manually or by a robot.



A special procedure in welding technology is plasma welding, in which the welding material is not applied by melting a wire or an electrode, but instead supplied directly as powder in

1958

The acquisition of the first automatic cam lathe for machining operations marks the onset of the automated production process at SAMSON.

1959

The plant to clean lathed parts with trichloroethylene is automated.

1960

The first checkpoints are introduced in production to monitor the quality, laying the groundwork for the quality assurance scheme later established.

1965

The Type 306 is the first electric heating controller to be produced at SAMSON.

1968

Stainless steel bellows production starts. High-frequency soldering is introduced. The first rotary tables are used for assembly work.

the plasma flame. This process deposits precise coatings of alloys on parts that are subject to intense wear, significantly extending their service life. In this case, the material combinations and heat treatment at the preparation stage also require a great wealth of specialized knowledge that can only come from years of hands-on experience in dealing with changing materials and requirements on workpieces.

Passivation to combat corrosion – Creating surface finishes that do not react even in corrosive atmospheres is rated as one of SAMSON's core competences. The production facilities at Frankfurt include electroplating plants, allowing a whole series of various surface treatments to be performed in-house. Steels are zinc-plated and yellow-chromated in the rack installation, whereas copper alloys undergo nickel plating to attain an attractive finish. A basket system is used to treat parts that require more complex passivation treatment. For instance, a phosphate coating is applied to iron parts to promote the formation of a passive film that protects them against corrosion. Die-cast aluminum parts are chromated to inhibit the detrimental effect of blistering in corrosive atmospheres. The pickling process removes any ferrite residue left from the machining process on stainless steel parts. Workpieces to be used with high-purity water or gases undergo this treatment as well. In the paint workshop, the typical light-beige powder paint is applied to valves and devices, except when customer specifications call for a special coat in a different color or structure.

Corrosion protection is a priority at SAMSON. The surface of parts is given the best finish with the appropriate technique in the automated electroplating plant.

Just recently, SAMSON acquired three new injection molding machines for the plastic components production. The injection molds are designed with the aid of CAD data on site by the work equipment design workshop and produced by the Toolmaking Department. The two halves of the mold, essentially a negative of the part being produced, are pressed together in the machine with a force of up to 100 tonnes. As a result, none of the heated plastic injected into the mold at a pressure of 2000 bar can escape. Thanks to computer-aided programming, these new high-tech machines can be re-equipped for new parts within one hour and run 24 hours a day. Finished parts are subjected to a quality check by the machines and faulty products are sorted out automatically.

The long service life of a diaphragm largely depends on the smooth shaping of the fabric and an even rubber coating.

Detail engineering – SAMSON's in-house diaphragm production started in the 1970s to promptly respond to the call for pneumatic actuators even in times of increased demand. What at first glance looks like a simple rubber part turns out, on closer inspection, to be a key component that has to cope with high amounts of strain over the long service life of the control valve. The best sealing performance and an exact restoring ability over hundred thousand cycles at extremely high or low temperatures depend on the correct selection of the reinforcement fabric, elastomer materials and vulcanization techniques. Regarded individually, these physical properties are easily optimized, but the optimal combination requires highly specialized expertise and the corresponding background knowledge. The same is true for sealing, where the smallest refinement can make all the difference. In the early days, foam rubber cords were used with their inherent seams, whereas nowadays a two-component plastic foam is applied directly to the recess to be sealed. This modern method has the advantage that the foam is evenly distributed, providing an unbeatable sealing performance.

The standard paint coating is applied by electrostatic spray procedure. Coats to meet special customer specifications and repairs are done by hand.

1972

Valve bodies are manufactured on rotary table machines fitted with eight machining stations.

1974

The first step in automation of printed circuit board manufacturing entails a wave soldering bath.

1976

SAMSON purchases its first NC automatic lathe, marking the onset of computer-assisted manufacturing.

1978

The first plastic parts are manufactured with in-house injection molding machines.

1980

The era of automated processes advances at SAMSON thanks to the computer-aided process for manually fitting printed circuit boards with components.

In the beginning, the production of Bourdon tubes and metal bellows required a lot of manpower. Modern technology has resulted in automated processes.

On-board computer – The proportion of control valves with integrated electronic components, performing key duties like control, valve diagnostics and communication, is constantly increasing. For instance, the latest series of positioners from SAMSON come with an on-board microprocessor, which is precisely tuned to the instrument and customer requirements. This focus on providing custom solutions instead of mass-produced goods even goes so far that SAMSON itself fits electronic components on its own printed circuit boards. Depending on the batch size and type of component, state-of-the-art automatic pick-and-place assembly machines are used to place these surface mounted devices, often only a few millimeters in size, onto boards at breathtaking speed and precision. Plug-on parts, however, are still assembled by hand. The printed circuit boards and components are joined by vapor phase soldering or are wave soldered in a bath. Afterwards, the finished boards are subjected to an in-circuit functional test and the corresponding documents are issued.

Production control and documentation – The complex production operations are managed by the Production Planning Department at computer-aided manufacturing (CAM) workplaces. This intelligent solution assisting the manufacturing process bundles the data from the areas of R&D, sales and logistics within the company, bringing clarity to the production process and achieving a high level of process efficiency thanks to the latest production technology. An excellent illustration of the system at work is shown by the process to label dials intended for instruments, such as the Media meters for indicating the liquid level of large tanks. The reading of its dial has to match the shape of the tank that it is attached to. The CAM system sends the correlated data directly to the laser inscription machine. As a result, dials can be customized to suit a tank without additional work. Three different color layers are applied to the dial faces so that the laser just has to cut through to the selected layer to make a certain color emerge. The computer-assisted laser inscription process is also applied at SAMSON to label components and instruments, for clear identification and retracing purposes.

Not all components can be automatically fitted onto printed circuit boards. The components are soldered on to the bottom of the board in a wave bath.

Most of the work at the final assembly stage is still performed manually since the products are custom-made. This involves assembling the prepared components to make a complete instrument and packing it ready for dispatch. However, the quality of the final product is checked before being released. Each product is extensively examined and subjected to a functional test. If required, the products can even be finally inspected by the customer. The resulting pile of test documents steadily grows as the instrument approaches its completion. As a result of all this effort, both SAMSON and its customers can be absolutely certain that the final product exactly meets the stipulated requirements and is ready for dispatch to its final destination in perfect working order.

Valve assembly combines automated production engineering and skilled workmanship. The continuous quality assurance is an integral part of production processes.

1984

The quality checkpoints are integrated into the quality assurance scheme implemented in all production processes.

1986

Three years after the new automated electroplating plant was introduced, the environmentally friendly powder coating facilities are introduced.

1990

The quality management system is certified by BVQI (Bureau Veritas Quality International). Laser inscriptions are introduced into production. Arc welding is used for the first time to apply Stellite facings.

1995

Complex parts are machined on 4-axis and 8-axis lathes, while valve seats from forged blanks are machine-cut completely on a CNC vertical lathe. The thermostat production and its monitoring are automated.

1997

Robot-operated plasma welding has established itself in the production. Another robot is acquired to weld plugs and thermowells.

Controlling the flow

Precisely controlled processes – A SAMSON positioner is assembled from around 200 components including, for example a printed circuit board, which in turn is made up from a similar number of parts. Fitting these parts together to make an entire instrument rests upon the parts being sorted logically for assembly in the correct sequence. However, the countless number of combinations to meet customer specifications makes the production process particularly complex and calls for precise control. At SAMSON, this is all taken care of by the Production Planning Department. Yet, prior to setting about the assembly of ordered products, the team from this department has had to deal with completing a long sequence of preparatory work. For instance, raw materials and externally sourced products required for production need to be stored ready for use in sufficient quantities. This inventory is partly demand-controlled, meaning frequently used parts and materials are ordered as soon as they are used. Stocks of steel rods for the machining workshop or standard nuts and bolts for example, are managed in this way. In addition, the production of intermediate products manufactured in-house is also controlled by Production Planning, which is in charge of initiating their production when the demand arises. The same procedure also applies to final products delivered to customers.

In former times, products were simply stacked together on the ground. Nowadays, a high-bay warehouse is used to store products tightly together. Sufficient stocks are an absolute must for fast deliveries.

Six million parts in stock – A well-organized process is activated as soon as an order arrives from the sales division and after all technical specification matters have been clarified. A typical order can, for instance, involve 50 control valves for a chemical company, required in various materials, in different nominal sizes and pressure ratings, which are also partly equipped with several valve accessories such as positioners or solenoid valves. The required parts for this order are compiled by the warehouse management software system and printed out on an order sheet.

The logistics center contains over 20,000 different products and a total of six million parts are kept in stock. Most of these parts are housed in the high-bay warehouse inaugurated in 2002, consisting of ten rows of shelves with 29 racks providing a total of over 13,500 spaces for storing pallets and wire mesh boxes. Five computer-controlled stacker cranes grant quick access to all pallets and boxes, placing them on the automated conveyor system and forwarding them to the pick/pack area. At the pick/pack workplace, the responsible employee from the logistics team removes the required parts and compiles the order on pallets. 160 pallets per hour can be moved within the warehouse.

Picking-and-packing to order from an assortment of around 20,000 products stored in the high-bay warehouse and storage area for small components guarantee deliveries to schedule.

Everything under one roof – The logistics are not cut off from the other production processes. Both the logistics team and their workplace have been tightly linked to the production for several years. The production planners responsible for coordinating the production planning work in offices located directly next to those of the assembly workshop foremen. This proximity has turned out to be very useful as the occasional hiccup in production can be quickly remedied by material manager and assembler, resulting in even faster processes. Finished products are sent back to the logistics center for temporary storage until the customer inspection has been performed or they are prepared for dispatch. In this field, SAMSON's ability to deliver in record time is almost unsurpassable owing to its highly favorable location just a twenty minutes drive from Frankfurt airport, a major international airfreight hub.

2000

Valves for oxygen, cold box and high-purity gas service are assembled in a special clean room.
The positioner housings are completely machined by machining centers with rotary tables and swing clamps.

2002

The logistics center is integrated into the production process. The six-sided machining of flanges on an automatic lathe and milling center with loading robot commences.
The first valve made of duplex steel is delivered.

2003

The computer controls for the powder coating plant are renewed. A new wave soldering facility with conveying system and fitting tables for wired components starts operation.

2004

A robot is used to completely bolt together Type 3271 and Type 3277 Pneumatic Actuators with an effective diaphragm area up to 700 cm².

2005

The new CNC machining center can machine valve bodies reaching up to DN 500 or five tonnes in weight. The pick-and-place line for SMD components is upgraded to handle 40,000 pieces in an hour.

Under close scrutiny

Quality assured – Statistically, it will be over 800 years before the first fault arises in a Type 3730-2 Positioner. And this interval is expected to be prolonged, bearing in mind that the positioner model is a new development and its manufacturing process will be subjected to refinements based on the experience gained over time. Quality assurance makes sure of that. All production-related processes at SAMSON are integrated into the quality assurance scheme. The Quality Assurance Department is not subordinate to the production management, but reports directly to the executive board.
The QA team is in charge of continuously monitoring products and processes to pinpoint any deviations from the standards at an early stage and to rectify them. In addition, the processes are checked for any possible further improvements as part of quality enhancement measures. Such action is taken long before the production of a newly developed product is even launched. Quality assurance starts at the development stage when technical drawings of a new product are placed under close scrutiny. Any quality assurance proposals are incorporated into the design, where the individual inspections are planned in an established routine.

