

Therminus

The LAUDA info magazine

Issue 2/2005



Gas hydrates – when natural gas solidifies

- Correct care of your thermostat
- Working with LAUDA is fun
- Over 40 years' service: LAUDA thermostats in the Dr Flad Institute

LAUDA People



Dr.-Ing. Heinrich Paul certified engineer, has been appointed technical managing director. He had held the position of technical manager

since January 2004. His area of competence covers the fields of operations, development and design.



Anne-Cathérine Busch has been at LAUDA since May 2005. The industrial clerk employs her expertise in the LAUDA service centre.



Stephan Brust has been a member of the LAUDA team since April this year. The certified engineer for electrical engineering works in the heating and cooling systems department.

NEWS

The LAUDA PVS viscosimeter works with the LAUDA Proline. More details in the new brochure.



Thermostats /circulation chillers – the new brochures are out.

The brochure LAUDA interfacial instrumentation is adapted – now with LAUDA TD 1 C and MPT C.

To order, simply use the coupon on the back of the magazine.





Dear friends of LAUDA ...

2005 is coming to a close ... and a lot has been going on at LAUDA.

Internationalisation remains an important aspect. LAUDA participated in more trade fairs abroad than ever before, including its premiere at the Pittcon and the ACS Show in the USA as well as at the Chemie 2005 in Moscow. We are mighty proud of our first branch abroad – in France – which will continue to consolidate our strong position on the French market.

When it comes to our products, we have extended and rounded off the range of thermostats and circulation chillers. The two new WK 300 and WKL 1000 circulation chillers were successfully launched at the beginning of the year. Three new UWT model circulation heat exchangers have been launched. They are already included in the new price list, as are the new Class A thermostats. This extension is worth a special mention, since it is the first time that the three various cooling thermostats are available with an Class A control head. The family of

measuring instruments has gained new members upon the introduction of the TD 1 C and MPT C tensiometers.

The year 2006 is set to become a very important year in the LAUDA company's history. Firstly, the industry's most important trade fairs will be held in this year, such as the Forum Labo in Paris, the Analytica in Munich and, of course the ACHEMA in Frankfurt am Main. Naturally, none of the above would be complete without the attendance of LAUDA.

Secondly, a very special anniversary will be celebrated next year: 50 years of LAUDA. Wait and be astounded by the innovations to appear this year, and look forward to great campaigns on the occasion of the company's anniversary.

We at LAUDA hope you enjoy reading this issue of "Therminus" and wish you a great start to the New Year.

Rainer Hartmann
Sales manager

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Therminus, Issue 2/2005

New ad-motives

The new ad-motives for our Measuring instrumentation are placed in special technical magazines at home and abroad.

The right temperature worldwide **LAUDA**


Problem. 


Solution. 

Complete control of plastics' quality: viscometry systems by LAUDA.
LAUDA has a range of modular, fully-automatic viscometry systems to ensure that your plastics remain in top form. These systems reliably calculate the viscosity coefficient, the IV- and the LV-value of dissolved polymers – from granules, semi-finished products or end products. In the form of the new DVS 1 viscometer, even the smallest samples can be determined even faster and more precisely! Problem solved!

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The right temperature worldwide **LAUDA**

Theory. 

Practice. 

The efficient, precise measuring of surface and interfacial tension: tensiometers by LAUDA.
For surfactant research and control laboratory applications alike, LAUDA measuring technology reliably supplies the static and dynamic surface and interfacial tensions of complex, viscous liquids – right down to the millisecond range. At the touch of a button. Naturally, this has a scientifically well-founded basis. Since, for us, theory and practice go together.

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Anything but a closed book

From 2006, manufacturers will be obliged to take back old electrical appliances free of charge for the customer. These legal provisions also apply to LAUDA products. The German implementation of the European-wide regulation is known as the "Electrical and Electronic Equipment Act" or, in short, the "ElektroG". The ElektroG fully implements the two EU specifications (2002/96/EC): the WEEE (Waste Electric and Electronic Equipment) regulates recycling, whereas the RoHS (Restriction of Hazardous Substances) ensures the largely harmless production of the equipment.

