

Therminus

The LAUDA info magazine

Issue 1/2003



Change of executive management

■ LAUDA and the "Middle Kingdom of China" ■ New staff leader in the sales department ■ CMC measurement made easy

LAUDA people



The graduate engineer **Ingo Weyer** has been in charge of the consultation, planning and co-ordination of temperature systems in the department of Heating and Cooling systems at LAUDA since the beginning of 2002.



Unusual anniversary

A rare occurrence these days: Kurt Kordmann (2nd right) has celebrated 40 years at LAUDA. The managing partners at LAUDA expressed their gratitude for his commitment and loyalty to both his colleagues and the company. As foreman in the electrician department, Kurt Kordmann trained many young people to be skilled workers.

NEWS

■ The LAUDA Ecoline RE 104 and RE 204 cooling thermostats are now available in the following voltage models: 230 V; 50 / 60 Hz. ■

The certified LabVIEW LD1001 driver supports all Ecoline E 2XX/ E 3XX devices and Integra thermostats as well as all WK/WKL circulation chillers with the interface option. The driver can be downloaded from our homepage.

■ Simply use the fax coupon on the back of the brochure to order further information.

New PRODUCTS

Increased efficiency with LAUDA Wintherm Plus.

The new LAUDA Wintherm Plus software allows control of all LAUDA Ecoline thermostats with control head E 2XX and E 3XX, all thermostats with control head / unit P, circulation chillers WK/WKL with interface as well as all Integra process thermostats from any PC running WINDOWS 95 or higher.

Some of the software's features include the transfer of the set point and the bath temperature as well as the transfer of the external temperature values. Further features are the online graphical display of all values, the creation of temperature profiles via program editor, the simultaneous activation of up to 64 thermostats, with up to eight serial interfaces responding. The software is available in both English and German. An additional feature of LAUDA Ecoline: the software enables the overall control of all thermostat functions such as control parameters, the permissible temperature range and pump capacity. Available from the end of February 2003.



We are delighted to be presenting the first edition of *Therminus* of 2003. We would like to express the most important thing first – we wish you all the very best, happiness and success in the new year!

This year will be very significant and forward-looking for us all at LAUDA. Karlheinz Wobser, managing director with many years' experience at LAUDA, has taken retirement following over 46 years at the company. He has also resigned his position as shareholder. As "man at the forefront", he was the first employee and right-hand man of the founder of the company, his father Dr. Rudolf Wobser. Together with his brother, Dr. Gerhard Wobser, he managed the company from 1977. We would like to thank Karlheinz Wobser for his many years' successful work which have made a major contribution to the successful development of the company.

His shares have been taken over in equal part by Dr. Gerhard Wobser and Gunther Wobser as new partner. In the course of the plans for a successor, Gunther Wobser has been appointed Managing Director by the shareholder.

The formation of the new managing duo is accompanied by further measures. Four management employees have been granted general commercial power of attorney at the end of 2002: Hans-Hermann Dietermann (head of development and construction), Wilfried Hund (head of production), Dieter Moll (head of finance) and Alfred Semrau (head of Heating and Cooling systems).

We are convinced that our re-setting of the course is for the best. We both intend on taking LAUDA into the future as a modern, family-run company and preparing the generation change in the coming years. We would like to ask for your support in this – and your trust. The strength of family-run companies such as ours lies in the combination of flexibility and continuity. The top is not only for managers; it is also for people who give all they can to achieve results. It is with this in mind that we wish you a successful and exciting year.

Dr. Gerhard Wobser Gunther Wobser

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New head of sales department



From left to right: Karlheinz Wobser, Rainer Hartmann, Reinhold Hellmuth, Dr. Gerhard Wobser

The graduate engineer Rainer Hartmann has been the new head of sales at LAUDA DR. R. WOBSE since 1 July 2002. Mr Rainer Hartmann has been involved with the LAUDA company for many years. He started at the company on 1 April 1983 and

spent periods in various different positions. His main area of responsibility up until the end of 1993 was in the area of measuring instruments, where he acquired management qualities. Between 1994 and June of 2002 he was responsible for the export activi-

ties of the medium-sized company. During his time spent as head of the export department, Rainer Hartmann gained the trust of both clients and representatives of domestic and foreign markets. The 46-year-old chartered engineer is held in high esteem due to

his competence, his know-how, his well-founded expert knowledge and his tireless commitment. On his new position Rainer Hartmann to expand marketing activities on tough international markets.

