The magazine of the EnergyAgency.NRW

4_2007

# innovation &energy

## Let there be light – efficient and modern



EnergieAgentur.NRW

## Focus



## Innovation



## Application



## Magazine



### NRW Day in Paderborn

Everyone who was anyone was at the NRW Day in Paderborn in August. The State Government was showcased in a small tent city. "My House Saves" was the NRW Economic Affairs Ministry's theme; concentrated information on innovative technical systems for buildings, the energy refurbishment of buildings or the utilisation of geothermal energy was much in demand. The visitors included Minister-President Rüttgers. The EnergyAgency.NRW was also flying its flag in the tent of the NRW Innovation Ministry. Numerous visitors obtained information on "made in NRW" fuel cell technology already in use in cargo bikes, scooters, buses, mobile phone systems and even house energy supply systems.

### At the DEUBAU 2008

Under the heading "Creating Future", international construction experts will come together from 8 to 12.01.2008 at the 23rd DEUBAU in Essen. This motif will be evident on the stand so North Rhine-Westphalia. The joint stand in Hall 3, Stand 141 will provide information on "Building and Living in the 21st Century", "Energy-efficient and Solar Construction", "Service Management in the Crafts" and international activities, focusing on the Netherlands, the partner country of the DEUBAU 2008. There the EnergyAgency.NRW will be exhibiting with the topics of "50 Solar Housing Estates", "My House Saves" and "Energy Pass". The EnergyAgency.NRW will also be flying the flag in Hall 6: the Heat Pump Market Place will be showcased with 6 partners on Stand 310 and the Wood Pellets Campaign will be present with 7 partners on Stand 330.

**Kurt-Henning Wiethoff,**
**Director-General of 3M Deutschland GmbH,**
**Neuss**

Dear Readers,

Energy efficiency is one of the key concepts in energy policy - firstly because of steadily rising energy costs and secondly, just as importantly, against the backdrop of climate change. On a European and national level, policy has already provided major impetus. The State of North Rhine-Westphalia plays a pioneering role, for example with the energy efficiency offensive "NRW Saves Energy". We all know that our present use of energy has conservation potential. One area that illustrates this is energy-efficient lighting. The discussion concerning the possible prohibition of traditional light bulbs shows, however, how sensitive the subject is. What is needed is technical solutions which take account of environmental and climate protection concerns as well as consumer needs. Industry is making appropriate contributions in this respect. Our developers in Neuss have, for example, managed to put an idea into practice with which very large spaces can be illuminated with energy efficiency and yet over a wide area: tunnels, halls, underground stations or multi-storey car parks are fitted with a system of tubes lined with a special foil. This foil reflects the light of a single source throughout the whole tube. Where there are low ceilings in particular, it is then possible to generate an even light without having to mount a large number of individual light sources in succession. The metal vapour lamp integrated in the tube system is already highly efficient today. At the present time we are working on enhancing the energy efficiency further by means of LED lamps, which have a longer service life.

We have already taken major steps on the road to environmentally friendly, economic and at the same time aesthetically pleasing lighting systems. A further, and in my view very interesting approach is the greater utilisation of daylight. An outstanding example of this in the truest meaning of the term is that of the so-called light pipes at the Potsdamer Platz in Berlin: glass light stacks several metres high bring daylight into the underground train station. The transport of light is also supported her by the special light-conducting foil. Not only companies, but also architects, civil engineers and private and public clients are already pioneers of energy-efficient lighting systems. In raising awareness regarding energy efficiency, the partnership between politics and industry is a major success factor.

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# Bright ideas

**Light sources play a decisive role in modern society, and innovative ideas for the generation of light are in demand as never before. Universities and research institutions in NRW have also taken up this topic and are working on efficient and attractive solutions for light in all sectors, ranging from general and vehicle lighting, up to and including street lighting.**

Examination of the market for conventional lighting systems shows that the light-emitting diode (LED) offers a convincing solution because, in particular, of its low power consumption and long operating life. This is not the case with its price, however. "But in many other energy-sector matters, too, the fact is that research and development enable us to find solutions and open up global markets for tomorrow's technologies," emphasizes NRW's innovation minister, Prof. Dr. Andreas Pinkwart. "This is why energy research is assigned such a high ranking in the state government's innovation policy."

LEDs are produced using comparatively expensive inorganic luminescent materials. Research is therefore currently pursuing new materials and systems which will permit lower-cost production combined with high efficiencies. High potentials in this field are offered, for example, by polymers, which, once regarded as "cheap plastics", nowadays play a key role as high-performance materials: in automotive and aerospace engineering, as intelligent-surface materials in medicine, and in polymer electronics. They also have a great future in the lighting industry, a field in which reasonably priced, efficient polymer-based LEDs can assist in saving energy and in cutting production costs even further.

Under the leadership of Prof. Dr. Elisabeth Holder, the "Functional Polymers" working group at the Bergische University of Wuppertal is researching innovative luminescent polymers (LUPOs) and their potential applications in lighting. As a collaborating partner of the Dutch Polymer Institute (DPI), the University of Wuppertal is working in the context of an interdisciplinary German-Dutch project with other working groups from the University of Cologne, the Technical University of Eindhoven, and the University of Groningen, Netherlands. The project target: LEDs are also to set new tones with manifold colours in the residential sphere.

**Luminescent polymers**

**Illuminants: a comparative survey**

| | Incandescent bulb | Halogen lamp | Energy-saving bulb | LED light |
|---|---|---|---|---|
| Power consumption | 25-100 W | 10-50 W | 7-14 W | 1-3 W |
| Service-life, approx., in h | 1,000 | 1,000-20,000 | 15,000 | 50,000-100,000 |
| Item price, from | 0.30 euro | 3 euro | 6 euro | 12 euro |

At the Fachhochschule Südwestfalen (Technical University of South-Westphalia), the emphasis is also on the LED. The "New lighting technologies" research focus

headed by Prof. Dr. Ulrich Kuipers is concentrating on LEDs in lighting applications. In close cooperation with industrial associates, products such as signal lights featuring LEDs for installation on high-rise buildings and cranes, for example, are being developed. The range includes the wake turbulence beacons for Airbus Industries of Hamburg; a signalling system to warn shipping of sever turbulence when an A 380 lands has been developed and installed on the River Elbe close to the Airbus site in Hamburg.

In addition, the Fachhochschule Südwestfalen is also participating in a cooperation project with the City of Düsseldorf, the Stadtwerke Düsseldorf (Düsseldorf Municipal Services Utility), and HSW Stadtfeld GmbH & Co. KG. This involves the use of modern LED technology for public lighting installations. Germany's first LED street lighting system is to be installed by the end of this year in the context of a pilot project at Fleher Deich, Düsseldorf. A further project in Düsseldorf is to follow. "Efficient LED systems are capable of making

**Coming soon to Düsseldorf: LED street lighting.**

a significant contribution to the safety of the climate. In introducing this innovative technology, we are targeting savings in $CO_2$ emissions of 50 per cent", states Dr. Lutz Bendel, Head of Network Services at Stadtwerke Düsseldorf, summarizing the benefits of the new technology over conventional street lighting systems.

Other advantages of LED-based street-lighting: thoroughfares are illuminated more uniformly than was previously the case. In addition, precision control of light avoids so-called "light-smog". "Light-emitting diodes, since they are punctiform light sources, permit accurate direction of the emitted light", explains Prof. Dr. Ulrich Kuipers from the Fachhochschule Südwestfalen.

The L-LAB, a research institute for lighting technology and mechatronics supported in the context of a Public-Private Partnership (PPP) by the University of Paderborn and well-known motor-vehicle electrical and electronic component supplier Hella KGaA Hueck & Co., of Lippstadt, is concerned with the use and the effects of light in the field of traffic and transport. Fifteen scientific staff and the same number of students, organized in project teams, are currently investigating the fundamental principles of the automotive lighting technology of the future.

An empirical study has, for example, investigated the extent to which other road-users' vision is affected by halo-

**Light tunnel at the L-LAB Research Institute for Light Technology & Mechatronics**

gen and xenon lighting systems. The dazzle caused by incorrectly adjusted and illegally manipulated headlights has also been determined. The results: xenon headlamps, despite occasionally being considered irritating, do not, objectively, have any detrimental effect on vision. Incorrectly adjusted and illegally manipulated halogen headlamps do, on the other hand, constitute a hazard.

The survey was conducted in a "light tunnel" containing a 140 meter long section of road. Sixty test candidates were positioned in small groups at the spot occupied by a driver being approached by another vehicle from a distance of 50 meters.

The objective of the L-LAB's work is that of locating the best possible support for humans in the context of mobility in an ever more complex traffic environment.

Further information:
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## "Bright and cheerful": Potential savings from energy-efficient lighting

The EnergyAgency.NRW and Haus der Technik conference, Essen, January 29, 2008

Around every one in three kilowatt-hour of electricity generated is consumed by the lighting system in service-sector enterprises and municipal buildings: their share of total power consumption in the tertiary sector is around 30 per cent. But it is not only in administrative buildings, but also in areas such as industrial production shops and street-lighting that lamps are simultaneously an indispensable source of light and an enormous cost factor. The good news is: the use of modern lamps and lighting systems makes it possible to reduce the power consumption of lighting systems significantly. And even where energy-efficient lamps and light fittings are already in use, operators can tangibly cut their electricity bills even further by means of need-orientated control technologies.

Lamps and light fittings, control and greater use of natural light: in the final analysis, modern lighting technology permits reductions of up to 50 per cent of power consumption in the lighting sector. And the lighting system can actually be improved without investment of precious capital if the lighting-system modernization project is achieved by means of the "Contracting" financing model. This is true in the field both of municipal street-lighting and that of office lighting in commercially utilized properties and corporate administrative buildings.

## Conference showcases inspirations drawn from practice

Because lighting systems present an enormous potential for optimization, Haus der Technik Essen e.V. and the EnergyAgency.NRW will, at their joint conference, devote their attention to the potentials of energy-efficient lighting. Numerous campaigns and completed projects illustrate how lighting systems can be optimized and electricity costs cut by means of modernization and rationalization. The event is aimed, in particular, at the representatives of service-sector companies and the municipalities.

Agenda and registration for the conference at www.energieagentur.nrw.de.

# Light-management in companies

In many companies that operate large production shops and warehouses, lighting is one of the major energy-consumption factors, alongside heating, ventilation and air-conditioning (HVAC) systems, since it is necessary in many cases to illuminate large interior areas throughout the year. Continuous fluorescent-lighting strips or individually suspended high-pressure vapour lamps are installed in the ceiling areas of the majority of warehouses. There are various methods for optimization of fluorescent lighting, whereas complete replacement is frequently the only cost-effective solution in the case of high-pressure vapour lamps.

