01 ° 2014

mag°

all about ebm-papst

COOL AND SPICY

Taking the heat out of eating: A food court in India keeps its eating cool with a perfect combination of EC fans

“Fact, not Fiction”

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Built on a foundation of good ideas

Thomas Borst
Managing Director
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ebm-papst Group

Dear readers, last year we celebrated 50 years of ebm-papst. On such an occasion it is quite natural to reflect upon the secret of the company’s success over the past five decades. Innovations have certainly played an important part. But they are far from being a matter of course. They are the product of creative, technologically-minded ideas thought up by members of our company – and brought to life by customers who pick up on these ideas. One particular driving force over the years has been the motto of the company founder – namely that every product we bring onto the market should be economically and ecologically superior to its predecessor. That is why we develop products which both help to protect the environment and are of real benefit to the people who use them. Our customers have always supported us in our efforts with many valuable contribution towards putting innovations into practice. This expression of confidence and cooperation has often been crucial to the success of our ideas. And so it is also thanks to our customers that ebm-papst was honoured as Germany’s Most Sustainable Company at the end of last year.

The project in Chennai (India) presented in this issue is an excellent example of an innovative working relationship. For the first time in India, one of our customers used our EC fans to create a space and energy-saving fan array (Page 10) – and played a pioneering role in doing so. We too are always on the look-out for pioneers and support their efforts, as outlined in the report on Page 22 about the Sollektor – a system for transporting daylight.

With your assistance, we look forward to spending another 50 years developing a whole host of new ideas and innovative products.

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A great honour: Rainer Hundsdörfer (right) accepting the German Sustainability Award

Simply the best

German Sustainability Award for ebm-papst

Rainer Hundsdörfer's pride was clear for all to see when he accepted the award for Germany's most sustainable company on behalf of ebm-papst in Berlin. The Chairman of the Board of Directors of the ebm-papst Group headed the company delegation at the star-studded German Sustainability Award ceremony on 22 November. Since 2008 a foundation has been presenting the award annually to companies successfully combining economic success with social responsibility and environmental protection. The jury was most impressed by ebm-papst's GreenTech company philosophy. "We are absolutely delighted to receive this internationally renowned award," said Hundsdörfer at the ceremony. "The high standard set by this award is reflected by the list of illustrious nominees and I am overwhelmed that we have managed to fulfil all the requirements. We will continue to pursue our policy of sustainable business practice in the context of our comprehensive GreenTech strategy – all around the world."

Who benefits from flexible working hours, Mr. Sturm?

Ralf Sturm, Head of Human Resources in Mulfingen, about a new working time model

Mr. Sturm, how will the new system affect working times?

With effect from the beginning of the year, 1,000 employees in Mulfingen are no longer bound by core working hours. By arrangement with their particular team they are free to organise their working time as they wish between 5 a.m. and 10 p.m. with a minimum working time of four hours per day in the case of full time employment. The idea behind this new working time culture was to shift the emphasis from physical presence to task orientation.

What are the consequences of this internal re-organisation for customers?

Our customers enjoy even better support. Thanks to the flexible working hours we are still able to serve our customers quickly and efficiently even when we have a heavy workload. What's more, customers in other countries benefit from the fact that we are easier to contact. After all, working times in the USA and Asia do not start and finish at 9 a.m. and 5 p.m., they cover a span from 6 a.m. to 9 p.m. Our new model accommodates this aspect as well.

How have the employees reacted to the new system?

The response has been very positive. Flexible working hours help our employees find a better balance between family life and work and give them more personal freedom. A good work-life balance is an important argument, particularly when it comes to attracting and holding onto highly qualified personnel.

News in brief

Before delivering any sintered products, ebm-papst ZEITLAUF checks the hardness, structure, porosity and density of the materials. In recognition of these high quality standards the company has now received the QM Context Award from Fachmetall GmbH. This prize is awarded for particular diligence in the field of material quality testing.

With more than 1,900 exhibitors, the AHR Expo in New York is one of the most important events in the heating, ventilation and air conditioning system calendar. At this trade fair, which took place in January, the RadiPac Series K3G630 Plug-Fan received a honorable mention in the "Green Building" category.

The Schwarzwald-Baar-Heuberg Chamber of Commerce awarded ebm-papst St. Georgen the Chamber of Commerce Qualification Training Prize for its successful personnel development concept. ebm-papst won the award in the "Industrial enterprises with more than 350 employees" category. The jury gave top marks to the personnel development measures, the high qualification training quota and the long-term commitment.

The Swiss branch of ebm-papst was delighted to be honoured with the renowned ProKlima-Produkt-Award 2013: The AxiTop diffuser beat ten other competitors to take first place.

At the "Automotive Supply Chain Global Awards 2013" the jury honoured ebm-papst in the Environmental Awareness. Gareth Jones, managing director of ebm-papst Automotive & Drives (UK) Ltd, was pleased to accept the prize: "Our key product, the EC motor, helps lots of customers reduce the energy consumption of their products and increase performance. We are delighted to have our work recognised in such a way by the jury."

Paul Prescod and Gareth Jones from ebm-papst in England

Full of enthusiasm: the youngsters with the Mouse

Animal visitor

ebm-papst opened its doors to the Mouse

"Here comes the Mouse" was the cry at the end of October in St. Georgen. A "Door opening day" organised by German television's "Programme with the Mouse" gave interested children the opportunity to take a look behind the scenes. Under the motto "How is wind generated and how much noise does it make?", experts explained all there is to know about fans and electric motors in a language the children could understand. Another highlight was the "Screaming project" in the sound measurement room: This involved the children screaming as loud as they could and then receiving a certificate showing the volume they reached. "In keeping with the concept of the 'Programme with the Mouse' we really enjoyed teaching the youngsters something about technology," said Peter Metzger, Head of Business Sector Development and Marketing at ebm-papst St. Georgen.

View the video of the day's activities on www.youtube.com/ebmpapstDE

3:2

Germany against Portugal: This duel was on the agenda at the end of 2013, some months before the start of the soccer World Cup in Brazil. A local team sponsored by ebm-papst Portugal beat the visiting Germans 3:2 at a youth tournament in Lisbon.

