Magazine for Customers of the Lust-Group

LUSTtec

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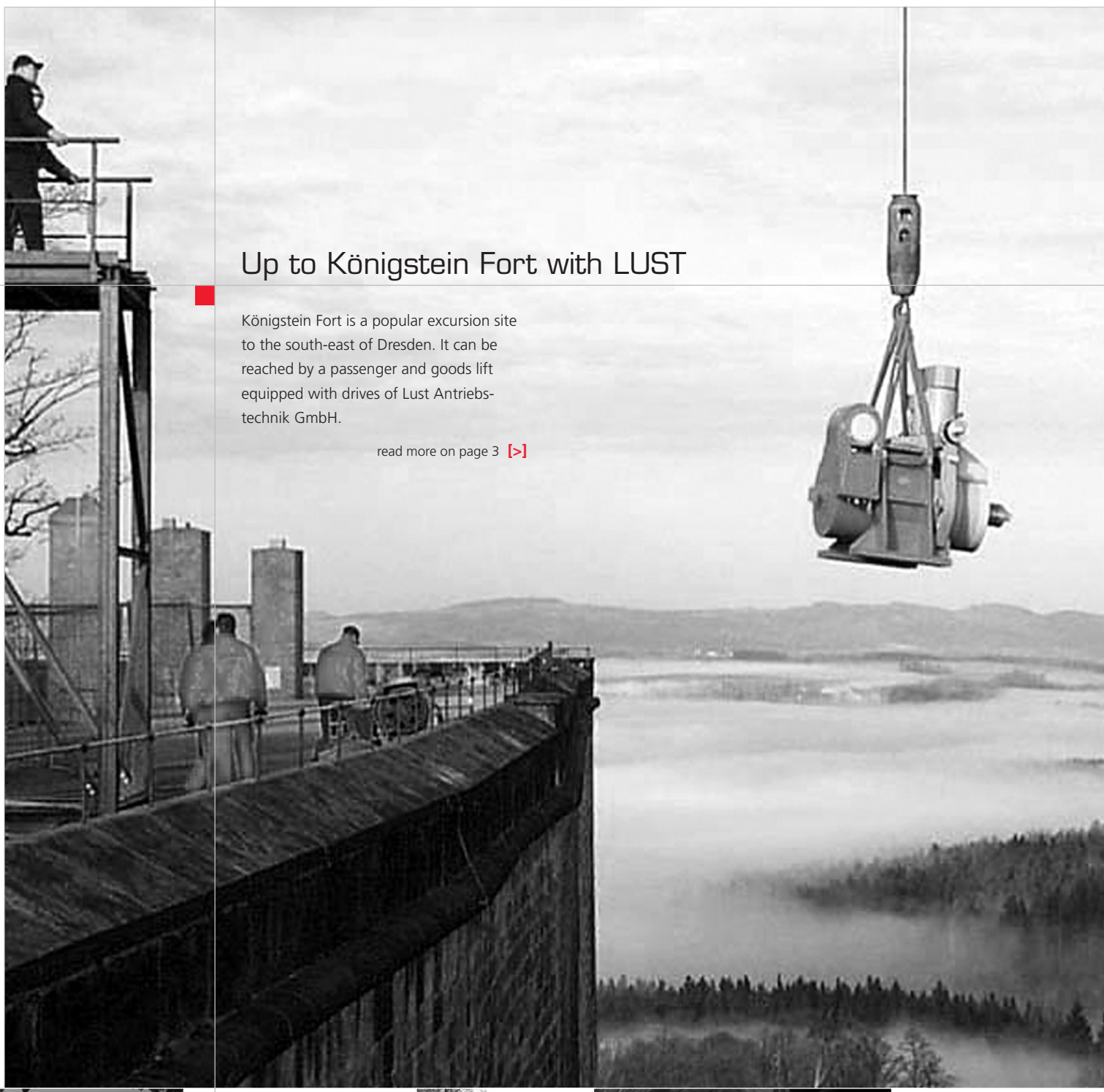
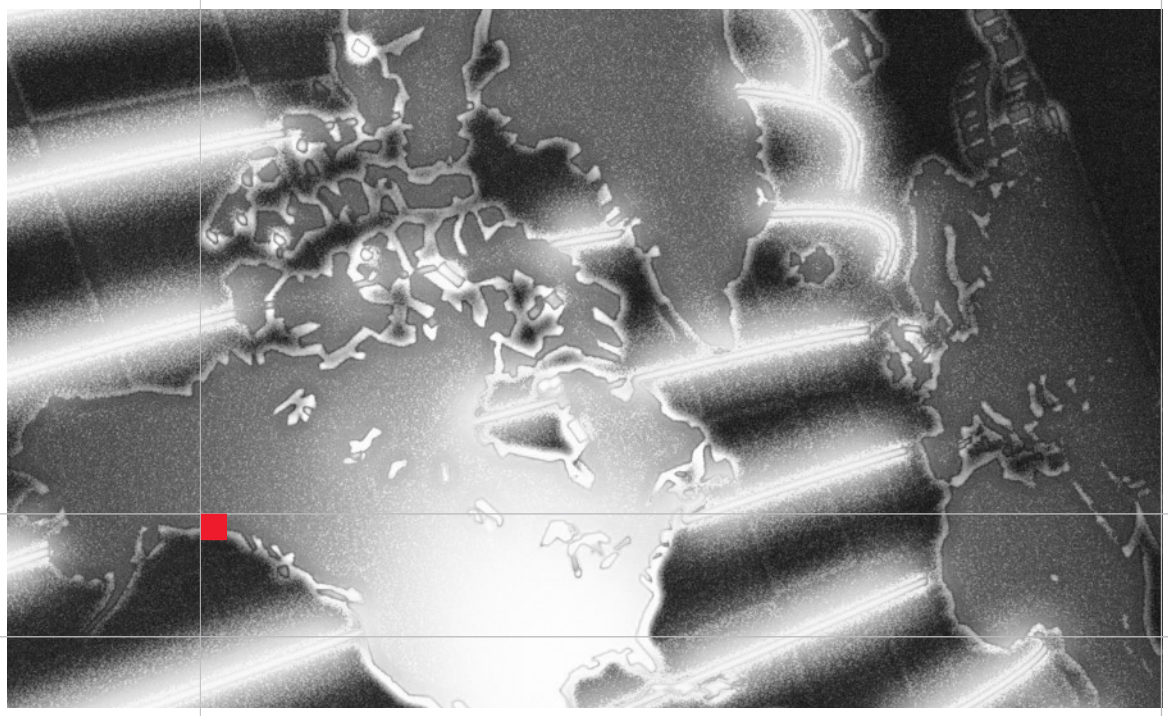