## Recommended: Reflectors

Older fluorescent-lighting systems frequently feature only simple reflectors, if any at all. Without reflectors, the light fittings radiate at least 50 per cent of the emitted light into areas where it is not needed. Clean white reflector plates reflect at least up to 85 per cent of this light, but the communications routes and other areas requiring illumination are nonetheless lit only inadequately, due to the high diffuse light content. Such lighting systems can be optimized by fitting the lamps with mirrored reflectors, which have a reflectance of up to 98 per cent and a high directional light content. Both wide-angle and directional reflectors are available on the market. It is generally possible to more than double the illumination intensity on the target area, and thus to dispense with at least some of the lamps for at least some of the time. Where the wiring system permits, one lamp in double-illuminant light fittings can be fitted with a reflector, while the other is simply removed. Power consumption can thus be reduced by 50 per cent. Lamp purchasing costs and maintenance costs can also be reduced in this way. Reflectors for retrofitting cost between 25 and 35 euro. Electricity-cost savings in our example are around 40 euro per year for a double-illuminant light-fitting with two 58 watt fluorescent lamps (system rating light fittings + ballast 2 x 71 watt). And the use of reflectors is only one, if indeed an extremely cost-efficient, method of optimization.

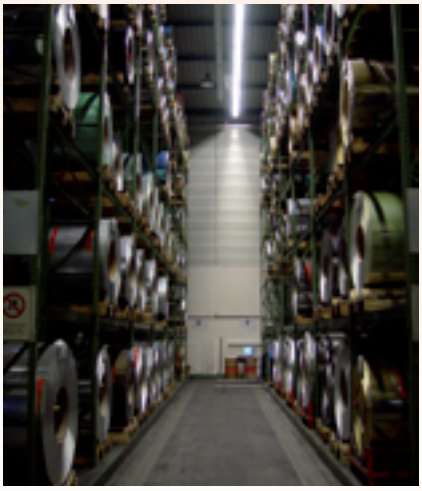
The overall renewal of lighting systems offers considerably more potentials than the optimization of existing ones, however. EnergyAgency.NRW recommends accurate and detailed software-assisted lighting-system planning, a procedure which allows significant reduction of energy-costs, and possibly also of investment costs. The essential components of a good interior lighting system take the form of lamps with a luminous efficiency of greater than 85 lumen per watt, reflectors with a reflectance of not less than 93 per cent and ballast with a low energy consumption. Depending on local circumstances, daylight-sensitive control systems and presence detectors may well also constitute energy-saving and cost-effective augmentations of a well planned lighting system.

## High light output

Modern metal halide lamps and T5 fluorescent lamps (16 mm tube diameter) in some cases have luminous efficiencies of above 100 lumen per watt, compared to mercury-vapour lamps (HPMV lamps), with their only around 55 lumen per watt. Even more efficient systems, such as high-pressure sodium-vapour lamps, can be used if there are no special requirements for colour rendition.

Replacement of 400 watt HQL with new 250 watt metal halide lamps permits, assuming an electricity price of 0.12 euro/kWh and 4,000 operating hours (a figure frequently reached in the warehouse sector), savings of 70 euro per annum per lamp.

New lighting systems are also capable of cutting not only energy-costs, but also maintenance costs. Modern lamp systems have a significantly longer illuminant service-life, a lower lumen maintenance drop across the lamp life-cycle, and generally superior colour rendition.



**An example of an – also visually attractive – lighting-system solution is shown here. On the left, a section of a typical installation, with strip light and an installed electrical rating of 1,562 watt, on the right, the new system, with an installed electrical rating of 760 watt. Illumination intensity has been raised here by 100 lux, to 300 lux. The specimen lighting system is based on 80 watt T5 fluorescent lamps and high-efficiency reflectors, with a reflectance of 95 per cent.**

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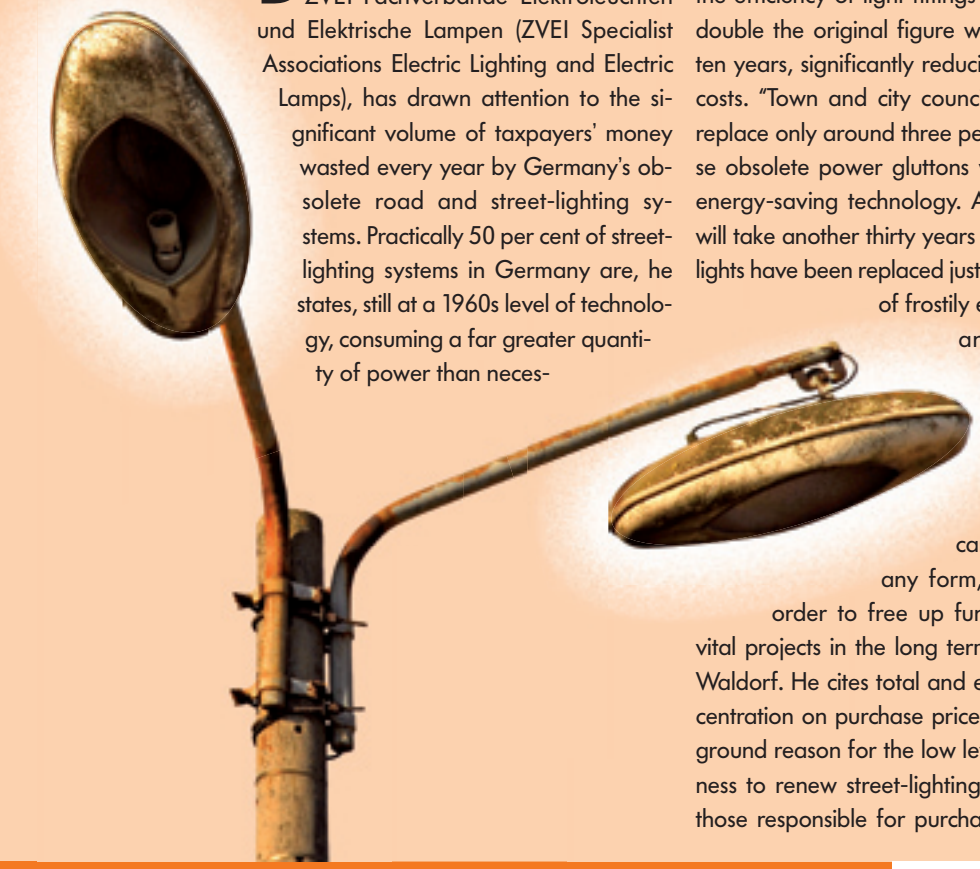
# Getting on in years

## "Street lighting" - the municipal headache



Dr. Jürgen Waldorf, President of the ZVEI-Fachverbände Elektroleuchten und Elektrische Lampen (ZVEI Specialist Associations Electric Lighting and Electric Lamps), has drawn attention to the significant volume of taxpayers' money wasted every year by Germany's obsolete road and street-lighting systems. Practically 50 per cent of street-lighting systems in Germany are, he states, still at a 1960s level of technology, consuming a far greater quantity of power than necessary. His claim is that the industry has raised the efficiency of light fittings to practically double the original figure within the past ten years, significantly reducing operating costs. "Town and city councils each year replace only around three per cent of these obsolete power gluttons with modern, energy-saving technology. At this rate, it will take another thirty years until all street lights have been replaced just once. In view of frostily empty city tills and continuingly high electricity prices, municipal finances can use relief in any form, however, in order to free up funds for other vital projects in the long term", complains Waldorf. He cites total and exclusive concentration on purchase price as the background reason for the low level of willingness to renew street-lighting systems. For those responsible for purchasing in many administrations – and in a large number of private companies – this alone is the decisive criterion. Energy costs across the total life-cycle of the systems are generally not taken into account, Waldorf asserts.

For this reason, the ZVEI proposes the imposition of a country-wide and binding program of renewal, in order to achieve quicker replacement of obsolete street-lighting installations with modern, energy-saving technology. Waldorf also points out that even today the KfW (Reconstruction Bank) provides funds, using which a significant acceleration of this process could be assured. In the ZVEI's opinion, however, the precondition should be that the municipalities make a binding undertaking to specify minimum energy standards in public invitations to tender and thus include so-called life-cycle costs in their calculations.

Further information:
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# LED exhibition

The "Bei uns" (With us) discussion evening on the topic of "Globalization, internationalization and worldwide networking", to which Christa Thoben, NRW's Economic Affairs Minister, had invited some eighty representatives of family-owned and operated enterprises in North Rhine-Westphalia, included the opening in the recently refurbished foyer of the ministry of economics of an exhibition by family-owned Zweibrüder Optoelectronics. This Solingen company, the world market-leader in LED lighting technology, presented innovative and creative products and ideas on all topics in the field of light and lighting.

## The LED Competence Network in NRW

The LED Competence Network operated by the EnergyAgency.NRW provides a cross-organisation platform for representatives of industry and science concerned with the subject of "light-emitting diodes" (LEDs). Its aim is to create favourable conditions for the networking of industry, science and politics, and to further expand North Rhine-Westphalia's pioneering role in the field of LED technology. Some two-hundred experts actively work together within this network, which supports these partners in the generation of combined research projects. Interchange of information between the participants takes place at regular network meetings. The range of topics extends from the theoretical fundamentals, via questions of design and application, up to and including marketing and the structure of the LED industry in Germany, Europe and the world as a whole. Further information: Sabine Michelatsch, Tel.: 0211 896-4610, e-mail michelatsch@energieagentur.nrw.de

# "Fuel Cell Box" schools competition launched

The start of the NRW "Fuel Cell Box" schools competition in the field of hydrogen and fuel-cell technology: following the positive response to the Fuel Cell Competition in recent years, the EnergyAgency.NRW, in cooperation with h-tec Wasserstoff-Energie-Systeme GmbH, has now launched a further round of the competition. NRW Economic Affairs Minister Christa Thoben has this year, for the first time, assumed the patronage of the event: "We need to arouse the enthusiasm of even more pupils than up to now for technology-orientated topics, for we must never forget that the pupils of today are the urgently needed skilled workers, technologists and engineers of tomorrow. Only target-orientated promotion of our young people can assure our state's future and competitiveness".


The aim of the competition is to improve and consolidate knowledge and understanding of the energy-source "hydrogen" and of the efficiency technology "fuel-cell" in the schools of North Rhine-Westphalia. In the course of this academic year, the young people will need to confront the following new challenge: the "Fuel Cell Box", a kit, must be used to develop a fuel-cell-operated model vehicle, complete with a hydrogen infrastructure, which is intended to simulate actual operation of fuel-cell-powered buses at the Düsseldorf trade-fair and exhibition grounds. The "Fuel Cell Box" is correspondingly equipped for this purpose: it includes among other things a solar cell, an electrolyzer, a hydrogen storage canister, a fuel cell, various cables and connecting materials, plus an electric motor, a gearbox and a vehicle chassis, complete with wheels.

