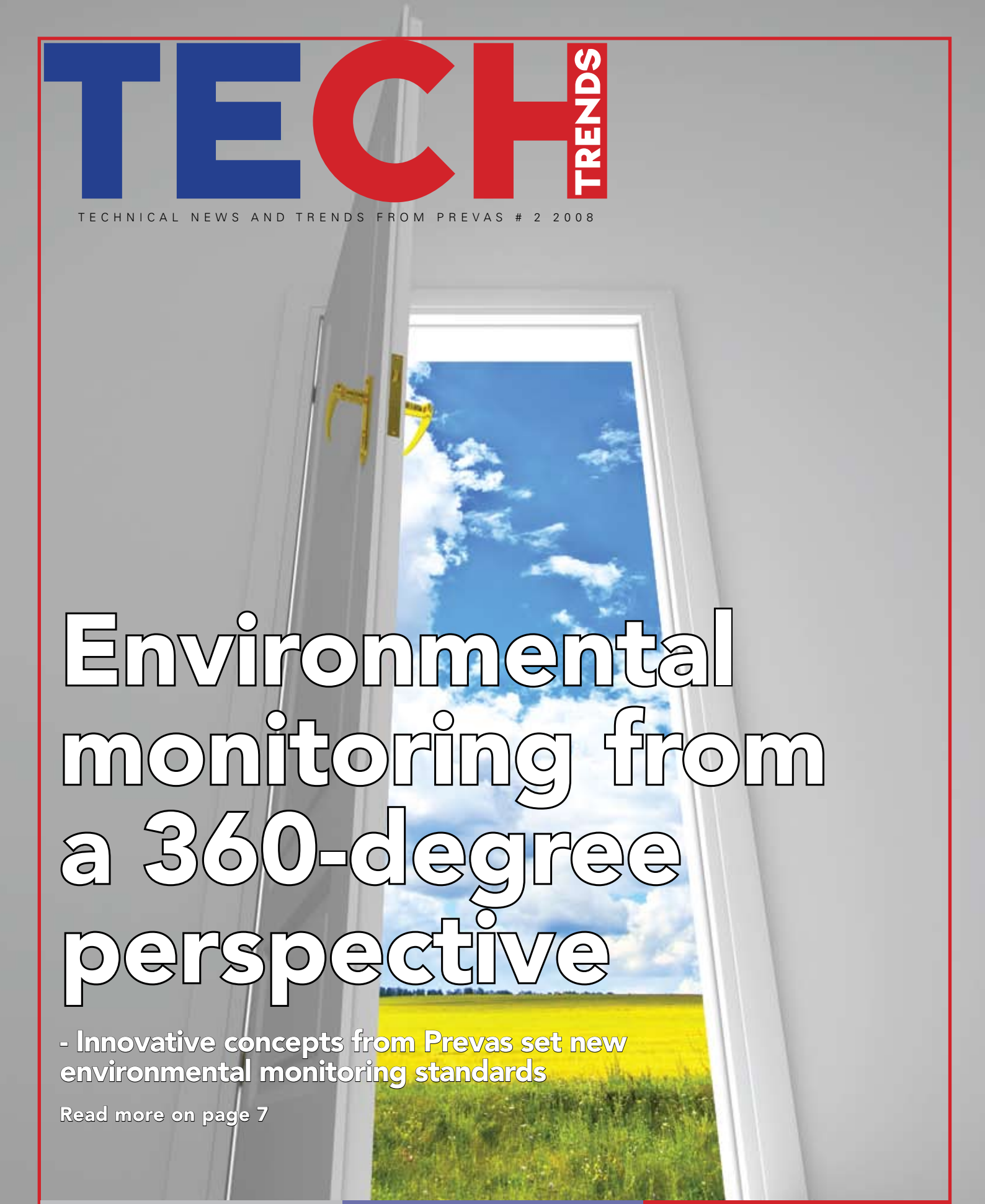
TECH TRENDS

TECHNICAL NEWS AND TRENDS FROM PREVAS # 2 2008



Environmental monitoring from a 360-degree perspective

- Innovative concepts from Prevas set new environmental monitoring standards

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Reduces energy

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Green energy

A unified Europe has declared that a large part of produced energy must be green. Consequently existing equipment for monitoring the medium voltage grid must become more intelligent.

