



**Burckhardt  
Compression**



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Regula Brunner	Human Resources
Peter Ernst	Contracting
René Guthauser	Quality / Infrastructure
Martin Heller	Sales
Peter Huber	Marketing
Dr. Leonhard Keller	Design & Manufacturing
Daniel Oswald	Information Technology
Harry Otz	Finance & Administration
Marcel Pawlicek	Customer Support Service

**Burckhardt Compression, a world leader in reciprocating compressor technology**

Burckhardt Compression, in business for well over a century, is one of the world's largest manufacturers of reciprocating compressors. The company is the only manufacturer of a complete series of Laby® (labyrinth piston), process gas, and hyper compressors for numerous applications. Burckhardt Compression designs and builds tailor made compressors to optimize their performance for a given application. The compressors are manufactured in Burckhardt Compression's plant in Winterthur (Switzerland) and Pune (India) in accordance with ISO 9001:2000 standards.

Burckhardt Compression's customers are companies in the field of oil refining, chemical and petrochemical industries, air separation,



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**Board of Directors**

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Heinz Bachmann  
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Valentin Vogt  
CEO Burckhardt Compression AG

**Auditors**

PricewaterhouseCoopers AG

as well as gas transport and storage. These industries use compressors to raise the pressure, to reduce the volume and to cool or liquefy gases such as hydrocarbon gases, industrial gases and boil-off gases.

Burckhardt Compression's worldwide service network ensures a wide customer support. Specialists with on-going training have expertise in each particular compressor application, and can provide the necessary service, like analysis of compressor performance, complete plant overhaul, engineering and re-engineering, or fulfilling extensive maintenance contracts.

**Key figures of the Burckhardt Compression Group**

	2005	2004	Change
Order intake (mio. CHF)	<b>323</b>	206	+ 57 %
Sales (mio. CHF)	<b>210</b>	168	+ 25 %
Research and development expenses (mio. CHF)	<b>5</b>	3	+ 39 %
Personnel	<b>638</b>	542	+ 18 %

**Acceleration**

The business environment in Burckhardt Compression's respective market segments was favourable. During the course of the year orders in excess of CHF 300 mio. could be registered representing a new benchmark in the company's 162 year history. The growth in order intake and in sales relates to the new machine business as well as our customer support service activity.

The global demand for hydrocarbon products continues to grow in the industrialized countries and in the emerging markets. The shift of production capacities in the polyolefin market from Europe and the US to Asia and the Middle East has led to an additional demand for products and services from Burckhardt Compression. The booming steel market required large quantities of oxygen. Our order intake and sales benefited from the growing LNG market and from the transportation market for other hydrocarbon gases. Growth was driven by the increasing importance of natural gases as a prime source of energy and the need to transport gas from the producing to the consuming countries. The production of natural gas and oil will continue to grow as a result of increasing demand for fossil fuels. The cooperation with various customer support service partners was further expanded and helped to boost the order intake. During the fiscal year 2005, Burckhardt Compression acquired a subsidiary in Brazil and opened a branch in Korea. In addition, Burckhardt Compression entered into collaboration with PROGNOST Systems GmbH for monitoring and diagnostic systems and enlarged its products and services for customer support service.



Valentin Vogt and Guido Patroncini

Due to the continued high work load, our staff and capacities were increased. Burckhardt Compression's R&D efforts are focused, on the one hand, to enhance the current line of products and, on the other hand, to develop new or improved applications together with our customers, wherever Burckhardt Compression technology is applied.

The situation in the supplier markets, in particular for castings and forged products, has substantially worsened during the reporting period. Due to our advanced planning system, we were able to keep our delivery schedules most of the time.

Burckhardt Compression's continued efforts to improve operations in combination with the favorable market conditions allowed financial results above budget.

A thank you goes to our customers, our employees and our suppliers. We are grateful to our customers for their continued loyalty and confidence in Burckhardt Compression. We are very proud of our dedicated employees. They have coped well with the high workload despite the increasing pressure put on them.