The pupils must, however, firstly solve the task on paper, before proceeding to the practical development of the model vehicle. The organizers have provided topic-related teaching materials for this purpose. On the basis of the diagrams submitted, a maximum of twenty school-groups will be selected by February of next year, and will then have the opportunity of translating the solution concepts already drafted in writing into reality, using the "Fuel Cell Box". The ninth to eleventh grades of all further education schools in NRW are eligible to participate. And this schools competition is organized in close cooperation with industry - sponsors up to now have, for example, included Air Liquide Deutschland GmbH, TÜV Nord Systems GmbH & Co. KG, Hydrogenics Corporation, Hoppecke Batterien GmbH & Co. KG, Deutsche Wasserstoff- und Brennstoffzellenverband and Messe Düsseldorf, the Düsseldorf trade-fair and exhibition organizer. Further information and teaching materials for the competition: www.fuelcellbox.nrw.de, www.brennstoffzelle-nrw.de and www.energieagentur.nrw.de, Thomas Kattenstein, Tel.: 0211 86642-15, e-mail kattenstein@energieagentur.nrw.de

**In the last round of the competition, the pupils developed a fuel-cell-powered transportation system.**

## New hydroelectric turbine screw

In conjunction with the German Mill Day, Stadtwerke Rhede (Rhede Municipal Services Utility) commissioned the first hydroelectric turbine screw in the Münsterland region at Rhede-Krechting, on the Bocholter Aa river. The newly completed facility was unveiled to the population in the context of a public celebration. Hydroelectric power has been generated at this location since as long ago as 1909. The old mill building was demolished in the late 1960s, and a new dam constructed as part of the Aa water-control program. By 2004, Stadtwerke Rhede's thoughts of reviving utilization of hydroelectric power at this old site were gaining maturity. After intensive discussion and consultation with the responsible authorities and neighbouring interested parties, planning was gradually finalized, and construction of the hydroelectric plant started in 2006. The population of Rhede welcomed the data supplied by the Stadtwerke on the hydroelectric screw and took the trouble to gain information on the special technical features of this installation. Information was also provided on the hydro-ecological improvements implemented in the form of the newly constructed bypass channel. Biological monitoring will now document the functionality of the fish ladders and fish-friendly operation of the turbine screw, and gather valuable knowledge for future projects. The facility at Rhede can thus be viewed as an example of exploitation of previously unused energy potentials and, at the same time, the assurance of unobstructed hydro-ecological passage for fish and small aquatic organisms.

With an installed capacity of 50 kW, an annual electrical output of 240,000 kWh per year is planned. This is sufficient to supply around eighty households with electrical energy, saving some 150 tonnes of $CO_2$ annually. Further information: Stefan Prott, EnergieAgentur.NRW, Büro für Wasserkraft, Tel.: 02945 989189, e-mail prott@energieagentur.nrw.de

# Steam-driven power plant with solar furnace

An experimental and demonstration solar-thermal power plant unique of its type in the world is currently taking shape in Jülich. This solar-tower power plant has an electrical output of 1.5 Megawatt and is to go on-stream in November, 2008. The plant operator will be Stadtwerke Jülich (Jülich Municipal Services Utility). The first sod was turned recently, with Christa Thoben, NRW's Minister for Economic Affairs and Energy, officiating.

"The Jülich solar power plant represents a milestone on the road to $CO_2$-free power generation. This joint project offers the opportunity of publicizing the State of North Rhine-Westphalia's pioneering role in the technology of utilization of regenerable energies both nationally and internationally", emphasized Minister Thoben. The target of the project, she stated, is that of creating a solid basis for the continuous further refinement and development of this technology, and of assuring the German plant- and mechanical-engineering industries' current market leadership in this field. As she added, a rapidly growing market exists for this new and environmentally friendly technology, particularly in high-sunshine countries. Solar thermal power plants on a megawatt scale could meet a significant portion of future global electricity demand at a rational cost level.

The in all 23.2 million euro plant was planned and designed by Stadtwerke Jülich, the future operator, in cooperation with the Solar-Institut Jülich (SIJ) of the Technical University of Aachen, the City of Jülich, the Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR), Cologne, and Kraftanlagen München (KAM). The North Rhine-Westphalia Ministry of Economic Affairs and Energy, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, and the Bavarian Ministry of Economic Affairs, Infrastructure, Transport and Technology are supporting the project with funds totalling 11.6 million euro. Just less than half of this amount, 5 million euro, is to come from the budget of the NRW ministry of economics. The remainder will be financed by the project partners or by means of loans.

This globally unique solar-tower power plant on a City of Jülich site is a conventional steam-driven power plant with a solar heating system. The combustion chamber, previously heated using oil, gas or coal, is replaced by a solar furnace. The plant features a total heliostat (or "solar reflector") surface area of around 19,000 m². The heliostats heat air to generate steam at 680 °C, which is then used to generate electricity for feed into the public transmission grid.

Fluctuations in hours of sunshine are to be balanced out by means of an innovative new storage system. This will make power generation in the plant less dependent on immediate sunshine, and thus more load-orientated. These innovative power plant components have been developed by the Deutsches Zentrum für Luft- und Raumfahrt e.V., of Cologne, are patented, and have already been successfully tested in Almeria, Spain. The complete system, consisting of the solar components and the conventional power plant elements, are now being developed and tested for the first time at Jülich. In future, it will be possible to operate the generating plant conventionally, using biomass fuel, if solar radiation is lacking. In the long term, it will also be possible to use solar-tower technology to generate hydrogen using solar energy.

Further information: www.kraftwerkstechnik.nrw.de and Prof. Dr. Bernhard Hoffschmidt, Head of the Jülich Solar Institute of the Technical University of Aachen, Tel.: 02461 993529, e-mail hoffschmidt@sij.fh-aachen.de

# Solland Solar: Solar cell production expanded

For the second time within a year, Solland Solar has announced a significant expansion of its production. The solar-cell maker's shareholders have approved a plan to practically triple production capacity. As from mid-2008, Solland Solar will have the capability to manufacture 170 $MW_p/a$ of solar cells, against present capacity of only 60 $MW_p/a$.

To achieve this increase, Solland Solar is building an additional production shop on the German section of the Avantis Business Park, the company's existing location, sited between the cities of Heerlen and Aachen. Commissioning of this new production capacity is scheduled for spring, 2008. Space for two further production buildings has already been reserved on this site, to accommodate plans for even more expansion.

### Growth in the solar-energy sector

This expansion project is Solland Solar's reaction to increasing demand for solar energy. A study performed by Germany's Photon Consulting confirmed in early April the increasing market interest, which is the result of worldwide concern about climate change caused by the combustion of fossil fuels (coal, oil and gas). $CO_2$-free alternatives, such as solar energy, are thus enjoying ever greater popularity. Estimates submitted by Photon indicate that present-day production capacity for solar cells, currently 2.7 GW, is set to quadruple by 2010. Solland currently employs 180 persons, of whom seventy-five work at the German division. On the basis of its own data, the company is anticipating a total of some one thousand jobs by 2010.

### EPIA calculations

Thanks to decreasing prices, solar energy is now also becoming increasingly attractive for consumers. EPIA, the umbrella organization of the European solar cell manufacturers, has calculated that cost price will be euro 0.20 per kWh within ten years. Solland Solar is a Dutch-German manufacturer of solar cells. Its initial capacity when it started production in late 2005 was just 20 $MW_p/a$.

Further information:
www.sollandsolar.com

# "E-world" 2008: Essen energy-efficiency capital for three days

Energy-state NRW, and thus the EnergyAgency.NRW, too, is again to be showcased with a broad range of topics at the "E-world energy & water" from 19 to 21 February 2008: the subjects covered range from photovoltaic power generation and motoring using biogenic fuels, via energy-efficiency technologies, through to modern fuel-cell and hydrogen applications and innovative power plant designs. Around twenty companies and scientific institutions will be showing excerpts from North Rhine-Westphalia's energy landscape on the 450 $m^2$ joint NRW stand in Hall 3, Stand 3-166. The partner country this year is Switzerland. www.energieagentur.nrw.de and www.e-world-2008.com

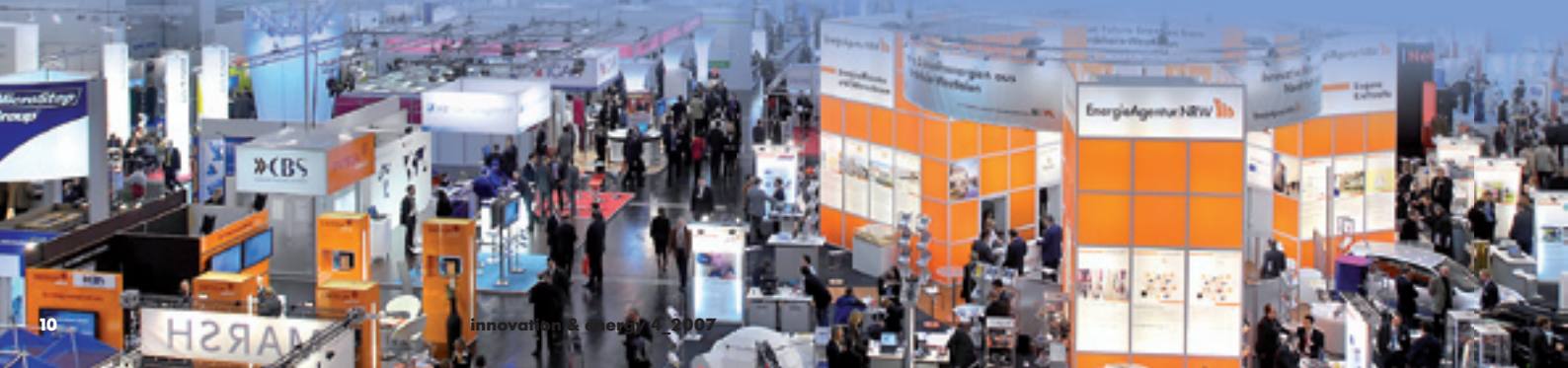
The EnergyAgency.NRW's 12th Expert Conference on Future Energies is the first in the "E-world" series of events and will be held from 10:00h to 17:00h on 19 February. Headed by NRW Minister of Economic Affairs Christa Thoben's opening speech, the agenda also features expert addresses on the Swiss energy industry and on climate change. Following these papers, three specialist forums on the topics of photovoltaics, energy-efficient building and fuels of the future are planned for the afternoon.

### 4th German Hydrogen Congress

The 4th German Hydrogen Congress 2008 is to be held within the framework of the "E-world" on Wednesday and Thursday, 20 and 21 February 2008. This event will examine current developments in fuel-cell technology and define more precisely the role of hydrogen in a future-sustainable energy-economy. An exhibition, a school-pupils', teachers' and students' day, and various excursions, are planned, in addition to papers on energy strategy and technology.
www.h2congress.de

### NRW Expert Conference on Power Plant Technology

Against the background of globally burgeoning energy consumption, ever scarcer resources, and the demands for effective protection of the climate, power-generation technology is confronted with great challenges. Economic and scientific experts will present their conceptions for innovative power-generation technology at the Power-Plant Technology Expert Conference in Essen, from 19 to 20 February 2008. This specialist event is being organized by ConEnergy and the NRW Power Plant Technology Competence Network, and will be held in Essen within the framework of the E-world.



