



Achieving a leak-free start-up - impossible dream or achievable project?

Klinger Limited, Bradford/UK

Large petrochemical plants will always require periodic maintenance and inspection shut-downs. During these shut-downs, a large number of gasketed joints are dismantled in order to gain access to the equipment. After reassembly, the plant systems are leak-tested with high pressure nitrogen to ensure the integrity of the pressure envelope prior to the introduction of hydrocarbons. If leaks from gasketed joints are discovered during this process, it will be necessary to de-pressure the systems in order to remake the joints.



Huntsman Olefins Plant



For the 2002 shut-down, engineers at the Huntsman Olefins Plant at Wilton set a target of ZERO remakes for leak testing. With 7000 joints to be remade by 400 technicians, that was quite a challenge! KLINGER UK Ltd was the gasket supplier, while Hedley Purvis provided bolt-tensioning services. To achieve such an ambitious target, the two companies joined forces to develop a project that involved a joint making procedure that de-

manded full traceability and controlled joint tightening to a pre-defined load. Great emphasis was also placed on the human element of effective joint making, as well as careful briefing and validation for each technician in order to ensure that high standards were maintained. A training video was also produced for the instruction and involvement of technicians and their supervisors.

The success of the project was demonstrated by the first ever "leak-free" start up of the Olefins plant. To publicise the work, papers have been presented at a number of conferences, including this year's BHR Group Conference in York. The paper and video relating to this conference are available through Dr Gavin Smith at KLINGER Limited. ■



Oil and Gas Exhibition Western Australia

Klinger Limited, Australia

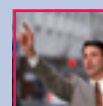
Appearing at the 2003 Oil and Gas Expo in Perth, Western Australia, in mid-March, KLINGER once again had a strong presence as a leader in the fluid and gas sealing industry.

The show, which attracted some 150 exhibiting companies and approximately 4000 visitors, was an opportunity for KLINGER to introduce present and potential customers to its new range of compression packing and gasket materials - products that included the Top-graph 2000/2008/2009, the Marlo 369C Fugitive Emission Valve packing, and the newly developed Marlo Pack-RYT sealing system. Indeed, the interest shown by a number of potential customers has already resulted in enquiries about a number of KLINGER products.

The oil and gas industries within the Asia Pacific region are presently going through a major expansion phase and



KLINGER Limited, Australia, intends to be a major supplier of fluid and gas sealing products during this period. ■



Stop Press Klinger Group

A small team comprising Allan Cook, Norbert Weimer and Dr Gavin Smith has been collating data on our sealing products. The multi-faceted and at times very comprehensive information has been gathered throughout the KLINGER Group and includes hard technical data as well as facts and figures that will assist with the marketing of sealing products.

This data will be distributed shortly on CD - either to designated Sealing Product Managers or Managing Directors.

The collating exercise has, of necessity, been a dynamic one; no information has so far been included on Fluid Control, for example, although that can follow quite quickly. Many companies are expected to request an upgrade of their individual Issue 1 entries. The result will be Issue 2 - which will also include the necessary information on Fluid Control. ■



'KLINGER Presented Papers' Version 1.0 now available on CD-ROM

Istag AG, Switzerland

Although some of the contributions are quite old, they have lost none of their topicality. The collection also provides an excellent insight into how technical knowledge about gasketing has developed over the years.

Because all the collection's papers are still current and applicable, they are ideal for training, seminars and presentations. Illustrations, diagrams, graphs, tables with technical data - all may be used for new presentations in order to explain the technology. The informed reader is liable to find the compilation repetitive, but will nevertheless be able to skip those sections and concentrate on the main points of each contribution. The less knowledgeable reader, on the other hand, may welcome the repetitions as an aid to training and memorisation. Before the end of this

ISTAG has recently issued the first in a series of CD-ROMs that contains Version 1.0 of 'KLINGER Presented Paper' - a collection that has been presented by KLINGER technical staff at conferences throughout the world during the last 15 years.

year, ISTAG plans to issue an upgraded Version 1.1 of 'KLINGER Presented Papers' that will contain additional technical essays which are currently being converted into electronic form. For that reason, all staff members within the KLINGER Group are requested to send their papers to ISTAG for inclusion either in Version 1.1 or a later, follow-up edition. Texts already in electronic form would be much appreciated, but this is not essential. Papers from outside the KLINGER Group would also be welcome when related to KLINGER activities or containing general technical information

on a gasketing subject.