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Lean design

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LEADER

We want to be a green beacon

Most of the world is focusing on the climate. The reasons are many, some more commercial than others. Ever since the signing of the Kyoto agreement in December 1997, people from the top of the political food chain have worked feverishly on a host of initiatives. But the climate change debate and general concern about the environment first drew general interest last year, when Al Gore initiated his persistent crusade on the global scene. Since then, it has become popular to be aware of carbon dioxide emissions, alternative fuels, and development of energy efficient technologies. And with consumers riding the green wave, many players from both the Scandinavian and international business communities have launched a host of climate-friendly initiatives.

Green focus at Prevas' Center of Excellence

Prevas is no exception. Over the years we have had substantial positive experience with reducing energy consumption in our production, technologies, and products. Our IT systems lead to more energy-efficient production, providing accurate emissions reports and products developed which in all their simplicity are eco-friendly. The more intelligence in microformat that we can apply to modern, sophisticated products, the less electricity they require.

In a time when electricity consumption worldwide is generally on the rise, by applying our knowledge to produce innovations in products and manufacturing we could play a role in reversing this trend.

We have established a Center of Excellence in this field as part of our product development initiative. At this center we will apply our knowledge and experience to develop climate- and eco-friendly technologies to create solutions that will be both profitable and sustainable in a world where the climate and the environment are top priorities.

This new Center of Excellence with a focus on energy will be located in Copenhagen, in part because in many ways Denmark is developing into Scandinavia's center for climate and environmental issues.

Benefits both the environment and the order books

In addition to benefitting the environment, a focus on the climate will increasingly become an important competitive factor in the struggle for market share. Scandinavian and international companies must now consider the climate and the environment early during the development process in order to compete in the commercial world. Prevas is both able and willing to contribute its knowledge and experience to ensure that its clients' solutions also become viable with respect to consumer requirements for social accountability.

Mats Lundberg
CEO, Prevas AB

TECH TRENDS

Technical trends, inspiration and news from Prevas AB

Prevas is an innovative IT company with a strong corporate culture that offers its customers solutions with a world-class competitive edge.
Prevas develops intelligence in products and industrial systems.
Prevas has offices in Västerås, Stockholm, Göteborg, Malmö, Linköping, Uppsala, Karlstad, Copenhagen, and Århus, as well as Oslo.

For more information on Prevas, please visit
www.prevas.com

Prevas

Prevas works with the brain

Swedish medtech company QuickCool AB has the know-how and experience necessary to develop a new technology that can cool, and therefore protect, the brain in patients who for one reason or another did not receive an adequate supply of oxygen to the brain.

QuickCool AB wants to revolutionize treatment that protects the brain by applying its knowledge to develop an innovative technique to rapidly, effectively, and easily cool the brain during the crucial seconds in the ambulance or the intensive care unit. The medtech company has received SEK 30 million in venture capital for this purpose. Today Prevas is involved in the development phase as a subcontractor.

Read more about QuickCool at www.quickcool.se.

Safeguarding the environment

The environment is important for everyone and is our common responsibility. Consequently companies must meet a number of requirements to reduce energy consumption – including carbon dioxide emissions. The first step is therefore to be able to calculate the amount of energy a company uses so that it can meet the limits set by regulatory authorities.

The Prevas solution, Mikon Continuous Emission Monitoring Systems (CEMS), provides an overview of the company's actual energy consumption in realtime. The solution actually provides a way to guarantee that government requirements are met. In addition, the company can both free up internal resources and simplify administration.

The environment is important for all of us and it is our common responsibility. Prevas' Mikon CEMS solution can save companies both fines and a bad reputation, by ensuring that individual companies meet their quotas down to the last decimal point.

Prevas reduces energy consumption in the Finnish steel industry

Prevas has received an order from Finnish steel company Rautaruukki Oy. The Finnish company intends to update its furnace control system and upgrade its furnaces at the Rautaruukki factory.