Spot checks and 100 % inspections Incoming parts that have been purchased externally are subjected to strict controls by Quality Assurance as is the case for parts manufactured at SAMSON's own facilities. Routine spot checks are performed during the production process. How often these inspections take place depends on the particular process or product. As a result, the experts establish the frequency required to identify, for example, whether the production process is running smoothly or whether the interval between replacing tools is long enough.
Pilot lots and components for critical processes undergo 100 % inspections. To be able to fully rule out cracks in pressure-bearing parts, a magnetic particle inspection or a dye penetration test is performed. In this way, microscopic surface faults are made visible. After their final assembly, all positioners and pressure-bearing devices are subjected to a final test in several stages to check their dimensions, functions and any installed software.

CNC coordinate measuring machines with high-precision air bearings check the tolerances of workpieces in all three axes. The surface of austenitic steel cast bodies is checked for cracks using the dye penetration method.

Analysis and documentation – In the quality control laboratory, the QA experts can check material composition with the aid of a spectrometer and an X-ray fluorescence analyzer, performing analyses right down to atomic level. Other analytical techniques including tensile strength, hardness and corrosion tests are performed, placing materials under close inspection. Finally, the laboratory technicians are also responsible for regularly calibrating over 11,000 pieces of testing and measuring equipment in use at SAMSON.

An additional area of responsibility of the Quality Assurance Department entails the meticulous documentation of the quality assurance action taken. This paperwork starts with the material certificate for the raw material and ends with the final certificate of approval attached to the products on dispatch. The data contained in this certificate allow the product to be traced, item by item, back to its origin. Additionally, the quality assurance scheme ensures that the delivered goods really do comply with the customer specifications. This includes making sure that products conform properly to the standards of the country of destination. The final objective of all this work is highly rated by the customer since, after installing and commissioning the instruments, statistically speaking, they can be forgotten for as long as about 800 years.

The fluorescent iron particles settle in any cracks of the workpiece in the magnetic particle test and are made visible in ultraviolet light.

1907

Hermann Sandvoss appoints the company Camille Ebstein situated in Geneva to sell his products in Switzerland under the name of SAMSON.

1920

Hermann Sandvoss' nephew, Hans Sandvoss, establishes the first company in Germany to represent SAMSON in Hanover.

Help close at hand

The sales division at SAMSON is dedicated to providing complex engineered solutions in which the technical and commercial aspects are closely linked with one another. The list of activities performed by the departments is diverse and ranges from finding the right valve to handle abrasive oil slurries right up to selecting the best and most secure method of payment for shipments even to the remotest places. The sales division is also in charge of ensuring that the valves are appropriately packed and reach their final destination on time. And when customers require assistance to commission their valves or later need spare parts or a maintenance engineer, the right experts are always close at hand. Essential information is also provided in data sheets or operating instructions, which can be conveniently downloaded from the company's website. Regardless of the customer's location, the specialists, based either at the Frankfurt headquarters, at one of the 14 German engineering offices or at one of 47 subsidiaries located right around the globe, are within easy reach to respond to customer requests quickly.

Global support

At an early stage, SAMSON recognized the demands placed by the increasingly globalized marketplace and set out to follow an international strategy. For instance, local representatives are sought out to represent the company in a regional or national market as soon as it has reached a certain size. When the market growth continues, a subsidiary is established to ensure that the whole spectrum of products and services can be provided on a local basis. In some cases, the obvious choice is to join forces with the former local representative, who has successfully managed SAMSON's local business. In any case, SAMSON does not rely on employees dispatched from the headquarters to manage the subsidiary. Instead, qualified local experts are entrusted to strengthen the business activities. In return, support is readily available from the headquarters. Naturally, the main focus is on the customers' needs and providing the best possible service locally and an immediate response, if possible in the local language. At the headquarters, staff originating from all around the world work constantly to help bridge any language or cultural barriers that may be encountered.

1922

The Italian company Ing. Luigi de Kümmerlin is appointed to sell SAMSON products in Italy.

1929

After the integration of the branch offices in Silesia, Pomerania, Danzig and East Prussia, the SAMSON sales network comprises 19 branch offices in Germany and 25 offices abroad.

1937

For the first time, SAMSON participates in the 7th ACHEMA trade fair held in Frankfurt. Since then, the company has participated in every ACHEMA fair.

1953

The new Technical Sales Department combines the areas of sales coordination and engineering expertise. The newly established branch office in Lörrach on the German border to Switzerland takes over Swiss sales from Camille Ebstein.

1956

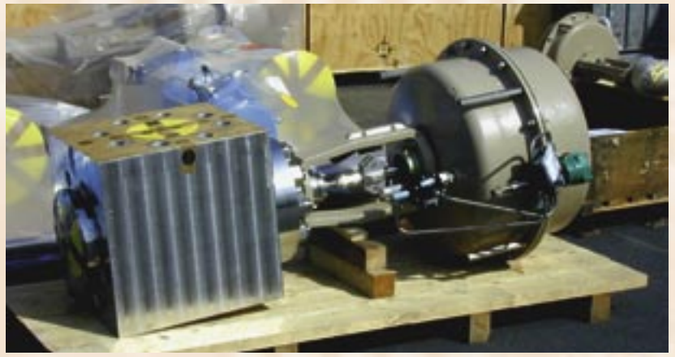
Farbwerke Hoechst install the Type 801 Pneumatic Transmitter for Differential Pressure in a test laboratory. This is the first SAMSON instrument tested for the chemical industry.

Unmatched control solutions

Specials are standard – Mass-produced goods like sneakers, MP3 players or television sets, which are manufactured in huge quantities and in identical versions, are sold all over the world. Typically, the manufacturer of these goods does not have to be familiar with the customer and compliance to individual requests is out of the question by definition. The exact opposite is true for SAMSON who can hardly address customer requirements with off-the-shelf solutions. In most cases, special valves are standard. SAMSON has to work closely with customers to identify their control needs. To discern the exact requirements, before a valve can be sold, the sales team has to consult with the customer to determine the exact specifications of the application. Wide-spread marketing campaigns to advertise a particular valve or actuator model wouldn't go down very well.

The valve size is usually known right from the start. But a host of other options has to be fixed on selecting a control valve, necessitating an intense contact with potential customers to finally find the right solution. Typical points to be clarified include which type of liquid or gas is going to flow through the valve and under what conditions. And even if it is just plain water, it still cannot be taken at face value as perhaps oil residues or sharp-edged grains of sand are mixed with it. Another matter of key importance is the prevailing pipe pressure. If this has not been defined, it must be calculated from the pipe circuit plan or from pump specifications listed in the pump data sheet. The list of additional valve specifications that need to be clarified is long, such as whether a pneumatic or electric actuator be used.

Comprehensive project support – Large-scale projects involving plants being built from scratch or upgraded with new equipment are planned in detail and most specifications are clear right from the beginning. In this type of business, reliable planning documents are usually at hand, their scope is so extensive that sizeable files are filled just with the section covering valve specifications. Many of these large projects require a variety of different valve types, meaning that the supplier has to take care of the additional purchase of special instruments and accessories as well as ensuring delivery from a single source. Furthermore, the compliance with extensive project regulations has to be taken into account. Some projects take years to complete, making comprehensive long-term support an essential part of project business.



Orders for control valves made of high-grade materials and intended for use in critical processes must fulfill strict quality requirements. Extensive consultation to clarify all engineering details is absolutely essential.

Extensive competence in plant engineering is called for to be able to clarify any unresolved matters prior to drawing up the quotation or to become familiar with the details specified in the planning documents. Close client contact with buyers and the client engineering team is essential as application details still need to be discussed in depth even after the quotation stage has been completed. Decisions between various available options have to be made, and often modifications in planning result in specification amendments. The final order itself is already the result of intense interaction.

Top engineering skills – The intricacy involved in finding tailor-made solutions means that the majority of the sales staff at SAMSON are experienced technicians and engineers with at least three to five years engineering experience. The high level of engineering skills ensures that customers are provided with the best control solutions. Optimal coordination of large projects is provided by a member of the project team, who is assigned to oversee the day-to-day business and act as the contact person for the customer over the entire duration of the project.

Consequently, the sales activities performed by the experts at SAMSON are less in line with the conventional sales work. Rather the sales personnel offer engineering advice and act as the contact partner for customers. This type of work relies on customers placing their entire confidence in the sales staff, which can only be achieved when members of the sales team have a sound engineering background. Exaggerated sales talk is definitely out of place in this case. Experience and extensive expert knowledge is required to correctly process quotations and orders to ensure that customers can benefit from the smooth running of the administrative operations.

Complex processing plants require a continual dialog with the plant contractor already at the planning stage.

1957

A new department to exclusively deal with customer support is established to extend the service network. The Type 201 VP Pneumatic Control Valve is delivered to the first customers in the chemical industry.

1958

The first SAMSON subsidiary is opened on 7 February in Redhill near London.

1960

Two training courses are offered to instruct customers in the product areas of pneumatic controllers and transmitters as well as Media instruments.

1962

SAMSON REGULATION is founded in Lyon. Just one year later, two branch offices in Paris and Marseilles are opened to strengthen SAMSON's position on the French market.

1963

The sales network is restructured. Engineering and sales offices with their own stocks and direct contact to customers replace the representatives working on their own account. The first engineering and sales office is opened in Kassel, Germany.

Sales and production sites like SAMSON REGULATION in France or the new Chinese head office ensure that SAMSON valves are delivered on schedule and extensive customer support is provided throughout the world.

The language of engineering – The same principles apply the world over as far as business is concerned. When engineering details need clarifying, the global community of engineers and technicians can easily understand each other with the aid of blueprints and standardized graphical symbols. Yet, major discrepancies still exist in the daily course of business and the way it is conducted depending on the country and culture. SAMSON has gained firm ground in its own home market including many long-standing customer relations that go back decades. In addition to the 280 employees based at the Frankfurt headquarters, German sales teams in 14 regional engineering and sales offices directly support sales activities of the sales department and maintain close contact with customers in their region.

SAMSON anticipated growth opportunities in the global marketplace at an early stage and became active all around the globe in those places where involvement seemed appropriate to satisfy the needs of strategic markets. The current number of sales companies abroad amounts to 47. The companies have their own warehouses, workshops and test facilities, allowing them to respond quickly to customer requirements in their region.

Satisfaction as a core value – It is often a drawback having to handle daily business in a foreign language, especially when technical subtleties have to be discussed. This is why SAMSON places emphasis on recruiting managers originating from the country where the subsidiary is located to steer the local company. Before managing the subsidiary, these employees often spend a few years working at the Frankfurt headquarters. This practice has benefits for both SAMSON and the future manager. To increase their understanding of the products and how processes are handled at SAMSON, these soon-to-be subsidiary managers gain experience in various departments, such as project planning and technical sales. Additional advantages are presented by the opportunity of networking on a personal level and the constant availability of staff who are well-acquainted with the languages and cultures of key markets. English is a matter of course these days, however, Chinese, Russian, Arabic, French and Spanish are also spoken at the Frankfurt headquarters.