More room for large fans

An extra 10,000 square metres for the Hollenbach plant

ebm-papst are investing around 15 million euro to extend the Mulfingen-Hollenbach plant. This will provide an additional 10,000 square metres for the production of large energy-saving fans for the European market as well as for the construction of a computer centre. Rainer Hundsdörfer, Chairman of the Board of Directors of the ebm-papst Group: “With this investment, we are responding to the increasing demand for energy-saving technology and positioning the company for further growth. The decision to expand in Germany is a sign of our long-term confidence in the location.” In keeping with the company’s GreenTech philosophy the new buildings will be planned and constructed with energy efficiency and sustainability in mind. Construction is scheduled for completion in September 2014.

ebm-papst are investing 15 million euro to double the size of their production facilities in Mulfingen-Hollenbach (blue area)

Several thousand runners are expected again this year

Ready for the off

Register now for the 19th ebm-papst marathon

After starting out as a small regional event, the ebm-papst marathon has long since become an event not to be missed in the sporting calendar. Thousands of amateur and professional runners will be taking part again this year – cheered on by more than 10,000 enthusiastic spectators. And to get them in the mood as well there will be a variety of activities on offer for the whole family.

Why not join in! Online registration is now open.
www.ebmpapst-marathon.de/en

GreenTech worldwide

Making the world a greener place: Photovoltaic system in France

Environmental awareness is a matter of course for ebm-papst. As part of the “Every day is a GreenDay” campaign, our French branch inaugurated a photovoltaic system on the front of their office building. The 56 panels are capable of generating up to 20,000 kilowatt-hours of power per year — corresponding to 7 per cent of the total energy consumption of the Obernai facility. ebm-papst France are hoping that the success of this system will also inspire other companies in the region to make use of the sun as a means of ecological power generation.

The 56 panels are capable of generating up to 20,000 kilowatt-hours of power per year

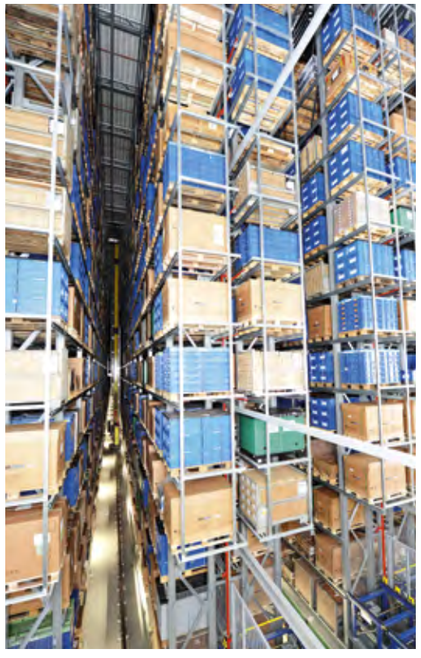
WWW.GREENTECH.INFO

Well prepared: apprentices at the training for the Hannover fair

Trainees to the fore at the trade fair

Junior staff to man the ebm-papst stand at the HMI

When the Hanover Trade Fair (HMI) opens its doors again on 7 April 2014, ebm-papst will be represented by the youngest team of all. How come? As was already the case in 2010, trainees from all German plants will be responsible for the presentation of the company at the world’s leading industrial trade fair. The 12 junior employees will be thoroughly prepared for the task: In special courses the trainees from the technical and commercial departments will learn all they need to know about professional presentation, the products on show and how to deal with the press. Right from the start they will be involved in organisational aspects, product selection and invitation management. As Rainer Hundsdörfer, Chairman of the Board of Directors of the ebm-papst Group, explains: “Throughout the company, the young people we train at ebm-papst are extremely capable and talented. This landmark project shows that we have full confidence in their ability to master complex tasks and fittingly represent our company in public.” The protagonists are already getting excited about the trade fair, as confirmed by Philipp Jany, a trainee in the press office: “I am really looking forward to the HMI. A project like this offers the opportunity to gain a wealth of new experience and put our knowledge into practice.”



Space for efficient processes: the new logistics centre in Landshut

Moving with the times

More space thanks to the new logistics centre in Landshut

A grand ceremony was held to open the new logistics centre in Landshut in September 2013. Whilst enjoying snacks and the accompanying events, one of the things the guests were able to admire was the start-up of the fully automated high-bay warehouse after a thirteen-month construction period. This warehouse is the heart of the new logistics centre: 110 metres long, 23 metres wide and 26 metres high. Every 75 minutes, a gas-powered lorry delivers finished products and takes raw materials back to the production shop. Around 40 employees working in two shifts keep this cycle constantly in motion and a new SAP world controls the orders. Items customers wish to collect are fetched by way of a fully automated conveyor system. The moment the driver rings the bell at the gate the consignment is ready for collection. As the existing storage facilities were no longer sufficient and more space was required for manufacturing, the decision to build new premises was taken in 2012. Until the warehouse was opened, raw materials and finished products were stored at several locations, even including Slovenia – the facilities were bursting at the seams.

Dining after shopping: Guests can fortify in the well tempered food court of the mall

More fans, fewer problems

Ten small fans instead of one big one: That's the secret behind ebm-papst's first fan array project in India, which is helping a shopping centre save over 20 percent on energy for the air conditioning in its food court

Pizza, doughnuts, curries or ice cream? Guests who get hungry while shopping at the Forum Vijaya Mall in Chennai, India, have a wide range of choices in the huge mall's food court. But no matter which dish they decide on, they can enjoy it in a comfortably air-conditioned room, thanks in part to ebm-papst India, which carried out India's first fan array project in cooperation with air-conditioning specialists ETA. But until the project's completion, Ramesh Swaminathan, general manager (sales & marketing) at ebm-papst India, had a lot of persuading to do.

"It all began when ETA got an order from the operator to equip the Forum Vijaya Mall in Chennai with a complete air-conditioning system," recalled Swaminathan. Since ETA had already been working successfully with ebm-papst India for several years, it contacted Swaminathan to request a proposal for air-conditioning the food court. "The mall's dining area accommodates 21 restaurants with seating for 850 people. Given these figures, the air conditioning system has to transport 60,000 cubic metres of air per hour at 900 Pascals," explained Wahab Jainulabideen, deputy general manager for operations at ETA. To date, such tasks have usually been performed in India with a single large, belt-driven fan. "But that has a few disadvantages," said Swaminathan. "Installing the fan is very time-consuming, its energy efficiency leaves a lot to be desired, and if it fails the entire air conditioner is out of service."

And then there were ten To avoid these disadvantages, he proposed a different solution to ETA: a fan array with ten RadiPac EC fans arranged in parallel – a solution unprecedented in India. Even for the customers from ETA, who are open to innovation, it required some persuasion. "In this project, the customer took two steps at once with us: switching from a belt-driven to a directly driven EC fan, and from a single fan to ten fans working as a single unit."

