



Ten thousand KLINGER valves sold in Moscow

Klinger Fluid Control GmbH, Austria

KLINGER Fluid Control's presence in Russia began in 1995 with a trade-fair presentation that signalled the start of extremely successful business activities.

We received our first orders from Moscow's district heating sector in 1996. Since then, we have been equipping the city's entire district heating network with our valves, and by June last year we had supplied 10,000 KLINGER ball valves to Moscow.

The following figures should give an idea of the scale of our activities:

Since the start of the Russian business relationship, we have sold:

- 81 items, DN 800
- 24 items, DN 700
- 116 items, DN 600
- 155 items, DN 500
- 282 items, DN 400
- 310 items, DN 300

We have also supplied many more valves of smaller diameter.

To celebrate the sale of the 10,000th ball valve, we invited our Russian business colleagues to join us on a cruise along the Moscow Canal - and on 25 June 2002 took great pleasure in welcoming 70 high-ranking figures from politics, business and the district-heating industry to a very well-organised event.

For the same reason, we also commissioned our apprentice workshop to construct a 1:50-scale ball valve - a fully functioning model that was pre-

sented as a keepsake to Mr Lipowski, the President of Moscow's district heating company. During the event, several speakers took the opportunity to point out that the KLINGER brand has been known in Russia for 30 years - mainly thanks to the company's sight gauge products.

The party was rounded off by a terrific entertainment programme, with our guests finally taking their leave late in the night with the comment that we would hopefully soon be celebrating delivery of the 20,000th ball valve!

Further afield from Moscow, KLINGER Fluid Control also has a strong presence in St. Petersburg, where we have been supplying our products to the entire district-heating network for years. However, KLINGER valves are now being supplied to other cities, too - such as Kagalín. The need for renovation in all Russian district heating systems is huge - after all, centralised networks are the main source of heating in all cities - so in the coming years, we anticipate enormous potential in the Russian market. Even in 2002, we were able to achieve an 38 % increase in turnover.

It is also possible that, one day, an independent KLINGER company will be required in Russia. The signs of political and economic stability in Russia have never been better. ■



Major piston valve sales in India

Uni Klinger Ltd., Pune/India

Our joint venture company UNI KLINGER Limited are in the process of delivering their largest single order for piston valves.

This involves the supply of 13,740 valves of which 95 % are in the sizes 15 mm and 20 mm. The customer is Chennai Petroleum Corporation Ltd. located in Southern India. The specifying authority is Engineers India Ltd. (E.I.L), the government corporation responsible for the design of the majority of all government owned process plants in India.

Application is a major expansion of the crude refining capacity from an existing 6 million metric tonnes to 9 million metric tonnes. The piston valves will be used on steam tracing lines ranging from 3 bar to 7 bar, saturated steam. Whilst the project is in Chennai the office of E.I.L. responsible for the turnkey project is located in New Delhi so negotiation of the order was carried out by the New Delhi office of

UNI KLINGER under the leadership of Mr V.K. Sood. Asked what he believed were the key factors in winning the order, Mr Sood highlighted:

- Long history of successful piston valve use by E.I.L. in Indian refineries.
- Close liaison with design engineers resulting in a zero deviation bid.
- Requirement by E.I.L. that bidders have a successful track record for which UNI KLINGER can point to a long history in E.I.L. projects. ■



Valves ready for shipment to Chennai Refinery. In the background from left to right: Mr Donald Monro, Klinger Group, Mr V.M. Wadadekar, Production Manager, Mr F.D. Neterwalla, Director, Mr A.R. Tipnis, CEO



International oil exhibition, Abu Dhabi

Ados-Klinger Gasket Factory, Abu Dhabi



The prestigious Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), one of the largest of its kind in the Middle East, takes place every two years in Abu Dhabi, United Arab Emirates, and attracts many of the leading companies from the oil and gas sector.

The 2002 event was held between 10 and 16 October and provided an excellent opportunity for KLINGER and its partner Abu Dhabi Oilfield Services Est (ADOS) to publicise its products and services, and add to the success already achieved in this market. ■

Pictured from left to right are: Mr Prashant Nair, Sales Manager MEOS (a member of ADOS); Mr Jamal Alsamarra'i, Operations Manager ADOS-KLINGER Gasket Factory; and Mr Alan Bates, Managing Director KLINGER Limited.