We are of the opinion that the fundamentals in our main markets continue to be favorable and, therefore, look optimistically into mastering the future challenges in our business.

Winterthur, April 2006

Guido Patroncini                      Valentin Vogt  
 Chairman of the Board              Chief Executive Officer

## Burckhardt Compression flashlights

### Geographical expansion of Burckhardt Compression's market presence in Korea and Brasil

Burckhardt Compression opened its own sales office in Korea, named Burckhardt Compression Korea Branch which is responsible for new and existing contracts with customers and contractors for all business with reciprocating compressors. Burckhardt Compression has done business in Korea for many years and has now established itself under its own brand name. The office in Korea also provides customer support service and cultivates the contact to engineering contractors and customers.

Burckhardt Compression acquired the reciprocating compressors business from Sulzer Brazil and opened a new subsidiary with a complete service center, including the first Burckhardt valve shop in South America. The new subsidiary continues its operation with the same staff which was responsible for the Burckhardt compressor business in Brazil for many years. The company provides the full range of services for all reciprocating compressors such as valve service, spare parts logistics, engineering services, field service, technical support, component repair as well as extensive revamps. The local application engineering capability is also able to develop and produce compressor packages for a variety of applications.

### Award for above average employee satisfaction

In a nation-wide employee satisfaction survey, conducted by a specialized company and a business newspaper, Burckhardt Compression scored rank 15. In total 76 companies representing 46'000 employees participated in the survey. Willingness to perform and satisfaction were the key criteria for the award. Both are crucial in real situations, like work load for each

individual employee, adequate remuneration or smooth operating processes. The feedback received provided the bases to launch targeted improvement projects, where appropriate.

### Reselling partnership with PROGNOST Systems

The world-wide increase in demand for online diagnostic systems induced Burckhardt Compression to evaluate a strong and recognized partner in the field of online condition monitoring and diagnostics for reciprocating compressors and to evaluate relevant systems. Burckhardt Compression decided in favor of the technology supplier of online diagnostic systems PROGNOST Systems GmbH due to its specialization and the more than 15 years of experience in the field of high-resolution data acquisition for reciprocating compressors. Over 200 world-wide references of this diagnostic technology prove the high degree of customer benefits and satisfaction. The two companies have agreed on a reselling partnership for PROGNOST® Asset Performance Management Systems. Under the agreement Burckhardt Compression offers online diagnostic systems from PROGNOST Systems for new reciprocating compressors or as retrofit for existing installations.

### LNG and LDPE as hot topics for customer events

In the gas industry LNG these days is clearly in the spotlight. The symposium "Boil-off Gas Compression in LNG Receiving Terminals" staged last year in Winterthur was therefore repeated in the United States, bringing again various existing and potential customers together. This year lots of experts from all over the world followed our invitation for the first LDPE Symposium "Compressors for Polyethylene Production" held in Winterthur. Experience in LDPE processes and compressor design, operation, maintenance and safety



aspects were exchanged between operators and OEM. The expert knowledge of Burckhardt Compression is backed by more than 200 hyper compressors installed world-wide; alone this business year, several customers selected Burckhardt Compression to supply such compressors.

**Market highlights**

**Burckhardt Compression to supply compressor for largest Lupotech T plant in Saudi Arabia**

National Petrochemical Industrialization Company – also known as Tasnee Petrochemicals – and Basell are currently building a new integrated polyethylene complex at Al-Jubail Industrial City in the Kingdom of Saudi Arabia. The complex will include a gas cracker and two 400'000 tons per year polyethylene plants, one of which is based on Basell's Lupotech T technology and will produce low density polyethylene with a hyper compressor supplied by Burckhardt Compression. Scheduled to start up in 2008, the plants will be the largest of their kind in existence. The complex spells rewarding job opportunities for the Saudi workforce. Expected manpower requirement is around 700. This project is a further step in Saudi Arabian General Investment Authority's vision to double the country's petrochemical share from the global output, which currently stands a 7 percent to 13 percent by the decade's end. We are proud to be part in such an important project.