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As part of the new order Prevas will replace the furnace control system for the smelters with Prevas' own system, FOCS-RF. Many experts consider this system to be the market's leading system for optimization of all aspects of heating steel slabs.

Energy savings of 5 to 10 percent

Heating steel slabs is an extremely energy-intensive process. Efficient control of furnaces therefore requires optimization of productivity, quality, and energy consumption. Prevas worked with industry organization Jernkontoret and Metallurgical Research Institute AB to develop the FOCS-RF software solution to handle this optimization process. The system achieves energy savings of between 5 and 10 percent while maintaining productivity and quality.

Efficient control of furnaces is a growing market, in part due to rising energy prices. Selection criteria for providers of this type of project often include factors such as potential energy savings, increased quality control, and whether product functionality can be further developed. And this is the case here, where Prevas was chosen in competition with several other systems. A long-term structured process with continuous improvement of productivity and quality is absolutely imperative in this potential growth market. Moreover, innovation in the form of new technology solutions and ecological and energy-saving functions must always be at the core of the work.

CASE

Green energy requires i monitoring of medium v

A unified Europe has declared that a large part of produced energy must be green. The goal is to achieve 20 percent sustainable energy by 2020, which will involve a huge increase in the quantity of sustainable energy for the electric grid. Consequently existing equipment for monitoring the medium voltage grid must become more intelligent. Otherwise the energy will not become green.

"If wind, solar, and hydroelectric energy are to be used optimally and generate sustainable energy for a greener Europe, the local medium voltage grid must be extensively renovated. If this does not happen, green initiatives such as new wind turbines will be useless because it will not be possible to connect them," says Poul Lind, CEO of high-tech company PowerSense A/S.

PowerSense has developed a technology that enables the company to measure, monitor, and control the medium voltage grid. The sensor-based technology can measure and monitor the medium voltage grid and then send the gathered data to the client's control center.

In cooperation with Prevas

"According to PowerSense's business model, our focus is 100 percent on our own core competency; everything else, we outsource to selected partners in various industries. Prevas is one of these partners," says Poul Lind.

In order to get PowerSense's new sensor technology to effectively communicate with the medium voltage grid, Prevas developed and delivered a communication module that can be customized for all international standards and for the client's SCADA system.

Today PowerSense's technology and knowledge, along with Prevas' communication module, are in full operation to support the implementation of green energy in Denmark. And the same will soon be the case in countries such as Australia, the United States, India, Austria, France, Portugal, and Spain.

Poul Lind, CEO PowerSense A/S

ntelligent

oltage grid

Substantial investment required

The European Commission estimates in a recent report that optimization and digitization of the medium voltage grid in Europe alone will require an investment of up to EUR 500 billion.

Increasing energy consumption

Up until 2030, European energy consumption will increase by about 1.4 percent annually. This trend is one of the reasons that the International Energy Agency (IEA) decided that major investments in energy from alternative sources such as water, wind, and sun are needed. However, this can only succeed if the medium voltage grid becomes more intelligent.

An experienced executive

Poul Lind, CEO of PowerSense A/S, was previously CEO of Nesa A/S, CEO of DONG Energy Sales & Distribution A/S, as well as President of Dong Energy A/S. He has headed PowerSense since early 2007.

Mathematical modeling saves time and provides an overview

Mathematical modeling is a clear trend when developing advanced controls of machinery, devices, and processes. Development time can be sharply reduced, at the same time that results become far more predictable. The consequences of changes can be seen already at the model level, so that unnecessary tests can be avoided.

Mathematical modeling is an important component in "lean design" thinking. It supports the basic philosophy that analyses, simulations, and predictions are a good path to efficiency and user-friendliness. Mathematical calculation models make it possible to identify uncertainties and pitfalls that could have an effect on the finished product. This insight and control have made mathematical modeling a particularly popular tool.

Virtual setting

MatLab is one of the mathematical modeling programs that Prevas uses. This technical program models mathematical calculations and also automatically converts them into part of the software code to be used in the machine. The result is considerable savings in terms of both time and staff. All calculations, code generation, and tests of critical algorithms are conducted in a virtual model of the machine, which means that function changes and new tests can be carried out within a matter of minutes, rather than over several weeks.