Up to Königstein Fort with LUST

Königstein Fort is a popular excursion site to the south-east of Dresden. It can be reached by a passenger and goods lift equipped with drives of Lust Antriebstechnik GmbH.

read more on page 3 [>]



[*It is symptomatic of the situation that in an opinion poll 70 % of citizens put their trust in the entrepreneurs and only 12 % in the political system.*]

Growth and success are doable!

Innovation is the deciding prerequisite for competitiveness and growth in our company. It is only when we succeed in combining technical talents rich in ideas with a courageous entrepreneurial spirit that innovation becomes concrete, creating products and performances that gain the interest of our customers.

Even when times have been hard, we have still worked innovatively while at the same time working on making our structures more flexible. The success of 2004 and the satisfaction of our customers show us that we are on the right path. We have exceeded our own ambitious plans and have become stronger than our competitors. We have created more jobs and made the existing ones more secure.

[*Innovation is the deciding prerequisite for competitiveness and growth in our company.*]

Growth and success are doable

- if we all support the planned measures and work at achieving the many goals with all our strength;
- if we continue to strengthen the potential for growth in our company by new developments, better customer care, longer working hours and even more flexibility;
- and if we implement our successful application-oriented product and market strategy internationally.

We will only be able to continue successfully making our mark as an international, global competitor if we break open our encrusted and over-regulated structures and are ready to strike out on new ground. The need for reform has been felt for a long time now by the citizens of our country and the employees in the company. It is symptomatic of the situation that in an opinion poll 70 % of citizens put their trust in the entrepreneurs and and only 12 % in the political system.

We have to seize the initiative in the company and dare to face new things. We have to urge the political system to make reforms and make Germany into a successful engine for Europe once again.

Growth and success are doable, and "doable" means we have to do it as no one else is going to do it for us.

We all have to want the changes and want to understand the challenges of the now global markets as there is no success without the will to change. Our willingness to accept the global challenge and to continue targeting growth is shown not least in the fact that we have founded a distribution branch in Shanghai, and that this year we will be building a new company domicile for Lust DriveTronics GmbH in Unna.

I would like to thank our customers for the successful and loyal cooperative working relationship we have with them, and I look forward to seeing as many of you as possible in Hannover and at any of the other trade shows taking place this year. There will be lots of new things to see!