The Sales Department has, in fact, completed its work as soon as the last valve in an order has been delivered. But fortunately in many cases, the next order from a customer soon follows. As often proven in the past, satisfied customers are happy to rely on SAMSON again and again. When acquiring new customers, precisely this method has proved to be the most effective, particularly since globally active customers trust the tried-and-tested services provided by SAMSON when expanding their activities to other countries. Engineering contractors count on their long-standing business relationship with SAMSON to supply valves for new projects. Naturally, such reliability and expertise gets around. Many contacts to new customers are mainly established in one way: Expertly engineered solutions that only SAMSON can provide.

An order is completed first when the entire order has been delivered with its documentation.

1967

Service technicians are employed at the engineering and sales offices to provide a faster response to any problems that customers encounter.

1968

International project business gets under way at SAMSON with the help of the Series 240 Valves. These valves are easily adapted to various applications thanks to their modular design.

1972

The first contract for a project is received from the German plant constructor Uhde, to supply control valves for the MOPE/L project in the Soviet Union.

1974

New engineering and sales offices are opened in the German cities of Berlin, Mannheim, Lörrach, Stuttgart and Hamburg.

1975

SAMSON wins a contract with the plant contractor Lurgi to supply control valves for a large aromatic compound plant in China. Thanks to the well-coordinated work, the valves for the first large-scale project are delivered on schedule.

Competence beyond boundaries

A large proportion of SAMSON's turnover is generated by export activities, mainly coordinated by the subsidiaries.

Support at first hand – Even in modern times of globalization with a continual rise in the flow of goods and services across borders, international business transactions are still governed by certain rules, which often differ from country to country. There are various details that have to be observed when exporting, such as customs procedures, export and import regulations as well as the road conditions in the country of destination. Such attention to detail is regarded as important by the export department at SAMSON, as the final objective lies in delivering the ordered goods in perfect working order to the agreed location on time.

Over two thirds of the SAMSON Group's turnover is nowadays generated in the international sales business. A large proportion of exports is managed locally by the 47 subsidiaries situated around the globe. Usually, they act as the SAMSON's sole business partner in their country. This distributed sales structure ensures that customers in key markets have direct access to all of SAMSON's services close at hand. Furthermore, customers are served by a team, who naturally speak the local language.

Multitude of conditions – In most other countries where no subsidiary is active, there are sales partners representing SAMSON, who work independently. Working as a representative, these partners are in charge of negotiating contracts with the final customers and acting as a contact to also deal with any after-sales service as well. In this case, the sales team at the headquarters is considerably more involved in handling the sales transactions than is the case where subsidiaries are active. This involvement is even more intense in countries not covered by a fixed sales partner at all.

In such cases, the export sales team at the Frankfurt headquarters is in charge of all the details of the business transactions. This includes dealing with customs formalities and organizing shipment. Outside the European Union market, a multitude of export requirements has to be met. For instance, completely diverse legal systems make frequent clarification of financial matters necessary to guarantee secure payments. This side to the export business, often handling complex credit transactions involving at least two banks, requires a particularly extensive experience.

Export experts – Some of SAMSON's products are required to comply with export restrictions. Due to a variety of reasons, certain special coatings, alloys and technologies may only be exported to particular countries or regions where restrictions apply. In such cases, export staff at Frankfurt need to obtain permission from the German authorities. This requires gathering detailed information about the final customer beforehand to make certain that this customer only intends to use the products for the proposed purpose.

To a great extent, exports involve processing typical orders. Handling these orders requires close cooperation with the Production Department: tracking the production process to ensure deadlines can be met, dealing with export procedures and organizing the shipment details. Even the packaging of valves presents certain challenges as transport and storage regulations need to be met. The export team is also responsible for all the import documentation required when the products arrive at their destination. The department works together with various forwarding agencies, which must have the necessary transport capacities in the country of destination. Administrative assistance in coordinating export formalities is also given to European plant engineering companies engaged in project business outside the EU boundaries. Always in pursuit of getting the ordered goods to their correct destination on time, the export department consistently achieves its final objective.

To meet tight delivery schedules, even large valves which have been carefully packed are delivered by air freight.

1979

The network of subsidiaries in the UK, France, Austria, the Netherlands, the US and Belgium is expanded by the addition of new subsidiaries in Finland, Denmark and Sweden.

1982

The steamcracker II at BASF in Ludwigshafen, Germany, is fitted with 650 valves from the Series 240 and 250. Approximately 30 % of the SAMSON and SAMSOMATIC products are sold abroad.

1988

The Chinese capital city Beijing modernizes its district heating network. The first 100 from a total of 2000 transfer stations fitted with SAMSON instruments are delivered.

1990

On 1 November, just one month after German Unification, a new engineering and sales office is opened in Dresden.

1992

A total of 800 control valves are supplied to the world's largest steam cracker at the BASF Antwerp site, Belgium. It has an annual capacity to produce 900,000 tonnes of ethylene.

Versatile engineering experts

Diverse activities – The diverse range of responsibilities held by the engineers in the Technical Sales Department demands a high level of flexibility. Their job does not just involve contact with potential clients or even maintaining existing long-term relations with good customers. It also includes writing complex instructions, for example on how to operate a digital controller, or developing application software.

As part of their daily contact with the customers, the team of thirty engineers are particularly responsive to the ever changing demands of the market and often possess a gut feeling about which product concepts are worth following. The engineers regularly liaise with other members of the sales team and colleagues from a range of departments, such as R&D and production. In close cooperation with the R&D division, the engineers are actively involved in all the development stages of new products, their production and sales. Their practical knowledge of products is the basis for technical documentation and application descriptions for tailored solutions as well as internal product news presented in the form of product information and circulars.

Training and support – When a new product is launched, the Technical Sales Department is responsible for preparing the sales and after-sales staff by instructing them on its features and applications. Additional training is offered, tailored to the exact needs of the service personnel from other companies who handle SAMSON equipment. The team also holds introductory courses for new members of staff to familiarize them with the SAMSON product range. Moreover, courses are conducted to enhance the subject-based knowledge of long-standing staff in key areas, such as the fast-developing fieldbus technology.

Not just the newest products are presented at the SAMSON booth at trade fairs. It also acts as an ideal environment for sizing up competitor companies, performing market analyses and exchanging information.

The further training activities provided by the department range from courses lasting one or two days, held in either German or English, on selected subjects, such as the scope of application of self-operated regulators or control valve sizing, to two-week seminars concentrating on specialized topics from all fields of control engineering.

The Technical Sales team is responsible for drawing up quotations, especially to bridge the gap left when the specifications listed by the customer and the technical feasibility do not match. In this case, the engineers try to find the best solution to meet the application. In addition, the team also steps in to provide professional advice when new products have already been delivered to customers and the after-sales service team has not yet completed training to completely familiarize themselves with the product. Additional activities include troubleshooting and advising technicians who encounter problems that have arisen on installing and commissioning SAMSON valves and instruments.

A broad range of responsibilities
Thanks to their extensive product knowledge, the Technical Sales staff is also present at the numerous trade fairs that SAMSON participates in, consulting interested visitors. Their vast technical experience is also applied to make in-depth presentations on products and engineering applications, which the engineers hold in Germany and abroad at conferences or on site at the customer's. The technical sales engineers' knowledge is directly related to one of the five product groups within the SAMSON product range. But this specialization does not restrict the wide scope of their activities and the flexibility demanded of them. If necessary, they are prepared to quickly organize spare parts for a customer and take them along to the factory themselves. And it is exactly this variety in the working day that the technical sales engineers particularly appreciate in their job.

The Technical Sales Department is responsible for demonstrating the benefits of new products to customers and passing on useful feedback within the company.

1993

A service staff roster is introduced to provide 24-hour support. The training scope on offer is enhanced to provide even better training opportunities for customers.

1994

On 1 June, a subsidiary in Singapore is established with its own training facilities. SAMSON also opens a subsidiary in Mexico.

1995

The Technical Center is founded in Singapore to provide support and extend the sales and service network in the South East Asia-Pacific region. BASF places an order for two gigantic valves in DN 500.

1998

The Chinese subsidiary, SAMSON CONTROLS, is founded in May. Sales offices in Shanghai, Guangzhou, Beijing, Chengdu and Nanjing are already active on the Chinese market. The Kuantan Service Center is opened in Malaysia.

1999

The new Sales and Marketing International Department is launched. More than 50 % of SAMSON's turnover is derived from exports. Subsidiaries in Russia, Malaysia, Norway, Taiwan and Argentina are opened.

Solution-oriented service

Remote and hands-on support – A typical case encountered by the After-sales Service Department is exemplified by a Russian plant operator, who opted to perform routine maintenance on SAMSON valves by themselves. The valves had been supplied several years before by a German contractor. However, the customer soon ran into difficulties as they were not familiar enough with how the valves functioned and how the plugs and seats had to be replaced. Assistance was readily at hand from the Frankfurt After-sales Service Department, who created a presentation illustrated with photos that described every step on how to replace the parts.

This is just one example from the wide range of support tasks that are performed by the After-sales Service Department and that go way beyond the core activity of repairing valves. However, this does not imply that the service team no longer provides hands-on assistance. Service technicians are still responsible for mending valves and carrying out maintenance work off site at SAMSON's own repair workshop facilities or directly on site at the customer's. Early on in SAMSON's history, distributed service centers were set up to provide local customer support. Initially, a service network was only established in Germany. Meanwhile, SAMSON has service centers located all over the world.

Even in the early days, SAMSON had an effective sales and service network. The VW Beetle used by SAMSON in those days was on duty in the Balkan states.

Up-to-date around the globe – The service department is responsible for the in-depth training of the service technicians. Regular training courses are organized to provide the field team with the latest product information and to keep them up-to-date with new technologies. Courses to train plant maintenance personnel are also conducted. The training facilities at the Frankfurt headquarters as well as some of the larger subsidiaries abroad are equipped with a wide variety of product models for hands-on training. Naturally, if required, a service expert still flies across the globe, for example to support the local field team in a scheduled turnaround of a chemical processing plant, in Taiwan. Furthermore, their scope of responsibility also includes the fast delivery of the right spare parts to both customers and SAMSON service centers worldwide as well as renting out special hydraulic equipment to the colleagues abroad.

Prevention is better than cure – The preventive maintenance approach has long since been followed by the service experts to anticipate the need for upcoming repairs and avoid plant downtime all together. Many customers have signed extensive service agreements. As part of the conditions laid out in the service contracts, the long-term maintenance requirements are analyzed and any arising work is completed. For instance, an overall maintenance inspection involving 150 SAMSON valves was scheduled in 2001 for a steam cracker in a large-scale chemical plant. This maintenance work entailed cleaning the valves and performing analyses. The appearance of the valves was improved by sand-blasting and repainting them and any worn valve parts were replaced. An analysis of the entire maintenance program proved that it would be more cost-effective for the plant operator to simply replace the smaller valves in the plant at the next scheduled maintenance than have them reworked as the plant downtime would be reduced considerably.

Documenting performed maintenance and repair work is also part of the service technicians' daily routine. Customers can not only completely trust that the service work has been carried out properly. They can also provide complete proof of any service work performed to authorities and inspecting bodies. The After-sales Service team ensures all process run smoothly, on and off site.