India moves into non-asbestos

Uni Klinger Ltd., Pune/India

After very successful production trials in December, UNI KLINGER India are ready to make a serious move into the non-asbestos sheeting market.

As we have seen elsewhere, the move to non-asbestos in India is being spearheaded by the automotive industry in response to a need for consistency in engine design across the many countries where engines may be used.

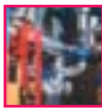
That is why UNI KLINGER will have a strong line-up of KLINGER's specially developed, non-asbestos automotive products. Industrial grades for steam, oil and chemical applications will also be available. ■

Connect with Quality

First sheet of non-asbestos in India.



3



Dansk Olie Genbrug orders filters and level gauges from Klinger Denmark

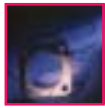
There are two factors behind the upgrade and expansion of Dansk Olie Genbrug's production facility: firstly, the company's vision of becoming the undisputed world leader when it comes to developing and constructing facilities for the regeneration of waste oil; and secondly, the EU directive which requires member countries to recycle waste oil instead of burning it.

www.oliegenbrug.dk

After the upgrade, the Dansk Olie Genbrug A/S facility, which handles 70 % of all waste oil in Denmark, will be able to process a total of 35,000 tons per year. The primary end product is a base oil of such high quality that it can be sold back to the oil industry for use in new lubricating oils.

KLINGER Danmark as has supplied 18 Plenty filters of the Simplex type for the new facility, as well as 14 KLINGER transparent level gauges. One of the reasons for selecting the Plenty filter is its ability to be serviced and cleaned without the use of any tools. The KLINGER transparent level gauge, on the other hand, was specified on the basis of previous positive experience with this level gauge. Dansk Olie Genbrug has also decided to use KLINGER graphite PSM-B and TopChem 2003 as their future standard gaskets. Furthermore, Dansk Olie Genbrug A/S is testing KLINGER KVN piston vales for shut-off purpose. A positive test will result in a standardisation to KLINGER Piston valves instead of gate valves. In view of Dansk Olie Genbrug's processing success and the demand for the regeneration of waste oil, a decision has been taken to construct similar facilities in other countries. ■





TopChem re-defines properties of PTFE gaskets

As experience shows, in the application of PTFE-based sheet materials - polytetrafluorethylene (PTFE) gaskets - there are benefits and drawbacks:

- High resistance to chemicals is offset by a limited useful temperature range;
- High adaptability to the sealing surfaces comes at the cost of a high hot compression value.

For some years, a new manufacturing method at KLINGER has enabled the production of highly filled PTFE sheet materials with a hot compression value that achieves the levels of earlier IT gaskets.

A comparison, for example, of the measurement results from DIN 52913 testing (the standard test for residual stress in the era of asbestos-based gasket materials) gives a residual stress of approx. 35 MPa (or N/mm²) under test conditions of 50 MPa initial gasket pressure and 300 °C. The results for KLINGERIT, an IT 400 material, lie in the region of 35 MPa.

Naturally, the residual stress - in other words, the stability of the material in relation to the pressing forces in the flange - is not the only redeeming factor. Until now, however, it is this property that has prevented flat gaskets of PTFE and PTFE filler combinations from being used safely at higher forces and/or temperatures. In addition to residual stress, for example the peripheral stability of a flat gasket is also important: here, it becomes clear whether a material can also be die-cut and used for small ring widths.

In practice, however, it is the sum of the properties that result from the new products that is of interest:

- Universal chemical resistance
- Maximum residual stress (gasket pressure)
- Zero brittleness
- Excellent working properties
- Stability with narrow-width gaskets
- No impurities
- Fire-Safe certified
- Compliant to German Clean Air Act



New application options arise from the combination of these properties that have so far not been possible with PTFE-based gaskets.

Example 1

For our first example, let us take a combination of

- universal chemical resistance
- plus maximum residual stress
- plus zero brittleness

The combination of these properties results in excellent suitability for use in steam applications up to 265 °C.