Karl-Heinz Lust

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Photo title and this page: FB-Aufzüge GmbH & Co. KG - Dresden

Up to Königstein Fort with LUST

[Königstein Fort is a popular excursion site to the south-east of Dresden. It can be reached by a passenger and goods lift with a service load of 4,500 kg and lifting height of 41 m; it is driven by a WVD34.110 lift controller and transports several thousand people each day.]

In the past, asynchronous motors in lift applications were only used in combination with highly reduced worm gears. Such systems accommodate faults in the field model, non-optimal controller settings and weaknesses in the current and encoder evaluation. However, a direct drive makes these problems brutally apparent with bad dynamics, vibrations and humming noises. An asynchronous direct drive from SAD Type WLG-35.1 with a weight of 3,900 kg and a rated torque of 3,700 Nm is being used at Königstein Fort. Starting up such a motor without stalling of the lift car and vibration-free running places high demands on the control characteristics of the lift controller. These are exactly the features that particularly characterize the WVD3000.

The WVD3000 is a universal lift controller that can drive both synchronous as well as asynchronous motors with a choice of gearbox or direct drive unit. It detects the car load via a load cell and switches a suitable stopping torque to the motor even before engaging the brake. This prevents the lift car entirely from sagging and the lift drive starts without any noticeable jolt. The WVD3000 has a parameter identification system which reliably and very exactly measures out the electrical parameters of the drive motor when at standstill. The costly motor field model and controller settings are automatically calculated from these parameters and from the mass inertia of the system.

All of this happens virtually with the press of a button on the PC user interface DriveManager. The user does not need to concern him-/herself with the higher mathematics which support these functions. Starting up the directly driven synchronous and asynchronous motors is easy to master. The excellent controller quality of the WVD in combination with the asynchronous direct drive from SAD results in a very comfortable ride which far exceeds that of worm gears.

Joachim Albach
Lust Antriebstechnik GmbH

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Contents

The World's Largest: »5M«

REpower Systems AG

»5M«

The currently largest wind turbine in the world is set in action with LUST

["With this system, the German wind power industry is once again demonstrating its leading position both technologically and globally", praises the federal minister for the environment, Jürgen Trittin, at the launch of the world's currently largest wind turbine, on February 2nd 2005 at Brunsbüttel in Schleswig-Holstein.]

The "5M" from REpower Systems AG is the first wind turbine in the 5 megawatt class; and with a height of 183 m it is taller than Cologne Cathedral.

There are three servo-systems, "PITCH*master* CDD54.072" from Lust DriveTronics, located in the rotor hub at a height of 120 m that ensure optimal system power control in changing wind conditions.

PITCH*master* was developed for operation under rough environmental conditions. It is optimized for a high number of operating hours and has to work without disruption irrespective of wind, rain or temperature fluctuations.

Even in the worst case scenario, i.e. if the electronic components fail, the Lust DriveTronics Pitchsystem will move the rotor blades out of the wind into a secure parking position.

The rotor blades with a weight of 18 tonnes and a length of 61.5 m each have to rotate up to twelve times per minute to achieve the nominal output of 5 megawatt. Its annual output of 17 million kilowatt hours of power produced in an environmentally friendly way can supply 4,500 households.

If the "5M" passes its test run in the coming months it will be used primarily on the open sea (offshore) from 2006. These offshore wind parks would be built up to 40 km from the shore to leave nature parks and bird protection areas untouched.

In the last few years, Lust DriveTronics has sustainably invested in innovative technologies. It therefore makes sense to take up the challenge of the "5M" and make an important contribution with the "PITCH*master* CDD54.072" to this pioneering wind turbine.

Lust DriveTronics has further developed its role as an innovative and technologically leading company by sticking to tried and tested methods and measures, but also by adapting regularly to the latest status of technology and continuing development work.

Dirk Fedder
Lust DriveTronics GmbH [ ]

Services creating high performance

[The rendering of services is gaining more and more importance in the automation and drive technology industry. Against the background of products and systems becoming ever more complex, services are an important component for suppliers of products, systems and solutions.]

Services in Automation

An Initiative of the ZVEI Automation Division

- **Class 0**
  Product-Related Basic Services
- **Class 1**
  Product-Related Standard Services
- **Class 2**
  Product-Related Customized Services
- **Class 3**
  Application-Specific Services
- **Class 4**
  System-Related Services
- **Class 5**
  Plant-Related Services
- **Class 6**
  Extended Plant-Related Services

LUST has always made it a priority to provide solutions to the customer, and technology certainly plays a decisive role at the beginning of talks. This is often the first place we hear a call for support in selecting a system, in the design and start of operation.