The Forum Vijaya Mall in Chennai has more than 100 shops under its roof

Less space, more energy efficiency Two steps that ETA was quite prepared to take. "We're always looking for new solutions. The main things that make the fan array so convincing are its energy efficiency, its compactness and the redundancy offered by ten fans instead of one," said Wahab Jainulabideen. If one of the fans fails, the other nine ensure that the system continues to operate. The space needed is up to 40 percent less than that required for conventional AHUs. In addition, the energy consumption of the ten EC fans is around 20 percent less than that of a single belt-driven fan of the kind required for a system of this size.

"The things that make the fan array so convincing are its energy efficiency, its compactness and the redundancy offered."

Wahab Jainulabideen, deputy general manager for operations at ETA

After the initial consultations, ebm-papst made an offer for the job. The reaction was different than expected, as ETA had received lower offers from competitors. "That was a big surprise for us as we had turned in a well-calculated offer," recalled Ramesh Swaminathan. Thanks to the good relationship with ETA he was able to compare at the offers and quickly realised that they were not nearly as comprehensive as the one from ebm-papst. "It was an apples-and-oranges comparison since competitors only made an offer for the fans. But our offer included the entire system. Once this difference was taken into account, our offer was more than a match for it."

An investment that pays off But still the price was higher than the amount ETA would have had to pay for a single belt-driven fan. "Of course ten fans cost more than one," said Ramesh Swaminathan. "But if you also look at the operating costs, it quickly becomes clear that this investment already pays off after two years." For the installer, further savings result from the easier installation and the elimination of maintenance costs for the EC fans. ETA was completely convinced by these arguments and awarded the project to ebm-papst, and Ramesh Swaminathan and his colleagues saw the project through from the design phase to the installation of the fans. The synchronisation of the ten RadiPacs turned out to be a technical challenge for ETA. "For a solution with one fan, of course you don't need a controller," said Swaminathan. "With ten fans, things are different. They have to be synchronised with one another by a controller to deliver their full performance." To ensure a trouble-free installation, he supported ETA with the search for a specialist for the controller. "The professionalism and cooperation made the project with ebm-papst very pleasant, and were just as important to us as the high efficiency and reliability of the products," said Wahab Jainulabideen.

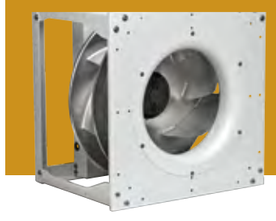
Ramesh Swaminathan is confident that more customers will show interest in fan arrays after this successful project. "The conditions for them are good in our country. India is a very progressive market for energy-efficient solutions. Today over 65 percent of the products we sell are EC fans and motors. The main reason for this development is the exploding energy costs, so solutions like this one will be in increasing demand in future."

Left: Discussion at lunchtime: Kandhaswamy Jayaram Venkatesh and Ramesh Swaminathan from ebm-papst talking with Wahab Jainulabideen and Prem Kumar from ETA
Right: The food court offers 850 seats

Ramesh Swaminathan (on the right) discusses the advantages of the fan array

RadiPac – simply efficient

The RadiPac EC centrifugal fan delivers convincing efficiency in all areas. Thanks to the combination of GreenTech EC motors in an external-rotor design and rugged impellers with backward-curved blades, the fans reach a static overall efficiency of well over 60 percent. The impeller, motor and control electronics are already taken into consideration in this figure. Together, the electronics and motor comprise a single unit, not only saving space but also ensuring easy installation. In addition, all features needed for trouble-free operation are already built in and all operating parameters are preset for fast and uncomplicated commissioning.



By the way, the GreenTech EC motors already exceed the future energy efficiency class IE4 – without the use of rare-earth magnets.

A tasty bit of fan!

Wolf-Jürgen Weber serving up the right fan for Dietrich Lampe's plate warmer

Dietrich Lampe had a flash of inspiration: A portable plate warmer. He set about developing it himself — and soon landed in hot water. The recipe proved to be a success: Even gourmet chefs are now regular customers

It all began with a minor tragedy. Some five years ago Dietrich Lampe, chef and restaurant owner from Osnabrück, Germany, was invited to the birthday party of a close friend and was looking forward to enjoying some good food. The caterer had gone to a lot of trouble, but the disappointment arrived with the starters: Although the variations of fish looked delicious, the wafer-thin slices immediately went cold on the unheated plates. And that did not do the flavour any favours or, as Lampe overheard an elderly lady comment: "This fish died in vain!" A remark which stuck in Lampe's mind. Being in the trade himself, he knew only too well why the plates were cold: The caterer could only have heated them with the help of heavy, cumbersome warmer trolleys. "But these stainless steel constructions are unattractive in appearance and not worth using at small gatherings," says Lampe. The fact that there were no alternatives on the market aroused Lampe's inventive spirit. He took a commercially available thermal bag for drinks, cut a hole in it and stuck his wife's favourite hair dryer through it. The outcome of an experiment with a pile of plates was: Warm plates, broken hair dryer. Although this got him into trouble with his wife, the basically positive result – at least from a theoretical point of view – fired his determination.

The gourmet inventor Realising at this point that he could not get any further on his own, Lampe approached a team of technical experts. "When all said and done, I am a chef and not an engineer," he points out. Even so, finding a feasible solution was a tedious business. One idea after the next landed in the paper bin. "My garage is full of failed prototypes," says Lampe with a wry smile. After months of frustration, a promising design existed at least on paper and was not so far removed from Lampe's idea with the hair dryer: An appropriately shaped hot-air blower for warming plates under an insulated cover. This was the birth of "Master Lampe's Hot Plate". There were however plenty of teething troubles to be cured. The first fan fitted to distribute the heat simply would not do what it was supposed to. Lampe's development team approached Wolf-Jürgen Weber, ebm-papst's representative in the region. "With the benefit of our experience we were able to offer Mr. Lampe our immediate support," he says. The right fan and the optimum solution for the air conduction under the cover were soon found. Weber still clearly remembers the pragmatic tests performed to work out the optimum number of ventilation holes in the warming cover: "We simply punched a lot of holes, covered up one at a time and tested the temperature of the plates by hand." Despite such primitive test methods the end product turned out to be a real high-tech device: The blower housing is made of a special fibre glass-reinforced plastic and a sensor chip constantly measures the temperature to switch off the heating at the appropriate moment. The outcome was a practical combination of a shallow device with a flexible cover which is easy to carry – in a shoulder bag.