Maintenance staff at a BP refinery are given a demonstration on site to show what SAMSON digital positioners can accomplish in combination with an asset management system.

2001

The new Frankfurt-based Service Support Department acts as a coordinating hub for international customer support. It is in charge of extending the worldwide service network in accordance with valid quality standards.

2002

Production of 540 control valves starts as part of a contract from Linde AG to upgrade an ethylene plant run by Tiszai Vegyi Kominát (TVK) in northern Hungary from an annual production of 360,000 to 610,000 tonnes.

2003

An order is won to equip the Sand Hill Energy Center in Austin, Texas with control valves. A new service center is opened in Nanjing, China where the largest Sino-German joint venture project is also located.

2005

35,000 SAMSON valves have been delivered in all sorts and sizes to handle a diverse range of media for BASF's Ludwigshafen site alone. Project business makes up 20 % of SAMSON's turnover.

2006

The service network includes 47 subsidiaries, seven service centers, 17 production sites, over 140 engineering and sales offices as well as representatives in 66 countries.

Corporate communications

Uniform design – SAMSON stands for top-quality engineering and services provided on a worldwide basis. This essence forms the basis of the corporate identity as well as being the main message to be conveyed in the corporate communications. The Public Relations, Advertising and Training Department is responsible for ensuring that all publications issued SAMSON, whether it be data sheets, the website, or advertisements, reflect these corporate values and have a uniform, recognizable and attractive design.

From start to finish – Graphic design stands at the forefront of corporate communications. The guidelines drafted by the small team of graphic designers are implemented throughout all corporate publications. This team is responsible for the consistency of the corporate design used in basic layouts to create advertisements, flyers, exhibition panels, brochures, catalogs, websites and even presentations. The majority of these media are created in the department from the initial concept stage right until they are ready for printing.

A major factor contributing to the attractive overall appearance of SAMSON's exhibition booth is achieved by implementing the corporate design.

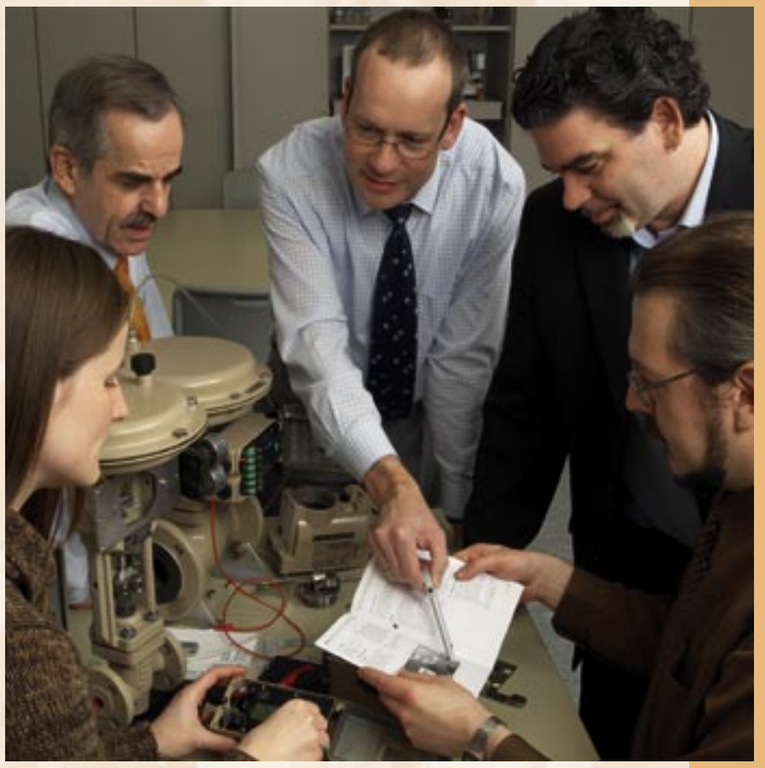
The technical documentation, such as data sheets and operating instructions, is drawn up by teams of technical writers and drawers, who work in close cooperation to present engineering details and technical data in a concise form to help customers understand the advantages of the products and how to operate them.

Cross-cultural communication – To serve the global market, publications are translated, mainly into English, by the in-house team of translators, paying particular attention to lingual and cultural subtleties. Urgently required assistance is also at hand for assorted small translations into French, Spanish and Italian within the company. Documentation in the other languages is organized in coordination with the subsidiaries in the various countries to ensure that practically all customers around the globe have key information available on a product in their own language.

The communications specialists also maintain the corporate website in four languages to provide an international platform for information on SAMSON and its products. Additionally, the websites of the subsidiaries are set up with the assistance of the graphic designers and writers in line with design guidelines to give a uniform appearance to all company-related websites. All printed publications at SAMSON from the concept stage up to the print coordination, storage and distribution lies within the responsibility of the department. Around 3,500 different printed items amounting to approximately 42,500 pages in 18 languages are managed here.

Training and trade fair support – The technical information booklets, which form the basis for the technical seminars, are written by the team of knowledgeable instructors themselves. They also hold the courses for SAMSON staff as well as for customers, either in the new seminar rooms at the Frankfurt headquarters or on site at the customer's. In addition to the theoretical side of flow control engineering, participants attending courses at the Frankfurt training facilities have the opportunity to gain hands-on training practice on functioning devices in a closed loop, simulating plant conditions. For specialized topics, training participants can also use the fluid dynamic model at the in-house test bench facilities.

A creative group working in the Exhibition Stand Design and Construction Department is in charge of the entire exhibition booth coordination at the numerous trade fairs in which SAMSON participates at home and abroad each year. This includes ACHEMA, the most important trade show for plant engineering held in Frankfurt, practically right on SAMSON's doorstep. Subsidiaries can rely upon the department's services at around 50 small-scale fairs held each year to equip their booth with the informative exhibition panels and high-quality functioning exhibits. Their unique, self-made cut-away models of valves are displayed at trade fairs and used within the company in large numbers.



Both customers and SAMSON staff have the opportunity to familiarize themselves with the features and the possible scope of application of new products.

1907

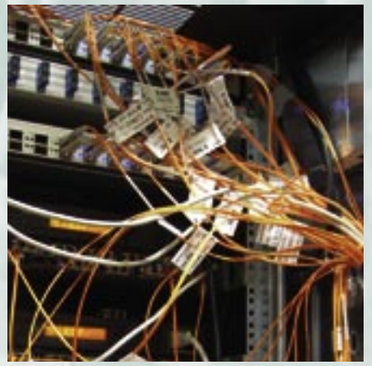
VULCAN Technische Apparate Baugesellschaft mbH starts production in Düsseldorf with a workforce of 30 employees.

1909

VULCAN Technische Apparate Baugesellschaft mbH becomes SAMSON Apparatebau GmbH.

Organizational efficiency

The Finance and Accounting, Personnel and IT Departments manage their fairly contrasting business activities using completely different methods. Yet, they have two main aspects in common, apart from belonging to the administration division in the SAMSON organization. Firstly, their efficient organization avoids excessive bureaucracy and guarantees a high degree of productivity. Secondly, the guiding principles adopted by SAMSON involving a long-term outlook, sound business management and social sustainability are reflected in the transactions performed by these departments, creating a reliable framework to promote corporate creativity and to supply high-quality products and services.



Collective innovation

Thirty per cent of all employees who complete their vocational training at SAMSON also celebrate their 25th anniversary with the company. Employees celebrating forty years or even fifty years working at the company are not quite as common, but are still not out of the ordinary. The average length of employment for staff at the Frankfurt headquarters is fifteen years. These figures are the best confirmation of how the long-term perspective is rooted in the company. It is precisely this stability experienced in staff teams that allows young engineers to be optimally integrated into development activities and that keeps the innovative SAMSON community up-to-date. Innovative ideas contributed by staff are followed up and subsequently implemented. These innovations are also a constant source of new applications for patents, which have a long-standing tradition in the company founded on patented ideas.

1910

SAMSON takes on its first apprentice for commercial business.

1919

An apprenticeship to train as a mechanic or lathe operator takes three years. Apprentices in their first year receive five Marks a week.

1922

The SAMSON business is growing fast, requiring more funding. The limited liability company is turned into a stock company.

1928

The first canteen opens on the works' premises to provide workers with plain good food. It is run as a leased business.

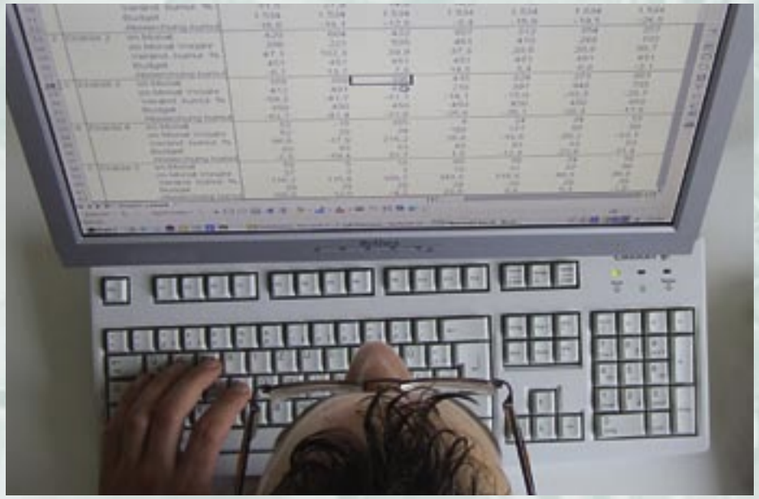
1934

A trainee workshop is set up to improve the training facilities for SAMSON apprentices. In the same year, the dual vocational training system is also introduced, in which apprentices visit a vocational training school once a week.

Growth on the company's own terms

Behind the scenes – Finance and accounting is the same in every line of business, at least this is the general assumption. The balance sheets and rows of numbers need to be examined much more closely to reveal that they are hiding something noteworthy. It quickly becomes apparent that these activities are also in line with SAMSON's typical corporate values. The corporate structure and basic principles are precisely reflected in the Accounting Department, which comprises the Financial Accounting, Business Economics, and Internal Controlling Departments.

Accounting evolved at SAMSON in step with business requirements. For many years, straightforward accounting activities adequately covered the company's financial obligations. However, over the years, the number of subsidiaries grew, coinciding with an increase in sales turnover and workforce. The product range steadily expanded and the production facilities grew more complex as well. Over the past few decades, the need for a more advanced instrument to handle internal controlling, corporate expenses and costing has arisen. In addition, the obligation to prepare consolidated financial statements to comply with EU accounting regulations also contributed to the departmental transition. At the end of the 1980s, a department responsible for internal controlling was established.



Monthly reports with key business figures arrive from more than 50 subsidiaries. These statistics are included in the monthly corporate reports with a concise review of key financial data.

Caution is the key – This transition did nothing to alter corporate values, though. The financial experts at the Frankfurt headquarters take a clear standpoint on SAMSON's approach towards financial management, adopting a cautious, conservative approach without following every new management trend. Special task forces hastily organized to disappear again a few years later have never been implemented at SAMSON. Five-year and ten-year financial plans containing precise targets that need to be achieved are also unheard of. Figuring out a realistic financial plan to cover just one year is already a challenge according to the financial experts at SAMSON.