ISTAG would also like to remind the general reader that nothing is so perfect that it cannot be improved! Any feedback about errors or misleading passages in any of these texts would be very welcome, along with suggestions for improvements. The 'KLINGER Presented Papers' collection is intended not only for use within the KLINGER Group but also for wider distribution to customers and users. The CD-ROMs can be requested from ISTAG at the following e-mail address: joerg.latte@klinger.ch. ■



Important agreement between KLINGER Spa and ABB Sace for the supply of level gauges

Klinger S.p.A., Italy

For many years, KLINGER SpA has been producing glass level gauges for the Italian and European markets. Production capacity has recently been increased, and it has been possible to achieve important commercial results with Italian and foreign customers.

One of the principal agreements was drawn up last February between KLINGER SpA and the Italian company ABB Sace, which is part of the international ABB Group. The agreement was preceded by long and complex negotiations in order to meet all the technical and commercial requirements and finally arrive at a solution that was satisfactory to both companies.

On the basis of this agreement, KLINGER SpA has supplied 200 glass level gauges destined for eight petrochemical plants commissioned by N.I.O.C. (National Iranian Oil Company) to Irasco and from these to ABB Sace.

Because of the tough conditions imposed by the project, the level gauges - both the reflection type and the transparency type with explosion-proof illumina-

tor - were all made in stainless steel.

In addition to the glass gauges, KLINGER SpA has also supplied a series of 'tank level' indicators from a leading Italian manufacturer.

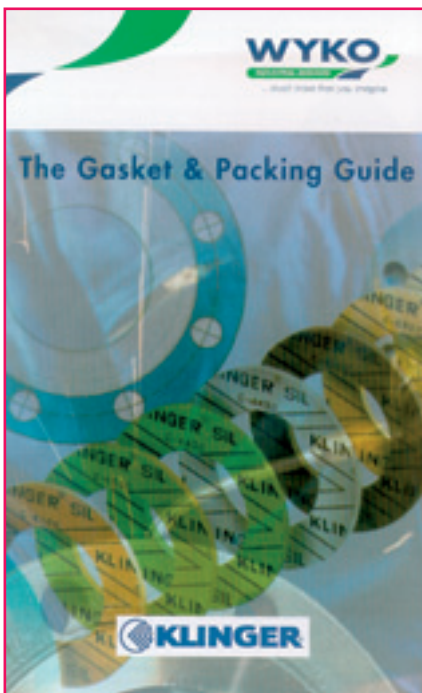
All gauges were tested positively at the KLINGER SpA plant in Mazzo di Rho in the presence of ABB Sace inspectors and end-customer representatives.

Testing was conducted at the end of May and, together with other material supplied directly by ABB Sace, these products were packed in 16 big wooden cases for shipping to Iran according to established deadlines.

For KLINGER SpA, the positive experience of this important agreement consolidates the prospects for growth and raises expectations for continuing and expanding the collaboration between ABB Sace and KLINGER SpA. ■



KLINGER and WYKO partnership to boost UK business



WYKO are one of the largest suppliers of engineering consumables and services in the UK. The company provides a complete supply solution to industry and has seen considerable growth over the past few years - success that has been built on high-level customer service and strong partner supplier relationships.

The KLINGER-WYKO partnership agreement is an excellent opportunity for both companies to develop and grow business in the UK. For KLINGER, WYKO provides a pathway into industrial sectors where it has so far been under-represented. It is an exciting opportunity to achieve significant business growth.