Steam is effectively alkaline in the majority of technical applications, and therefore universal chemical resistance is thus an important factor. The property of maximum residual stress makes for a low

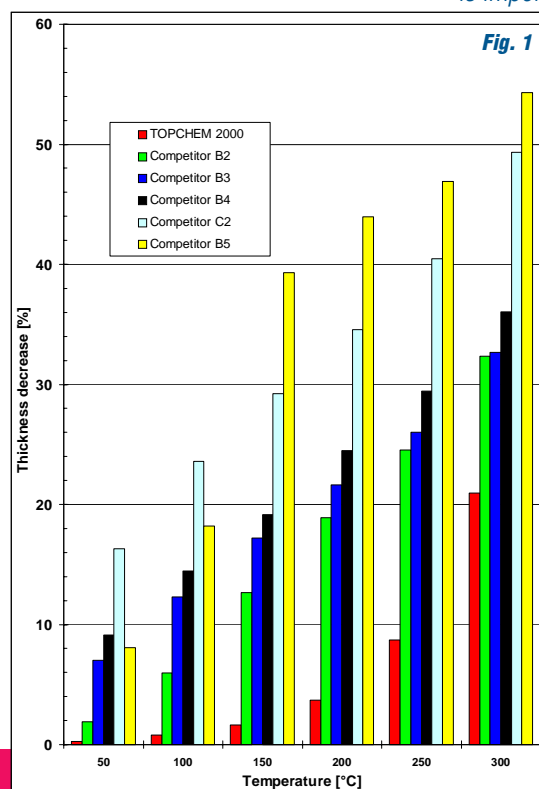
thickness decrease through flange pressure, and thus only slight loss of bolt tension. The behaviour of previously available products in this respect can be seen in the diagram (Fig. 1).

The high thickness decrease of 25 - 46 % at 250 °C and 2 mm may seem a lot - 25 % means 0.5 mm absolute (hardly compensated by a tightened bolt) - but if we consider that under pressure PTFE will flow further, it is especially unpleasant. In comparison, the new highly filled PTFE material only suffers about an 8 % thickness decrease - so the required stability is now available, and retightening is no longer necessary!

A low tendency to become brittle is important when movement in the piping system is expected - often the case with steam piping. A good comparison of the brittleness of gasket materials can be made by conducting a 3-point bending test (Fig. 2).

A strip of the material is artificially aged (temperature/medium) and then subjected to load deflection measurements in a tensile tester. The required force for a specific deflection is recorded.

Typical shapes of measurement curves for brittle and non-brittle gasket materials are shown in the diagram (Fig. 3).





Klinger GmbH, Idstein/Germany

The green curve, on the other hand, shows a balanced shape for force versus deflection. The gasket material has not fractured.

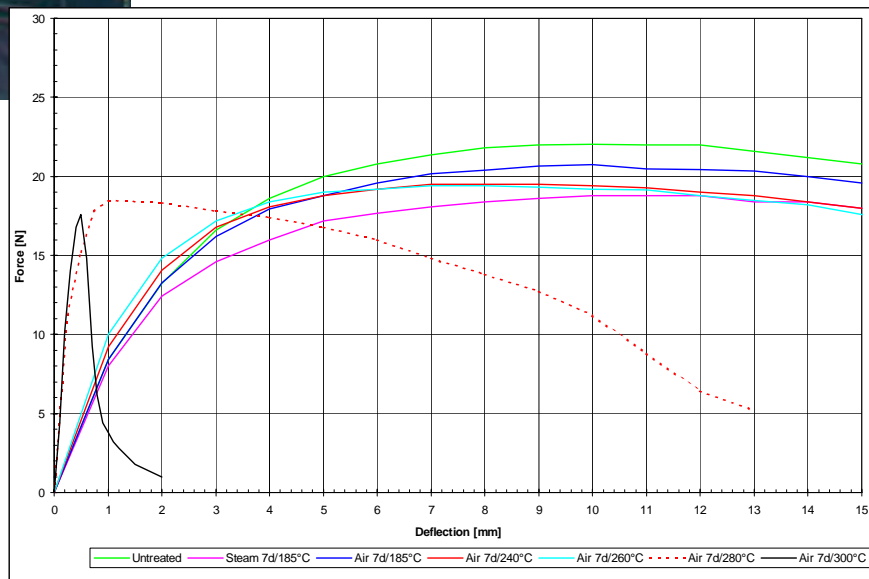
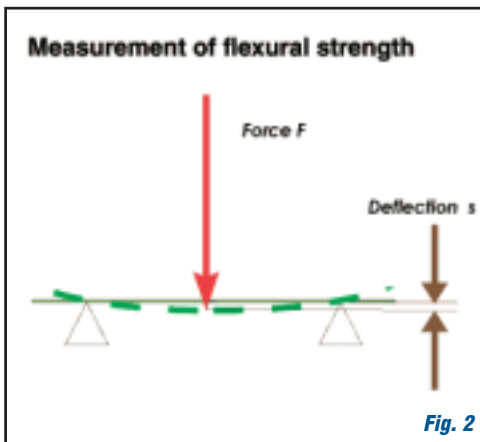
The next diagram (Fig. 4) shows the curves for the different ageing conditions. No changes in the shape of the curve can be