# Cologne-Ossendorf Solar housing estate inaugurated

"Nothing is more convincing than a completed project" affirmed NRW Economic Affairs Minister Christa Thoben at the inauguration of the "Solarpoint" (information displays on the estate) on the occasion celebrating the completion of the solar housing estate in the Cologne district of Ossendorf. In the context of the "50 solar housing estates in NRW" pilot project, the state is supporting the construction of new estates, and renovation of existing ones, which are distinguished by a combination of energy efficiency and the use of solar energy in the residential buildings.

Cologne's largest residential-property company, GAG Immobilien AG, has refurbished 144 residential units in Ossendorf from top to bottom, to the latest technical standards. The buildings, constructed in 1963, had no insulation and were in many cases equipped with electrical heating systems and electrical instantaneous water heaters for supply of hot water. They have now been fitted with an all-encompassing, 14 cm thick thermal insulation system for the building shell. The original heating systems have been replaced with modern wood-pellet heating facilities, augmented with apartment ventilation systems incorporating heat-recovery. In addition, solar thermic and photovoltaic systems have been installed on the roofs of the south-facing buildings. These buildings, containing forty-eight residential units, constitute the solar estate zone within the overall complex.

These modernization provisions have reduced tenants' energy costs from their former approx. 3 euro per m² of residential floor area to around 0.21 euro, equating to a cut of more than 90 per cent. The simultaneous increase in rent, of a maximum of 2 euro/m², is thus more than balanced out by the fall in energy costs. Further information: www.50-solarsiedlungen.de

# Students' residences feature photovoltaic double-façade

The AKAFÖ, the studentenwerk (students' amenities and welfare organization) for Bochum and Gelsenkirchen, has made the "Erlenkamp" halls of residence fit for the future with energy-saving innovations unique in Germany.

Günter Kerfin, technical manager of the studentenwerk, came up with the dazzling idea for innovative and sustainable modernization of the building: The combination of a double-façade back ventilated and lined with photovoltaic elements and an air-heating system permits enormous savings on energy-costs. The award of the Energy Efficiency Class A category and initial statistics confirm this. The State of NRW provided just over 100,000 euro for modernization of the facility.

The modernization has reduced the heat requirement for the heating system from 487 to 245 kWh, equivalent to savings of around 20,000 kg of $CO_2$ compared to a gas-fired heating system. In addition, the modern design of the system means that around 75 per cent of hot-water demand is also covered. Solar-electricity production from the photovoltaic elements has also been enhanced by their innovative mode of fixing: Since there is space ("double-façade") between the elements and the actual face of the building, the elements are back-cooled by currents of air. This increases their rated output by around five per cent. With their 30,000 kWh annually, these solar cells are now generating sufficient energy to supply twelve average households for a full year. A total of 10.95 million euro, of which 4.8 million from state and the remainder from the organization's own funds, were invested in the overall renovation project for this once dilapidated residential facility. The AKAFÖ is anticipating annual savings on water, power and heat costs amounting to around 35,000 euro.

Adjacent to the high-rise section, with its innovative air-heating system and solar power system (108 residential units), the facility's low-rise sector (ninety-eight units) continues, by the way, to be operated with a conventional heating system, permitting direct assessment of the operating-cost differences for buildings of the same floor areas and type. With its future-orientated technology, the AKAFÖ's "Erlenkamp" residential facility is therefore set to continue to supply scintillating results for a long time to come. Even now, other students' organizations are showing lively interest in this exciting energy-saving modernization concept – it is also to be applied in both Essen and Dortmund.

# Environmentally friendly vehicles throughout Europe

**An EU project of considerable environmental policy importance is gaining impetus in NRW's Emscher-Lippe region; the participating regional political representatives from Germany, France, Italy and Spain in September, meeting at the Schloss Herten manor house, signed a declaration and agreement on close cooperation on the use and further development of fuel-cell technology for motor-vehicles.**

**The project presentation: Philippe Paulmier, Head of Project, and Volker Lindner, Stadtbaurat (Municipal Building Officer) of the City of Herten**

Environmentally friendly compact and lightweight vehicles are to be developed up to market maturity and come into use by 2011. They will be powered by hydrogen-fed fuel cells. The project target: testing of the vehicles in everyday traffic.

"Today is a milestone for the Emscher-Lippe region. We are here also positioning ourselves internationally in one of the future's central fields for environmentally friendly energy forms", affirmed Jochen Welt, District Administrator of the County of Recklinghausen. Cooperating partners within the EU are the Rhônes-Alpes (France), Emilia Romagna (Italy) and Castilla y Léon (Spain) regions. "HYCHAIN-MINITRANS is one of the lead pilot projects organized by the EU and the EnergyAgency. NRW in the field of fuel-cells and hydrogen. The development and dissemination of new energy technologies constitutes a global challenge, which is why there is a particular need for intensive cooperation at European level", stated Dr. Volkhard Riechmann, Head of the Department of Energy at the NRW Ministry of Economic Affairs and Energy.

In addition to the four participating regions mentioned above, twenty-five private companies and institutions are also involved in the project. "HYCHAIN-MINITRANS" extends to a fleet of 158 vehicles: forty-four mini-transporters, forty cargo tricycles, thirty-four wheelchairs, thirty motor-scooters and ten shuttle-buses. The large number of vehicles sold in the four regions is intended to provide a basis for initial industrial production. The vehicles will be refuelled by means of interchangeable hydrogen cartridges. These can be changed easily and safely, thanks to their simple "clip-on" design. Distribution of more than 2,000 of these cartridges is supported by the infrastructure already in place in the four regions.

In the Memorandum of Understanding signed, the four regions agree their intention to develop and promote joint projects, over and above the "HYCHAIN-MINITRANS" scheme, in the field of the use of environmentally friendly hydrogen. This may, for example, involve the use of larger vehicles, or innovative solutions for utilization in the building sector. In NRW, the following partners are participating in "HYCHAIN-MINITRANS":

- Air Liquide Deutschland GmbH: Installation and operation of a 700 bar hydrogen filling station for high-pressure cartridges for mobile fuel-cell use at the Chemiepark Marl (HyLog)
- Hydrogenics GmbH: Development of a midi-bus with hybrid fuel-cell propulsion, in Gladbeck
- Masterflex Brennstoffzellentechnik GmbH: Development of a fuel-cell-powered Cargobike at Herten
- WiN Emscher-Lippe GmbH: Service Center (HyServ) for vehicles and users, providers of training and qualification programs, and project-control headquarters, in Herten
- Wuppertal Institute for Climate, Environment and Energy: Scientific support

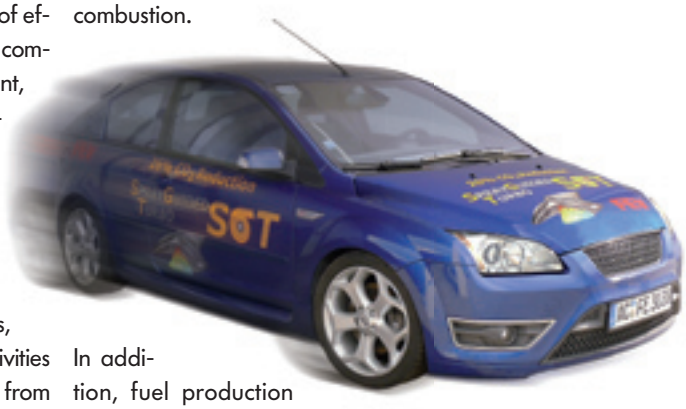
The project, which is to run for five years, started in January, 2006. Total budget is around 38 million euro. "HYCHAIN-MINITRANS" is receiving financial support of 17 million euro from the European Union. The remaining 21 million euro is made up of contributions by the participating companies and institutions. The NRW partners' share of this budget is around 8.4 million euro, of which four million euro in promotional subsidies (www.brennstoffzelle-nrw.de). Further information: Günter Fritsch, WiN Emscher-Lippe GmbH, Tel.: 02366 10 980, e-mail guenter.fritsch@emscher-lippe.de, www.energieregion-el.de

# Propulsion systems for the future

FEV Motorentechnik GmbH and the Department of Combustion Engines (VKA) of the RWTH Aachen are supplying innovative ideas for sustained reduction of $CO_2$ and pollutant emissions from road-vehicles, and constitute one of the world's most productive independent Research & Development organizations in the field of propulsion. This status is documented by their around 1200 employees, more than seventy engine testing stands, two vehicle-testing dynamometers, plus various special test facilities for optical flow and combustion analysis, engine-component, catalytic-converter and low-temperature tests, and also fuel-cell studies. Current Research & Development activities are focused on reduction of fuel consumption in gasoline engines by means, for example, of direct fuel injection combined with supercharging, variable valve lift, variable compression, alternative modes of combustion (spontaneous ignition and lean-mixture combustion), cutting of diesel-engine emissions with a simultaneous enhancement of efficiency by means of improvement of combustion and exhaust-gas after-treatment, and efficient combustion modes for alternative liquid and gaseous fuels with low $CO_2$ emissions. In the case of both gasoline and diesel engines, research work is also being performed, alongside the refinement and further development of the propulsion systems, on optimum fuel composition, with activities also extending to production of fuels from biomass. "This is a pleasing development," underlines NRW Innovation minister Prof. Dr. Andreas Pinkwart, "particularly because only innovations will enable us to continue to guarantee assured, affordable and environmentally safe fuel supplies in the future".

Fuels have a significant influence on the internal operation of the engine: the injection system, mixture preparation, ignition and combustion behaviour, and also the durability of the machine as a whole. Efficiency and pollutant emissions are also closely related to the fuel selected, and to harmonization of the engine with the particular fuel. In the context, in particular, of future biomass-derived fuels, which have a higher oxygen content, it should be noted that, given appropriate engine-tuning, these fuels are likely to achieve positive benefits in terms of particulates emissions. An elevated oxygen content, however, results simultaneously in a reduction in calorific value and thus in a reduced vehicle range for the same combustion efficiency. To fully utilize the potential of the fuel, it is therefore also necessary to further refine and develop the combustion process, and tailor it specifically to the fuel.

An integrated optimization process for fuel and the combustion process itself offers potentials in terms of enhanced efficiency and reduction of emissions. Systematic manipulation of the molecular structure of the fuel, and therefore of the characteristics relevant to the propulsion process, necessitates research in the field of engine combustion.




In addition, fuel production must itself be subjected to a holistic analysis with a view to optimization of energy efficiency and thus achievement of minimum possible $CO_2$ emissions. This concept presupposes interdisciplinary cooperation between groups of researchers from the fields of chemistry and catalysis, chemical and process-engineering, and combustion and automotive engineering.