The long road to series production When it was officially presented at a renowned gastronomy fair, the "Hot Plate" met with nothing but praise, nonetheless there was still a long way to go before production and marketing could become a reality. After an unsuccessful search for a suitable partner, Lampe and his hand-picked crew decided to take series production into their own hands. One aspect which represented an enormous hurdle and involved a lot of to-ing and fro-ing was the official certification process. Lampe hit upon rather an unusual way of going about series production: Instead of just paying a normal manufacturer, he has all the components – including the fan – sent to the Alexianerbund in Cologne, where the plate warmers are assembled in a workshop for the disabled. Several thousand plate warmers have since left the premises. Winning over so many customers involved a lot of hard toil – and truly "cold" acquisition. The reward: The plate warmer is now not only in use in large hotels and on cruise liners, gourmet chefs and TV crews would not want to be without their "Master Lampe's Hot Plate" either. An added attraction: Caterers can apply their logos to the warming cover and so leave a lasting impression on the guests thanks to Dietrich Lampe's invention. Dietrich Lampe's satisfaction with this success is clear for all to see and even his wife has since forgiven him for ruining the hair dryer – she recently got a new one as a silver wedding anniversary present by the way.

For more pictures of Master Lampe's Plate Warmer visit mag.ebmpapst.com/meisterlampe

HUGE SAVINGS

What makes these new axial fans with GreenTech EC technology so impressive is their impeller diameter of up to 1,600 millimetres. They are the first of this type to be used in the medium pressure range. Thanks to the energy-saving giants, flash freezers and cold storage facilities have no problem meeting the strict efficiency standards demanded by law.

RETROFIT CHAMPIONS

Say good-bye to belt drive and add-on motor: The new EC centrifugal fans with scroll housing are the absolute champions when it comes to retrofitting – and not just in the field of ventilation technology. With their backward-curved blades they achieve high efficiency levels and pressures in combination with a low running noise. They are also compact, robust and maintenance-free. Pre-wired and configured, they could not be easier to use – Plug & play!

SURE-FIRE

The latest induced draft fan generation helps to optimise the combustion process in modern solid fuel heating systems, employing wood pellets for example. With their reliable, quiet-running and ecological operation they provide an atmosphere of well-being. And the EC version saves energy as well.

COMPACT, VERSATILE AND INTELLIGENT

There is more than meets the eye to the new compact drive for industrial automation, conveyor system and medical engineering applications. The new K4 control electronics incorporates all the essential parameterisation and control functions and can be easily and conveniently actuated from a PC using the “Kickstart” software for example. The VDC external rotor motor is particularly powerful, reliable and quiet-running. Combination with ebm-papst ZEITLAUF gear units makes it into a real all-round talent.

More information: www.ebmpapst.com/product-news

CODE WORD: S-PANTHER

It takes a real specialist like the S-Panther to dissipate waste heat from equipment with tightly packed components such as solar inverters or welding machines. The latest generation of high-performance fans features improved aerodynamics, a less complex design and greater efficiency. For example, the sound power level of the new 172 millimetre size fans is up to 9 dB(A) lower than that of earlier models at high power and with the same operating point.

The material heat is made of: Biomass heating systems – using wood chips for example – are enjoying double-figure growth rates

A small impeller with a huge impact

The Austrian company Hargassner, a pioneer in the field of ecological heating, becomes the first manufacturer to make use of EC technology in wood chip heating systems

To start with, Dr Johann Gruber was somewhat sceptical when Thorsten Hartl, sales manager at ebm-papst Austria, suggested using an EC induced draft fan for a new wood chip heating system instead of an AC model. "We had actually been considering a larger impeller to achieve a greater air performance," recalls the head of development at Hargassner. The company manufacturing wood chip, pellet and wood burning systems based in Weng im Innkreis in Upper Austria is one of the leading European specialists in the field of biomass heating technology – a market enjoying double-figure growth rates. Hartl's suggestion was however very much in keeping with the ideas of Gruber and Anton Hargassner, the junior director of the company: They were looking for a way of enhancing the efficiency of the wood chip heating method which would keep emissions to a minimum whilst consuming less power than earlier models and at the same time permitting a compact design. After initial discussions with Hargassner, Hartl soon realised: Only an EC motor is capable of satisfying such requirements. Despite some initial scepticism the decision was therefore taken to try out EC technology for the first time in the biomass branch. "It came as quite a surprise to discover that we reached the air performance target with room to spare in spite of the smaller impeller." This was however only possible on account of super-synchronous speeds above 2,800 rpm.

Central control instrument No mean feat, as the performance of a heating system is largely determined by the air throughput in the boiler. The induced draft fan plays a crucial role: It produces a vacuum in the combustion chamber and thus creates the mixture ratio required for optimum combustion. This ratio is measured with a Lambda probe – a sensor which controls the combustion air composition on the basis of the measured values. And the more finely the air throughput can be regulated, the better the output can be modulated. This is particularly important when burning wood. When compared to other forms of energy, the fuel to which Hargassner has been dedicated for 30 years almost always comes out on top: Whereas oil and gas prices are constantly on the increase and resources are dwindling, trees are regenerative and supply heating material at a cost

Thorsten Hartl and Dr Johann Gruber inspecting the new EC blower

"Nowadays purchasing decisions are based on power consumption."

Thorsten Hartl, sales manager at ebm-papst Austria

"We can now achieve a far higher efficiency level, particularly in the low speed range."

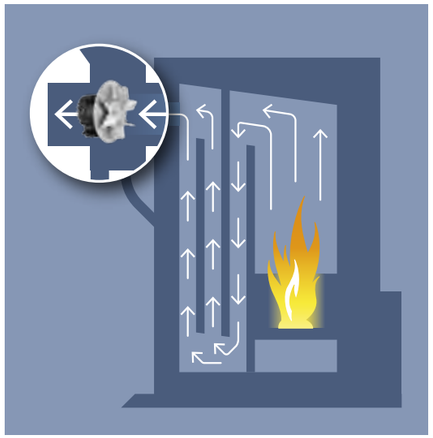
Dr. Johann Gruber, head of development at Hargassner

which has remained steady for years at a level well below that of fossil fuels. What's more, the sustainable raw material only gives off the amount of carbon dioxide on burning which it absorbed in the course of its growth and its climate effect is therefore neutral. Legislation governing permissible emission levels is becoming ever more restrictive and accordingly a crucial aspect in development work. Emission values can only be reduced if the wood burns optimally, which in turn depends on the properties of the induced draft fan. This however requires electricity to operate. So the second major challenge was to keep the power consumption as low as possible – not least because induced draft fans run for up to 2,500 hours per year. "Consumers take a close look not just at the fuel but also at the electricity costs involved," Hargassner stresses. Hartl is of the same opinion: "Power consumption is the benchmark on which today's purchasing decisions are based."