Example 2

A combination of the material properties:

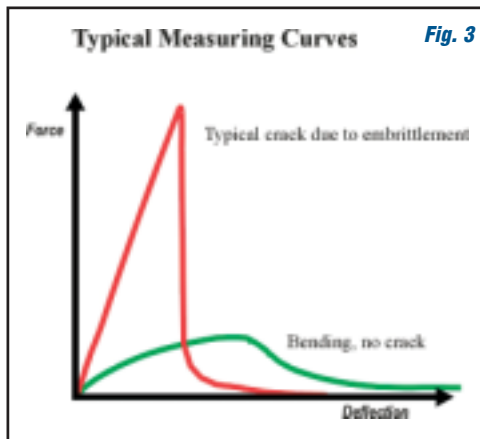
- universal chemical resistance
- plus stability with narrow-width gaskets

results in excellent suitability as a plug seal in pumps and other units used in the chemicals industry.



detected up to 260 °C - and therefore no brittleness. In practice, the result here is: excellent suitability for alternating loads - even with steam.

Let us look at an application in the area of chemical pumps (Fig. 5):



The red curve shows typical behaviour for a brittle gasket. Relatively high force is required to achieve deflection. When it comes, the brittle fracture will be sudden, and the curve will return to zero force.





Fig. 6

Vent and drain plugs are mostly equipped with narrow-width gaskets. Because, however, the gasket materials should be used universally throughout the chemicals sector - as a rule, a different type of gasket for every pump is not feasible - PTFE is the correct basis (Fig. 6). With such gaskets, peripheral stability and behaviour during the turning and pressing phase is extremely important: on the one hand, the sealing surfaces are subject to relative rotation, and there are not only pressure forces but also tensile and shear forces; on the other hand, the spring constant of the metal component (plugs, housings) is not comparable with a standard flanged joint. Elongation of the plug will not occur, and also the plug counterpart will not act as an elastic, self-seating design component. As a result, a stable-edged, shear resistant and, if necessary, even a low-friction gasket will be required that also exhibits universal chemical resistance. Until now, a satisfactory solution has not been available. Graphite gaskets are certainly entirely adequate as far as chemical resistance is concerned, but they have an almost complete absence of peripheral stability, and the gasket is very fragile.

Asbestos-free, compressed fibre gaskets still have really good peripheral stability, but susceptibility to shearing and chemical resistance leads to problems. Last

but not least, let us look at the PTFE flat gasket materials used to date: due to the flow characteristics, the plugs have become increasingly loose, and have subsequently started to leak. That can incur unacceptable associated costs, as reported to us by users. As we can see, with the new highly filled PTFE material, this critical applica-



Fig. 7

tion can be mastered, even with a thickness/width ratio of approx. 1:1 (Fig. 7). One chemical pump manufacturer has conducted extensive tests with threaded joint gaskets and can confirm our own results.

The next two examples should briefly demonstrate additional potential of the gasket materials' properties:

Example 3

In equipment for extracting nickel from nickel ore, the process parameters of 98 % sulphuric acid, 69 bar pressure and continuous temperatures of 260 °C peaking at 270 °C do not lie in a particularly pleasant area. All flanges and connection pieces are made of titanium. Even the inner ring in the case of spiral wound gas-