Further information: Dipl.-Ing. Fabian Fricke, VKA, Tel.: 0241 80-95370, e-mail fricke@vka.rwth-aachen.de, www.vka.rwth-aachen.de, full version available at www.kraftstoffe-der-zukunft.de

## Three tonnes of wood pellets for a Paderborn family

"Wood Pellet Day", organized by the EnergyAgency.NRW, was marked by the handing over of a stock of wood pellets sufficient for this winter to a family in the town of Paderborn by environment minister Eckhard Uhlenberg. The winners, the Bayer-Böckly family, received the three tonnes of winter fuel for their entry in the "5th Wood Pellet Day" in NRW on October 6, 2007. The EnergyAgency.NRW organized a draw for five winter-stocks of wood pellets among all of the six hundred volunteers who opened their doors for visitors to view their pellet-fuelled heating systems on Wood Pellet Day. Also grateful for their free store of winter fuel, alongside Karin Bayer-Böckly from


**Publicizing the tiny wood pressings: NRW Environment Minister Eckhard Uhlenberg, winner Karin Bayer-Böckly, pellet producer Andrè Wagner, supplier Dieter Schwarze and Franz Lödige, from the Landesbetrieb Wald und Holz (State Forestry and Timber Agency), are all wood-pellet enthusiasts.**

Paderborn, were the St. Georg German boy scouts troop, in Aachen, Manfred Schemberg, of Dülmen, Bernhard Ohlert, Bad Münstereifel, and Dr. Bernd Rösner, from Siegen. The doors of some six hundred private cellars were opened on the "5th Wood Pellet Day" in NRW, to permit examination and discussion of wood-pellet installations in private households. "The wood-pellet campaign day enabled us to give all those interested the opportunity of experiencing domestic heating using wood pellets on a daily basis and of talking to system owners and HVAC engineers", stated the minister at the hand-over ceremony in Paderborn. "The boom in installation of pellet-fuelled heating systems illustrates the satisfaction of the owners with this climate-friendly heating technology". Since 2003, the number of pellet heating systems installed in North Rhine-Westphalia has risen from six hundred to its current 7700. Further information: www.aktion-holzpellets.de.

# "White Giant" saves money

The "Berg Fidel" district is located in the south-west of the city of Münster. Its townscape is predominantly that of a mixed-utilization area of detached and multi-residence houses, and a seventeen-storey building complex, originally planned as a block of luxury apartments and visible from afar which, due to its size and white façade, is locally referred to as the "White Giant". This tower-block contains 113 residential units and stands at the highest point in the Berg Fidel district, with a ground elevation of 71 meters.

The now somewhat old heating centre of this building, designed originally in the form of a roof-mounted system with a thermal capacity of 600 kW x 2, no longer met contemporary requirements for a modern, and efficiently operable roof-mounted heating centre. Also included in planning was the replacement of the building's windows with new glazing that would meet present-day insulation standards and the visual upgrading of the White Giant's façade. Since this extensive modernization program would necessitate significant investments, the initial consultation, with advice provided by the EnergyAgency.NRW, led to the examination of contracting as a method of financing.

Verwey GmbH, of Duisburg, the management corporation responsible for the property, already had experience with a series of similar contracting projects at numerous locations throughout Germany, and was thus entrusted with further coordination. A number of contracting-based suppliers and service-providers were then requested to submit bids for replacement of the obsolete and inefficient heating-equipment centre. A significant element was analysis of the system's overall energy-efficiency, in the context of which it was necessary to attach great importance to precise adjustment of the heat flow, due to the existing single-pipe system. Verwey had, in advance, already obtained corresponding quotations from firms of heating engineers, to permit comparison of contracting bids against a self-financed solution.

The result: Stadtwerke Münster GmbH (Münster Municipal Services Utility) prevailed with its "Thermokonzept business" bid. The cost appraisal for the calculated self-managed solution and the successful quotation submitted by Stadtwerke Münster indicated a cost-advantage of several thousand euro annually. Further information: Christian Tögel, Tel.: 0202 24552-34, e-mail toegel@energieagentur.nrw.de

# Meeting needs: companies unite in a local heating network

Medium-sized enterprises in eastern Westphalia are setting a good example and practising on-the-spot climate protection. Fritz Becker KG, a manufacturer of moulded-beechwood chairs, door- and window-fittings producer FSB Franz Schneider Brakel GmbH & Co., and AGRAVIS Kornhaus Ostwestfalen have signed an agreement on joint utilization of process energy and will in future place their trust in a common heat supply originating from regenerative raw materials, and in the resultant reduction of carbon dioxide emissions. This cooperative solution by the companies in the town of Brakel has a pilot character for NRW and has therefore received financial support from state funds. This is the first time that companies with differing production processes have grouped together to form a local heat-sharing arrangement on the basis of a number of renewable energy sources. The idea of cooperative energy generation arose in the context of talks between FSB and Fritz Becker KG, whose existing wood-fuelled combustion system for thermal exploitation of waste wood has hitherto produced an otherwise unused surplus of energy. The project ultimately took on more concrete shape as a result of consultation with the EnergyAgency.NRW and the EfficiencyAgency NRW. The concept involves greater exploitation of furniture producer Becker's wood-fired system. The firms are backing renewable raw materials, in the form of waste wood at Fritz Becker KG, combined with biopellets from AGRAVIS Kornhaus Ostwestfalen, as their energy sources. Natural gas, which has up to now been used by FSB for heat-generation, will in future be used as an energy source only to cover peak demand. Thermal energy is to be supplied from Fritz Becker KG to FSB via a new heat-transmission pipeline to be installed in the near future.

**The CEOs of the participating companies: Dieter Holsträter (FSB), Dr. Ralf Becker (Fritz Becker) and Johannes Hofnagel (AGRAVIS Kornhaus) (left-to-right) put their signatures to the agreement.**

The group of companies is planning to generate around 6,000 MWh of environmentally-friendly thermal energy annually. This output is equivalent to the energy consumption for heating of six hundred typical German households. Its generation will result in the production of some 1,200 tonnes less of $CO_2$ per annum. Further information: Rüdiger Brechler/Bernd Geschermann, EnergyAgency.NRW, Tel.: 0202 24552-14/-15

# War on mould

An advantage of the energy-related remediation of buildings which is often not taken sufficiently into consideration is the fact that the buildings are subsequently not so subject to attack from mould. This is achieved by improving the situation within the building as regards heat management. This not only prevents the costs which arise when mould damage has to be repaired, but also has positive effects on the users of the buildings.

An investigation carried out by IEMB (Berlin) which is representative for Germany shows that in more than one in five buildings there is damp damage, and in almost half of these cases, mould has also appeared. Often – in addition to insufficient or inappropriate ventilation, defects in the structure of the building are the cause, with formation of condensation from the room air the trigger for the damage. Because of the danger to health which arises from mould, damage from damp in flats and houses, and also in non-residential buildings, must be repaired in a suitable way as soon as possible. This process should also include determination and elimination of the causes of the damp. Renovation of the shell of the building particularly taking matters of energy into consideration generally eliminates the problem if the original cause of the damage is to be found in the structure of the building.

Damage from damp can be attributed to the structure of the building if damp from the inside room air condenses on cold surfaces. In fact, mould formation is directly connected to increased humidity in the room air and/or a too-low surface temperature of the relevant part of the building structure. The higher the temperature of the surface, the less probability there is that the mould will form.

In order to prevent mould attack, it must be ensured that a minimum permissible surface temperature of 12.6 °C is maintained on the inside of the building structure with outside temperatures of -5 °C. Too-low inside surface temperatures are often created at so-called "cold bridges". Cold bridges are designated as locations at which the heat from the inside space "escapes" to the outside more quickly than over the rest of the shell. So-called "structural" cold bridges are caused by the structure of the building, e.g. they are based in the details of the structural connections at transition points within buildings. But also a weakening of the material strength of the outer shell creates a more or less effective cold bridge. Examples of this are the radiator alcoves which are often to be found in older houses. Structural elements which project into the cold outside air from the warm insides of buildings without any intermediate insulation have a particularly marked effect, e.g. balconies and other projecting structures.

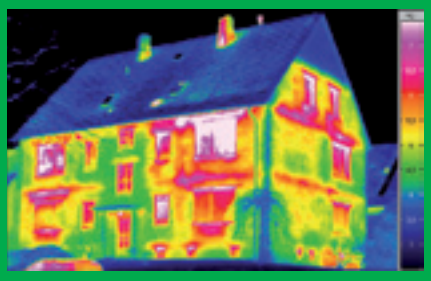
Solutions can be found for all these structural weaknesses within the framework of energy-related remediation, enabling a clear reduction in the escape of heat at these so-called cold bridges, leading in turn to a form of construction which should allow the building to remain free of mould.

Air-tightness is not only extremely important inside for reasons of energy saving. Avoidance of damage to buildings also plays an important role. Here, it not only a question of the rate of air exchange, which is measured in the blower door test (N50 value) but also of the size of the individual air leaks. For example, if air penetrates into the insulation material from the inside of a building through a gap in an air sealing foil, condensation will form in the insulation material in winter. If the leak is so considerable that the moisture cannot escape in time, the insulation will become damp all the way through, which generally leads to mould growth. In order to avoid this, it must be ensured that there are no air leaks when buildings are modernised.

If the building shell is generally airtight following modernisation, particular attention must be paid to the ventilation of the building. This is not so much for reasons associated with the structure of the building, which mainly concern the escape of moisture, as because of the heat insulation the inside surface temperatures increase to such an extent that, even in the case of increased room humidity, it is not probable that condensation will form on the surfaces, leading to possible mould formation. It is rather the case that it is important for good and healthy air quality that hazardous substances should be removed from inside areas in a controlled way and that there should be sufficient exchange of air. As we live today, with longer absences from the home, the usual form of ventilation achieved by opening windows is often not sufficient. The solution here is to install a ventilation system – on a centralised or decentralised basis, which from the point of view of energy management should ideally be combined with heat recovery. Further information: www.mein-haus-spart.de

**Model project for house owners:**

## Special funding



A model project of the German Energy Agency (dena) offers special funding to those who own an old house which they would like to renovate. House owners who decide to modernise their building so efficiently that they only consume 50 per cent of the energy specified by the Energy Saving Ordinance for New Buildings receive a low-interest loan of up to 50,000 euro per residential unit, and cancellation of 20 per cent of the debt if the planning is successfully implemented in practice.

The model project "Low Energy Houses in the Existing Housing Stock" is financed via the $CO_2$ Building Renovation Programme of the Kreditanstalt für Wiederaufbau (KfW - Reconstruction Bank). There are already 14 such forward-looking buildings in NRW, and ten others are currently in the process of renovation.