Considerable savings can be achieved, especially by large customers, as a result of optimized logistical ideas, starting with supply. Kanban, delivery "just in time", or paper-less order processing are only part of the range of logistical services on offer.

Competent, telephone support saves time when troubleshooting and increases productivity. Product and software adjustments offer the possibility of optimizing product processes; machines with higher output performance and new processing procedures are only possible by developing customer specific solutions.

Services and customer orientation turn customers and suppliers into a high performance company.

From this basic premise, it was natural for Lust Antriebstechnik GmbH to participate actively in the service initiative of the ZVEI (central association for electro-technology and industry) "Services in Automation", to harmonize and classify services. Services were given a structure and terms and definitions clearly standardized in a strategy group consisting of 40 member companies. As a result of this, the customer will receive an individual service offer from a catalogue tailored to the corresponding business. This means, the customer will know already before transaction conclusion what services are considered reasonable from the perspective of the supplier over the lifecycle of the product and can make an individual decision based on this.

Participants are subject to a registration procedure regarding adherence to the rules. They are obliged to maintain certain quality standards. By signing the registration, participants will acquire the right to use a registered service logo. The logo should establish itself on the market as synonymous with quality and service competency and increase the basis for trust between suppliers and end customers.

[Services and customer orientation turn customers and suppliers into a high performance company.]

The services defined within each class can be viewed in a separate brochure (order at: info@lust-tec.de, key word: "services" or look at www.zvei.org/automation).

Services to the customer are a component of the Lust company philosophy; the structure and classification of our services with respect to the nomenclature of the ZVEI will be concluded shortly and made available to our customers.

Volker Kuhoff
Lust Antriebstechnik GmbH

[ ]

Innovative companies send out an invitation

This year, Lust Antriebstechnik GmbH has become the host for the TOP-Program

[The TOP-Program (Transfer of knowledge, Optimization of processes, learning in Practice) is sponsored by the federal ministry for education and work and supported by the FAZ-Institut.]

TOP intensiv

Our dates:

28 April 2005
and
13 October 2005

Meeting place:

Lust Antriebstechnik GmbH
35633 Lahnau

Each meeting runs
from 10.00 to 16.00

We are convinced of the TOP-Program basic idea that successful companies confronting the ongoing challenges of the market are available on a daily basis as hosts to professionals from all industries as a result of their innovative capacity and distinct pioneering nature. Broaden your horizons but no need to reinvent the wheel. Others have done that for you.

We would like to invite any interested professionals and managers from throughout Germany to our company for a professional and technical meeting. The focus there will be on transfer of knowledge about comprehensive innovative processes and technologies. This year our central theme is based on the logistical concept of Kanban, and more. We will demonstrate the savings and rationalisation possibilities with integrated complaints management from supplier level to customer level.

We hope that our visitors will take back suggestions and ideas to their companies but we also look forward to lively discussions which will lead to an exchange of knowledge for all participants.

Use the opportunity with us or with another TOP company to experience innovations live.

Eberhard Schmauch
Lust Antriebstechnik GmbH

[ ]

Book your place at our TOP event:
www.top-online.de
you will also find more information online.

Lahnau – Shanghai

by internet telephone

[*LUSTtec talked to Mr. Dr. Wang*]

Good morning, Dr. Wang. It's remarkable that this form of communication by camera via internet functions so perfectly. We can see you are already sitting in your new office in Shanghai.
What's that in the background?
Good morning to you, too – although it is actually just before going home time here. Our office is located in the district of Puxi. You can see part of the city centre in the background.

We are glad that our Chinese branch office was able to be built within just a few months.
That's very impressive. How did you manage it?
To be exact, it wasn't even two months from application to official authorization. You want to know why it went so quickly? It was extremely important that the company management was decisive and committed to the project and that the affected departments at LUST all gave active support. Of course, good preliminary work and a lot of information were also necessary to be able to introduce the relevant steps quickly.
I am particularly pleased by the fact that we chose Shanghai. The high requirement for innovation, technology and professionalism is concentrated here.

Shooting a goal with LUST …

[Once a week, employees from Lust DriveTronics GmbH meet at the football hall in Unna to play football on a permanently green Astroturf pitch.
It doesn't matter whether colleagues come from sales and marketing, service, development, production or the training workshop – every department is represented at football and every colleague is welcome.]

At the start of the week, you can register for an appointed time which is communicated by email and as soon as at least eight colleagues have agreed to meet, then one of the six Astroturf pitches can be reserved.
There haven't been any serious injuries so far and there won't be any in future as the main focus for each person is to have fun.