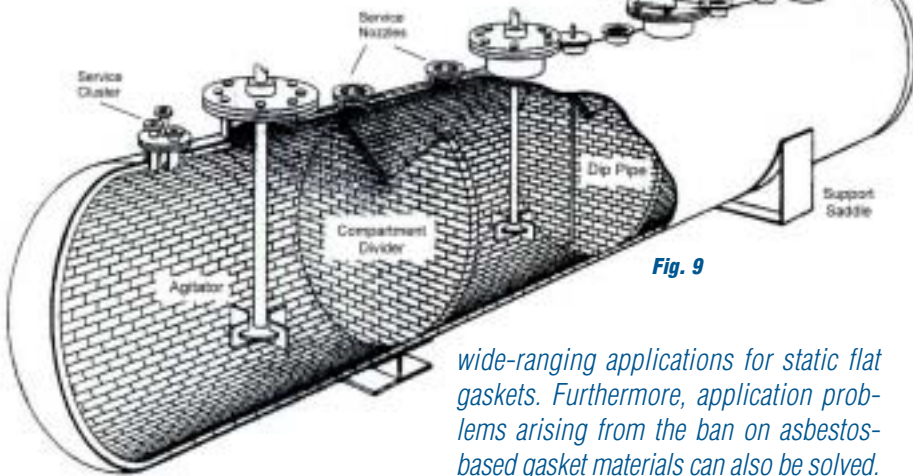


Fig. 9

kets had to be manufactured from this expensive material. Now, the new PTFE gasket material can be used for the inner ring, enabling the use of a cheaper option.

Example 4

In the refinery and petrochemicals sectors, British Standard 6755 or the equivalent API Spec. 6FA is required for certification; the so-called "Fire Safe" test. This test is designed to show that the components remain fully functional - in the case of gaskets, that means leak-free - for a specified period during a fire. Previously, this could not be demonstrated in the case of PTFE-based flat gaskets. With the "new quality", the use of PTFE in "Fire Safe" flat gaskets can now be depicted (Fig. 8).



Fig. 8

Conclusion

The new options offered by highly filled PTFE sheet lead to new and

wide-ranging applications for static flat gaskets. Furthermore, application problems arising from the ban on asbestos-based gasket materials can also be solved.



TopChem 2000 - saving work and cutting costs

Robco Inc., Quebec/Canada

The Abitibi Consolidated at Grand-Mere is one of the world's largest producers of newsprint and paper. The company uses 90psi digesters (large vessels under pressure) to cook wood chips for a period of 100 minutes using steam and very hard chemical products.

Previously, for all applications, the mill installed the 1/8" Garlock blue gylon on all the chemical or steam pipes coming in or out of the vessels. However, there was a problem: after a while, the bolts would loosen up. Every time, Abitibi was forced to shut down and depressurise the vessels so that all the gaskets could be re-torqued before restarting. The result was higher maintenance costs. The company was also forced to implement a maintenance schedule, sending out a team of millrights every 6 - 8 weeks to re-torque all the gaskets.



After seeing the advantage of the TopChem 2000 over the Gylon, Abitibi decided to give our products a try. First, the size was changed - from 1/8" to 1/16". Then, on a single shutdown, all gaskets were replaced and then torqued to the settings stipulated by KLINGER. A few days after fitting the gaskets, Abitibi sent in a team to double check the torque settings. All torques were the same as the initial installation. Two months later, and not one gasket had to be re-torqued. The company has since depressurised the vessels twice and - to their big surprise - they have not have to re-torque a single gasket! This has never happened before. Everyone at the mill is very impressed with the results. ■



1000th Domino in Finland

inkjet printer sold

Meckelborg Oy, Masala/Finland

MECKELBORG Oy has a good reason to celebrate. The company has reached a milestone: 1000 Domino inkjet printers sold in Finland.

and the twentieth Domino inkjet overall.

Plant Manager Hans Ingman is well satisfied not only with the functionality of Domino inkjets, but also the level of co-operation that exists between the two companies.

MECKELBORG Oy, the market leader in Finland, has been representing Domino, the world's leading inkjet producer, since 1984.

Based in Cambridge, UK, Domino was founded in 1978 and employs 1500 world-wide. ■



On 7 May 2002, the 1000th Domino A100 Continuous Inkjet Printer was delivered to Ingman Foods Oy, one of the biggest dairies in Finland. Ingman Foods Oy is using inkjet printers for "best before" and batch marking on icecream, butter and yoghurt cups. Collaboration between Ingman Foods Oy and MECKELBORG Oy goes back a long time, and this was the fifth A-series printer to be used in Ingman plants

Commitment Excellence



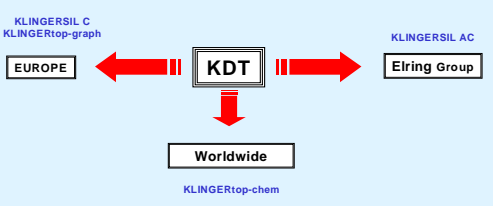
A new distribution concept for gasket sheet in Europe

Rich. Klinger Dichtungstechnik GmbH & Co. KG, Austria

The system in use up to the end of 2002 has been modified. From 2003 onwards, sales responsibilities will be re-assigned (Fig. 1).