The new heating system with EC technology only uses half as much power

Economical, compact and powerful EC technology from ebm-papst enables Hargassner to reduce the power consumption of the new heater by 50 per cent. "With this very low level we are now the best in our branch," as Hargassner is pleased to point out. In addition, the DC motor permits infinitely variable speed control and thus ideal, low-emission combustion. "The test authorities told us that we are the only manufacturers with such low emission figures," Gruber explains. "We can now achieve a far higher efficiency level, particularly in the low speed range." A further advantage is that the flat impeller permits a compact design. "With an AC motor we would have had to use a larger model to achieve such performance and construct a giant induced draft unit to go with it." Another aspect is ease of installation. "We have adapted the EC induced draft fan in such a way that Hargassner now only has to tighten four bolts and connect the power and control cables," explains Hartl.

Successful cooperation The new wood chip heating system has been on the market since March 2013 under the name ECO-HK and is intended primarily for customers in the agricultural and industrial sectors. The Austrian Ministry of the Environment and the Upper Austria region have already honoured the system with the "Energy genius 2013" innovation award. "The ECO part of the name is intended to emphasise the very best in terms of efficiency," according to Gruber. "We don't cut any corners when it comes to quality – and that's what we like about ebm-papst." The two companies have been working together to their mutual benefit since 2006. And the effort has been well worthwhile, as Gruber can confrm: "We do of course have yet more plans in the pipeline in connection with EC technology."



Left: Optimum combustion guaranteed: The induced draft fan produces a vacuum in the combustion chamber and so controls the mixture ratio

Right: Final assembly at Hargassner

The secret of the cosmonaut's case

A mobile ventilation system provides fresh air for Russian astronauts' suits

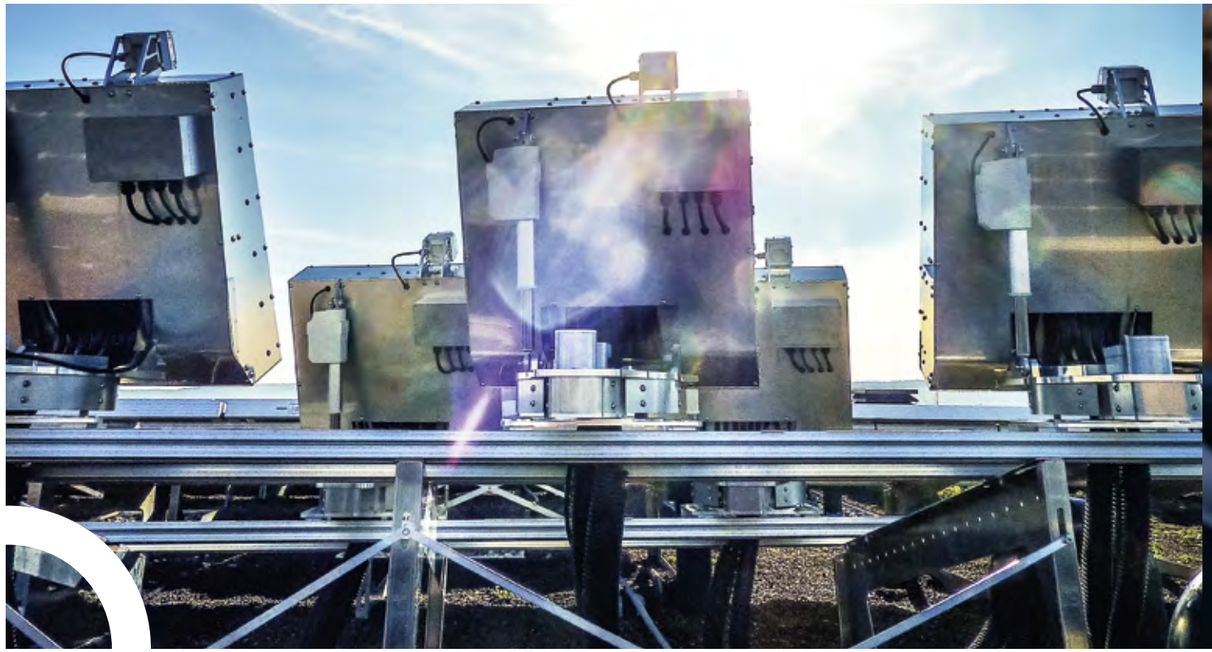
Just before they board their rocket, astronauts like to give a quick wave to the cameras. And they always have a little case in their other hand. What do they keep in it? A packed lunch perhaps? If they are Russian cosmonauts it will actually be a fan from ebm-papst. The case is in fact a mobile ventilation system. This is connected to the spacesuit by way of tubes to supply it with fresh clean air.

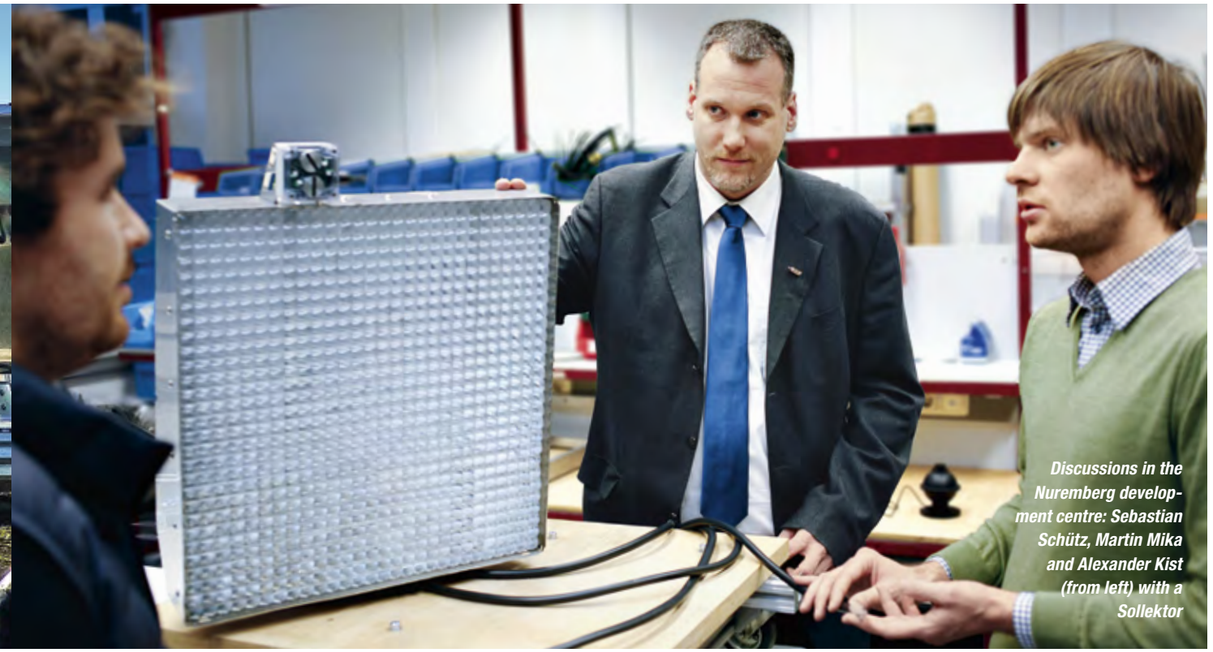
Spacesuits are hermetically sealed: There is not even the slightest exchange of air with the surrounding atmosphere. Which means that they would soon become unbearable without any ventilation: Perspiration and body heat alone would be enough to create an intolerable situation quickly leading to total overheating. For this reason use is made of a mobile suit ventilation system for ground training and on the way to the launch pad. In the space capsule and in outer space ventilation is then provided by the on-board system.