The apparent inconsistency arising from the long-term orientation of the financial policy as well as the all-round corporate strategy is only superficial. The financial professionals know exactly where the company is being steered. However, they make do with just keeping these intentions firmly in mind. Accounting and internal control activities focus on the essential and practical aspects of business. As a result, the financial management operations can be kept efficient and effective. On closer inspection, the image of an ultra-modern department, which is firmly rooted in the present and calmly looks to the future, emerges.

Accounting and internal control activities focus on the essential and practical aspects of business.

Solid foundation – The finance and accounting team is responsible for hundreds of thousands of accounting transactions annually as well as managing thousands of customer and supplier accounts. They also take care of over 50 subsidiaries worldwide, which send monthly reports with key business figures. These statistics are included in the monthly corporate reports with a concise review of key financial data. Detailed quarterly reports expand on this information and provide the executive managers with an overall picture about the state of the entire SAMSON Group. The annual financial statement is prepared in accordance with German law.

The important principle of independence also applies to the Accounting Department. The intention at SAMSON is never to be dependent on individual suppliers, key customers, investors or banks. A solid foundation prevails over short-term strategic goals. Sound business management is therefore the key to success. Growth is self-financed. Employees responsible for expenditure are expected to act as if it were their own money that they are spending. And this approach has proved unbeaten over the past hundred years.

Similar to the course that accounting has taken at SAMSON to follow the corporate requirements, the expansion of office and factory space complies with functional and future-oriented needs of the company.

1937

SAMSON pays a loyalty bonus to its long-standing employees and introduces an additional company pension scheme.

1940

A company-operated canteen with spacious dining room is opened to provide the staff with proper meals.

1948

On 20 June, the Reichsmark is replaced by the Deutschmark as part of a monetary reform. SAMSON draws up the opening balance sheet in Deutschmark.

1953

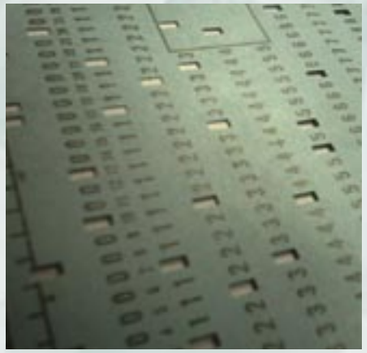
After conferral with the works council, a modern canteen is inaugurated in a different building on the premises. Lunch costs 30 pfennig. A skilled worker earns an hourly wage of around 1.75 Deutschmark.

1960

The first excursion is organized for apprentices, also attended by the mechanics apprentice Gernot Frank, presently Chairman of the SAMSON Executive Board.

A continuous flow of data

Dawning of the computer era – Just around half a page of typing would have filled up the main memory of the first mainframe computer at SAMSON, an IBM system S/360-20 computer installed in 1966 with a total memory size of 16 kilobytes. Looking back, the capacity seems ridiculously feeble, especially when considering that the computer filled a large room. Yet, by feeding punch cards into the computer, its memory size was sufficient to cope with processing the payroll, supplier bank transfers and the sales analyses. It took a while before Moore's law, which states that chip transistor densities tend to double every two years and was formulated by Intel co-founder Gordon Moore, was fulfilled.

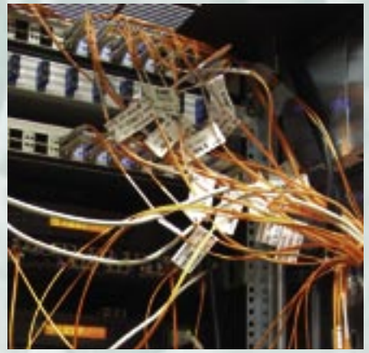


In 1974, the computer experts at SAMSON implemented a computer-assisted decision matrix for configuring products, which was a revolutionary breakthrough at the time. The software had been developed internally as standard programs for such applications were practically non-existent. It was tailor-made to compile a product automatically from the immense number of existing parts, and was applied to order processing and invoicing processes, too. This customized solution was refined in the following years to comply with new requirements and served many departments well right up to the year 2005.

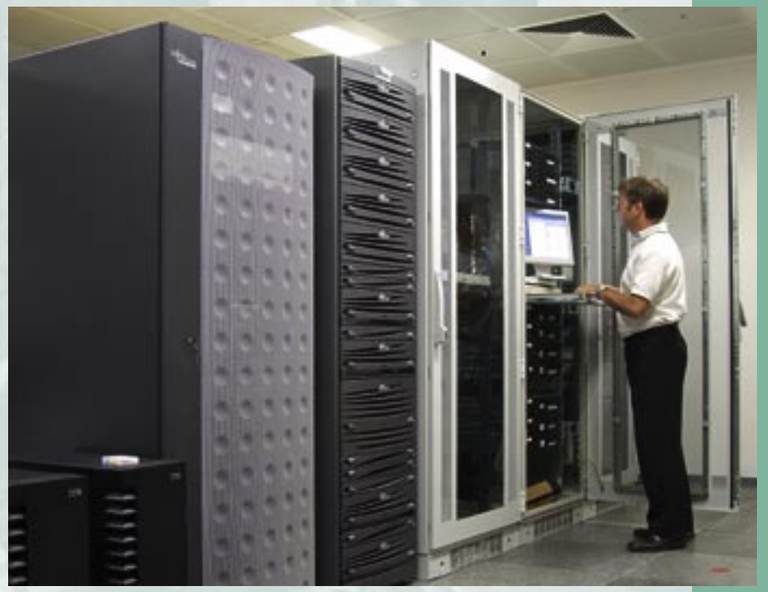
The 16 KB memory of the first mainframe computer at SAMSON, an IBM S/360-20 computer, was sufficient to cope with the entire accounting transactions by feeding punch cards into the computer.

Tera and beyond – Nowadays, an enterprise resource planning (ERP) software supplied by IFS, a leading provider of business solutions, is used to coordinate the entire scope of corporate business activities. This Unix-based software application helps process several hundreds of transactions daily including invoicing. All the data created in the R&D, Sales, Production, Dispatch and After-sales Departments converge in the ERP system.

To handle the huge amounts of data, the system requires a lot of data transfer, processor and memory capacity. The IT Department is currently able to master a data volume totaling three terabytes (3×10^{12} byte). The mainframe computer that manages this enormous amount of data was installed in October 2004. Presently, SAMSON staff in Germany have direct access to the system; the German sales offices are linked over a virtual private network (VPN), while staff located in other countries are indirectly connected over an offline tool.



Data safety and communication – To be able to restore data in the event of a computer crash, regular data backups are performed. Constant differential backups are performed, which entails comparing the database and copying the new and modified data. A full backup of the entire database is scheduled each week and saved to external storage media. The entire process takes place in another building at a safe distance from the mainframe computer. An uninterruptible power supply (UPS) guaranteed by a battery backup and a diesel-driven emergency power generator assure that the power supply is kept going uninterrupted, even in the event of a local power cut. Should a fire break out, the most recent data can be recovered very quickly.



Currently, SAMSON's IT has a mainframe computer with memory system to manage a data volume of more than three terabytes.

A team of IT professionals at the headquarters are committed to ensuring that the flow of data does not come to a halt. Computer hardware and software become outdated notoriously quickly as better versions are released, placing high demands on the experts to be always on the ball. Consequently, a key part of their work requires them to constantly enhance their knowledge in the extensive field of information technology, involving regular further training. Thanks to their expertise, SAMSON staff worldwide have constant access to real-time data, allowing them to serve their customers quickly and reliably.

1966

SAMSON's first mainframe computer is installed. The capacity of its main memory of 16 KB is rather meager by modern standards.

1969

New vocational training legislation comes into force in Germany to accommodate for the general trend towards specialized training in the industrial sector instead of the traditional apprenticeship to learn a trade.

1971

SAMSON sets up a modern accounting department including corporate planning and costing.

1973

The annual summer excursion for SAMSON's retired staff, started in the mid 1960s, is immensely popular and two buses are already needed to transport all the pensioners.

1974

A suggestion scheme is set up in agreement with the works council. Employees submitting ideas or suggestions to improve quality or to cut costs that are adopted are awarded a bonus

Recruited from SAMSON's own ranks

Core value of knowledge – The proportion of employees at SAMSON who have worked for the company for longer than 25 years is unusually high. At least half of them also completed their vocational training within the company, including two members of the current Executive Board. These facts clearly indicate that social responsibility and sound economic feasibility excellently complement each other. SAMSON pursues the strategic goal of appointing to vacant clerical and skilled labor posts as many as possible of those trainees who have completed an apprenticeship within the company. This guiding principle has a positive impact on staff continuity and contributes to a stable work climate. Additionally, it provides the groundwork for an immense base of collective knowledge and skills, which has given rise to leading-edge products and an all-round service for customers.

Theory and on-the-job practice – In 1910, only three years after the company had been founded by Hermann Sandvoss, he recruited his first commercial apprentice. Soon, other apprentices learning different trades followed. Even in those days, the apprenticeship contracts stipulated that SAMSON would introduce the young trainees to the latest technology. The training workshop was therefore constantly equipped with the newest machines and tools. For instance, an NC machine was added in 1980, shortly after NC machinery was introduced into the production process.

SAMSON was one of the first companies in the industrial sector to recruit women in commercial and technical training programs around 30 years ago. Young skilled workers are encouraged to seize further training opportunities to advance their career and qualify as a technician or engineer. In this area, SAMSON has a wide variety of career openings and offers placements to gain practical insights into the working environment as well as the opportunity for undergraduates to perform thesis research.

A win-win situation – Modern technical training programs at SAMSON include courses for vocational qualifications in industrial mechanics, machining, tool making, electronics, mechatronics and technical drawing. Trainees are initially instructed in an in-house training workshop and later in several specialized departments within the company. In the commercial sector, the trainees are provided with an insight into all specialized departments, such as purchasing, production and sales. The SAMSON headquarters in Frankfurt provide trainees with the opportunity to gain thorough on-the-job experience at one location backed up by theoretical knowledge imparted at the vocational training school as part of the German dual training scheme. All the training stages, covering the entire spectrum of the occupation chosen, can be completed on site. At SAMSON, emphasis is placed on cultivating key values, such as self-discipline and working independently, from which both the company as well as the trainees benefit.

The training workshop has always been equipped with the latest equipment and machinery to introduce the trainees to state-of-the-art technology.

Modernly equipped workplaces are essential for a successful and purposeful training scheme.

SAMSON provides the trainees with intensive backing including computer courses, English lessons, exam-oriented preparation and various project work. This comprehensive support definitely pays off as the above average results of the trainees in their final examinations demonstrate each year. And as most trainees remain at SAMSON after completing their apprenticeship, SAMSON and its customers profit from their excellent capabilities for years to come, often longer than 25 years. The perfect proof that SAMSON's training strategy works is that these recruited trainees find former trainees in all levels of the company hierarchy.

Machining trainees are given the opportunity to learn to operate a CNC lathe machine in the training workshop.

1980

A NC lathe machine is added to the training workshop just three years after NC machinery is introduced into the production.
Trainees make up around 11 % of the workforce, ranking SAMSON a top training company.