Of course there can be some small superficial wounds, such as bruises, or you can't quite get out of bed the next morning because your muscles are hurting – but what else is flexitime for ..!?

It's obvious that football is definitely not a sport for softies; a misplaced kick in the shinbone of your opponent instead of hitting the ball is however always quickly forgiven.

Following all the sporting competitive spirit on the pitch, it's only natural to allow yourself a cold beer at the bar afterwards. Any defeat during the game is quickly forgotten; after all, you can look forward to a return game next week.

Communal sporting activities also promote communication between individual departments, and you get to know your colleagues on another (non-professional) basis.

Stefan Budde
Lust DriveTronics GmbH [ ]

[*v.l.t.r.: Shujie Li, Joey Zhang, Dr. Wolfgang Lust, D. Yongfan Wang, Jens Thielmann*]

■ **What tasks and responsibilities have been entrusted to you by the company management?**
Shanghai is to become the central branch in China and Asia. An extensive sales, application and servive network is to be developed from here. We will serve the Chinese market with products in line with market requirements, primarily within the range of servodrive technology.

■ **We see that you have a lot of responsibility for the business development of our enterprise and have a lot planned for the near future.**
What are you going to start with more concretely?
In the last few months, as well as founding this company, we have been observing and analyzing the Chinese market thoroughly. This has set the course for our business.
Now we have to deal with the long list of jobs lying on our desk. We will start with drawing up and translating various documents and clearing the homepage. We will build a repair centre at our participating company in the town of Wuxi (approx. 150 km from Shanghai) and of course, we will start with the first concrete customer projects. As you can see, there is a lot to do.

■ **Talking about the repair centre, our European customers are sure to be pleased with this bit of news.**
When can they expect to get concrete information about this?
It won't be long now. I think it will be about the middle of this year that we will be able to publicize details.

■ **Many thanks for the interesting conversation, Dr. Wang. On behalf of all the employees of LUST, we would like to wish you and your team a good start in China and of course much success!**
Thank you very much. My best wishes to everyone in Lahnau.

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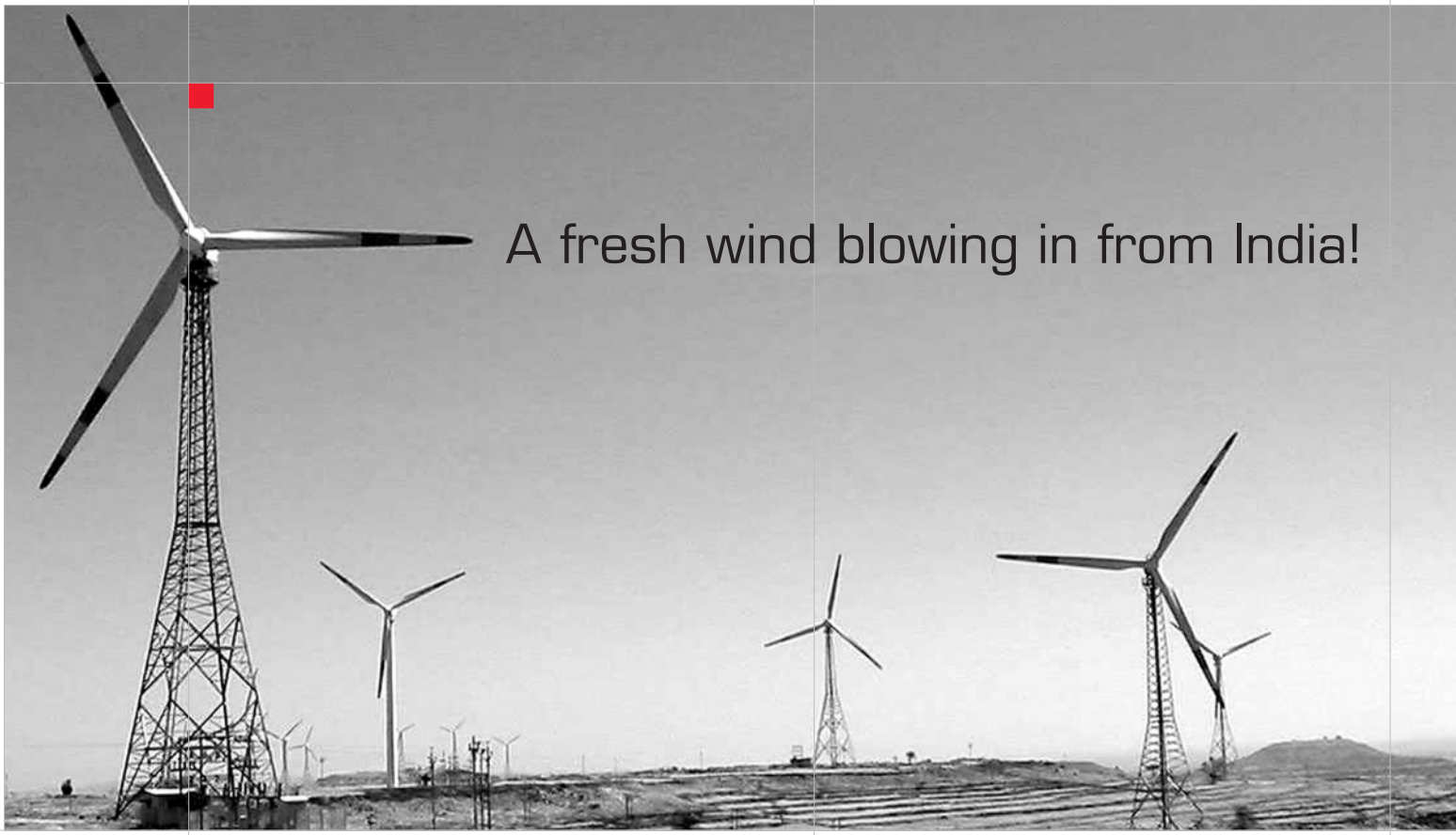
A fresh wind blowing in from India!