The former head of sales, Reinhold Hellmuth, retired on 30 June 2002 due to age reasons. He served LAUDA for almost 20 years. Hellmuth's employment contract commenced on 1 July 1983, with his career starting off as an extremely competent export manager who learnt his trade starting from the bottom. In 1994, he assumed the demanding position of sales manager. During his almost two decades at the company, Reinhold Hellmuth has gained great respect from our clients both at home and abroad, thanks to his expert knowledge and his extraordinary commitment. The managing partner Dr. Gerhard Wobser used the following words to summarise his work at the company, "Thanks and recognition are due to Mr. Hellmuth for his successful work, and we wish him all the very best".



Karlheinz Wobser (left) took leave from "his company" at a works party held on 10 January 2003. It was clear that not only was he respected for his business achievements, but also that the employees respected him as an individual too. Dr. Gerhard Wobser paid tribute to his partner of many years, elucidating in his speech the close connection between his brother's activities at the company and its progress. He not only went into the company's successes; he also expounded on the difficult times, especially those experienced at the beginning of the 1990s. The works council and other employees acknowledged Karlheinz Wobser as a trustworthy conversationalist and as a fair boss. Karlheinz Wobser intends on dedicating his newfound spare time to his family and his numerous hobbies. The management and all employees wish him all the best and many more years in the best of health.

Face-to-face **The laboratory industry as a sign of the times**

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Dieter Kneucker knows the industry like no other. He has been accompanying the industry in his capacity as a journalist for decades now. Therminus quizzed him on the past, present and future of the industry.



Therminus: What has changed in the industry over the past 25 years?

Kneucker: At the end of the 1970s, there were thousands of laboratory firms and many small companies in Germany. Analytical chemistry experienced its hey-day during the days of environmental protection. A new method of analysis was developed

almost on a daily basis. Quality was urged on, with one DIN standard being implemented after another. Certification, eco-audits, environmental management are signs of the time and seals – without which it is not possible to sell anything. The prices of the equipment went down, but not additional personnel costs, with the upshot being that companies and dealers merged together. The classic laboratory market – in particular expensive equipment – stagnated. Export managed to restore the balance. The “Made in Germany” label was particularly successful in the USA. Then came life science with applications for an enormous field. A new market grew up, with increased sales.

Therminus: How should a contemporary medium-sized firm organise itself?

Kneucker: Customer requirements are extremely specific. The customer of today wants a fast solution to his problem. A smaller firm is better equipped to fill a gap in the market. “Customised solutions” offer a better initial position for subsequent orders. Clients categorically refuse to pay huge sums of money for “All for One” solutions when only one application is run by it. Automation is important.

Therminus: In your opinion, what was the most important industry event during 2002?

Kneucker: The Analytica was particularly important. This really well-established trade fair presented the latest state of device technology alongside the latest developments in analytical chemistry and biotechnology. Exhibitors and visitors alike were more than content with the trade fair.

Therminus: How will the Asian market – and China in particular – develop?

Kneucker: The Asian market is booming – especially the Chinese one. China is opening up and is looking out for partners in Europe and the USA. Representation or – even better! – a small production plant in China which could be expanded bit by bit is definitely a good investment. The manufactured devices can then be presented at exhibitions and offered on Asian markets. This has brought the trade fair companies who had entered into a joint venture into the arena; they are currently constructing a new trade fair centre in Shanghai. This trade fair centre will also be jointly used by German trade fair companies from Munich, Frankfurt and Düsseldorf at different times.

Competition unites Europa

The response to our competition surpassed even the greatest expectations. It was under the motto "They belong together despite the differences" that LAUDA launched a Europe-wide competition on Ecoline thermostats in conjunction with VWR International. Hundreds of correct entries were received from numerous countries, which meant that the winners had to be determined by means of a prize draw.

The question was: *Which Ecoline thermostat product enables external control?*

The answer: *The range of devices with the E 300 control head. The lucky winners of the three LEICA cameras are:*



Mechtild
Grunwald,
Henkel,
Germany



Hugh
Cartwright,
Oxford
University,
Great Britain

Laila Gertsen, Novo Nordisk, Denmark
(no photo)

Congratulations to the winners and lots of fun with their cameras!