Since the start of 2003, Rich. KLINGER Dichtungstechnik GmbH & Co. KG (KDT) in Gumpoldskirchen has been operating a new distribution system.

The aim of the changes is to provide even closer customer support so that you can achieve an even better market position for the gasket sheet manufactured by KDT (KLINGERSIL, KLINGERtop-chem and KLINGERtop-graph), and thus increase market share. ■



To take full account of the new duties, the organisation of KTD has been extended to create a new sales department. The structure of this sales department shows that, in addition to order processing, emphasis has been placed on the areas of Product Management (technical training, presentations, support of the Technical Product Manager) and Marketing (presentations, sales documentation, etc.).



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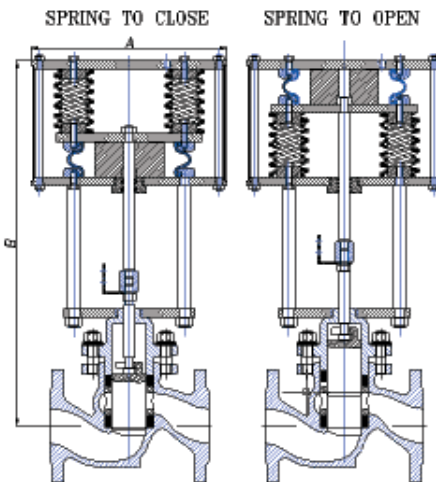
KLINGER excels at Campinas workshop

Rich. Klinger Ind e Com Ltda., São Paulo/Brazil

KLINGER do Brazil played a key role in the «Emerging Technologies in Industrial Automation» workshop organised by the Cia Brasileira de Tecnologia e Automação (Brazilian Technology and Automation Co. or CBTA).

- Richard KLINGER, among others - were invited to show their latest innovations, and their product display was linked to discussions that provided detailed information, and thus a better understanding of the technologies involved.

The event was held in the city of Campinas, in the auditorium of the Faculty of Mechanical Engineering at the University of Campinas (UNICAMP), one of the most famous engineering schools in Brazil. It was attended by professionals in the field of industrial automation, and by representatives of companies from various industrial sectors - Petrobras, BASF, Nestlé, Rhodia, Com Products, to name a few. Many of these professionals travelled long distances to participate in the workshop, which was aimed at introducing industrial investment administrators to new technologies and presenting state-of-the art developments in automation. A few companies



Overall, the event was a complete success. KLINGER surprised everyone with its specially developed concept for piston valve actuators with a minimum of 5 million cycles and reversible error positioning. The concept will maintain KLINGER's great performance: the lowest leakage rate and the best sealability met in the market, plus a very high level of precision in the control of processes.

The design of these automated piston valves was rated highly by the participants, some of whom are already users of KLINGER valves. So we have great expectations for 2003. ■

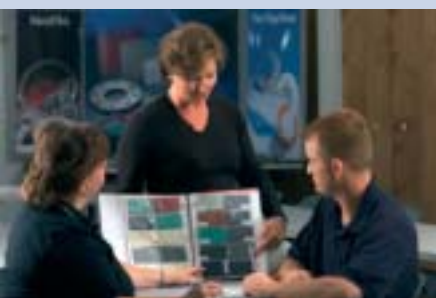
Thermoseal Inc., USA achieves certification to ISO 9001:2000

THERMOSEAL Inc. has successfully passed the certification audit to upgrade their quality system from ISO 9002:1994 to ISO 9001:2000.

While the 1994 standard was based on control of documents, processes, records, etc. the new series of ISO 9000 standards focuses on customer satisfaction and continuous improvement. In other words, we are placing greater emphasis on customer needs and the monitoring of information on customer satisfaction. The new standard is a business system. It looks at the way an organisation conducts its overall business, bearing in mind that it takes the entire company to make the system work. With our current registration, we have also decided to include design and development in order to convey to the market that we are a design capable organisation.

A lot of work and planning has gone into upgrading our system. One of our biggest challenges was to make the transition from a production-oriented system by identifying the key factors in all of our processes in order to become a more successful business. A positive aspect of the new ISO 9000:2000 standard is its increased flexibility over the 1994 standard. We, as a company decide which processes to have in place in order to achieve our objectives.

Our quality management team did a great job preparing us for the new standard, and we are pleased to have achieved this certification. ■



A ship that's a long way from the sea

Uni Klinger Ltd., Pune/India

What is a replica of a modern cargo vessel doing in a decorative lake at Pune, 140 kilometres inland from the port of Mumbai?