Environment protection

The objective is the environmental-friendly construction of electrical and electronic equipment as well as the best-possible recycling of old electrical appliances. The manufac-

turer is responsible for the costs incurred by the collection and recycling of old appliances from private customers. The manufacturer is also responsible for complying with recycling quotas. The manufacturer is obliged to take back and recycle appliances from commercial customers: however, he is entitled to pass on the costs to the customer.

LAUDA labelling

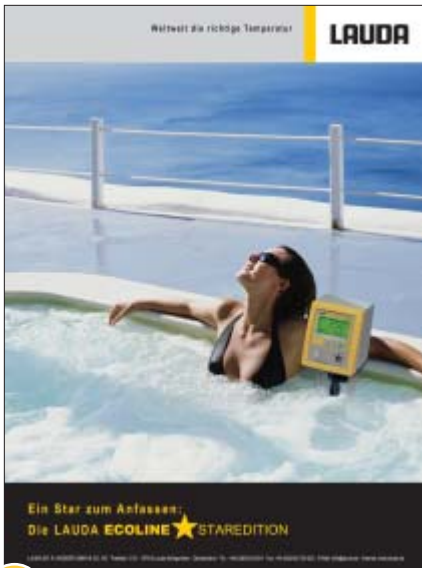
Since 14 August 2005, LAUDA has been labelling all its thermostats, circulation chillers and measuring devices with the legally-specified symbol: a crossed-out rubbish bin. Appliances and devices purchased before this date are not affected by the law. LAUDA is currently drawing up a Europe-wide system for the disposal of old appliances delivered after 13 August 2005. Customers will receive notification of this system in due time.

Changes to our General Terms and Conditions, as of 14 August 2005:

Our prices continue to comprise exclusively the costs for the return and recycling/disposal of old appliances of other, private users. At the customer's

request, we can arrange the return and recycling/disposal of these appliances upon assumption of costs". For further information, please visit: www.lauda.de/agh.

Fun with LAUDA



A Ecoline Staredition „Pool“

We want to brighten up your working day a bit with our three new fun poster motifs. The poster motifs



B Proline „Hammock“

capture the advantage of our devices at the blink of an eye. The first 15 senders can select their favourites



C Proline „Surfer“

and request them free of charge by using the coupon or by sending us an E-mail.

Reflecting readers' interests

We launched our customer magazine "Therminus" in 2002. The information magazine is 16 pages long and has a circulation of 16.000 copies. The editorial concept and layout give the magazine a high recognition value: the magazine enjoys great popularity amongst customers and users. Therminus

reports on new products: these reports are particularly well received by the readers. According to a recent survey, over 40 % said this was the case. Readers awarded grade 2.3 (highest possible grade: 4) to the importance and attractiveness of the topics covered. A high grade was also awarded for infor-

mation about the company (3.2): the same grade was awarded for articles about general topics. Design and layout were awarded a grade of 3.3. These results encourage the LAUDA team to keep you, esteemed reader, even better informed about events at LAUDA in future.

The Class A grows up

Until now, the LAUDA Class A thermostats have been available as immersion, heating and bath thermostats with transparent bath. Now, the scope of this family of devices has been dramatically extended. In the form of the A 111 bath thermostat, a stainless steel bath with a bath volume of 12 liter is now available. The RA 104, RA 106 and RA 120 cooling thermostats are a significant addition to the range. For the very first time, the Class A is now available with active cooling. Temperatures down to $-30\text{ }^{\circ}\text{C}$ and cooling capacities of up to 350 Watt

at $20\text{ }^{\circ}\text{C}$ enable their use for working at below ambient temperature without the need for additional coolers.



Bath thermostat A 111



Cooling thermostat A 120

Special transportation for special products



LAUDA delivers the largest chilling appliance in the company's history.