It is possible to apply for funding for one- and two-family houses until 31.03.2008. Conditions for participation in the programme are available from EnergyAgency.NRW. Your contact is Lale Salur, Tel. 0202/24552-71, e-mail salur@energieagentur.nrw.de

"mission E" on the march:

## Brochure to help consumers use less energy now available


The "Energy Savings Book" of the "mission E" project of the German army and EnergyAgency.NRW was ready right on time for the German government's open day. The brochure is entitled "We can switch off!" and 400,000 copies are to be issued. All members of the German army will receive a copy of the brochure, which describes how to save energy without sacrificing comfort – and which is intended for use both at work and at home. From computers and monitors through lamps and ballasts, refrigeration and deep-freezing, washing and drying up to heating and ventilation, energy labels and energy use in standby mode: the brochure offers tips on numerous consumers of energy at home and in the office. But the "Energy Savings Book" is much more than a collection of tips for saving energy: example calculations regarding the cost-effectiveness of new purchases, background information on, for example, the functioning of thermostatic valves and also notes on websites of interest and online tools complete the energy-saving advice on offer. Further information: Tom Küster, Tel. 0202/24552-23, e-mail kuester@energieagentur.nrw.de

# School heating from biogas

The Peckelsheim school centre, with primary and secondary school, secondary high school, indoor swimming pool and three sports halls, is by far the most important consumer of energy in the town of Willebadessen (9,000 inhabitants, Höxter District). In view of constantly rising energy costs and the fact that four of the total of six boilers at the school and sports centre are due for renewal, the municipal administration asked for two tenders for alternative heat supply solutions based on regenerative energies in the spring of 2006.

Following initial advice from the EnergyAgency.NRW, the two concepts were compared with each other and also with a conventional solution. The results of an economic feasibility study covering the next 15 years were quite clear:

Supply of waste heat from a biogas installation with unit-type co-generation plant one mile away, which is now at the planning stage, was by far the most economical and also environmentally-friendly solution when compared with the other two variants under consideration – changeover of the heat supply to a central boiler fuelled with wood chippings or modernisation of the gas boilers. According to the study, the annual costs for heat from the biogas installation from the company Bio Energie Peckelsheim GmbH & Co. KG, including the capital costs for the district heating pipeline, were a good 50 per cent lower than for the second-best solution.

Following signature of the contract, the biogas installation, the district heating pipeline and the link to the heating systems of the municipal buildings were completed between July 2006 and January 2007 by the participants in the project. It is only necessary for additional heating to be provided by the natural-gas-fired boilers in the municipal buildings in the cold season.

The biogas installation was designed by the company Biogas Nord AG, Bielefeld and the Turk engineering consultancy from Brakel. The actual construction of the installation was for the most part carried out by Biogas Nord acting as main contractor. The co-generation plant, with an electrical output of 500 kW, originates from the company 2G Energietechnik from Heek, which is also responsible for maintaining the machinery. The planning consultants Planungsbüro IBL Ingenieur Büro Lesemann from Detmold was responsible for planning of the regulation and control systems and connection of the district heating pipeline to the existing heat distribution network in the municipal buildings.

Further information:
Rüdiger Brechler/Ulrich Goedecke, Tel. 0202/24552-16, e-mail goedecke@energieagentur.nrw.de

## Contracting guide

Whether in private trade and industry or in the public sphere, a shortage of investment capital often prevents use of cost-effective energy savings potentials in buildings or complexes. Contracting is a tried-and-tested solution in such cases. The NRW Economic Affairs Ministry has now published a new issue of its 48-page „Contracting" guide. This guide contains basic information on contracting and is intended to help this future-orientated energy service to be used over a broader base. The examples of successful contracting projects from NRW in this brochure can certainly serve as an encouragement. The brochure is available from EnergyAgency.NRW by calling +49 (0) 1803/190000.

# Passive house heats with rapeseed oil

**The second apartment block using the passive method of building is already in place in the Rosellerheide district of Neuss. During the cold days of the year, a boiler fuelled with rapeseed oil works in the cellar in order to heat the building – and there is a solar heating installation on the roof.**

The Neuss architects "Tintemann Architekten" built the house to face south. However, the building costs, which are around 9 per cent higher than for conventional construction methods, are not reflected in the purchase price of the apartments. "We have saved the additional costs in other ways, for example through greater planning efficiency", explains architect Ingo Tintemann. This is already the fifth passive house for which his company is responsible, and a further block with eight residential units for senior citizens and the disabled is already at the planning stage.

On the technical side, the passive house is special in several respects. Large triple-glazed windows were set into the south-facing wall of the building, with a Uw value von 0.8 and g value of 0.5. This helps to collect heat in winter, and in order to avoid loss of heat, there are only a few windows in the north-facing wall, which have deliberately been kept small. The protection against the heat which is needed in the summer is provided by means of heat-insulated blinds and projecting balconies.

The building is covered in 20-centimetre-thick hard polystyrene foam sheets, which prevent the heat which is in the building from escaping to the outside. The air-tightness of the building was proven by means of the blower door test.

In addition, it is standard practice for passive houses to be equipped with a ventilation system incorporating heat recov-

ery. Each apartment has its own ventilation system and the desired room temperature can be controlled individually by means of a room sensor.

A further advantage of passive houses is the fact that the outside air which enters the house is filtered, which offers considerable relief to those suffering from allergies. The outside air is pre-heated in winter by means of an earth heat exchanger with constant earth temperature of between 10 and 12 °C, but is cooled in summer. Further heating of the intake air and also of water for domestic use is by means of a tube collector-type solar heating installation on the roof. Because of the low requirement for extra heat in the passive house, the intake air is quite sufficient in order to heat the building, there are no radiators.

If, however, the heating should in exceptional cases not be sufficient if temperatures are very low, a condensing boiler comes into play. This boiler is fuelled with rapeseed oil. Further information: Ulrich Goedecke, Tel. 0202/24552-16, e-mail goedecke@energieagentur.nrw.de

## Lessons in physics

"We want: Industry for Schools in NRW" is the name of a campaign which is being used by Economic Affairs Minister Christa Thoben and Schools Minister Barbara Sommer all through the region in order to encourage entrepreneurial activities in schools. To set a good example, the ministers decided to sponsor the "Am Kothen" grammar school in Wuppertal. The activities related to the sponsorship are all connected with the subject of "energy" and are coordinated by the EnergyAgency. NRW.

Economic Affairs Minister Thoben has now made a visit to "her" school in Wuppertal as part of her efforts to encourage entrepreneurial activities in schools.

The Minister was able to gain an insight into the many possibilities of cooperation between industry and schools at the school during a day with the special theme of "Energy efficiency and Renewable Energies". Inside the NRW special "energy" vehicle, Minister Thoben watched while pupils from the 5th to 9th classes carried out small experiments in order to show how energy can be saved using simple means. The Minister also joined in a physics lesson of Class 6d on the subject of "energy" and discussed how efficient use of energy and renewable energies such as geothermal and solar energy can make a useful contribution to climate protection :

Further information: www.wir-wollen.nrw.de/unternehmenspreis.php

# More than 150 events throughout the region

NRW SPART ENERGIE

For seven days in October during the "NRW Saves Energy" Action Days, 151 private households, schools, companies, clubs and associations showed how to handle energy differently – in other words more economically and in ways that are more climate-friendly. NRW Economic Affairs Minister Christ Thoben sent the "NRW Saves Energy" energy bus to the state parliament in Düsseldorf for the Action Days, which took place within the framework of the energy efficiency offensive of the state government and were co-ordinated by the EnergyAgency NRW.

A total of 151 events took place throughout the region, in the form of conferences, chat rooms, and teaching and training events within further education. And the purpose was always to demonstrate the performance capacity and efficiency of energy-saving equipment or technologies which are fuelled with renewable energies. "NRW is already full of energy efficiency solutions – and some of them have been shown here as examples", said the Minister. "Nothing is as effective as a real functioning example when it comes to convincing people – whether it's a heat pump, heat recovery, district heating co-generation plant or a condensing boiler – the Action Days demonstrate that energy-saving technologies can play a vital role in everyday life".

The examples were many and varied: several architects' offices presented their services, while a large number of tradesmen throughout NRW made use of the Action Days in order to demonstrate their knowledge of energy-saving methods and equipment. Energy markets in Dormagen, Wulfen and Sankt Augustin offered a wealth of information in a highly concentrated form.

Among others it was possible to visit a 110 rapeseed oil unit-type co-generation plant, which is used as the central heating unit for an "island" local heating system. The "island" consists of two residential properties, one office building and a restaurant.

In Wülfrath, several heat pump users presented their equipment to interested members of the public, opening up their houses to visitors.

Recovery methods for consistent energy saving in relation to all ventilation, air-conditioning and cooling systems were presented by the company SEW in Kempen. It was possible to visit the factory and also to view the company's own air conditioning equipment for the offices and production areas with a total floor area of 2,500 square metres.

The district administration in Höxter participated in the Action Week with an exhibition. In ten years, the district of Höxter has been able to reduce its energy consumption by 62 per cent and heating costs by 1.9 million euro.

In Mülheim an der Ruhr, the old principle of the timber-framed house came back to life with the opportunity of visiting a so-called load-bearing straw bale house with superb insulation characteristics. The house stays cool in summer and warm in winter. When plastered over with clay, the bales regulate the room humidity.

However, it is not only the large-scale projects which impress with their activities, but also a large number of private households. A typical example: the energy-saving house which belongs to the Eickels family in Rheinbach. It is possible to read about this house on the www.nrw-spart-energie.de website. As the family says: "We do not have a zero-energy house, but it is very well insulated and equipped with a ventilation system with heat recovery, photovoltaics, a solar heating installation, a wood-burning stove, and a gas condensing boiler for liquefied gas. The different installations in the house are well co-ordinated and electronically regulated."

Further information:
www.nrw-spart-energie.de

# A visit to exemplary energy-efficiency projects

"Energy efficiency measures are one of the most important contributors to climate protection. At the same time, the rapid increase in the price of energy means that intelligent use of electricity and heat has never been so worthwhile from the financial point of view." These were the words of Economic Affairs Minister Christa Thoben during her visit to three exemplary energy-efficiency projects in Bochum, Hattingen and Essen. These visits were a part of the "NRW Saves Energy" Action Days in October.

Within the adult education programme of the city of Bochum (www.tbs1.de), headmaster and senior teacher Peter Hille and his team presented the energy-saving training and practical work for those training for a specific profession. In the school's own "Laboratory for building systems technology", apprentices training to work within the different areas of the electrical and electronics industry learn about the latest building automation and data bus technologies (data transfer methods), which are at the forefront when it comes to the energy-saving building complexes of the future. Peter Hille: "With us, young people learn how to deal with energy so as to protect the environment and also valuable energy resources, and clearly experience the link between theory and practice. This has already led to changes in behaviour when it comes to use of energy and above all to helps those who learn with us to find interesting work which suits their skills."