After the official launch of the partnership in January, the companies produced a Gasket and Compression Packing

Guide not only to promote the agreement but also to aid product selection and after-sales support.

The booklet covers the main grades of gaskets and packings, and also includes installation procedures, a troubleshooting guide, an industry selection guide, and a useful glossary of terms that provides a technical and functional background to all KLINGER and WYKO products. ■

A new and improved axial flow piston valve

The new axial flow piston valve is a development based on the tried-and-tested constructional features of the piston valve already well-established on the market. It is in particular the new valve's functional principle - a cylindrical piston is moved along its axis and opens/closes the flow channel by means of radial sealing rings - that will receive attention here.

Development history

In 1922, company founder Richard KLINGER developed the Type KVn piston valve [Fig 1]. In so doing, he replaced the combined seating and seal body of a conventional globe valve with a cylindrical piston with radial sealing rings arranged within the valve housing. In the exact same way as a globe valve, fluid flowing through the valve is deflected twice in order to enter and exit the closing chamber. The top and bottom of this closing chamber are closed off by sealing rings that are supported and separated by a lantern ring with radial openings. The bonnet bolted to the housing fixes the lantern and sealing rings

within the housing. A spindle or piston rod mounted in bearings in the bonnet controls the position of the piston and thus triggers the actual closing and opening sequence.

80 years on, this valve system is still in widespread use in water, steam and chemical plants. It is also used with heat transfer media. Continuous improvements in the sealing system as well as optimisation of the manufacturing process have kept this flow-control device 'young'.

Nevertheless, there is still a technological/economic upper limit with this system that cannot be exceeded: namely, nominal pressure as a function of nominal size. For the cast steel DN 15 - DN 50 version, this tops out at PN 63. With DN 65 - DN 200 sizes, the figure is PN 40.



Fig. 1: KVn piston valve

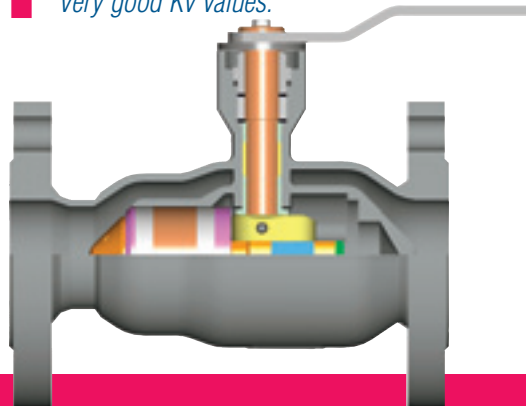
Demands on the KVA axial

KFC technicians have stayed with the basic principle - pistons and radial sealing rings. The closing system has been turned through 90°. Pistons and sealing ring axes are thus precisely aligned with the fluid flow axis (effectively, the axis of the pipping). The pressure requirement ranges from PN 100 up to and including PN 420, while the maximum operating temperature has been fixed at +550°C. The KVA (KLINGER VALVE AXIAL) [Fig. 2] is envisaged for a nominal size range between DN 80 and DN 800. Both DIN and ANSI ranges are covered. The main application areas are petrochemicals, cold- and hot-water applications, and steam plants.



The advantages of this type of construction

- Low actuation torques, especially with large nominal sizes and pressure levels, due to a full pressure balance across the piston.
- Very good tightness behaviour, since the established piston valve has been retained and the body is constructed as a single component.
- Low pressure loss.
- Very good control properties.
- Double leak-tightness in on both port directions.
- Low flow noise.
- Good "rapid shut-off" properties.
- Very good Kv values.





Klinger Fluid Control GmbH, Austria

the closed to the open position by a quarter turn of the stem. However, because of its drive mechanism, the KVA requires a half turn to achieve this; in other words 180°. This therefore corresponds to a “half-turn” valve, which is far less widespread than the “quarter turn” type.