The LAUDA credo is: excellent products, professional service and absolute reliability. One highlight in the company's history dates from June this year when a particularly "hefty" piece of equipment went on the road. The heaviest LAUDA thermostating appliance to date – a Kryopac KP 400 HKCT-Ex – weighing 9.4 tons needed a special crane to hoist it onto a HGV. Its dimensions – 4.2 m wide, 2.3 m deep and 4.85 m high – break all previous records. The system has

already been installed in its final resting place in England, where it is being used for the production of ultra-pure substances manufactured at extremely high and extremely low temperatures. The temperature range for the production process lies between -100 and $200\text{ }^{\circ}\text{C}$. Hot steam generated as waste heat by the customer is used as the heating medium. The patented LAUDA Kryopac method uses liquid nitrogen (LN₂) as cooling medium.

When natural gas solidifies

Under certain boundary conditions (such as high pressure and low temperatures), water and some gases form a solid compound: a gas hydrate. Water molecules form caged structures in which gas molecules are enclosed. They are therefore also known as inclusion compounds or clathrates (from the Latin *clatratus* = cage). Generally, during their formation, gas hydrates can simultaneously integrate various gas molecules like methane, hydrogen sulphide, carbon dioxide and, less frequently, higher hydrocarbons into separate cages. Gas hydrates are only stable at high pressures and relatively low temperatures.

Blocked pipelines

Back in 1810, the British natural scientist Sir Humphrey Davy succeeded in producing an ice-like substance (chlorine hydrate). However, for more than a century, gas hydrates were considered more or less as chemical oddities. During the 1930s, they became familiar to the oil and gas industry when it turned out that the unintentional formation of gas hydrates was responsible for transport problems in pipelines. At lower temperatures (even at temperatures above 0 °C), solid gas hydrates were formed from the pressurised gas (mainly methane), which then blocked the pipeline system. This problem forms the core of numerous research projects for the systematic investigation of the conditions surrounding the formation of hydrates.



Connections of the LAUDA Proline RP 890 C to the reactor system.

Thermostats & Circulation chillers

Heating and Cooling systems

Measuring instrumentation



Integration of the LAUDA Command console to the system control.

The research into hydrates was given a new dimension upon the discovery of natural gas hydrate deposits in the Siberian permafrost ground in the mid-1960s and in the seabed in the Black Sea and off the coast of Central America during the 1980s. Essential issues of this are their possible use as a future source of energy and the interplay of methane hydrates with the climate.

Always in touch: LAUDA Proline

The main focus of a series of research work carried out at the Institute for Technical Thermodynamics and Refrigeration Technology at the University of Karlsruhe (TH) is on the examination of the process of the formation of gas hydrates. The difficulty lies in the search for suitable inhibitors for the prevention of the formation of hydrates under certain conditions. As a rule, these conditions are high pressures up to 250 bar and low outside temperatures beneath -40°C .

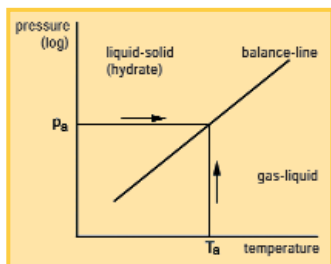
The work currently being carried out by certified engineer Christoph Windmeier aims at examining the influences of additives on the kinetics of the formation of gas hydrates. A high-pressure, stainless steel reactor with double casing is used for the production of gas hydrates. The temperature control of the reactor in the range down to -30°C is carried out using a LAUDA Proline RP 890 C cooling thermostat. Due to the high refrigeration capacity of the SmartCool system, not only the reactor but also connected components are reliably cooled. The powerful VarioFlex pressure and suction pump ensures even temperature distribution and enables the system to be operated in a half-open state. Moreover, the connections can be laterally lead out of the thermostat, thus simplifying the installation.