New Website

Even an old faithful has to be revised, modified or even re-designed from time to time. The LAUDA home page has online since the end of June 1997. However, this much-acclaimed Internet representation has been swapped for a more attractive version. The design has been changed, and navigation has been simplified. A Windows technique with mouse-over function has been used, to allow the user to access the required pages faster and easier. The "Thermofinder" is a special treat. This feature aids the Internet user in his search for the right thermostat. The contents have also been extended: the new Web site now offers information on individual devices, FAQs, product specification sheets or operating instructions, a download area and a special terminology service.

Interested?

Then simply switch on your computer and log on to www.lauda.de.

Hope you enjoy our new Web site!



Trade fairs forge a link between different cultures

On Tour

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With a population of around 25 million, Shanghai is one of the largest cities in the People's Republic of China. Producing around one-tenth of the nation's industrial production, it is the Republic's largest industrial cen-



tre. With its renowned Fudan, Tongji and Jiaotong universities, 200 research institutes and numerous academic training institutes, Shanghai is also one of China's most important educational centres. The Analytica China opened its doors between 3 and 6 September 2002. The marketing team of our Intermass-Fischer representative and our long-term measuring device experts, Mr S. K. Cheng and Mr Dong from Hong Kong, successfully suppor-

ted our employees. The exhibition hall was full to the brim with visitors and interested parties shortly after the trade fair opened its doors, and continued to be so until its close.



Impressions of the Analytica China and Analytical and Lab Equipment.

The laboratory trade fair Analytical Lab Equipment – initiated and organised by the SPECTARIS German trade association – was held in Bangkok between 16 and 18 September 2002. Without exception, all German exhibitors were delighted with the visitors' response – with around 1,500 visitors recorded over the three days. Not only were

the visitors able to view the trade fair exhibits, they were also invited to attend talks given by various speakers. With almost 10 million inhabitants, Thailand's capital forges a link between traditional Asian society and western



society. Right amongst the swarm of thousands of mopeds, cars and tuk-tuks which make up the capital's traffic, pavements are used as markets. Street vendors offer passers-by their exotic delicacies in the shadow of enormous office buildings. There is of course the other Bangkok, the religious and cultural centre of the emperor's palace and around 400 temple complexes, offering their visitors an oasis of peace and contemplation.

Visit from CHINA

On Tour

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A delegation from the Chinese petroleum industry stopped by LAUDA for a business visit during July 2002. The visitors from the Middle Kingdom inspected the medium-sized company and were extremely interested in the company's programme of equipment. The sales team gave them a detailed and competent des-

cription of the cooling thermostats for low temperatures right down to -85°C . The visitors were also presented with the PVS viscometry system. This system allows the determination of viscosity in accordance with the ASTM standard in temperature dependence and viscosity indices for lubricants, oils and fuels.



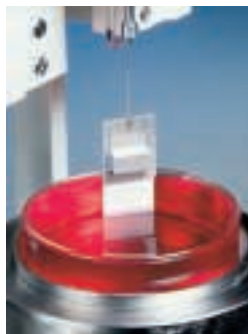
An overview of where to find LAUDA at trade fairs and exhibitions during 2003:

<u>Event</u>	<u>Location</u>	<u>When</u>	<u>Hall/booth</u>	<u>Further information</u>
Arab-Lab	Dubai	3. - 6. February	German Pavillon Hall 3, C 223	www.aralab.com
Plast India	New Delhi	15. - 20. February	Pragati Maidan	www.plastindia.org
Pittcon 2003	Orlando	9. - 14. March	booth 2232, 2233, 2333	www.pittcon.org
Brasil-Plast	Sao Paulo	10. - 14. March	Anhembi-Park	www.brasilplast.com.br
Control	Sinsheim	6. - 9. May	Hall 1, 1212	www.control-messe.de
ACHEMA	Frankfurt	19.- 24. May	Hall 6.2, D 36-E39 Hall 4.1, E 34	www.achema.de

Tensiometer as an All-rounder



Modern PC-based tensiometers such as the LAUDA TE 3 have progressed from their original use as interfacial tensiometers to become all-rounders in the chemico-physical laboratory. Due to the combination of flexible PC software and microprocessor intelligence, these devices frequently assume and extend the functions of standard density measurement devices and semi-microbalances. Suitable accessories, in particular sample holders, make it easier for the user to implement them. Thermostats, displacement transducers, magnetic stirrers or measuring and extraction devices are already integrated or can be integrated, enabling a high degree of comfort and an efficient degree of automation.