The stem (8) mounted within the housing transfers the rotational force applied by the handle or actuator to the crank (6). The stem is sealed to the outside by a stuffing box (4). The steering plate (7) then converts the rotational motion of the crank to a linear motion, which is transferred by the steering plate to the piston (2) [Fig. 3]. The piston now travels from the rest position out of the fixed torpedo body (10) (an integral part of the main housing) and starts to reduce the cross section of the flow channel. In the final position, the piston

has completely closed off the flow channel. Both the radial valve rings (3) in the piston ensure an optimal seal of the flow channel. In contrast to piston valves, these are accommodated in the piston, not in the housing.

The medium can flow through the valve to the left or to the right [Fig. 4], with the sealing system ensuring double leak-tightness on both port directions. The medium flows through both pipe cross sections at the valve ends, which then reduce to become a ring slot in the body (9). These are confined by the main housing (1) on the one hand, and the torpedo body (10) on the other. Bores in the piston allow the medium to pass into the torpedo body - a feature that allows a complete pressure balance across the piston.

Trial and test results of a KVA prototype

In the course of a pilot project, a KVA prototype was built to a nominal DN 80 size and PN 100. Both valve housing and torpedo body were manufactured as fully welded components. The separate steel piping components were mostly turned from rods. Stainless steel was mainly used for the internal components. Well-proven KLINGER KX graphite laminate rings were used for the seals. After completion of the valve, it was sent to the KLINGER Testing Department [Fig. 5].