Reliable operation

It is crucial that the necessary final temperature for phase equilibrium is quickly reached and then maintained with a high degree of stability, even when crystallisation heat is suddenly released in the reactor. Due to the high capacity reserves (830 W refrigeration capacity at -30°C), the

LAUDA Proline RP 890 C easily masters this task. LabView via the RS 232-interface controls the entire system: the LAUDA Proline RP 890 C can easily be integrated with the suitable, free driver from www.lauda.de. The Proline thermostats' Command console is used for the direct monitoring of the temperature variation. The removable operating part has been integrated into the system control: this hasn't been realised in any other range of thermostats available on the market. The large LCD display shows the reference temperature and the internal/external temperature and other important information such as the liquid level and pump stage.

Only the combination of high refrigeration capacity, powerful pump and a flexible interface concept coupled with simple operation enables the optimum adaptation of the LAUDA Proline RP 890 C cooling thermostats to the reactor system. The precise reaching of the required temperature in a correspondingly short time is the precondition for the examinations on the kinetics of gas hydrates.



Schematic equilibrium chart on the formation of gas hydrates.

Further information about LAUDA Proline:

- www.lauda.de
- Fax reply coupon

Thermostats & Circulation chillers

Heating and Cooling systems

Measuring instrumentation

LABORATORY dictionary

S

Interface, digital

is used to transfer data between connected units digitally via data cable. The set and actual temperature values are the main items transferred. The RS 232-interface is of serial type and allows a point-to-point connection. This means that at a time only two participants such as the thermostat and the PC can communicate with each other via the interface. The RS 485-interface is an addressable interface to which up to 32 participants can be connected. Each participant of the bus system has its own address.

The theory and practice of communicating

Wolfgang Flad, head of the Institute Dr. Flad – vocational college for chemistry, pharmacy and the environment in Stuttgart, is our interviewee.

Therminus: Congratulations! You are the winner of the picture competition from the last issue, Therminus 1/2005 (we were looking for the LAUDA device which has been in service the longest): you work with a 40-year-old LAUDA thermostat. How important is this device in your institute?

Wolfgang Flad: Clearly, on the one hand it is a nice little reminder of the past when we participated in "Jugend forscht" (a German youth sciences competition) and other competitions in which LAUDA



The U3 and NB thermostats, which have clocked up a grand old age of over 40 years, performed admirably even then, with their heating capacity of up to 2.000 watt.



Our interviewee Wolfgang Flad, head of the institute.

helped us. On the other hand, it is proof of how carefully we treat our equipment. The devices are still fully functional. Getting rid of them simply because they are old is not in line with our way of thinking. Naturally, we also have new LAUDA thermostats that are working. We already own a cross-section of models and series.

Therminus: How do thermostats change labs?

Wolfgang Flad: Thermostats greatly simplify day-to-day activities in the lab. They are indispensable at a multitude of stages. I need a thermostat if I want ease and comfort when taking many of the measurements.

Therminus: How do you combine theory with practice in your educational establishment? How do you use LAUDA products for the practical communication of knowledge?

Wolfgang Flad: We are active exclusively in the field of training. Theory and practice form one unit here. Of course, we also use LAUDA products for communicating knowledge. We discuss the nature of the problem with our students before they are turned into practice and the operation of the devices is practiced. We also use LAUDA thermostats for various experiments. Furthermore, we engage in a continuous exchange with colleagues from colleges of higher education, universities, industry and the German Chemical Society. This means that we are always kept up-to-date with developments in research and practice. The resulting network is prudently used for the good of the students. All of these activities and cooperation as a whole have one single objective: to enrich and supplement the lessons and, hence, to improve the career chances of our graduates.

knowledge



The Dr. Flad Institute offers more than just dull theory.

Therminus: Your institute really strives for contacts with industry. What form does the cooperation with LAUDA take on?

Wolfgang Flad: We have maintained contacts with LAUDA for many years now. We are always delighted to welcome LAUDA experts here, for example on training events or in their capacity as guest lecturers. Our institute has been training young people to become chemical-technical assistants since 1951. Later, we added training as environment-technical and pharmaceutical assistants to our programme. We have more than 30 teachers teaching over 340 students.