**Compressors for polyethylene production boost Maoming's petrochemical production capacity**

Sinopec Maoming Company is a large scale integrated petrochemical enterprise and one of the biggest petrochemical production bases in China. For the current 1 million tons per year ethylene expansion project, Maoming Company

is adding a 250'000 tons per year polyethylene plant, which will be equipped with a booster/primary as well as a hyper compressor manufactured by Burckhardt Compression. With the completion of this plant, the customer will greatly improve its petrochemical production capacity, will have more advanced technology for more optimized products and will turn out to be a petrochemical base with an international economic scale and a competitive capacity.

**Laby® compressors are world-wide used in the production of polypropylene**

Plastics are in thousands of products that are used everyday – from food packaging and personal hygiene goods to toys and automotive parts to building materials and pipes for water and gas. Lighter and stronger plastics increase fuel efficiency, expand design freedom and reduce the overall weight of vehicles. Plastics contribute to lifestyle and human development through affordable products both in mature economies and in the developing world. Polypropylene is a plastic material with good resistance to fatigue and a fairly high melting point, making it suitable for all the products just described. Laby® compressors can be found in many plants around the world producing polypropylene, like in Altamira, Mexico, in Sabic's Yanbu complex in Saudi Arabia, at the Borealis plant in Burghausen, Germany or at the Dushanzi Petrochemical Branch Company of China Petroleum & Natural Gas Company. We are proud to be part of shaping the future with plastics.

**Burckhardt Compression supplies compressors for many different applications in the hydrocarbon processing industry**

Sasol Olefins and Surfactants have awarded a contract to Linde for the engineering, procurement and construction of an alpha olefin plant in Secunda, South Africa. The plant is based on a new technology, converting 1-Heptene to



the valuable 1-Octene product. This liquid hydrocarbon is used as a chemical intermediate in the production of polymers, like polyethylene, fatty acids, detergent alcohols and lubrication oil additives. The syngas compressor for this new plant will be supplied by Burckhardt Compression.

Jose Superoctano of Venezuela will equip their new aromatics plant with a process gas compressor from Burckhardt Compression. Aromatics, so called because of their distinctive perfumed smell, are substances from crude oil and also from coal. The main aromatics are benzene, toluene and xylenes; they are used as starting materials for a wide range of consumer products, such as air bags, easy-to-wear clothes, car tires, CD's and DVD's.

Kumgang Chemicals Corporation has specified a Laby® compressor for methyl chloride for their synthetic rubber production facility in Korea. Synthetic rubber serves as a substitute for natural rubber in many cases, especially when improved material properties are needed. Toyo Engineering Corporation ordered a labyrinth piston compressor for the ethylene oxide/ethylene glycol plant of Sabic in Yanbu, Saudi Arabia. The major use of ethylene oxide is in the production of ethylene glycol, which is widely used as an automotive coolant and anti-freeze and to produce polyester polymers. Sabic is one of the world's largest producers of ethylene glycol, responsible for over 18 percent of global supply. We will supply another Laby® compressor for the same application to the Liaoyang plant of China Petroleum Corporation.

Petrom, the largest Romanian oil and gas group, launched a revamp project for their Petrobrazi diesel hydrotreating unit, to meet the clean fuels requirements of Romania in 2007. As part of this revamp program, two new combined duty make-up and recycle compressors were purchased from Burckhardt Compression. The make-up gas compressor feeds the diesel hydrotreating unit with make-up hydrogen from the refinery hydrogen grid

and the PSA unit, the recycle gas compressor circulates the gas through the plant and the catalyst. The two process gas compressors will be delivered in December 2006.