The replica is part of the prestigious Tolarni Maritime Institute, which trains merchant marine officers to sail under the Indian flag. We first came into contact with the Institute eight months ago, when they had a serious problem with the boiler that they use to train engineers. Under operating conditions of 500 °C and 45 bar, the gasket on a steam-operated actuator was failing every two weeks, causing a substantial loss of steam. For the Chief of Engineering Instruction, what could be more embarrassing than a leak on his own boiler that he could not fix? By chance, Mr Bhatia, the Chief Engineer, mentioned the problem to some engineers at P.C.V.L (a very good UNI KLINGER customer), who advised him to contact us.

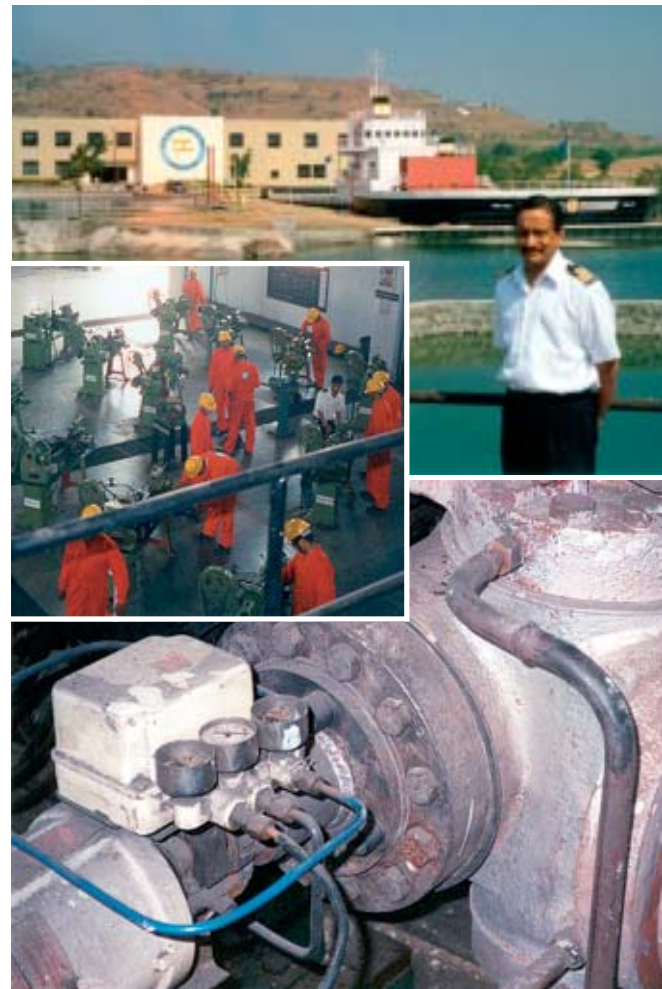
The very next morning, Mr Bhatia arrived at the sheeting plant, seeking to buy a sheet for cash. Mr Kagalkar of UNI KLINGER looked at the details of the problem and - free of charge - provided a half sheet of K 1000 for trials. Eight months later, the gasket is still in service and shows no sign of failure.

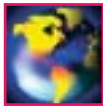
On Thursday, 5 December 2002, Mr Tipnis and Mr Kagalkar of UNI KLINGER and Mr Donald Monro of KLINGER Group met with Tolarni Maritime Institute's Principal Mr B.K. Saxena, Chief Executive Mr Paxnan Kapoor and current Chief Engineer Mr S. Pattabhiraman. Arrangements were discussed and agreed in principle for UNI KLINGER to pay regular visits and provide formal training on gasket technology, valves and level gauges to the cadets. It was also agreed that UNI KLINGER will supply level gauges, steam traps and piston valves so that instructional staff can give cadets first-hand experience in stripping down and assembling these products.

So what's the story about the

ship? This scaled-down vessel is used for mock fire drills and other ship-related simulation activities, and thus plays a vital role at the Tolarni Maritime Institute. Within the workshop area, there is also a ship's engineering control room that is complete in every detail. Here, cadets stand watch 24 hours a day, simulating real life on board a vessel.

The Institute moved to the new residential campus two years ago. The campus provides facilities for 460 cadets, both male and female, plus a further 60 final-year students who are destined for a six-month secondment to vessels at sea. ■





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