A diversity of uses

In principle, each and every tensiometer comprises a vertically suspended force transducer with a resolution of at least 0.1 mg and a weighing range of at least ± 1 g and a movable bench which contains the test tube with the test liquid. The torsion wire systems which used to be used have been replaced by monolithic electric compensated, highly-sensitive weighing cells. The testing bench is moved by a motor, measuring the distance accurately to the micrometer. "Stand-alone" tensiometers will also be used in the future as independent measuring devices without the use of a PC in order to determine the balance values of surface tension and interfacial tension. However, tensiometers are used increasingly with PC control as highly-sensitive, multi-purpose instruments. Prerequisites for this are the extremely low vibration of the system even whilst the testing bench is moving and insensitivity to surrounding vibrations.



With the LAUDA TE 3, a double spindle guide combined with a PLL-controlled direct-current motor ensures the necessary, free of play, vibration-free and even bench movement via a further speed range. As the tensiometer has also been designed for quality control, it is robust, reliable and resistant to negative environmental conditions and aggressive vapours and chemicals. The interior space for introducing the samples is large and open, and can be protected by a removable cover on request.

Thermostats

Heating and Cooling systems

Measuring instrumentation

Completely digitalised and equipped with microprocessor intelligence, the device is completely controlled by efficient Windows software.

Simpler and more efficient

Surface and interfacial tension measurements are usually still measured in accordance with the tried and tested Du Noüy and Wilhelmy methods, standardised according to DIN 53914. However, the connection to a PC simplifies the handling and is especially important to the evaluation and assessment of the measurements. Easy-to-use, self-explanatory Windows software offers high-resolution surface and interfacial tension state-of-the-art measurements for the TE 3 tensiometer. Important components are the automatic maximum level recognition feature and the calculation of the surface and interfacial tensions with all the necessary corrections according to different methods. The additional density parameter necessary for this can be determined using a simple additional measurement from the tensiometer using the Archimedes' principle. It is only by measuring the time dependency of the surface and interfacial tension and their graphical representation over a wide range determined by the user with linear or logarithmic distribution of the measuring points and the calculation of average values and standard deviations which allow an assessment of the non-equilibrium processes of the majority tenside-content samples. It also allows a clear determination of the "static", thermodynamic balanced surface and interfacial tensions.

LAUDA thermostats provide the temperature stability of the sample required for the high degree of precision and serve the purpose of automatic measurement of the temperature dependence. Tensiometers can also be used for many chemico-physical experiments and analyses. The measurement of the density of liquids is frequently used, as this value has to be known in order to determine the surface and interfacial tensions.

Dr. Armin Hofmann

Further information:

- www.lauda.de
- Fax reply coupon

LABORATORY



dictionary

Critical micellar concentration (CMC)

At this concentration, surfactant solutions suddenly change their physical properties. The reason for this is the formation of organized aggregates (micelles) of the surfactant molecules when the critical micellar concentration is exceeded. The structure of the micelles is dependent on the character of the solvent and the structure of the surfactant molecules.

Thermostating in laboratory practice

Typical application requirements made on laboratory thermostats for the technical and economic optimum choice

Performance and temperature range

In order to be able to achieve or maintain the desired temperature during the thermostating process, the heating and cooling output of a thermostat and its working temperature range must be sufficiently dimensioned. The output of the thermostat must be selected according to the time span that the user is prepared to wait until the target temperature is attained. In contrast to the heating output which remains constant across the entire working temperature range, the cooling output decreases with falling temperature until it has decreased to zero at the lowest working temperature (see pictures). As the cooling profile does not run in a linear fashion it requires enormous effort to calculate the shortest possible time span required to achieve a preset lower temperature. It is fundamentally easier to determine it from the cooling curve shown. If a thermostat can heat and cool, it should be observed that the given heating output can be reduced by the amount of the cooling output, should the thermostat not have a corresponding cooling management system (automatic compressor control) or proportional cooling.