**Pupils explain their work to the Minister**

The company RESOL in Hattingen was established in 1977 and is concerned with intelligent regulation and control technology for solar heating and other types of heating and air-conditioning equipment. Today, RESOL products regulate the efficient use of solar energy in 50 countries throughout the world and in 2.5 million solar, heating and swimming pool installations. A good 250,000 control instruments are manufactured each year with 120 employees, and 80 per cent of these products are destined for export. As Chief Executive Rudolf Pfeil says: "We have recently completed the development of an input-output controller (IOC)". This means that RESOL has designed equipment for use in practice for the function control and output monitoring of solar heating installations. Prototypes of the system have been developed and are now an established part of our product range." (www.resol.de)

In Essen-Haarzopf, the family home of the Schloss family has been awarded the energy-saving mark "Renovated house" and "Solar collectors". As Maria Schloss says: "Within ten months we have completely renovated the 50-year-old house. The original living area of 105 m² has been increased to 138 m² by means of an extension. The aspects of the renovation related to use of energy have been implemented using the best technology which is available today." The house is now completely insulated on the outside, as is the roof. The old oil-fired heating system has been replaced by a gas condensing boiler which is independent of the temperature of room air. This is supplied with hot water from a vacuum tube collector and a wood-burning stove which also heats water running through it in pipes. An electronically-regulated energy saving pump supplies the house with drinking and heating water. "Nothing is more convincing than a real example which actually works. This award is a visible sign of the energy standard of the building and should motivate neighbours to work in the same direction", explained Minister Christa Thoben as she also praised the commitment of the city of Essen, which is a partner of the State campaigns "NRW Energy Savers", "E-FIT" and "OldBuildingsNew". Further information: www.nrw-spart-energie.de and www-mein-haus-spart.de

**Every right to smile: employees at RESOL**

## Winners of the online energy quiz

3,250 people logged on to the EnergyAgency.NRW internet energy quiz, almost 1,000 mastered the ten grades of the difficulty within the question-and-answer game, which took place during the "NRW Saves Energy" energy efficiency offensive of the NRW State Government. "This really is a great success - by means of the energy quiz we have been able to spread the message of economical and responsible use of energy in a way which is fun," says Dr. Jens Baganz, State Secretary in the NRW Economic Affairs Ministry, on the occasion of the award ceremony in the Düsseldorf Economic Affairs Ministry.

Dr. Baganz presented baskets of useful energy-saving devices to Barbara Seidel from Wermelskirchen, Ulrich Freitag from Wuppertal (2nd from right) and Andreas Jeziorek from Ratingen (2nd from left). Among other things, the winners received LED torches, a solar-powered watch, a training course on how to save fuel while driving, multi-way connectors which can be switched off, a power saver, literature on the subject of renewable energies and low-energy bulbs. Among others, the prizes were donated by the ADAC, Zweibrüder Optoelectronics GmbH and RWE Rhein-Ruhr AG.

# Five local authorities set the pace in climate protection

Bielefeld, Castrop-Rauxel, Düsseldorf, Hemer and Remscheid have now been presented with the European Energy Award® 2007 (eea®) by Dr. Jens Baganz, State Secretary in the NRW Economic Affairs Ministry, who said, "Nowadays everyone is saying that we have to do something to help energy efficiency and climate protection; I think the work of these towns and cities is truly excellent".

The award ceremony took place during the "NRW Saves Energy" energy efficiency offensive in Castrop-Rauxel. The award is a European certificate for local authorities who have been able to demonstrate above-average commitment and a wide variety of measures associated with energy efficiency and climate protection. Castrop-Rauxel, Düsseldorf and Hemer received the award for the first time, while for Bielefeld and Remscheid it was already the second certification of their activities as a municipal authority. EnergyAgency.NRW is the sponsor of the European Energy Award® in the NRW region.

Regular internal and external control mechanisms ensure that optimisation of the energy area can be ensured in the long term. Up to now, 16 local authorities in the region have been awarded with the eea®, and 42 authorities are currently participating in the process. The European Energy Award® is a prize which the prize-winner can lose again. The participating authorities do not only undertake to make their energy management sustainable on a one-off basis, but for the long term. Bielefeld, for example, was certified for the second time: with the establishment of its initiative for future energies and energy efficiency, the town developed a concept for energy-related renovation of buildings for private individuals. In addition to advice and information, the town also offered funding for solar heating installations, heat pumps, biogas, biomass and heat insulation through the public utilities company along with a special loan programme from the local Sparkasse bank. A further aspect is that the co-generation plant which has been in operation up to now is not to be replaced by a new coal-fired power plant. An alternative energy supply concept is being developed which is particularly committed to reduction of $CO_2$ emissions, and also to sustainable cost-effectiveness as well as providing security of supply to Bielefeld.

**Dr. Jens Baganz, State Secretary in the NRW Economic Affairs Ministry (2nd from left) awarded the prize to the town of Castrop-Rauxel together with the Director of the EnergyAgency.NRW, Prof. Dr. Norbert Hüttenhölscher (right). Mayor Johannes Beisenherz (2nd from right) accepted the award, accompanied by the Energy Team of his local council.**

Remscheid was also certified for the second time. Projects here included the conversion of an office building from the 60s into a low-energy building, including assessment of various facade concepts from ecological and economic points of view and energy monitoring by the Bergische University in Wuppertal and also the energy saving programmes which are implemented in schools and kindergartens are an important success factor. Use of these measures has meant that up to now more than 14,000,000 kWh less heating energy, 1,400,000 kWh less electricity and 35.000 m² less water have been consumed. In monetary terms, savings have amounted to 688,500 euro.

Among other things, Castrop-Rauxel has instigated funding of energy saving projects with an energy fund specially established for the purpose – such as the renovation of the Europaschule school with a total gross floor area over all storeys of 4,200 m² and equipping of a total of five municipal schools with photovoltaic installations.

And Düsseldorf also has a long list: introduction of energy controlling, establishment of building standards for municipal buildings, training of caretakers, wide use of renewable energies, extension of the energy saving project already in place in schools and kindergartens to sports clubs and administration buildings, more energy-saving control of traffic lights and street lighting, introduction and extension of the parking control system have all contributed to the desired energy-saving effect.

**The energy teams from Remscheid, Hemer, Düsseldorf, Castrop-Rauxel and Bielefeld**

Hemer already started with the consistent energy management of its public buildings in 1984. Many energy-related projects have found their way into the eea: renewal of heating and regulation equipment in municipal buildings, installation of buildings management technology and also establishment of a central property management system – ZIM. But Hemer is also already thinking of the future: when the town is responsible for staging the regional garden exhibition in 2010, there will be many aspects related to energy saving - as many solar and passive houses as possible are to be erected on the site. Further information: Jochem Pferdehirt, Tel. 0202/24552-59, e-mail pferdehirt@energieagentur.nrw.de.

# Location check for use of geothermal energy

Drilling for geothermal heat

Those thinking of having a house built, tradesmen and architects can now find out by means of a free location check if geothermal energy is suitable as a source of heating in a particular location – where the building in question is completely new or it's simply a case of changing the existing heating system. At www.geothermie.nrw.de, The NRW Geological Service is able to supply information for every site in the region, down to a depth of 100 metres. This information offering is unique in Germany.

The conditions for utilising geothermal energy for heating are good in NRW. According to the results of investigations carried out by the NRW Geological Service, around 70 per cent of the region is suitable. The information on offer is intended to further encourage the use of heat pump technology. The trend towards use of heat from the environment again rose significantly in 2006. Almost 9,000 heat pumps were installed throughout the region, in contrast to only 4,000 in 2005. "Our goal is to continue to increase the market share of heat pumps in new buildings in NRW from its current level of ten per cent. I would like to see 20,000 new heat pumps each year over the next few years", said NRW Economic Affairs Minister Christa Thoben.

Last year was a record year for heat pump heating installations, with 44,000 new systems installed throughout Germany. Of the 170,000 systems currently in use, 35,000 are producing environmentally-friendly heat in NRW. Heat pumps make use of up to 80 per cent environmental energies, which are always available free of charge, free of hazardous substances and emissions and of course constantly renew themselves in a completely natural way. It is possible to provide heating using these environmental energies and a small amount of electricity for driving the heat pump – and in summer it is also possible to provide cooling. This means that heat pumps lower the cost of heating energy by more than 50 per cent.

This mature technology, which has proven its worth over time, also rapidly pays for itself. The purchasing costs for a heat pump installation at between 10,000 and 20,000 euro (depending on the size of the house and the type and equipment of the selected environmental heating system), are somewhat higher than for a modern oil- or gas-fired boiler offering the same performance. However, the low operating costs – especially considering today's high energy prices – can mean that the investment pays for itself after ten years.

Funding programmes at the federal level (low-interest loans from the KfW bank) can be applied for via local banks. Many energy supply utilities in NRW also offer grants for heat pumps.

In addition to the free site check, the NRW Geological Service offers a site-specific report, for which a charge is made, which can be used for detailed planning of a geothermal heating probe installation. The report contains detailed information regarding the structure of the subsoil down to 100 metres, the conditions relating to the ground water and also the particular geothermal extraction performance to be expected. This report is needed in order to calculate the length of probe which is needed and also to calculate the cost of the installation. Further information at www.gd.nrw.de. The NRW Heat Pump Marketplace, which is active under the umbrella of the EnergyAgency. NRW also offers more information on the subject of heat pumps. Useful an detailed information is available from www.waermepumpen-marktplatz-nrw.de.

## "House renovation – How to profit" takes off in Münster

NRW Economic Affairs Minister Christa Thoben is quite convinced: the new "House Renovation – How To Profit" campaign of the Deutsche Bundesstiftung Umwelt (DBU) – Federal Foundation for Support of the Environment – is sure to bear fruit. The Minister came to Gelsenkirchen together with DBU Secretary-General Dr. Fritz Brickwedde for the start of the campaign in her capacity as patron. The focus of the new programme, funded with five million euro from the European Union, is to offer house owners the possibility of an energy check carried out by trained tradesmen free of charge.

"Around twelve million of the good 15 million one- and two-family houses in Germany were built before 1984 and are for the most part in need or renovation", emphasised Brickwedde. Using energy-saving measures, private households could save up to 675,000 tonnes of carbon dioxide in the five years for which the campaign is planned to run. The initiative which has now been started fits excellently into our more general "NRW Building Refurbishment – My House Saves" campaign said Minister Christa Thoben. The initiative, which is coordinated by the EnergyAgency. NRW, collects together under one roof all the important offerings of advice and information in the region which support house owners in the planning and implementation of energy-related renovation measures. "Building refurbishment programmes secure and create jobs in building trades. The 22,000 "Building Energy Checks" which have been funded up to the present time have triggered investments worth around 170,000 million euro in NRW, and we are hoping for similar success from the new DBU initiative", explained the minister. More than 450 tradesmen are taking part in the initiative and offering their services. Information on obtaining the half-hour energy check from trained tradesmen in the area is available at www.sanieren-profitieren.de, which lists local co-operation partners. Further information: www.mein-haus-spart.de

# Innovation competition "Energy.NRW" launched


"We are looking for the best ideas for efficient conversion and use of energy" – this is the guiding principle of the innovation competition "Energy.NRW", which Economic Affairs Minister Christa Thoben has now started within the framework of the new EU-NRW programme entitled "Regional Competitiveness and Employment Objective 2007 - 2013" (ERDF).