[*„Supa Site" wind park*]

Pune/India

[Lust DriveTronics GmbH and a manufacturer of wind turbines from Pune in India have been working together very well for several years now.]

Lust DriveTronics GmbH supplies the drive controls needed to adjust the rotor blades on wind turbines manufactured at several sites in India. These drive controls were developed and produced with the customer, specifically tailored to the particular requirements of use in wind turbines.

Following an invitation by this customer, we visited India in February 2005.

As well as talking about our continuing work together we also visited a production plant near Mumbai (formerly Bombay) in which rotor blades were manufactured in a vacuum-infusion process according to state-of-the-art technology.

At another plant, we were able to see the final assembly of gondolas for 1.25 MW plants and their completion with main components, such as rotor hub, gear unit, generator and control system. Our particular attention was of course drawn to the rotor blade adjusters operated with Lust DriveTronics inverters.

An especial highlight was the subsequent visit to a wind park near the town of Supa in the Indian state of Maharashtra. Maximal performance yield and availability are realised by the 57 wind turbines installed on a chain of hills in an exposed and windy area and by the permanent presence of maintenance personnel.

The most important state variables (e.g. generated performance, rotor speed, gear and bearing temperatures) for all systems are continuously recorded; they are analysed and archived centrally at a separate control centre.

We would like to thank our Indian business partner for a good working relationship and for the interesting impressions we gained during our trip and wish them always a fresh breeze.

Matthias Vehring
Lust DriveTronics GmbH

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[*In front of the control centre at the "Supa Site" wind park f.l.t.r.: Matthias Vehring, Ralf Prechtel, Shyam Jamekar*]

LUST at fairs

Fair	Date/Location	Exhibitor
Hannover Messe World Fair for Technology, Innovation and Automation	11th to 15th April 2005 Hall 26, Stand M39 Hall 26, Stand M33 Hannover	Lust Antriebstechnik GmbH Lust DriveTronics GmbH Levitec GmbH
SMT/HYBRID/PACKAGING Fair for system integration in micro electronics	19th to 21st April 2005 Hall 9, Stand 315 Nürnberg	Lust Hybrid-Technik GmbH
Sensor + Test World Fair for sensors, measuring and testing technologies	10th to 12th March 2005 Hall 7, Stand 221 Hall 7, Stand 318 Nürnberg	Sensitec GmbH Lust Hybrid-Technik GmbH
PCIM Europe's leading exhibition and conference on power electronics	07th to 09th June 2005 Hall 12, Stand 507 Nürnberg	Sensitec GmbH
IAC, TME, SENSOR CHINA 2005 Internat. exhibition of Sensorics, Measuring and Testing Technologies	28th to 30th June 2005 Shanghai	Sensitec GmbH
Motek Internat. Trade Fair for Assembly and Handling Technology	27th to 30th September 2005 Sinsheim	Lust Antriebstechnik GmbH
SPS/IPC/DRIVES Internat. exhibition and conference for electric automation	22nd to 24th November 2005 Nürnberg	Lust Antriebstechnik GmbH Lust DriveTronics GmbH Levitec GmbH

Magnetic bearing technology

customer benefit gained through mechatronics

[An increasing number of requirements set by law and a growing sensitivity on the part of the public for environmental protection, operational and work safety, as well as a required increase in the availability of production lines is leading many industrial sectors to place increasing demands on the means of production.]