1982

SAMSON celebrates its 75th anniversary with a 1,400-people-strong workforce. Over 100 of these employees have been loyal to the company for 25 years or more. The average working relationship lasts 12 years at the time.

1991

SAMSON AG publishes its first consolidated financial statement as a group to comply with European accounting regulations.

1995

The last information letter is issued to the German workforce, which had been introduced in 1973 to keep staff up-to-date with the latest corporate news.

1996

The first issue of the new magazine published twice a year by the Personnel Department, which replaces the information letter, is distributed to SAMSON staff. The new company website is launched in November.

Long-term planning allowed

Common ground – A family atmosphere has always prevailed at SAMSON ever since the company was founded by the four Sandvoss brothers. Employees are not merely regarded as belonging to the workforce, but members of the family. Just as in a family, employees receive personal help, extra support and obtain the best possible social framework. In return, they contribute by demonstrating their resourcefulness, commitment and by taking on responsibility. The family analogy does not end there either. It is not just what happens by the end of the year that counts, but a great deal of consideration is placed on the next decade and the following generations, too. This is exactly where the common ground between the workforce and the company is instantly recognizable.

SAMSON invests a great deal to enable employees from all divisions to gain further qualifications and skills by participating in training programs.

Specialists wanted – The personnel policy fits perfectly into the overall corporate strategy that runs through all the business areas at SAMSON. The core concern is to strive for long-term stability and independence. Long-lasting work relationships are aimed for, in the same manner in which SAMSON aspires to maintain long-standing business relations. The organization's success is based on technology, the knowledge and skills of its workforce as well as on patents. Collective innovation covering the whole range of engineering expertise and technical competence is therefore essential to the company.

The corporate principle of self-dependence in all domains entails various specialists being employing to deal with every aspect of the organization. Considering that over 1,200 job descriptions exist at SAMSON, virtually every employee performs a unique function. Therefore, SAMSON invests a great deal in supporting employees to further their knowledge and skills in training programs. In particular, technicians and engineers experience an optimal start to their career at SAMSON after completing their studies since they are integrated into teams with highly experienced professionals.

To a healthy degree – Therefore, SAMSON does a lot to promote the well-being of its workforce and to retain their loyalty to the company. One of the factors important for employees includes a high level of job security. At SAMSON, there has never been recourse to rationalize operations and make job cuts or to introduce a social plan. A newly recruited employee at SAMSON can make long-term plans without any misgivings. Early retirement schemes, often practiced in German companies to entice older employees to end their careers early, are unknown at SAMSON. On the contrary, the expertise and skills possessed by experienced employees are highly valued. A great deal of commitment is expected of the workforce, yet not beyond a healthy degree. A good balance between an employee's workload and outside interests should be achieved, and not lead to work-life conflicts.

Spotlight on dialog – Top management and the works council have enjoyed excellent, co-operative relations for many years. SAMSON is committed to the stable social agreements, and for the past fifty years, the company has followed collective bargaining agreements worked out with the trade union; the contracts of employment provide a steadfast, reliable basis for both parties.

On average employees, including trainees, stay with SAMSON in Germany for fifteen years. In the long-established subsidiaries spread over 50 countries, similar figures are achieved. The trend at the other subsidiaries, which are comparatively young, points in a similar direction. This could also be due to the explicit company policy to respect cultural differences and allow the local team abroad to work on their own initiative. The excellent international understanding within the SAMSON Group is achieved thanks to the high level skills that all employees share across the border and their common objective of providing customers with the best-engineered solution.

The works council and top management have worked well together for many decades in the interest of the workforce.

SAMSON participates in a special recruiting fair in Darmstadt, Germany, informing young engineers about job opportunities.

1998

For the first time, SAMSON trainees are given the opportunity to take part in a one-year project, focusing on a particular area of the company. At the end of the project, trainees make a presentation of their final work to training personnel.

1999

The majority of office workplaces are linked to the company-wide Intranet. An apprenticeship for business-oriented information technology is added to SAMSON's training program.

2000

90 employees join the newly introduced English courses with the objective of acquiring the European Language Certificate. More and more staff use the opportunity to get fit for the globalized marketplace.

2004

For the first time, an interdisciplinary team of SAMSON trainees participate in a regional competition organized by a trade union and take first place.
The newly designed canteen with an electronic cash system is opened.

2005

IFS Applications, the new corporate ERP software, is introduced.

Understanding on a personal basis

Social sustainability – In the first few years after SAMSON was founded, the company moved twice to different locations. Initially, it involved moving from Düsseldorf to Mannheim, and soon after that to Frankfurt. Luckily, the staff followed suit, settling with their families in the new locations. The close ties which have existed right from the beginning between the company and its workforce have not been left to chance. The company management attached an unusual amount of importance to the private needs of its workforce from the early days. And since then, everything has been left unchanged, the welfare of the SAMSON staff has been granted top priority even in times of hardship.

Modern responsibilities – At the beginning of the 1920s, when Germany was hit by rampant inflation, the value of one US dollar rose from 420 thousand million Mark to 4.2 trillion Mark within two weeks. As a result, salaries at SAMSON were paid in foreign currency to overcome the inflation. In the 1930s, a loyalty bonus was awarded to long-standing employees and a relief fund was launched as part of an additional pension scheme. At the end of World War II, the city of Frankfurt still lay in ruins when production restarted at SAMSON. Everything was in short supply. The population spent a great deal of their time trying to track down the most important things needed to survive. Therefore, one of the first steps taken at SAMSON was to install a canteen and to heat the workshops to keep the employees warm at least when they were at work and allow them to concentrate on their job.

The canteen still rates high nowadays. Recently, the canteen and the kitchen were redecorated and refitted at great expense. At the headquarters in Frankfurt, a conscious decision was made to run the canteen within the company. In the first-aid station, the works doctor and nurse attend to all ailments, even if they are not directly to do with work-related matters. As it is, not much of their time is taken dealing with accidents occurring at work, thanks to the occupational health and safety scheme resolutely implemented at SAMSON, which has led to an exceptionally low accident rate.

Dependable on a long-term basis – The largest benefit enjoyed by employees is a secure source of income, which is a matter of principle for SAMSON's top management. One hundred years have passed without any rationalization schemes due to poor sales figures or the like, which proves that the SAMSON workforce can count on their employer. Besides the regular salary, various fringe benefits are paid. The loyalty bonus introduced over seventy years ago is still granted to employees that stay with the company. Additional bonuses, such as non-tariff remunerations and an additional company pension for the staff working in Germany, round off the picture. In other countries, similar benefits are provided in line with national legislation.

Employees about to retire can, if they wish, be accompanied by a member of the works council to visit the local authorities to apply for their pension. This extra service is valuable as the familiarity with pension procedures gained over the years and the personal support ensure that the future pensioner receives the best advice and service. Even after retirement, the company bond is cultivated. The retired SAMSON employees are invited every summer to go on an excursion, which is attended by one member of the executive board. The day trip enjoys immense popularity among the retired SAMSON staff, as is the case with the annual festive get-together held just before Christmas.

Despite the close ties to the company, the privacy of staff is left untouched. Yet, SAMSON takes its responsibility seriously to look after those employees in need of support. Colleagues, the works council or the Personnel Department can be depended upon to provide support on a personal basis, if needed.

Right from the start, SAMSON attached an unusual amount of importance to the needs of its workforce.

In addition to treating injuries, the first-aid station is also responsible for providing medical advice, for example, to employees planning a business trip abroad.

Retired SAMSON employees enjoy a day-out together every summer.

The canteen facilities still rate high. Recently, the canteen and the kitchen were redecorated and refitted at great expense.

A **company** in **full flourish**

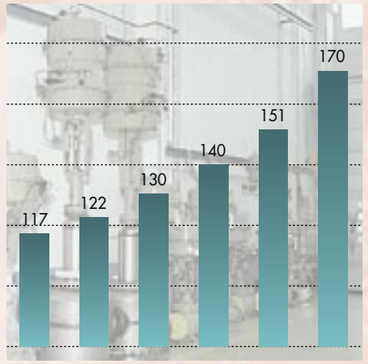
The magnolia excellently symbolizes the business development at SAMSON: strongly rooted, growing organically and in full flourish. Thanks to long-term planning, a well-grounded business strategy, excellent relations with customers and workforce as well as top engineering competence, SAMSON has been able to profit fully from the positive trend in economic development. Business has prospered without enduring any upheavals. The company is still able to continue growing on its own terms. SAMSON is on top form and well prepared for any challenges posed by the future.

1916

SAMSON Apparatebau GmbH relocates from Mannheim to Frankfurt. Just 25 factory workers and 10 salaried staff start production at the new 1,680 square meter site, holding one administrative building and a shed construction.

1918

SAMSON purchases 1,250 square meters of neighboring wasteland, increasing the total site area to approximately 3,000 square meters.



Global trend

In the past financial year, the global economy was even more buoyant than in previous years. Increasingly, China is evolving into the most important engine for global economic growth. Some other economies are also growing at a rapid rate with India, Russia and some Gulf states being the most prominent. Yet, positive developments have also been recorded in Latin America, South East Asia, Africa and Australia. The North American economy has once again proved to act as a mainstay for worldwide economic growth and the performance of the European markets has also improved. Thanks to the high quality of SAMSON's products and services and its worldwide operations, the company has been able to benefit from the good overall economic situation.

1928

The currency stabilization causes an upturn in the economy. A new four-story factory building with a production area totaling 1,100 square meters is erected to hold the workforce of 280 employees.

1940

SAMSON purchases an adjacent property of around 5,000 square meters, on which a building, with a production area of 440 square meters, for a foundry and electroplating facilities is constructed.

1945

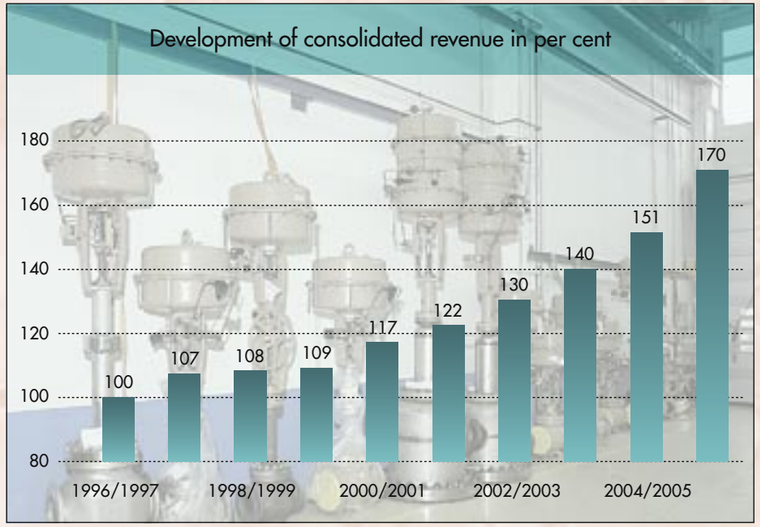
Due to World War II, production was stopped. Heinrich Nothdurft receives permission from the Allied authorities to restart production in May. SAMSON employs 45 people.

1948

With a workforce of just 170 employees, SAMSON's production output is the same as in the peak year of 1941.