"The "Energie.NRW" innovation competition offers a perfect framework for development of excellent projects which sustainably strengthen the value added chain within the many-faceted energy sector while encouraging the formation of high-performance clusters", emphasised Minister Thoben. The projects which are submitted will benefit from funding in future. The decisions with regard to the funding are made by an independent jury consisting of specialists and scientists in the particular field using clear and transparent criteria. "This is the only way of ensuring that the most innovative projects which will have the greatest effect in terms of spread are selected and funded", said the NRW Economic Affairs Minister. Participants come from the whole region, and include in particular companies, universities, research institutions, local authorities, churches, schools and hospitals. Altogether up to 16 million euro of funding is available from the European Regional Fund between 2007 and 2013, to which the same amount again will be added by the State of NRW, the municipal authorities and – for the first time – contributions from private third parties.

As the energy centre of Europe and promoter of innovative energy technologies, NRW offers particularly favourable conditions when it comes to making an important contribution to a future-proof energy supply, using efficient technologies which protect the environment and precious resources and which are also favourable as regards the climate. And this also results in excellent opportunities for establishing these technologies in the international competitive marketplace and therefore securing sustainable growth and employment in NRW. "I would like competencies to be linked and as many good ideas as possible to be developed – in particular also by small and medium-sized enterprises. These should make use of the opportunity to join in the marketplace with their creative ideas", said Minister Thoben, appealing to both science and industry. The competition will be supported by the project sponsor ETN at the Research Centre Jülich. Further information: www.ziel2-nrw.de or www.fz-juelich.de/etn

# The energy pass is coming!

**Series of events sponsored by RheinEnergie AG and EnergyAgency.NRW sold out**

The new Energy Saving Regulation (EnEV) has been in force since 1 October 2007. New in the EnEV is the energy pass, which will offer tenants and purchasers more information regarding energy consumption in the property market. Reason enough to continue this successful series of events, which was started last year for engineers and architects. RheinEnergie and EnergyAgency.NRW chose a really special venue this time. While the planes took off and landed right nearby, more than 600 architects and engineers came together in the Conference and Banqueting Centre of Cologne/Bonn Airport to discuss the subject of "Energy Pass for Buildings".

At the start of the event, Dirk Mobers from the EnergyAgency.NRW explained in his opening lecture how in general 2/3 of the energy requirement of a building can be saved by means of energy-related renovation and remediation measures. "The energy pass will lead to an increase in the rate of renovation and therefore also provide an important impetus for the job market in the construction industry", said Mobers. Following this, Georg Tillmann, Head of Marketing for Private and Trade Customers, presented the local initiatives and events staged by RheinEnergie AG in relation to climate protection. When does each particular type of energy pass have to be issued? What are the qualifications needed by issuers of energy passes and what are the opportunities for engineers and architects on the market? These were the questions which were answered by Matthias Strehlke from EnergyAgency.NRW. As one of the market leaders in the area of consumption-related charging of heating costs, Bernhard Mundry from Brunata described the advantages of consumption-based energy passes, which fulfil the legal regulations in a simple way at low cost. Following this, Dr. Jörg Albert and Patrick Jung described their experiences with the creation of requirement-based energy passes for residential and non-residential buildings. Both speakers made it clear that only the requirement-based pass can offer information regarding weaknesses in buildings from the point of view of energy. Of particular interest were the contributions from attorneys Rüdiger Fritsch and Dr. Svenja Kahlke regarding legal questions and questions of liability in connection with the energy pass. A view of the legal requirements and energy-related building standards of the future was then provided by Hans-Peter Lawrenz and Andrea Vilz from the Federal Office of Building and Regional Planning, which rounded off the conference.

A small exhibition area associated with the conference gave those attending the opportunity to gather information regarding further products and services offered by RheinEnergie and other exhibitors. The conference lectures are available to download on the EnergyAgency.NRW website (www.energieagentur.nrw.de) in the events archive section.

# Clutching at straws

**Construction Engineer Seyed Taghi Mohseni is very much in favour of a new method of heat insulation, as demonstrated by his ISO facade based on the use of wheat straw.**

Heat insulation of buildings offers considerable potential for energy savings. This is true above all of old buildings, as they have an energy requirement which is between one and ten times greater than that of a modern low-energy house. And this is the savings potential which interests Construction Engineer Seyed Taghi Mohseni. For many years he was active in the area of composite heat insulation systems at the Ruhr University in Bochum, and during this work he noticed that traditional systems tend to crack. He therefore developed an alternative system, and literally started clutching at straws. In fact, Mohsehni mixes wheat straw into the first coat of render.

In traditional composite heat insulation systems manufacturers generally make use of glass fibre matting in order to firm up the render. But there is the problem that this artificial mat reacts to alkaline substances such as mortar. Although the glass fibre is coated, it happens that it changes over time. The result: the mat can no longer fully absorb the tensions within the facade and therefore cracks are formed. A further reason for crumbling render is the fact that mistakes may be made when processing the material on site.

These problems do not exist in connection with the new render material which is strengthened with straw stalks. The decisive benefit of the natural material is that it does not change in the presence of alkaline materials. The high strength which the straw gives to the render remains. A further advantage is the ease of processing: the straw stalks are mixed directly into the first render mixture and then applied as a complete layer. In addition, wheat is a renewable raw material. Less energy is required for processing it than is needed for artificial fibres and it can be disposed of without residues after use. And to this is added the fact that the straw is considerably less expensive than synthetic fibres.

"It is important to offer an inexpensive and time-saving system. Then even more people who have houses built will be decide in favour of heat insulation and therefore will help to protect the environment", says Mohseni. In addition, his innovation is intended to make the product easy to use correctly. This is why the ISO facade is designed in the form of sheets. This means that the customer receives precisely formed insulating sheets made in the factory which can be quickly and easily applied to the house walls. Mohseni has been granted two patents and two European Technical Approvals for his new system. In 2005 he received the Wuppertal Energy and Environment Prize (commendation) from the Wuppertal Institute and the Energy-Agency.NRW for his development. Now the engineer is starting production at his location in Gelsenkirchen.

Further information:
www.iso-fassade.com

**Would you like more?**

## IngenieurImpulse 2007

130 participants in the "Ingenieurimpulse" at the Bergische Universität in Wuppertal show that there is a great need for information and discussion on the subject of "How energy-saving can it be?" – with regard to the passive house standard for new and existing buildings". At the beginning of the event the participants had the opportunity to view the "Burse" – the student hostels which were completely renovated a few years ago which in part fulfil the passive house standard – and to receive information first hand from the architect Dipl.-Ing. Michael Müller from the company Architektur Contor Müller Schlüter GbR, Wuppertal, who was responsible for the renovation work.

During the subsequent panel discussion, Dipl.-Phys. Norbert König from the Fraunhofer Institute for Building Physics (IBP) in Stuttgart presented the possibilities of modern construction materials for the process of building modernisation. And, based on his many projects, Dr.-Ing. Joachim Morhenne, from the engineering consultants Morhenne & Partner, was able to report that the step which is needed to achieve a passive house during modernisation of existing buildings does not necessarily involve a great deal of cost. Dipl.-Ing. Ronald Meyer, Energie und Haus, Darmstadt, said that it is already now essential to use the passive house as the ultimate goal when undertaking modernisation work.

The "Ingenieurimpulse" discussion format was implemented in the form of a joint event of EnergyAgency.NRW and the "Ingenieurkammer-Bau NRW" for the fourth time. Further information: Joachim Decker, Tel. 0202/24552-69, e-mail decker@energieagentur.nrw.de

# In brief

### TUNZA International Youth Conference 2007

In August the five-day international youth conference of the United Nations (UNEP) took place in Leverkusen. Around 130 young people from almost as many countries assembled at Bayer, the host of the event, in order to discuss many different environment-related projects in relation to "Technologies in the Service of the Environment". The event was opened by Minister President Dr. Jürgen Rüttgers and by the Federal Environment Minister, Sigmar Gabriel. The EnergyAgency.NRW had the opportunity to moderate and present the subject area of fuels and drives in a workshop. Among others, the activities of the German-Chinese Sustainable Fuels Partnership were discussed. The TUNZA conference takes place every two years as the most important UNEP platform for young people. The previous conference took place in Bangalore, India in 2005. Further information: www.unep.org/tunza/youthconference/

### Tougher requirements for IT energy consumption

The Energy Star stands for more energy efficiency for computers and notebooks. Since July 2007, the Energy Star Level 4.0 specifications apply, which contain much more stringent requirements than hitherto with regard to energy efficiency. Energy-saving office equipment is supplied with the Energy Star Label. Now, workstations and servers with desktop components will also be able to receive the Energy Star, along with desktop computers and notebooks. All products within these equipment categories which have been in production since July must fulfil the new regulations, if they wish to be accorded the label. The Energy Efficiency Initiative indicates this. Information regarding energy-saving office equipment can be found at www.energieeffizienz-im-service.de

### Renewable Energy Yearbook 2007

The new "Renewable Energy Yearbook 2007" provides current background information and a wide variety of statistical data. The fourth issue of this standard work contains the most comprehensive analysis of the market which is currently available, together with information regarding the possibilities of funding, the political framework conditions and a view forward until the year 2050. In addition to information regarding the development and use of sun, wind, water, bioenergy and geothermal energy, the reader will find detailed information on their significance for the electricity, heat and fuel market, and also their contribution to climate protection, costs, jobs and much more. The book is published by Bieberstein and is obtainable for EUR 35.20 through bookshops, or online at www.jee.info.

### New management board for hydro-electric power

The federation of hydro-electric power station operators in NRW (Verband der nordrhein-westfälischen Wasserkraftwerksbetreiber) has decided on a new focus for its work. A new management board has been elected, and supervisory bodies and working parties have been established. The objective of the new structures is to represent hydro-electric power as a sustainable, $CO_2$-free and also ecologically acceptable energy resource in NRW and to make use of possibilities for expansion. The slimmed-down management board consists of Alexander von Köckritz (Chairman, Beverungen), Wilhelm Schlimgen (Deputy Chairman, Troisdorf) and also the board members Hubert Verbeek (Waldfeucht), Ferdinand Graf von Westphalen (Meschede), Gunnar Lohmann-Hütte (Witten) and Sebastian Kaptain (Bielefeld). The working party can be contacted at its new business address: Arbeitsgemeinschaft Wasserkraftwerke NRW e.V., Am Gut 1, 37688 Beverungen, Tel. 05275/9879799, Telefax 05275/95908, e-mail info@wasserkraftwerke-nrw.de, www.wasserkraftwerke-nrw.de

### NRW participates in BioMotion EU project

Biofuels in Motion – this is the name of the EU project which started up on 1 September. The Centre for Sustainable Raw Materials NRW (ZNR) and also the competency network for fuels of the future of the EnergyAgency.NRW are partners for knowledge transfer within the project. The objective is to develop biofuel advisory centres in the participating countries France, the Netherlands, Poland, Hungary and Rumania, and therefore to support the spread of these $CO_2$-conserving fuels "from the fields" in Europe. Within this, particular emphasis is to be placed on decentralised regional solutions. This is why the Westphalian consumers of this fuel are included in the project with their E85 activities. The high point will be a European biofuel tour from Paris to Bucharest, which will visit all the project partner countries. The finishing line will be crossed on the return journey at AGRITECHNICA 2009 in Hanover.