Handy and durable The Moscow-based companies Eco-Intech Ltd. and Sokla Ltd. design and manufacture mobile spacesuit ventilation systems for the Russian Space Agency Roskosmos. The portable unit uses an EC centrifugal fan from ebm-papst to blow fresh air into the suit and helmet without any warming or cooling effect. To quote Nikolay Dudkin, General Director of Eco-Intech: "It is not an air conditioning device but rather an air supply system, actually quite a simple application. What makes the unit special however is the fact that it has to function reliably for hours at a time despite being lightweight, compact and handy." With its powerful lithium polymer battery and a sophisticated microprocessor system, the portable ventilation unit weighing six kilos can keep going for six hours – ample time for an intensive, uninterrupted training session.

Requirements fully satisfied Eco-Intech specialises in mobile and stationary devices for analysing the chemical composition of the air, used for example for monitoring pollutants in urban areas or laboratories. "We used to buy our blowers from a Russian manufacturer. But in the case of the portable ventilation unit, ebm-papst was the only supplier capable of satisfying all our own requirements as well as those of Roskosmos", says Dudkin.

Perfect climate in your space suit: The mobile device keeps cosmonauts from working up a sweat on their way to the rocket





Discussions in the Nuremberg development centre: Sebastian Schütz, Martin Mika and Alexander Kist (from left) with a Sollektor

Daylight transporter

Sunlight in windowless rooms? What sounds impossible really exists in Nuremberg — thanks to creative inventors and precision motors

"Sollektor" sounds like the title of a Hollywood film. And maybe the Sollektor will turn out to be just as successful in future as an action thriller. The prospects are really excellent, satisfying as it does today's demand for ecological, low-cost and innovative concepts. The recipe for success: It transports natural sunlight indoors.

One of the two inventors, Sebastian Schütz, explains how the system works: "A module installed on the roof collects the light and transports it to a windowless room." This is done by way of fibre optic cables which – like power cables – can be routed as required to supply rooms with natural light. "Anyone using a Sollektor doesn't need any electricity for artificial light," explains the other member of the team, Alexander Kist. "What's more, the true colours of sunlight create an atmosphere of well-being!"

Angle of incidence and tracking The major challenge facing the system: The sunlight has to be fed into fibre optic cables. The lens system plays a significant role, as a considerable amount of energy and heat is generated at the focal point. But a top quality Sollektor also needs the right motor and an appropriate gear unit. "Light cannot be transported by the Sollektor system without highly accurate solar tracking, in other words there is a need for correspondingly precise motors and gear units," says Sebastian Schütz. These constantly tilt and turn the lens system to keep it ideally positioned with respect to the sun. The commands come from an electronic system which detects the location of the sun at any given time and works out the necessary settings for the lens system. To guarantee precise positioning, Sebastian Schütz and Alexander Kist, who are now managing directors of the company Bavarian Optics, went in search of suitable motors and gear units.

From a very early stage in the development of the Sollektor the two inventors approached ebm-papst ZEITLAUF in the hope of finding a way to meet this challenge. Sebastian Schütz: "Our motto is: Use the best that is available and there won't be any problems." And so they set off, armed with the Sollektor concept, to visit the drive system manufacturer in the neighbouring town of Lauf. Their aim: To further develop the system devised during their studies at the Georg-Simon-Ohm University in Nuremberg to a marketable standard with the help of professional experts. The two developers were welcomed with open arms at ebm-papst ZEITLAUF. Cooperation with Bavarian Optics makes good sense for the drive engineering specialists as well: "If the system goes into series production," says Martin Mika, head of basic and series development at ebm-papst ZEITLAUF, "we will be in a good position to supply the number of gear units required."

When they come across a good idea the people in Lauf are not afraid to take a bit of a risk, particularly as the company has recognised the demand for alternative energy systems and is involved in the creation of concepts for the development of ecological technologies. As Mika explains: "The whole idea has plenty of potential and a real future. So of course we want to be involved when something new is in the pipeline." And that was not the only reason why ebm-papst ZEITLAUF was the right partner for the young start-up enterprise at the experimental stage: The company was also able to supply the Sollektor inventors with small quantities of standard gear units: Zeitlauf has the capacity to deliver 4,209 different gear unit versions within 48 hours. The right one for the Sollektor turned out to be the Flatline 78 spur gear motor.

The Sollektor has since become established on the market. To ensure their continued success, Bavarian Optics have maintained a lively dialogue with the experts at the university in Nuremberg. And to top it all, an attractive appearance and outstanding efficiency mean that the system stands out from other products on the market. Good reason for assuming that the success story from northern Bavaria is far from finished.

The secret of Sollektor success: It transports natural sunlight indoors

View the ebm-papst°TV film on www.youtube.com/ebmpapstDE

The perfect environment for all delicacies: Liebherr household appliances provide ideal storage conditions for food and fine wines

Technology for gourmets

People are becoming ever more choosy about their kitchens: Appliances do not just have to look good, they are also expected to be economical and as quiet-running as possible. And of course the food is supposed to stay fresh — which is where Liebherr comes in

The idea of banishing freezers to the cellar where they could make as much noise as they liked is a thing of the past. Nowadays, foodstuffs and the associated technology have long since become lifestyle items – new homes with open-plan kitchens are the latest fashion. This means refrigerators have to look the part and are often accompanied by special high-tech appliances to provide the best possible atmosphere for storing wine or cigars. The sort of loud, unpleasant noises which often used to emanate from appliances in the past would be completely out of place in this modern scenario. Which is why customers now listen more closely when deciding what to buy. Alongside energy consumption, noise is therefore becoming an ever more important topic when it comes to purchasing refrigerators and freezers. So for some years now, ways of reducing noise have been a focal point in the development of new household appliances at Liebherr. The refrigerator and freezer division of the Liebherr Group concentrates primarily on the premium sector. Refrigerators and freezers have to keep foodstuffs fresh 24 hours a day whilst at the same time consuming as little power as possible. Energy efficiency will continue to play a crucial role in future purchasing decisions. Which means there will be plenty of tasks to master from an engineering point of view. This applies not only to fridge/freezers but also to refrigerated wine cabinets and humidors. And sophisticated ventilation is always an essential element for all of these.