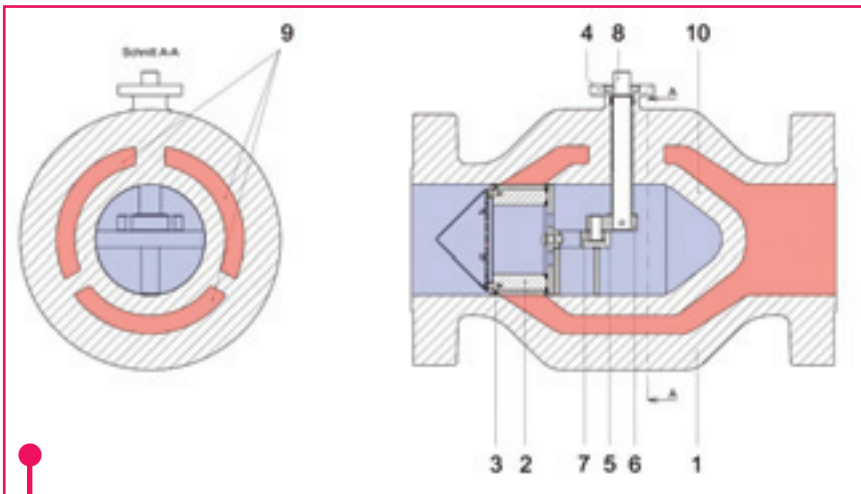


Fig. 3: Cross section of KLINGER axial flow valve in closed position

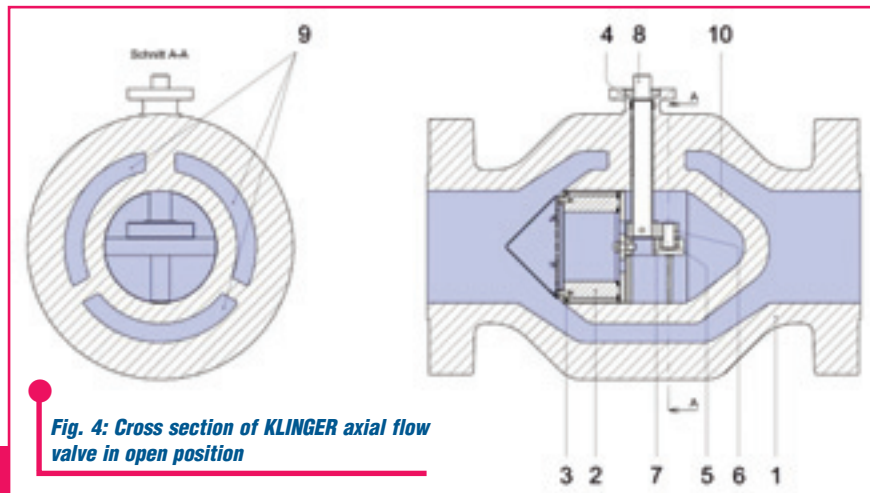


Fig. 4: Cross section of KLINGER axial flow valve in open position

Fig. 2: KVA axial flow piston valve

Basically, because of its operating sequence, this valve type can best be placed within the “quarter turn” valve group; in other words butterfly, plug and ball valves. These can all be brought from

At the forefront of the tests was the empirical determination of:

- the ζ -value
- the kv-value
- the actuation torque
- the tightness

Although the KVn piston valve and the KVA axial piston valve are not in direct competition, comparative data has nevertheless been ascertained. A cast steel DN 80 PN 40 KVn valve was made available for this purpose.

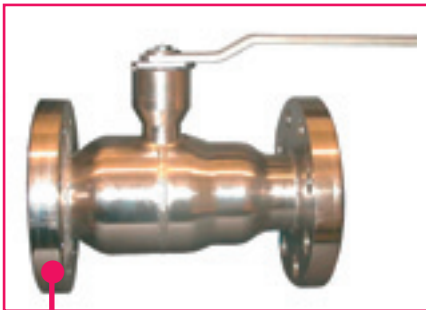


Fig. 5: KVA DN 80/PN 100 prototype

kv-value

Fig. 7 explains the kv regulation curves of the axial piston valve and the KVn piston valve. In the open position, the axial valve has almost double the flow rate thanks to its better flow characteristics.

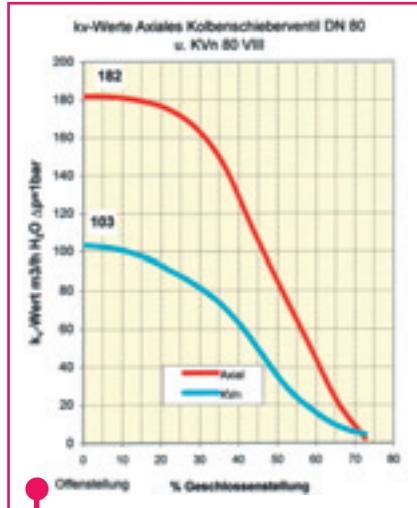


Fig. 7: Kv control curves for the axial flow piston valve and the KVn piston valve, DN 80 diameter in each case

thus optimally shielded from the flow. This is of particular advantage at high flow rates since the valve ring is subjected to less wear.

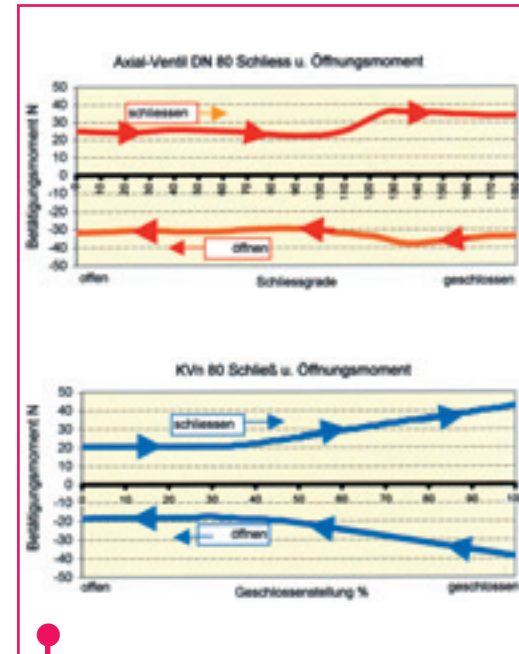


Fig. 8: Comparison of the actuation torques for the axial flow piston valve and the KVn piston valve

ζ -value

Fig. 6 shows a comparison of the flow resistances of the DN 80 axial piston valve and a KVn 80 in the open position at different velocities (water) in m/s at approx. 20°C. The considerably more favourable values of the axial valve are achieved by avoiding flow deflection, as experienced with the KVn.