Should the thermostating task require a constant cooling rate (linear fall in temperature) the thermostat must be capable of supplying the

output over the entire temperature ramp. It is not enough that the device could admittedly cool quicker at the beginning, but that it can no longer supply sufficient output at lower temperatures to achieve the cooling profile. The formula A set out below serves as a basis for the calculation of the heat flow. Dissipation after the time results in:

$$\text{Formula A: } \Delta Q = m \cdot c \cdot \Delta T$$

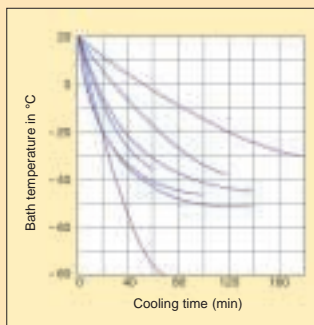
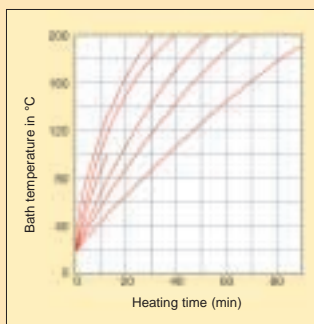
$$\text{Formula B: } Q = dm/dt \cdot c_p \cdot \Delta T + m \cdot c_p \cdot dT/dt$$

As the mass in the case under consideration does not change with time ($dm/dt=0$), formula B can be reduced to:

$$\text{Formula C: } Q = m \cdot c_p \cdot dT/dt$$

As a rule it is sufficient for the configuration of the thermostat to consider the specific heat capacity and mass of the participating liquids. The heat capacities of the bath and the tube connections are usually of secondary importance. On account of the simplified basis for calculating, an output reserve of between 10 to 20 % should in practice always be factored in.

Pictures left: Exemplary heating (top) and cooling (bottom) rates of a thermostating liquid in various thermostats respectively. Decisive for the rate are the output and the size of the bath.



Thermostats

Heating and Cooling systems

Measuring instrumentation

Fire in the medical laboratory of Texas University

Info corner

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Cause of the fire: Overheated circulation chillers

Scientists at the University of Texas in Dallas / USA reacted promptly when a fire broke out for the second time in two years in the laboratory of the Medical Research Centre in February 2002. As the investigation into the fire showed, the cause for both fires was overheated circulation chillers in the laboratory. There was considerable damage. The laboratory areas had to be revamped at great expense and new equipment had to be purchased. Not only that – several months' worth of research work was destroyed in the flames. That was a bitter pill to swallow. The ensuing costs amounted to several tens of thousands of dollars. The scientists, the laboratory manager and the safety officers were faced with the question of which level of user comfort and safety standards do laboratory devices have to meet in order to avoid the repetition of such a disaster? Ed Colten, field worker for Brinkmann Instruments, which also markets LAUDA products in the USA, had only one solution to this problem: thermostats with safety standards from LAUDA. The heating ther-

mostats from the LAUDA Ecoline range fulfil the safety requirements of this customer. Colten presented to the team of researchers and technicians the safety technology of the Ecoline range of products. As a special feature, this range has a temperature protection feature, a unique low level protection feature (DGM), an all-pole switch-off mechanism and an acoustic signal in the case of malfunction. Economic efficiency and reliability were also factors to be taken into account when considering the right equipment. The handling, security and cost-efficiency ratio were all in line with the requirements of all those involved.

Thanks to these advantages, Colten was able to install 30 LAUDA devices in the new laboratory, laying the foundation for LAUDA standardisation in the Southwestern Medical Center of the University of Texas.

Richard Jezykowski

Further information:

- www.lauda.de
- Fax reply coupon

Thermostats

Heating and Cooling systems

Measuring instrumentation

Proudly presenting ... our Asian representatives



LAUDA Partners

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Intermass-Fischer-Asia Private Ltd. (IFA) distributes thermostats and circulation chillers for LAUDA in China, Indonesia, Vietnam, Malaysia and Singapore. Viewed alone, Singapore is a relatively minor market; thus it is important for IFA to represent the products over an extensive regional basis. This is usually carried out exclusively in the countries in which Intermass-Fischer has its own headquarters and its own facilities. Besides LAUDA Intermass-Fischer carries out activities for eight other companies.