Strong performance in a competitive environment

Solid foundations – At SAMSON, things are planned and managed for the long term. The SAMSON Group has always trusted in sound organic growth, which is reflected in a sustainable expansion from its own resources. Acting in accordance with this principle, the Group's consolidated turnover has continued to increase for many years. The past financial year went very well for SAMSON, reinforcing the continued growth trend. Over the past ten years, the SAMSON Group has grown by 70 per cent. In the 2005/2006 financial year, growth amounted to around twelve per cent.



Prospering industries – The positive development also reflects the improved global economic situation and the quite turbulent progress encountered in some regions and industrial sectors. The rise in oil and gas prices has animated investment in the oil and gas industry. Likewise, the chemical industry has experienced substantial growth and benefited from the general trend. A similar scenario applies to the pulp and paper industry, and even the automotive sector, which went through a period of stagnation, has started to invest again. The plant engineering sector has been able to reap substantial benefits generated by this overall situation. SAMSON's home market of Germany and the euro zone profited from the positive global economic trend, bolstered by increasing growth in exports, although domestic demand still remains behind the general world market trend.

Active around the globe – The strong demand for SAMSON products in almost all fields of activity has led to the substantial expansion of production capacities. Only the market for self-operated regulators has remained rather moderate due to the stagnation in the district heating sector. In contrast, control valves are sought after by all industrial sectors. The trend towards smarter field instrumentation, bus communications and asset management has been affirmed once again by the sharp rise in digital positioner sales. The uninterrupted trend toward globalization manifests itself in the continued expansion of SAMSON's worldwide network of companies. Today, 47 SAMSON subsidiaries serve local customers in 66 countries. Production facilities are located at various locations in Europe, Asia and North America. 75 per cent of SAMSON's revenue is generated by exports.

Loyal workforce – SAMSON currently has a workforce of over 2,900 employees worldwide. 1,400 of these employees work for SAMSON AG in Germany. An excellent vocational training program and a traditionally good working atmosphere have contributed to SAMSON ranking top in a regional comparison of industrial companies concerning long-serving employees and the share of trainees within the company. Intense activity in the field of training and an exceptionally low level of workforce fluctuation characterize the entire SAMSON Group, not only in Germany. Top management consciously works closely together with representatives elected by the staff and attaches great importance to the welfare of all employees.

Superior products – SAMSON has evolved into a worldwide leader in the field of instrumentation and controls with an annual production over 100,000 self-operated regulators and more than 100,000 control valves. In addition, the company produces a wide assortment of electronic products, ranging from heating controllers to digital valve positioners with various communication capabilities such as HART®, PROFIBUS or FOUNDATION™ Fieldbus, supplied together with the corresponding software. The SAMSON Group has always aimed at excelling in the entire spectrum of flow control engineering. Therefore, SAMSON has invested a great deal in the field of research and development. Furthermore, unlike the vast majority of companies, the scope of in-house manufacturing is consciously kept as extensive as possible. SAMSON's objective is to achieve lasting expertise and quality, while accomplishing an extremely high level of flexibility and availability to be able to fulfill customer requirements quickly.

SAMSON currently has 47 subsidiaries and over 140 representatives or engineering and sales offices located in 66 countries. The photos below show the subsidiaries in the US, Spain and China.

1957

SAMSON celebrates its 50th anniversary with its 750 employees. Supported by the German economic miracle, SAMSON produces four times more than at the outbreak of the War.

1982

The 75th anniversary celebrations take place. The works premises in Frankfurt cover 53,000 square meters. The average working relationship of the 1,400 employees is twelve years.

2002

The new logistics center is built on the Frankfurt site now covering 62,133 square meters. In the new warehouse, over 160 pallets and wire mesh boxes weighing up to 800 or 1000 kg respectively can be moved per hour.

2006

Construction of the new building is completed to accommodate the sales department and training facilities on an area of 21,000 square meters.

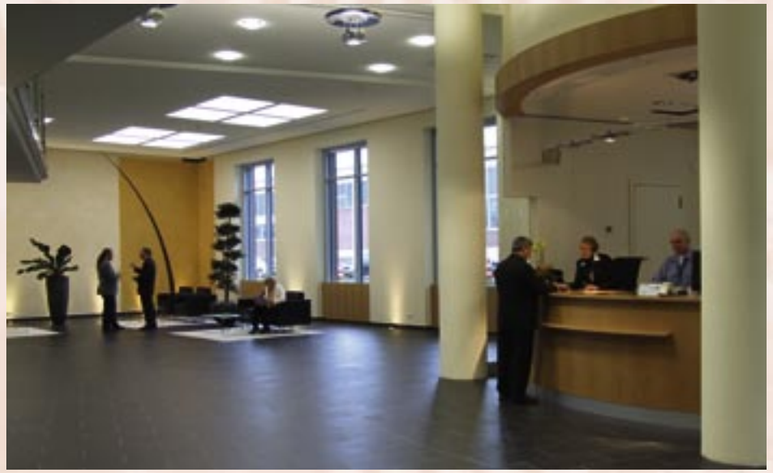
Strongly rooted in the city of Frankfurt

Far-sighted choice of location – As a tree grows, its branches spread and reach towards the sky, yet its roots remain in the same place. These roots extend deeper and wider into the ground. With this symbolic picture in mind, there is nothing paradoxical in saying that, on the one hand, SAMSON is active globally with production sites on three continents and on the other hand, it is still a local company which has close ties to the city of Frankfurt. There is nothing intentionally sentimental about it: Frankfurt has been home to SAMSON over the past decades. A far-sighted choice of location also meant that sufficient space for expansion of the company headquarters will remain available. Since the move to Frankfurt in 1916, the former 1,381 m² large premises have spread to cover a current 62,133 square meters.

Creating reserves – In this respect, a long-term planning and the principle of organic growth have proved effective as well. Whenever a plot of land in the surrounding neighborhood became vacant, SAMSON sought to buy it, in many cases with success. For example, after German Reunification and the partial withdrawal of the Allied Forces, SAMSON was able to buy the site of a large disused bakery, formerly belonging to the US military forces. Other neighboring companies, including some major organizations, relocated and readily sold their plot of land. The resulting land from this investment has presented SAMSON with major property reserves in an optimal location. Due to the fact that many of the buildings on the company premises, which were built several decades ago, are only a few stories high, a considerable expansion in height is also possible.

Optimal location – A first step in this direction was taken with the modern logistics center, including a high-bay warehouse, which was finished in 2002. Not long after the completion of this complex, planning to build a new sales and training building began. This new modern building, which was built adjoining the existing administration building, was ready after just 15 months of construction work. Extensions in various areas of the company are under way or at least at the planning stages. The constant expansion of the company headquarters in Frankfurt is a clear indication that SAMSON believes in the excellent benefits presented by the location. The highly qualified workforce, the majority of which comes from the region, deserves special mention. Decisive factors promoting long-term personnel planning include the good German educational system and, in particular, the dual vocational training scheme to learn a skilled trade, the proximity to major technical universities and the attractiveness of the Frankfurt metropolis located right in the heart of Europe. The company premises are located just a few hundred meters away from the highway exit, providing SAMSON with a direct connection to the excellent road network that runs all across Germany and linking the rest of Europe. Many key customers of the established domestic market are within easy reach. Frankfurt airport, a major international airfreight and passenger hub is practically on the doorstep of SAMSON, bring international customers within reach regardless of their location. Excellent relations to the local authorities, political stability and one of the world's best legal systems are additional arguments in favor of staying at the present site and extending capacities there.

A partial view of SAMSON's Frankfurt premises, including the logistics center, which was finished in 2002.



The new building, in which the sales department and new training facilities are located, was finished in late 2006. The spacious foyer represents the modern international course of business that SAMSON is taking.

1901

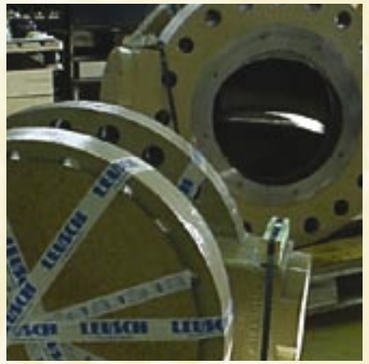
Welland & Tuxhorn is founded by Heinrich Welland in Bielefeld. The company with its own foundry produces shut-off valves, gate valves and stop cocks made of cast iron and copper alloys for water supply networks.

1964

CANALI, a mechanical engineering works, gets involved in valve engineering. It markets its products under the name of VETEC.

A valve range **second to none**

SAMSON valves can control the flow of almost any process medium in the pipeline. The classic control valve is suitable for countless applications. For those cases that require special valve solutions, the extensive range of valve engineering products available from SAMSON's associated companies can be called upon. SAMSON's chief intention was to integrate these companies and their products into an overall strategy to be able to provide customers with the best control solution from an engineering and economic point of view. A major argument in favor of most companies that now belong to the SAMSON Group was the acquisition of a product portfolio with the most varied range of control valves. The other companies supply controllers, superior rotary actuators or integrated solutions. One aspect that all the associated companies share with SAMSON is the unbeatable quality and service they provide.



From a one-stop shop

The customer is king and expects an all-round service, preferably from a single source. Yet, on the other hand, modern businesses do better to concentrate on what they do best and focus on their core competences. In response to this inherent contradiction and to provide customers with the best service, SAMSON has formed affiliations with a series of companies also active in the field of valve engineering, but specializing in the production of different valves from those manufactured at SAMSON's facilities. The specialization ranges from simple forged ball valves to advanced bypass valves for steam turbines in nuclear power stations. With the assistance of these associated companies, SAMSON is able to offer engineered solutions from a single source to comply with the requirements of complex projects and to meet unusual control challenges.

1965

SAMSON establishes SAMSOMATIC producing automation products to control mechanical systems.

1974

Jacob Leusch founds the LEUSCH Industriearmaturen company in Düsseldorf, selling and repairing control and shut-off valves. In November, Horst Pfeiffer establishes the company Pfeiffer Chemie-Armaturenbau.

1976

Santo Rota founds STARLINE in Grumello del Monte, Italy. The company focuses on the production of ball valves.

1978

Pfeiffer expands its production capacity and, with its workforce of 27 employees, moves to Kempen in northwestern Germany where it is still located today.

1981

Four electrical engineering students in Berlin found the company KT-Elektronik. Their objective is to develop modern electronic instruments to control heating systems, while minimizing energy usage.

An alliance of valve experts

Niche markets and project activities – A large proportion of the products produced by SAMSON are sold in the course of project business, which involves supplying valves and other instruments to construct a new plant or upgrade and modernize existing plant equipment. Typical projects include valves for a new refinery, overhauling and refurbishing a methanol plant, extending a district heating network or constructing a new power plant.

Consequently, these sorts of project are typically complex by nature, uniting diverse technologies. To keep matters simple, plant constructors as well as the actual plant operators would rather work with as few suppliers as possible. Ideally, they are looking for a valve manufacturer who can supply the entire instrumentation and automation for a project. To meet these demands, SAMSON has established a network of associated companies who can supply all the niche products in the valve engineering sector not manufactured by SAMSON itself. As the organization of specialist valve companies developed, some fields of activities within the group coincide and a few product areas are covered by more than one company, which has resulted in a competitive challenge.

An exhibit shows a Pfeiffer rotary plug valve with an AIR TORQUE actuator and SAMSON positioner.