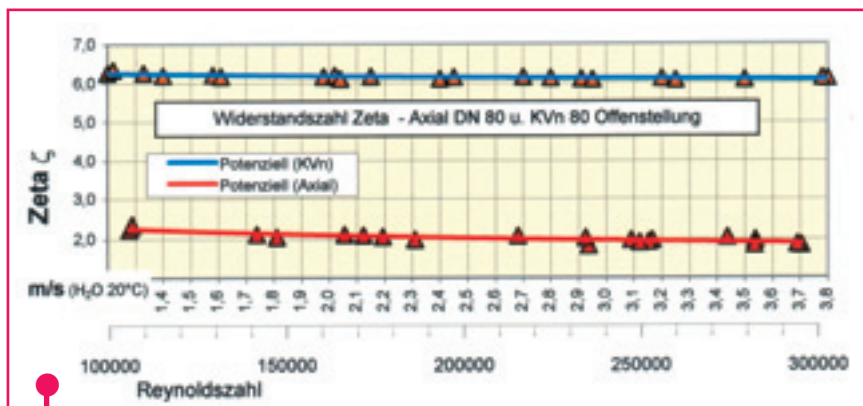


Fig. 6: Flow resistances of the DN 80 axial flow piston valve and a KVn 80 in open position

Actuation torque

A comparison of the actuation torques for the axial and KVn piston valves shows approximately the same values [Fig. 8] when both valve rings (KLINGER-KX graphite ring) are engaged (the closed position). In the open position, the KVn valves are slightly lower because the piston is only in contact with one valve ring. The

other is exposed to the flow. With the axial valve, the value in the open position is slightly higher because both valve rings are

Tightness

As can be seen in Fig. 9, the leak behaviour of the piston when using the KLINGER-KX graphite rings (sliding piston principle) during a 1000-cycle test run on the valve is almost even. The test was conducted with helium under a pressure of 40 bar. The test confirms the equally positive sealing properties of the axial and KVn valves. ■

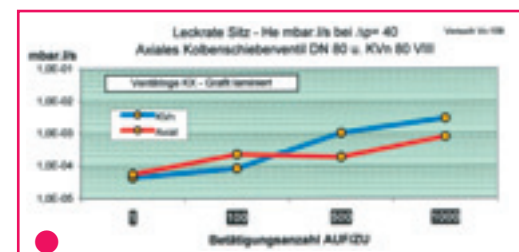


Fig. 9: Seat leakage rate of the DN 80 axial flow piston valve and the KVn 80 measured using helium at a pressure of 40 bar

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TECNOFLOW at the International Water Exhibition

Tecnoflow S.A., Argentina



At the International Water Exhibition at the Costa Salguero Exhibition Centre in Buenos Aires, TECNOFLOW Argentina S.A. was able to present its products to a great number of national and international visitors.



The event, which took place between 3 and 6 June, 2003, provided TECNOFLOW with an opportunity to promote its full product range to important water companies such as Aguas Argentinas, Aguas Provinciales de Santa Fe, Samsa, Aguas Provinciales de Cordoba and other suppliers. TECNOFLOW was also able to demonstrate that, when it comes to the search for solutions that guarantee high-quality products for the water industry, it is a solid and dependable partner.

10 years ago, many international water companies - Ondeo and Vivendi to name just two - decided to invest in Argentina after identifying the country as an important market.