One way to do justice to these requirements is to use magnetic bearing systems with which, for example, hermetically sealed systems and machines with the highest speeds (based partly on the lack of friction) can be built. Added value for products and production can be derived from this as a result of faster processing times, for example.

This kind of magnetic bearing system contains actuators, sensors, mechanical components, electronics and software; thereby making up a typical mechatronic system.

Based on the mutual dependencies and influences of the different components, a mechatronic system cannot be efficiently developed by designing and constructing individual components in isolation; it requires a holistic solution approach.

This is not the only reason why competencies in all requisite areas are available at Levitec GmbH as system supplier. The layout of the magnetic actuators for motor and magnetic bearings as well as of the position sensors is just as much a central theme as the mechanical aspects of construction, rotor dynamics, stress analyses and shrink fit analyses. The range of aspects involved in the mechatronic unit i.e. the magnetic bearing system is completed with a developed magnetic bearing electronics series with efficient software.

In this way, the customer gets everything from one source – from development to production. This is confirmed by the wide and successful industrial use of our products in the fields of biotechnology and pharmaceutical technology, spindles, pumps and turbo-compactors as well as customer feedback from the market.

Dr. Christian Redemann
Levitec GmbH

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Magnetoresistive sensors

the motor of progress

[On the occasion of the 8th MR Symposium at the beginning of March, over 100 specialists from research and industry met in Wetzlar. The Symposium takes place every two years and is considered the forum for magnetoresistive technology. Alongside specialist talks from over 20 speakers from at home and abroad, the exchange of experiences between participants and speakers is greatly valued by everyone at the symposium.]

[*Prof. Dr. Schultheiß and Dr. Dettmann, two people who have contributed considerably to shaping the success of Sensitec.*]

This time there were also reports on new evaluation electronics and on construction and connection technology. After all, sensor systems rely in general on ever faster and increasingly price worthy evaluation electronics (sensory analysis isn't much good without evaluation), and it relies on the progress made in micro-system technology combined with innovations in construction and connection technology. Contributions to this symposium illustrated the current status in these expanding technologies while considering their features in connection with MR sensors.

Great interest was aroused by contributions about the latest results from giant magnetoresistive (GMR) technology. As a result of thin film technology (an area mastered very competently by naomi technologies AG) in the field of nanotechnology and the Angström range, new GMR sensors with electrical properties far beyond the values of competitors are now being produced in series.

The balanced nature of talks, partly from research, partly from users with practical experience, was highlighted in a successful way.

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Editors from different trade journals had the opportunity of acquiring additional information at a press conference which took place parallel to the main events.

Sensors in magnetoresistive technology have been tried and tested in millions of ways in safety-relevant applications in automobiles (e.g. in the electrical brake, electrical steering or in anti-lock braking systems), and they also show an above average growth in industrial automation.

Sensitec GmbH has developed from a missionary for technology into a large-scale series manufacturer of MR sensors. This is also reflected, for example, in the growth of work places as last year saw the creation of nearly 20 % more jobs.

Joachim Achenbach
Sensitec GmbH

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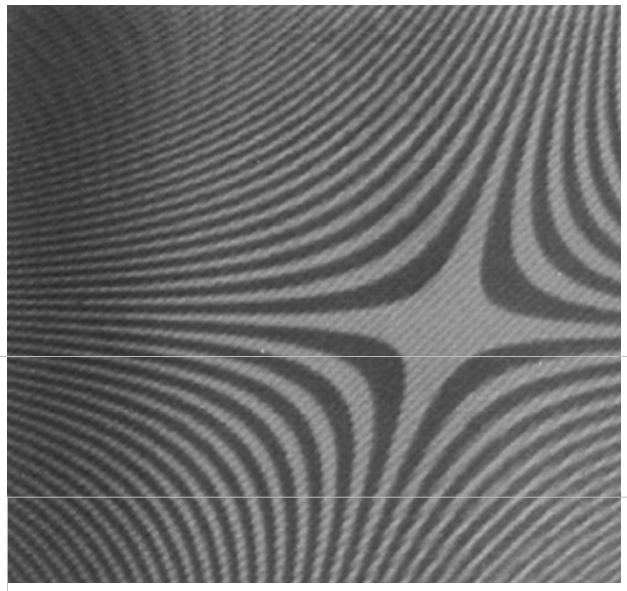
[*There are too few opportunities for engineers to acquire sufficient knowledge and experience about MR sensor systems.*]

Structuring glass

Manufacturing Diffractive Optical Elements (DOE)



[*Section from a lens structure (microscope picture at 50x enlargement)*]

[naomi technologies AG manufactures DOE that are used as corrective lenses in Head Up Displays (HUD).]