Therminus: How do you evaluate the services of the LAUDA DR. R. WOBSE GMBH?

Wolfgang Flad: Quite simply: the products are competitive. Otherwise, it would be nearly impossible for these medium-sized companies to hold their ground on the ruthlessly-managed international markets. We work mainly using LAUDA thermostats and are delighted, above all, with their quality and reliability.

Therminus: Let's take a look into the future, if we may. Where is this trend with thermostats leading to?

Wolfgang Flad: There are things which are simply good. If they don't get worse, then everything is fine. We are extremely happy with their durability and robustness.

Therminus: Your institute has already trained thousands of "Fladians". Which of your former students have made a particularly good career for themselves? Please give us some examples.

Wolfgang Flad: There are currently "Fladians" working in around 40 countries. Students from over 52 countries have the roots of their professional lives firmly rooted in the Dr. Flad Institute. Our

former graduates include over 600 "Fladians" with a doctorate, 19 of which are Professors of Chemistry. They are spread out throughout the world, from Tübingen to Thessalonica, right down to Auckland in New Zealand. Moreover, 40 former students now have their own businesses in the form of a chemical factory or laboratory. We are very happy with the "what became of him" results. Once a Fladian, always a Fladian! If you are travelling to the USA, for example, you can search for "former Fladians" in the database, contact this person and be picked up at the airport. Contacts like these are more or less priceless. To be a Fladian is a sign of quality: and will remain so!

Therminus: Thanks very much for the interview, Mr. Flad.

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The joys of thermostating

Thermostats & Circulation chillers

Heating- and Cooling systems

Measuring instrumentation

Thermostats are easy to operate. As with all electrical appliances, certain rules and regulations must be observed to ensure smooth operation:

Installation

A thermostat is to be placed on a flat surface. The air vents on the back of the control head are to be kept clear. The air vents on the front or the side wall of cooling thermostats must have a minimum clearing distance of 40 cm. The ambient temperature is also important, since any increase in temperature decreases the cooling capacity of the cooling thermostat.

Bath mediums and baths

The respective operating conditions must be taken into consideration when selecting the bath liquid: for example, water may not be used at temperatures in excess of 90 °C. A mixture of water and glycol may not be used at temperatures lower than

-30 °C. The specified operating temperature range must also be observed for organic bath liquids. The bath temperature may only lie within the permitted operating temperature range of both the thermostat and the bath vessel. Transparent baths made from polycarbonate, for example, may only be used for temperatures up to 100 °C – if used at higher temperatures, they run the risk of melting or catching fire. Stainless steel vessels are suitable for these temperatures.

Cleaning and maintenance

Baths, heating coils and pumps are to be cleaned before the bath medium is changed. Detoxification is to be carried out in the event of dangerous substances on or in thermostats. The heat exchanger (condenser) of the chilling devices is also to be cleaned at regular intervals. The thermostats of the LAUDA Proline range have a SelfCheck assistant which indicates on the display extreme dirtiness of the condenser.

Further information:

- ➔ www.lauda.de
- ➔ Operating instructions



*Photos (from top to bottom):
Extremely dirty condenser,
Slightly dirty condenser,
Proline service message, cleaned condenser.*

Controlling thermostats via the PC

You want to control thermostats simply and efficiently via the PC? Then the Wintherm Plus software is an absolute must! Try the free demo version to test out the program. The package can be used 30 times: after this, it is subject to a charge. You can download it from: www.lauda.de.

How it works: the software enables the simultaneous and mixed operation of the LAUDA thermostats and the DigiCal via the RS 232-serial interface. Connection of a device to the PC is via a 9-pole cable to one of the serial interfaces Com1 to Com8 which is supported by the system as standard. A suitable PC smartcard is available as an accessory for equipping a PC with up to 8 serial interfaces (Com1 to Com8).