As part of the exhibition activities, TECNOFLOW Argentina S.A. organised a conference that also served as a platform for the introduction of products by BERMAD and ARI - two of the companies that it represents in Argentina. It was gratifying to note that this event was attended by a great many engineers and technicians from other well-known and established companies. ■



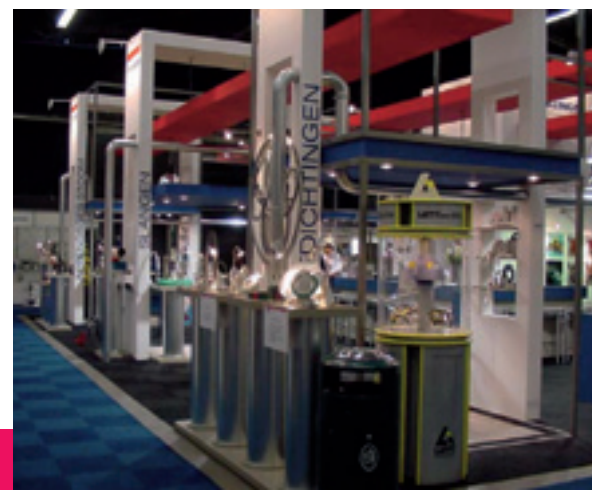
A regular event for KLINGER-PICOFF

Klinger-Picoff B.V., Netherlands

Rotterdam's Industrial Maintenance Exhibition, which takes place at the beginning of May, has become something of a tradition for KLINGER-PICOFF BV. Of the 1900 visitors who passed through the turnstiles each day, at least 650 were welcomed by our sales engineers and product specialists.

Meeting so many people in such a short time is always an ideal opportunity for KLINGER-PICOFF to show off its inno-

vative side with a strong product range that makes future investments pay - even in times of economic down-turn. ■





Business improvement award

Klinger Limited, Australia

ALCAN GOVE's 2002 Supplier Awards Brochure honours KLINGER with the following accolade:

"KLINGER has provided an excellent average rate of 93 % on time - in full delivery service throughout 2002. While achieving this, KLINGER has also been proactive in reviewing continuous improvement opportunities with ALCAN GOVE. KLINGER's commitment to continuous improvement has seen an increase in their productivity efficiency while decreasing overall cost through investment in advanced technology. This shared philosophy and direction with ALCAN has allowed for benefits to be achieved by both parties."

The brochure also contains some positive end-user feedback:

"In my dealings with KLINGER they have always succeeded in providing timely and relevant solutions to diverse challenges. Their follow-up has never failed to meet my expectations. They are a very friendly, efficient and innovative company to deal with." - Sean Carrol, SPS Maintenance Co-Ordinator.

The award was accepted by Managing Director Jon Lyons on behalf of KLINGER. ■

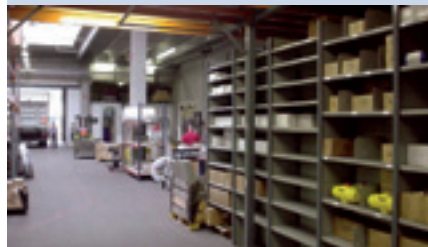


KLINGER's Queensland office under the leadership of Len Thompson was recently presented with an award by ALCAN GOVE, a large Alumina mining and refining operation in the Northern Territories, for KLINGER's commitment to its customer's Business Improvement Programme.

KLINGER-PICOFF adds space to boost efficiency

KLINGER-PICOFF has expanded its storage, repair and production facilities by an extra 2000 m². By concentrating all activities in one and the same building, the company is set to improve efficiency and communication, enabling an even more rapid response to the increasing demands of the market.

The new 8000 m² area includes soft gasket cutting, the manufacture of metal sealing, valve repair, hose assembly and storage facilities. ■



Great memories mark a 50th career anniversary

Thermoseal Inc., United States

The Klinger Group President Dr. Thomas Klinger-Lohr was the host at a special evening to mark Derek Coomber's retirement after 50 years with the Klinger Group.