While the effect of a classical lens relies on the refraction of light at the transition from glass to air, with a DOE the amplitude or the light wave phase is modulated on a microscopic scale by the diffraction effect.

DOE can therefore replace the optical functions of refracting lenses, but they also allow a greater degree of design freedom and considerably smaller heights can be achieved based on structures that are only micrometers thick.

The DOE manufactured at naomi have a special purpose in working as a corrective lens in an optical system. The DOE design created by the customer in cooperation with the technical college in Darmstadt was manufactured by naomi by using a thin film technology on glass substrates with a diameter of 125 mm and a thickness of 1.10 mm.

The desired lens structures were depicted on the glass surface by photo-lithographic processes and then worked out of the glass by ion milling.

In one special case, this process was run several times to achieve an 8 layer DOE. The lens size was several square centimetres; but these kind of lenses can also be manufactured easily in great numbers on one substrate to a few millimetres, and then separated.

Furthermore, manufacturing the lens structure in e.g. nickel or silicon as a negative means it can be used as a master in a tool for moulding the DOE in plastic for large and cost favourable requirements.

Franz Josef Braun
naomi technologies AG

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The Exhibition »Tüftler und Talente«

150 years of technical innovations in Mittelhessen

Book Recommendations

Vom Unsinn des Sinns oder Vom Sinn des Unsinns
Paul Watzlawick
(English edition: How real is real? Confusion, disinformation, communication)
The author pursues our personal perceptions and the arrangement of our senses. What is reality? Each person experiences it differently and subjectively.
Verlag Piper, ISBN 3-492-21824-5

Der Schwarm
Frank Schätzig, Roman
(Not available in English)
The sixth book by this bestselling author from Cologne has elevated him to a first-class international thriller writer.
Verlag Kiepenheuer & Witsch, ISBN 3-462-03374-3

Das neue Lexikon der populären Irrtümer
W. Krämer, G. Trenkler, D. Krämer
(Not available in English)
More assumptions, misunderstandings and flaws in reasoning. From "Advent" to "Zyniker".
Verlag Piper, ISBN 3-492-22446-6

EMV-Fibel für Elektroinstallateure und Planer
Wilhelm Rudolph
(Not available in English)
16 measures for electro-magnetic compatibility according to DIN VDE 0100.
VDE-Verlag, ISBN 0506-6719

[A remarkable exhibition at the Wetzlar municipal and industrial museum from October 04 to February 05. Two companies from the Lust-group – Lust Antriebstechnik GmbH and Sensitec GmbH were also participating.]

The opening ceremony on October 30th 2004 at the Wetzlar town house for the exhibition entitled "Tüftler und Talente" (tinkerers and talented people) was attended by many visitors, which showed how much interest the subject had aroused. Humorous speeches introduced the visitors to the ideas of the exhibition.
One statement which summarize the point of the exhibition is: "Tinkerers and talented people" are those people with ideas, and the diligence and skill to implement those ideas offering them to a market that has a gap for just such a product".

Thus prepared and full of curiosity, the visitors "stormed" the exhibits. There were a variety of exhibits to see from 44 regional companies, as well as those on loan from many private and institutional parties:

- Historical letters, as well as photos (both shown for the first time); a reproduction of the original Leica and a design drawing of a tonsure cutting device
- Exhibits from the period of the economic miracle and postwar years, such as for example, an oil stove from Haas & Sohn, first turbo-molecular pumps from Pfeiffer
- A suitable cross section on the frequency-history to the servo-controller for high-end applications from LUST and the model of the Mars mobile. In the original one sensors from Sensitec are responsible for its correct movement.

The exhibition ultimately saw nearly 4000 visitors. Surely, the unusually wide media coverage in Hessian newspapers, television and radio contributed to this figure.

All the participants, the exhibiting companies and parties as well as the organizers were excited to see whether it would be successful even before the start of the exhibition.

[Frequency inverters through the ages]

The numbers say it all, the careful preparation was worth it.

Dr. Sibylle Ganz
Sensitec GmbH [ ]

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