Guaranteed freshness Refrigerators and freezers have undergone dramatic changes in recent years. Whereas in the past a single storage area with a uniform temperature was sufficient, different zones are now demanded – like the so-called BioFresh compartments for example. These provide ideal storage conditions guaranteed to keep fruit, vegetables, meat, fish and dairy products fresh for longer. Just one fan is needed to regulate the temperature in both storage areas. Although fans with shaded-pole motors are still fitted in certain models, DC fans are being ever more widely used, particularly for higher energy efficiency classes. These permit speed regulation which in turn has a favourable effect on noise and power consumption levels. The situation is similar with regard to NoFrost technology: The convenient "No need to defrost" feature is of great benefit to customers. A special blower with DC or AC motors conveys the moisture given

From refrigerators with NoFrost system, to wine coolers and cigar humidors, all appliances offer maximum energy efficiency

off by the stored items or coming in through the open door to an evaporator element, where it then condenses. So frost has no chance to form either in the storage area or on the food itself. Both systems were developed by Liebherr in conjunction with ebm-papst. The latter has been an important direct point of contact for many years on the subject of fans. The success of this partnership can be attributed primarily to the fact that challenges have always been quickly mastered so far. For the latest version of the NoFrost system, the two companies took the joint decision to modify the housing of the DC motor BG-15 from ebm-papst Landshut in such a way as to minimise the transmission of vibration and the resultant noise. “All to the everyday benefit of customers who can enjoy having an efficient, quiet-running freezer,” says Reinhard Sommerreißer, the ebm-papst sales representative responsible.

With the NoFrost system, frost has no chance to form either in the storage area or on the food itself

Perfectly cooled wine all year round Although wine coolers only represent a smallish market segment, the Liebherr development engineers are keen to cut the noise level here as well. For testing, the appliances are taken to the noise laboratory at ebm-papst (St. Georgen). The measurement results obtained there are used to optimise the air flow and noise characteristics. Such tests are just one link in Liebherr’s long quality assurance chain. All-in-all, the trial phase for new products takes roughly a year. All components have to survive long-term testing, as Liebherr appliances are designed to last at least 15 years. The same is true of the humidor, despite the fact that the fans in it are exposed to a particularly high humidity level. The cigar store is fitted with a total of four fans. Two of these regulate the temperature, which can be set between 16 and 20 degrees centigrade – depending on what is needed for the cigars. The other two fans regulate the humidity to between 68 and 75 per cent as required. These two fans in particular are specially designed to guard against moisture. For this and other applications, it is important to Liebherr that the fans take up as little space as possible to maximise the storage space available.

ebm-papst fans are in operation in thousands of Liebherr appliances altogether. “The number of projects alone shows how intensive our association with Liebherr is,” says Reinhard Sommerreißer. He is in no doubt that the future holds plenty more projects with Liebherr. Gourmets, amateur chefs and cigar lovers the world over can rest assured: They will always be able to rely on top quality household appliances. ○

Perfect recycling

Systems from Hybag AG in Switzerland turn waste into biomass

Organic waste in the form of rotting foodstuffs from supermarkets or leftovers from canteen kitchens which are no longer fit for consumption ends up being thrown away. The potential contained in this is demonstrated by Hybag Automationen AG from Linden in the Swiss canton of Bern. The company produces systems for converting waste into biomass – used as fuel for generating electricity in biogas installations. A particular challenge in this process: The biomass must not contain any remnants of packaging. It does however often happen that the plastic, cardboard or string is not removed from foodstuffs before they are thrown away. So the “Tutto” system sorts out such non-biogenic waste during the production of the biomass. And a fan from ebm-papst plays an important part in the process.

Patented separation system Following delivery in a tipping trough, the raw material is conveyed into an intermediate bunker, where the waste is thoroughly mixed before being transferred to the separating hammer mill. “Here a patented system separates the packaging from the organic material,” explains Anton Berger, managing director of Hybag AG. "The individual hammers crush the entire raw mass and the light packaging material swirls up into the air." As soon as this happens, the foreign matter is propelled into a separate container by a jet of air.

Out with the foreign matter To keep the entire system operating at high speed it is important to eject the packaging material quickly from the separating hammer mill. So use is made of a compact centrifugal double inlet fan from ebm-papst to intensify the draught of air already produced by the rotation of the hammer mill. “We decided in favour of ebm-papst because the fan not only provides the necessary performance but is also extremely compact. It was also very easy to install in the system,” says Berger by way of explanation. The intensified draught of air blows all the synthetic materials into a container, from where they can be recycled. Pure biogenic substrate emerges at the bottom of the machine and is then subjected to heat treatment if required for the intended application before being ready for collection. So supposedly useless waste actually ends up generating power in biogas installations. ○

Past the sell-by date but ideal for green power: Hybag AG gives rejected foodstuffs a second chance

Paolo Pianazza

Technical Manager
ebm-papst Srl, Italy

Tougher requirements, big impact

The effects of ErP 2015 on fan manufacturers and customers

In this article I want to take a look at the ErP Directive from the point of view of our customers, who are working to satisfy the requirements. The directive affects all sectors in which fans are used as the central component. Directive 2009/125/EC and its Regulation 327/2011 will dramatically change the design of many of our customers' products.

Until now, manufacturers developed solutions that delivered the required performance on the one hand and were as cost-effective as possible on the other. For example, customers demanded that the special footprint for a machine be realised by designing a wall ring with a non-standard radius on the inlet side, or that it retains the same shape across a wide range of different products due to branding requirements, or that it allows only a limited height so that the machine could be more easily transported in a container. As a result, axial fans were combined with built-in nozzles for flat machines or the like.

When the first stage of efficiency targets went into effect in January 2013, equipment manufacturers and their fan suppliers were compelled to examine their product ranges to determine where a redesign of entire units becomes necessary. The reason for this is that the regulation treats the fan as a system (comprised of impeller, motor, housing and accessories such as a wall ring) needed in order to ensure a certain level of efficiency. This of course makes the fan strongly dependent on the conditions that determine its efficiency.