Derek began his career with the KLINGER Group on 14 April 1953 as an apprentice toolmaker at Richard Klinger Ltd in Sidcup, England. Derek's responsibilities increased over the years, and in 1972 he moved with his wife and children to Windsor, Ontario, where he ran the sales organisation for the Canadian and United States markets.

After the KLINGER Group's decision to start production in the United States in 1976, Derek moved his family to Sidney,

Ohio, to begin construction on the Richard Klinger Inc. manufacturing plant, which was able to start production under his guidance in 1977.

Derek was the president of Thermoseal Inc. from its establishment in 1994 until he resigned from day-to-day operations in 2002. Since then, he has been a consultant to the KLINGER Group.

Joining Derek, his wife Joyce and Dr. Thomas Klinger-Lohr at the special appreciation dinner were some of Derek's

closest colleagues who had worked with him during his career in Sidney, Ohio. Good food, good spirits and great memories were enjoyed throughout the evening. ■



Collectively, this group has contributed over 192 years of service to Klinger in the United States - and they are still counting!



A KLINGER do Brasil development goes on show at Achema 2003 in Germany

Rich. Klinger Ind e Com Ltda, Brazil

KLINGER do Brasil develops, manufactures and markets its pneumatic actuators throughout Latin America for use in KLINGER piston valves equipped with both on/off or control functions. In the short time that KLINGER has been operating in the region, the company has managed to embrace almost all sectors - the food, chemical, petrochemical and textile industries, for example, along with equipment manufacturers and the paper and cellulose, alcohol and sugar industries, etc.

The list of customers includes many well-known international companies such as Clariant, BASF, Nestlé, Bayer, Petrobas, AGFA, Westfalia, Ziemann Liess, Unilever, and Firestone. Recently, with the aim of entering markets on all five continents through the different Group companies, KLINGER exhibited its actuated valves at the famous Achema 2003 trade-fair in Frankfurt, where the products - including functioning valves - were on show to all who passed the stand.



After Achema, KLINGER do Brasil Sales Manager Dalva Pascher took the opportunity to attend the Overseas Meeting in Austria organised by Wolfgang Steinwender, Sales Manager of KLINGER Austria. Wolfgang Steinwender is responsible for America, Asia and Australia.

In front of an audience from the United States, Syria, Korea, Indonesia, Mexico and South Africa, Mrs Dalva Pascher gave a technical presentation on Klinger actuators, and the competitive advantages of their use with the KLINGER piston valve in particular. With their perfect adaptation to KLINGER piston valves and the suitability of the valve-sealing system and actuator type to the varied needs of the market, the actuators were very well received. In this new field of automation, it is also surprising how quickly these products have penetrated the market - facilitated by the general recognition of the quality of the KLINGER products. ■



KLINGER join forces with ROBCO Inc.

Klinger Limited, Bradford/UK

ROBCO, one of Canada's largest manufacturers and distributors of fluid-sealing, high-temp and speciality products, supplies a variety of OEM, MRO and process companies in the mining, metals processing, pulp and paper, power generation, chemical and petrochemical, steel and automobile industries. Founded in 1911, ROBCO has comprehensive market coverage with locations in Halifax, Montreal, Toronto, Sarnia, Edmonton and Vancouver.

A number of major contracts for the supply of spiral wound gaskets have been secured since the collaboration between the two companies - for example with Terra Nova, White Rose Project, Hibernia Platform and Irving Oil Refinery. ■

KLINGER Limited in the UK and ROBCO Inc. of Canada are pleased to announce a joint partnership for the supply of semi-metallic gaskets to the Canadian market.



Pictured with a consignment of products ready for shipment to Canada are ROBCO personnel during a visit to KLINGER Limited (from left to right): Stephen Leadbetter (Robco), Dr Gavin Smith (Klinger), Richard Moore (Robco), Walter Corol (Robco) and Jean Gosselin (Robco). Robco's visit to the UK followed an initial visit to Canada by Klinger Limited Managing Director Alan Bates and served to cement the relationship between the two companies still further.





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