Expertise in the interest of the customer – Such competition within a corporation seems fairly unusual. However, it is a conscious decision taken as part of a long-term corporate strategy. SAMSON's business commitment to these valve companies aims at combining special engineering competences and is not intended to reduce costs through synergy effects and workforce rationalization programs. The associated companies work independently, manage their own day-to-day business affairs and are fully responsible for their own staff. SAMSON can rely on their specialized products for projects and so provide the customer with an extensive range of control engineering products.

In return, the associated companies benefit from the affiliation. SAMSON's worldwide sales and service network presents them with an international platform for their products. The products appear in the SAMSON catalogs. In addition, they receive support from SAMSON on marketing matters and technical documentation. At various trade fairs they often join forces with SAMSON, participating side-by-side on a joint booth, or receive assistance to design their own booth. Either way, the common interests and the exchange of ideas concerning development and production engineering are beneficial to both sides.

Reciprocal benefits – In addition to the productive cooperation that has arisen between the companies, a certain level of competition within the group is definitely beneficial. Should competition arise because two group members offer the same sort of product, market forces are left to sort things out. The corporate strategy behind this is based on a slow-paced, balanced integration without fixed targets, which has proved to function extremely well. According to economic research, over 50 % of all takeovers and mergers fail, but all the affiliations initiated by SAMSON have run smoothly without exception. All associated companies work at full capacity to meet orders.

AIR TORQUE

The company, whose head office is located in Costa di Mezzate near Bergamo, Italy, is a worldwide leading manufacturer of pneumatic part-turn actuators for the automation of rotary valves with opening angles up to 180° and torques up to 10,000 Nm. In addition to the standard single-acting and double-acting versions, three-position actuators and actuators with adjustable hydraulic speed control are available. An extensive scope of application is made possible by the seven different anti-corrosive coatings as well as a housing entirely of stainless steel. Technical highlights provided by AIR TORQUE actuators include the external travel stop adjustment and the involute gearing of the rack and pinion, which converts the linear motion into a smooth rotary movement. The superior production quality and the use of first-rate materials guarantee a long service life of the actuators, which are certified to comply with ATEX, SIL and DNV requirements.

AIR TORQUE is a leading manufacturer of pneumatic part-turn actuators.

KT Elektronik

Located in the heart of the German capital city of Berlin, KT-Elektronik was founded by four electrical engineering students in 1981. Their plan was to develop modern electronic instruments to control heating systems, while minimizing energy usage. This commitment to save energy is still the fundamental principle of KT-Elektronik. The company produces controllers for heating systems and district heating stations, which allow the efficient use of primary energy resources. Users additionally benefit from the controller configuration tuned to their individual needs to manage the highly automated heating systems. The heating controllers are designed for large buildings and can be linked to building automation networks.

Each controller is subjected to a final inspection at KT-Elektronik.

1982

STARLINE transfers its facilities to San Paolo d'Argon, just 8 km east of Bergamo. The company premises are situated on a 10,000 m² plot of land.

1989

SAMSON acquires a controlling share in VETEC Ventiltechnik and integrates the company into the SAMSON's sales and service network.

1990

The founder of STARLINE, Santo Rota with three business partners, establish the company AIR TORQUE, specializing in pneumatic part-turn actuators on the STARLINE premises.

1992

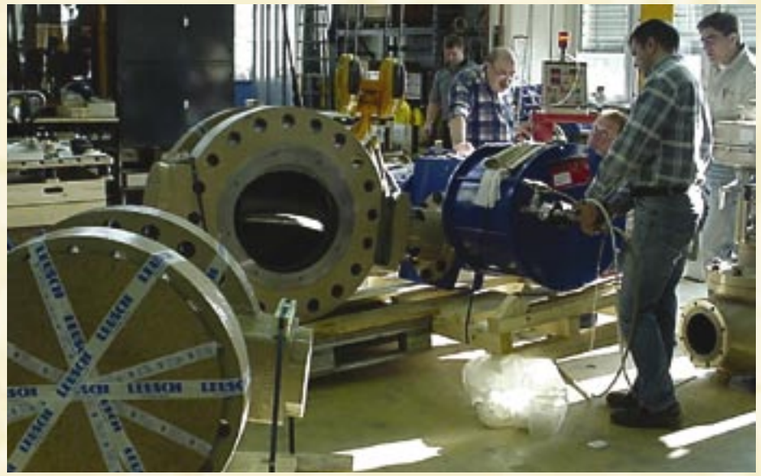
AIR TORQUE moves to Albano S. Alessandro near Bergamo to expand its production facilities on an area of 1,500 m².

1995

SAMSON acquires a controlling stake in Pfeiffer Chemie-Armaturenbau, who has a workforce of 75 employees.

LEUSCH

The company LEUSCH based in Neuss, Germany is very familiar with working on a large scale. High-performance valves in sizes up to DN 2500 (100") in diameter are the specialty of this company. These gigantic valves can weigh as much as five tonnes each! The valve range mainly consists of control or shut-off butterfly valves, ball valves and segmented ball valves in soft-seated or metal-seated versions. The exceptional valves made by LEUSCH are especially designed to withstand extremely high or low temperatures ranging from –196 °C to +1000 °C as well as high pressure conditions prevailing in the plant. The company's expertise focuses on delivering control solutions for demanding fluid flow applications, for example in refineries and hydrocarbon processing installations.



Triple offset butterfly valves from LEUSCH intended for a SAMSON project are extensively tested before their dispatch.

Pfeiffer Chemie-Armaturenbau GmbH

Similar to the ingenious technique used to make non-stick pans, the company Pfeiffer line its valves to ensure that nothing sticks to the inside of them. The company concentrates on producing valves with high-grade linings made of the versatile plastics PTFE or PFA, which are heat-resistant and chemically inert to a great extent. Lining the intricately shaped inside surface of valves is certainly an engineering challenge, especially to achieve a uniform lining thickness without cavities or inclusions. Various ceramic linings as well as globe valves, butterfly valves and ball valves in stainless steel or made of other exotic metals, such as titanium and tantalum, are fields of valve engineering also covered.

A valve bonnet, with PTFE plug and bellows seal attached, is assembled at Pfeiffer.

An additional area of expertise of the company based in north-western Germany is turnkey pigging installations. A pig is run through a portion of the pipeline to efficiently clean out excess liquids and solids, reducing product loss and allowing different media to run through the pipe without them being mixed together or coming into contact with each other.

SAMSOMATIC GMBH

As the name suggests, this company was by founded by SAMSON. Its main field of activity includes modern turnkey systems installed in process automation, building automation and production engineering applications. SAMSOMATIC serves the needs of customers worldwide from a wide range of industries, such as the chemical, petrochemical, pharmaceutical, food and beverage, raw materials, pulp and paper, automotive, aviation, plant engineering and public utilities sector. The broad range of system-related services offered starts at the consultation and planning stage, followed by production and commissioning. At the final stage, the entire system is validated and approved.

The process automation segment at SAMSOMATIC provides individual automation solutions, ranging from simple control loops to modern process control systems. Furthermore, the product range includes solenoid valves and limit switches to control and monitor actuators operating in hazardous areas and safety circuits.

To serve the building automation and district heating sectors, the company specializes in supplying tailor-made systems with customized software solutions and innovative products. In addition, size control systems and tool correction systems are provided to cover applications in production engineering.

SAMSOMATIC focuses on turnkey automation solutions, e.g. for installations in high-speed train maintenance workshops.

1996

SAMSON starts a strategic partnership with KT-Elektronik.

1999

In the course of growth and a preceding capacity expansion, LEUSCH moves to new facilities in Neuss, where it is still located today.

2001

SAMSON acquires a strategic share in Welland & Tuxhorn, a traditional manufacturer of valves used in power stations.

2002

SAMSON buys a controlling share in the Italian companies STARLINE and AIR TORQUE, which already have their own sales subsidiaries in Germany.

2003

SAMSON acquires a controlling share in LEUSCH, which has long since successfully worked together with SAMSON in project business.

STARLINE, located directly in the Italian industrial region around Bergamo, specializes in the production of forged ball valves for the oil and gas industry.

STAR LINE®

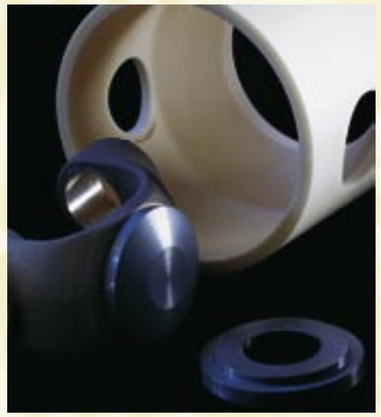
Ball valves are particularly suitable for shutting off the flow of medium running through pipelines in practically all sectors of industry. A key sector served by STARLINE, based in San Paolo d'Argon near the Italian town of Bergamo, is the oil and gas industry, with emphasis on providing control solutions for oil and gas exploration and offshore operations, refineries, pipelines and gas compression.

Additional applications of the ball valves include power plant engineering, the pulp and paper industry as well as seawater desalination plants.

The STARLINE product range includes high-quality forged steel ball valves, which can withstand pressures of over 40 bar as well as high temperatures. The advantages of STARLINE valves include the particularly long service life and their certification for critical processes. Thanks to the cooperation between STARLINE and AIR TORQUE, located nearby, the company can equip its ball valves with pneumatic actuators, which have been specifically designed to actuate ball valves.

VETEC Ventiltechnik GmbH

The Maxifluss rotary plug valves designed by VETEC combine the advantages of conventional globe valves, butterfly valves and ball valves into one instrument. Thanks to its double eccentric design, the rotary plug only comes into contact with the valve seat when the valve is completely closed. The plug and seat do not touch even when the valve is only slightly open. An added value that arises when the valve closes is that any fibers contained in the process medium are cut off and cannot impair the functioning of the valve. Tight valve shut-off is guaranteed even at high pressure drops, and a high rangeability provides precise control. The plug does not obstruct the flow when the valve is open and, as a result, the fluid can flow through the whole cross-section of the pipe. VETEC's valves are mainly used in chemical and petrochemical plants as well as in the pulp and paper industry, where high flow rates and low pressure drops are frequently encountered.



The precise machining of all valve parts plays a key role in the production of rotary plug valves at VETEC to ensure reliable functioning and a long service life.

WELLAND & TUXHORN

The long-standing German company, founded in 1901, is situated in the town of Bielefeld in northern Germany. It develops and produces specialty control valves and hydraulic actuators for power stations and industrial plants. Welland & Tuxhorn's own service network with its highly specialized service team provides aftersales services on a worldwide basis. The range of special valves includes leak-off valves, level control valves, spray water valves, high-pressure bypass stations and safety control valves. The valves can be fitted with electric, hydraulic or pneumatic actuators.

Desuperheating valves are used in many power plants as bypasses to quickly divert steam from the turbines in case of emergency. Even after many years in service, they are designed to function quickly and reliably on demand. The specialized valves have proven to work dependably over decades in extreme conditions and actually contribute to the safe operation of nuclear power stations in various countries.

The two low-pressure bypass stations produced by Welland & Tuxhorn destined for an 800 MW coal-fired power station are used to divert the steam to the condenser in the event of a turbine failure.