Consequently, we as suppliers have to verify whether our components still fulfil the directives, but the customers are responsible for certifying the fan if they produce parts such as the wall ring themselves, because according to the directive, that makes them fan manufacturers.

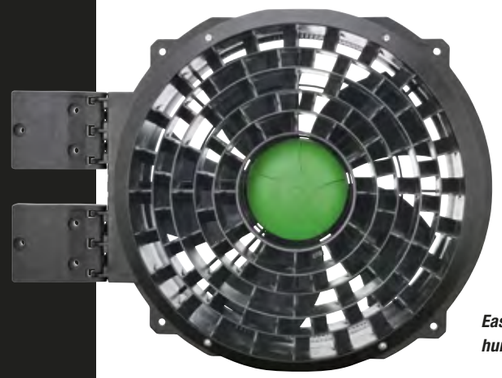
The requirements in effect until the end of 2014 are not so difficult to fulfil, but that will change completely starting in January 2015 when the second stage of the directive takes effect and tough new requirements will have a big impact. A few percentage points of higher efficiency will be enough to cause many of the designs mentioned above to disappear from the market. That will most likely lead to a convergence in the designs of the offered solutions. O

How will ebm-papst handle this?

With support from analysis to design, to find the best possible solution. Where that's not economical, a variety of standard products is available to help fulfil the efficiency requirements:

With AxiCool, energy guzzlers can be brought up to ErP 2015 standards without expensive development and new tools. An example: The target for A4E350AP0601 is an η of 28.6 percent at the best efficiency point, well above the 25.9 percent reached by the current design. The W4E350JN0230 overcomes the Δ 2.7.

The conversion from AC to EC technology ensures that ErP 2015 requirements are fulfilled, and it pays off quickly thanks to the lower energy consumption.



Easily clearing the ErP 2015 hurdle with the AxiCool

Imprint

Publisher:
ebm-papst Mulfingen GmbH & Co. KG
Bachmühle 2
D-74673 Mulfingen
www.ebmpapst.com

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Photography:
BavarianOptics
KD Busch
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Trade fairs

Nordbygg, Stockholm, 1 – 4 April 2014
Hannover Messe, Hannover, 7 – 11 April 2014
China Refrigeration, Peking, 9 – 11 April 2014
ISK Sodex, Istanbul, 7 – 10 May 2014
Data Center Expo, Tokyo, 14 – 16 May 2014
ARBS, Melbourne, 20 – 22 May 2014
InnoTrans, Berlin, 23 – 26 September 2014
IAA Nfz, Hannover, 25 September – 2 October 2014
FinnBuild, Helsinki, 1 – 3 October 2014
Chillventa, Nuremberg, 14 – 16 October 2014
For more trade fairs dates visit: www.ebmpapst.com

Events

19. ebm-papst Marathon, Niedernhall, 13 – 14 September 2014
7. Deutscher Maschinenbau-Gipfel, Berlin, 21 – 22 Oktober 2014

01°2014 mag

Technology for further reading

Are you interested in technical data, developments and products? The current issue of our sister publication tech.mag once again features a wide range of technical articles:

Range of modules for easy configuration of modern EC drives expanded: 63 mm drive with integrated control electronics

Air inlet grille for axial and centrifugal fans: "Air-guiding system" guarantees low noise output

Neat energy-saving solutions for clean-room applications: EC centrifugal fans for fan filter units

Energy-saving lighting demands new solutions: What to look out for in vehicle LED headlights

Axial fans for cooling units and evaporators: Fit for frigid environments

The **tech.mag 1/2014** is available. Contact our sales team or e-mail Katrin.Lindner@de.ebmpapst.com.

The Energy scouts teaching other trainees and training managers (left) and identifying "energy guzzlers" in the production process (right)

Energy scouts for all!

The concept invented by ebm-papst has spread to other regions

At the end of 2010 four trainees at the Mulfingen plant went in search of "energy guzzlers" in the production process. Using technical aids, they located, documented and repaired leaks in compressed air systems: The Energy scouts were born. "In the first year alone, we eliminated around 100 leaks and so saved 100,000 euro," says Lisa Bahr, responsible for energy and the environment in the Operation, Maintenance and Building department, who has been involved from the outset. The St. Georgen plant soon joined in with its own Energy scout programme. Since then all the German plants and the branch in Hungary have formed similar teams as well. Every year the people acting as Energy scouts pass on their knowledge to four new trainees to help the company save energy – after all, new leaks can appear at any time so that there is never any shortage of work for the scouts.

Practical instruction The prize-winning project has also received positive acclaim beyond the bounds of ebm-papst. "The idea is so good that it deserves to be more widely known," says Stefan Gölz from the management of the Heilbronn Franken Chamber of Commerce. Together with ebm-papst he is currently working on adapting the model for courses to be held by the Chamber of Commerce with a view to teaching trainees from other companies how to become Energy scouts. The courses are intended to start in the Heilbronn Franken region, to be followed by 18 Chambers of Commerce throughout Germany at a later date. "Particularly with regard to energy efficiency it is important to have concrete results to show and get employees directly involved. So the courses are of an extremely practical nature. Trainees are the ideal target group for such a project, as they adopt the appropriate attitude right from the start of their careers and keep the idea alive within the company," says Gölz.

ebm-papst has not just passed on its expertise to Chambers of Commerce, but also directly to other companies. As part of the GreenDay 2013, the Mulfingen Energy scouts provided a whole day's theoretical and practical instruction for trainees and training managers from ten companies. To accompany this event, two tutorial videos were also produced giving step-by-step instructions on correct use of the thermal imaging camera and compressed air leak detector. Lisa Bahr: "It is a delight to see how much interest there is in the Energy scouts. This project shows how any company can save energy employing simple means."

The idea is spreading to other companies as well

Scan these QR codes to view the tutorial videos of the Energy scouts on www.youtube.com/ebmpapstDE:

Tutorial on repairing leaks

Tutorial on identifying inefficient motors

"In the imagination of many Europeans, Russia still conjures up images of eternal winter, bears and the mysterious Russian soul. But the facts are much more impressive than this fiction: the largest country in the world possesses enormous natural resources and is home to around 200 different nationalities. In the same way as the climate is marked by dramatic contrasts, society is full of contradictions. In the light of the unique Russian mentality it is extremely interesting but not always easy to do business here. According to a Russian proverb, only unforeseeable consequences are foreseeable. That is why reliable business partners are absolutely essential. The same can also be said about the Winter Olympics in Sochi. Major investments have been made involving modern technologies. So we are proud of the fact that we were able to make our contribution in the form of RadiPac GreenTech EC fans for buildings such as the Ice Sport Arena and the Press Centre."

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