Programmable remote control

The majority of LAUDA thermostats also supports addressed operation (RS 485), whereby several devices are connected to the same serial interface and each device has its own address (000 to 127). For

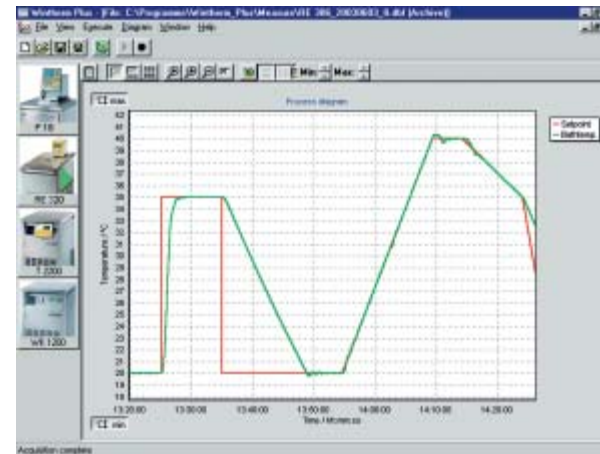
addressed operation, LAUDA offers a suitable RS 232/RS 485-interface converter. The software assumes the programmable remote control of the devices and, in the event of a device malfunction, quickly signals a hardware diagnosis. It can simultaneously support 12 devices.

Ranges and characteristics

Wintherm Plus supports a multitude of functions. They differ in their very own specific properties, so that not all devices have the same functions: hence, some thermostats have a cooling unit, some don't. Control can be carried out either via an internal or an external closed loop control system: alternatively, it is carried out exclusively internally. Most devices have a programmer function, several devices only support one program, whereas others support up to five.

Multiple use

The software can control all LAUDA Ecoline Staredition thermostats with control head E 200 and E 300, all Proline thermostats,



all Ultra thermostats, the WK/WKL circulation chillers with interface and all LAUDA Integral process thermostats from any PC running Windows 98 SE and higher. You require a minimum memory of 64MB and a serial interface. The Wintherm Plus Software comes on a CD.

Further information:

- ➔ www.lauda.de
- ➔ Fax reply coupon

LAUDA trade fairs and activities



Chemie 2005 in Moscow, Russia: active support from representatives.

LAUDA was once again active around the globe in 2005, gradually extending its clientele. At numerous trade fairs, the company offered interested parties information about the range of its products. The top

LAUDA products were particularly well received at the Analytica Expo in Moscow, Russia, where the medium-sized company presented itself at its own booth. Members of the sales department were actively supported by local partners – LAUDA representatives Ecros and Epac. LAUDA aims to reinforce its presence on the Russian market in the future. At the trade fair in Sinsheim, Germany, LAUDA presented high-quality measuring devices and calibration thermostats at its booth, which covered 20m². After that, the trade fair team travelled to the Ilmac in Basel, Switzerland, where visitors admired heating and cooling systems at the company's 30m² booth.

However, that was just the tip of the iceberg: top technology by LAUDA left indelible impressions on the experts at the ASSE Asia in South Korea, the Chemie in Moscow, the WTT in Karlsruhe and the Biotechnica in Hanover, Germany.

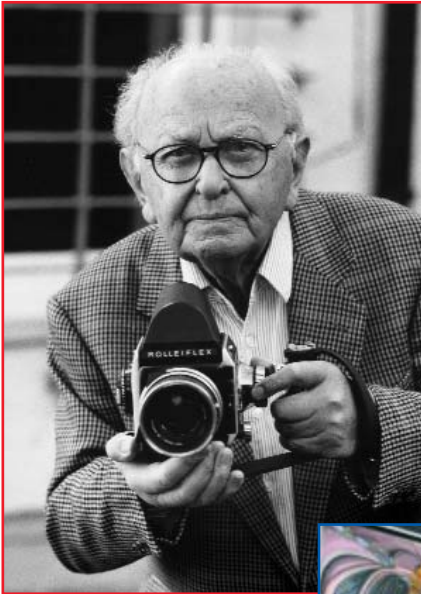


Heating and cooling systems were presented at the Ilmac.