The laboratory equipment market in eastern Asia is unique. The market requirements in the countries in which IFA is active cannot be compared with other markets anywhere else in the world. Representing LAUDA, Intermass Fischer presents the entire range of thermostats starting at the

Class A, covering the Ecoline, right through to the professional equipment of the C/K edition or the Ultras.

Intermass-Fischer wishes stand firmly - 100% - behind the sold products. Before IFA assumes sale and service of the products, training sessions with LAUDA service technicians are arranged to ensure that as many IFA employees as possible understand the products and applications. A customer-care team comprises 3 trained engineers in Singapore and a further 3 in the Beijing office. These engineers are supported by an internal coordinator. Which employee is responsible for which customers is up to the relevant manager. Intermass-Fischer has a total of 26 permanent employees. The company's success is based on their motto "Do it right from the start". The employees always want to offer

the best qualified service available, and this means fast delivery of the ordered goods, quick replies or reactions to service calls. Depending mainly on the proximity of the customer's workplace, IFA can carry out on-site services within 48 hours. Adequate structures with experienced employees ensure service in the relevant region at practically any time.

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New exhibitions

FactoryGallery

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Paintings and Collages

"Views" is the name bestowed upon the works on display until the end of October 2002 by the textile designer Horst Eczko. Eczko's works are characterised by personalised imagery which is the result of his many years' experience as a textile designer and his teaching position at Reichenbach's school of engineering. The expression "abstract art" can be applied to the collection of paintings, graphics and collages. This



designer – who currently works for several companies – offers designs from the various eras, with geometrical forms and lines from the Bauhaus style of art, with naturalistic flower and leaf decorations and with contemporary abstract designs.

Constructivism

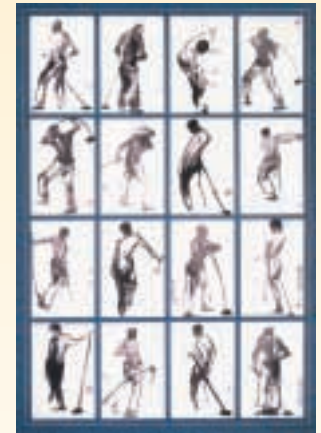


The artist Matani presented his paintings at the FactoryGallery from mid-October until the end of November. His works are an independent collection of constructivism, floating elements and magic symbols in a delicate architectural form. Bright colours with silky, matt surfaces invite the observer to enjoy new artistic experiences.

"The Middle Kingdom of China" and LAUDA

Under the patronage of Kexin Ju, Chinese artists are presenting their pictorial, sculptural and musical works of art. The works have been on display in the FactoryGallery since the be-

ginning of December 2002 and can be viewed until 7. February 2003. The new exhibition was opened on 5 December 2002 with a preview and the motto "Chinese Art – connecting Tradition and the Modern Age". On display are Chinese paintings, enchanting pen-and-ink drawings and sculptures from nine artists. The relationship between LAUDA and its employees in this country is also vividly represented.



We will gladly put you in contact with the individual artists. For further information on the art exhibitions, please log on to:

→ www.lauda.de

PRIZE COMPETITION



Which fully-automatic LAUDA device allows determination of the surface tension and their interfacial tension according to the DU Noüy and Wilhelmy methods?

Closing date for entries: 25th April 2003

Please enter the answer on the coupon. All correct answers will go forward to a prize draw for a gift of regional wine. Simply write the answer on the coupon below and fax to LAUDA or send an E-mail to info@lauda.de

The solve of the last issue 2/2002: "Paris". A gift of regional wine got Claude Besson, Thales France.

We wish a lot of joy.

The winners are drawn and notified in writing. Staff and relatives of the LAUDA DR. R. WOBSEER GMBH & CO. KG are barred from participating. The decision of the judges is final. Participation in the prize draw is independent of the information request. All details are treated in strict accordance with the Data Protection Act.



FAX reply coupon + 49 (0) 93 43/5 03-1 88

Coupon

The solution to the competition question is:

Please use BLOCK CAPITALS

Forname: _____

Surname: _____

Function: _____

Company: _____

Street/P. O. Box: _____

Town: _____

Country: _____

E-mail: _____

Telephone: _____

Telefax: _____

Please send me the following information:

LAUDA Ecoline RE 104 and RE 204
Cooling Thermostat

Wintherm Plus software

Technical article "Tensiometer as an All-rounder"