**Burckhardt Compression involved in project helping Britain to secure long-term gas imports**

Britain's gas demand is projected to increase by at least 15 percent in the next ten years. As production from North Sea gas fields declines, dependence on gas imports is forecast to approach 50 percent by 2010. An extension project is currently underway to triple the capacity of the existing Grain LNG terminal by the end of 2008. When complete, the terminal will be capable to import an additional 6.5 million tons of LNG per year, taking its total planned capacity to 9.8 million tons per year and representing around 12 percent of Britain's current annual gas demand. LNG is natural gas liquefied by refrigeration to a temperature of around minus 160 degrees C, a process that reduces its volume to 1/600th of that at normal ambient temperature and enables safe bulk transportation by ship. During ship unloading and storing a portion of the LNG evaporates and needs to be re-liquefied. 4 Laby® compressors for boil-off gas re-liquefaction will be supplied to the terminal, located on the river Medway, 20 miles east of central London, close to the gas market and some important gas-fired power stations. It will be a high quality facility with considerable capacity to provide a new source of gas to homes and industry in the UK.

**Sempra Energy relies on Burckhardt Compression**

Clean, efficient and environmentally-friendly natural gas is becoming North America's fuel of choice. USA is the world's largest market for natural gas, consuming 31 percent of the globe's annual gas production. Sempra Energy



is a Fortune 500 energy services holding company and provides through its subsidiaries electricity, natural gas and value-added products. The company serves more than 29 million consumers in various parts of the world. For North America and Mexico Semptra have started construction of two LNG facilities, one in Baja California, Mexico (Energia Costa Azul) and another near Lake Charles, Louisiana (Cameron LNG). As domestic production of gas declines, receiving terminals such as Costa Azul and Cameron LNG will bring plentiful world-wide gas supplies to North America. Burckhardt Compression has been chosen to supply three Laby®s each to the two LNG facilities. The compressors are especially designed for the low temperatures, which occur, when re-liquefying natural gas. The unique features of the Laby® were convincing factors for the customer to award the orders to Burckhardt Compression.

#### **Dragon LNG to be equipped with Laby® boil-off gas compressors**

Another UK LNG import terminal called Dragon LNG is currently under construction and is expected to have an initial capacity of 6 billion cubic meters per year. Dragon is a joint venture between BG Group, Petronas and Petroplus and will import LNG, which comes from North Africa, West Africa, the Caribbean and Malaysia. Two Laby® compressors will re-liquefy natural gas which boils off during terminal operation.

#### **The Laby® compressor – the work horse for industrial gas applications**

Due to its unique labyrinth piston, the Laby® is the compressor of choice, when it comes to absolutely oil-free compression. Quite a number of orders were therefore for oxygen applications, mainly for steel production or methanol plants. Far East and Europe were the main markets for these compressors. Other processes in the chemical industry, such as the production

of acetic acid also require Laby®s. Acetic acid is a chemical reagent for the production of many chemical compounds. The largest single use of acetic acid is in the production of vinyl acetate monomer, a chemical building block used to manufacture a wide variety of industrial and consumer products, such as paints, adhesives, coatings and packaging films. The largest Laby® in our product portfolio has been ordered for an acetic acid plant in Shandong, China.

#### **Extended scope of services offered**

In recognition of the increasing demand for expert service and replacement parts for other brand compressors, we have set up a dedicated group, providing technical services for compressors, which have not been manufactured by Burckhardt Compression. Our service organization, with various bases all over the world, has been on duty continuously. With a well-organized coordination we were able to handle the service calls in an efficient manner and to the satisfaction of our clients. An increasing number of other brand compressors has been equipped with our own valves, either with Burckhardt Plate Valves™, Burckhardt Poppet Valves™ or Manley® Valve, licensed by Burckhardt Compression. One example is the supply of valves for Linde-Sürth compressors. The service on valves is also increasing for non-Burckhardt valves. All our service centers will be equipped with a standardized, uniform leak test machine to guarantee the same high quality of the valves serviced all over the world. The trend to repair parts keeps growing and we are offering this kind of service world-wide not only for our own compressor population, but also for other brand compressors. Strategically selected service partnerships have been established, which enables us to offer integrated service packages out of one hand.



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