Impending trade fairs and exhibitions

<u>Event</u>	<u>Location</u>	<u>Dates</u>	<u>Further information</u>
Pittcon 2006	Orlando, USA	13-16 March 2006	www.pittcon.org
Analytica-Expo 2006	Moscow, Russia	14-17 March 2006	www.analyticaexpo.ru
ArgenPlas	Buenos Aires, Argentina	20-24 March 2006	www.argenplas.com.ar
231 st ACS Show	Atlanta, USA	26-30 March 2006	www.acs.org
Forum Labo 2006	Paris, France	28-31 March 2006	www.forumlabo.com
Analytica 2006	München, Germany	25-28 April 2006	www.analytica.de
Temperatur 2006	Berlin, Germany	16-17 May 2006	www.ptb.de/temperatur2006
ACHEMA 2006	Frankfurt, Germany	15-19 May 2006	www.achema.de

10 years of the LAUDA FactoryGallery



Top: Self-portrait of Paul Swiridoff.

The LAUDA FactoryGallery celebrates its 10th anniversary this year. During this time, 60 artists have presented company employees, visitors from all around the world and locals alike with various offerings. This year's programme hosted 6 exhibitions. One of the highlights was the "Faces of an Epoch" exhibition by the famous portrait photo-

grapher Paul Swiridoff, who lived in Schwäbisch Hall, Germany, and died in 2002 at the age of 88. 36 photos from a collection of over 120 portraits could be viewed. He portrayed artists, politicians, scholars and managers. The exhibition was a joint cooperation with the WÜRTH museum in Künzelsau, Germany.

A plethora of colours



Left: The artist Irmin Beck (2nd from right) next to her husband Professor Rainer Beck. Left: Dr. Gerhard Wobser with wife Inge Wobser.

Below: Jürgen Szajny presenting his works.



87 acrylic pictures by the artist Irmin Beck cast a spell on the FactoryGallery. Beck – who now lives and works in Sörnewitz, close to Dresden, Germany – has been working as a medical and natural scientist illustrator since 1980. She mainly exhibits plants and flowers in bright colours – "floral structures" is how she describes her works.

"Rays of hope" is the name bestowed on the Werdau artist Jürgen Szajny on his selection of paintings and graphic arts. The exhibited, beautiful landscapes in rich colours delighted lovers of art, awakening within them the longing for vacations in the South of France.

At a glance...

Which page is this picture detail on?

Simply write the correct page onto the following coupon and fax to LAUDA or mail to: info@lauda.de. Final date for entries: 31 January 2006. Five LAUDA 2006 art calendars will go out to five senders of the correct answer.



The winners will be selected from a draw and notified in writing. Employees of LAUDA DR. R. WOBSEY GMBH & CO. KG and their relatives are excluded from participating. The judges' decision is final. Participation in the competition does not depend on requesting information. All information will be treated confidentially in accordance with the Data Protection Law.

The winners of the last competition of Thermanus issue 1/2005 were:

5 thermos mugs:
Heidlore Marunge, Marco Gaus, Marius Kobler, Peter Marschall, Stefan Mayer

1 thermos flask was won by:
Wolfgang Flad

The LAUDA team wishes all its winners a relaxing coffee break!



Fax +49 (0)9343 503-188

The solution to the prize puzzle is page:

Please use BLOCK CAPITALS. Thank you.

Title: _____

First name: _____

Surname: _____

Function, department: _____

Company, building: _____

Street: _____

Town, postcode: _____

Country: _____

E-mail: _____

Phone: _____

Fax: _____

My favourite poster:

A) „Pool“ B) „Hammock“ C) „Surfer“

Please send me the following information:

- LAUDA Overall brochure Thermostats/
Circulation chillers 2005/2006
- Brochure Viscosity measuring system PVS
- Brochure interfacial instruments, Tensiometers
- LAUDA Class A: A 111, RA 104, RA 106, RA 120
- Brochure Heating- and Cooling Systems
- LAUDA Proline
- Demo version of „Wintherm Plus“