Optimal allocation of work

"More and more clients of our clients use MatLab to describe the segment that is their core area. MatLab creates a highly advantageous allocation of work between client and developer, since the program gives clients the tools that control those elements of the project that fall within their area of expertise. The clients know best how a product will be used, while our expertise is on the electronics side. With MatLab, clients can generate their own code, test variants, and modify functionality, without writing a single line of code. When the final program is ready, it can be moved over directly to our development platform and implemented in the equipment. This is an extremely efficient working method," says Rune Domsten, Chief Technical Officer at Prevas.

Prevas develops and delivers platforms that can directly use autogenerated code. Naturally if the client should prefer not to do the modeling for the application, Prevas provides this service as an integral component of the project. Contact Prevas to discuss the potential of mathematical modeling in your projects.

Strengthen competitiveness with "lean design"

Many companies work with efficiency measures in production, but profit is only maximized when "lean" reasoning is addressed starting in the design process.

"Lean design involves thinking two steps ahead. Starting in the design phase, the developer must understand the world in which the end product will be used in terms of both technology and the market. This approach eliminates in advance any surprises or need for redesign.

This is Maria Månsson's definition of lean design. She is the head of Prevas and has worked with streamlined design methods for more than 20 years. Prevas is gaining momentum as more and more companies recognize the importance of considering the entire product life cycle already in the design phase.

Focus on the client's customers

"Ever since Toyota launched its production model, 'lean' has been popular. Today lean is a buzzword, especially in manufacturing – though so far, 'lean design' has been somewhat overshadowed, perhaps because it is more complex. But the fact is that the benefits of a finely tuned production process are quickly lost if the design process is not thorough and surprises and requirements for redesign keep arising. Many companies, especially in the United States, have adopted Toyota's production principles without having achieved the expected benefits, because they do not include the design phase in the lean cycle," says Maria Månsson.

"You could say that lean design places the focus on the success of the clients' customers. All situations and requirements that the product could encounter on its path 'from cradle to grave' must be factored in from the design phase, from functionality and technology to regulations, environmental issues, and sellability. This is how lean design plays a role in strengthening competitiveness."

Parallel design processes

Instead of traditional, design processes divided into phases, lean design involves working with parallel flows. Proven solutions and platforms are reused and choice of components carefully considered. Prevention and anticipation are important concepts in lean culture.

Verifying at an early phase that EMC requirements are met is crucial. Prevas therefore has its own expertise in the field and has even invested in its own pre-compliance lab.

"Lean is about trimming away excess fat and concentrating efforts on value generation. Reducing unnecessary activities frees up time and resources for important innovations and makes it possible to verify them as early as possible. This results in substantially shorter and more effective development cycles, at the same time success on the first attempt is far more likely," says Maria Månsson.

New environmental requirements

One of the areas where lean design is becoming popular is in conjunction with the rapidly growing number of environmental requirements. Especially in the electronics industry, companies are becoming increasingly responsible for a product's life cycle, from how it is manufactured to what happens when it is discarded. By starting as early as the design phase, lean design ensures that the product navigates safely through the sea of regulations and lives up to all requirements.

"As lean design specialists we carefully monitor all environmental legislation, such as the RoHS directive, which prohibits the use of certain substances such as lead. Lead-free soldering means that the designer must understand the welding process in order to correctly draft specifications for materials and surface treatment on the circuit board. EU parliament politicians are currently working on a new directive, the EUP directive (also known as the ecodesign directive) for the product's environmental impact through energy consumption, which will have great significance for manufacturers of consumer electronics. Legislation could be rapidly passed that would regulate how high energy consumption may be when products such as computers, TVs, battery chargers and the like are on standby or turned off. Monitoring this type of change is crucial so that products on the drawing board can be designed to meet the more stringent legal requirements," says Maria Månsson and continues:

"This complex and globalized universe in which companies work creates a need for a complete overview, effective development cycles, and great accuracy. That is the essence of lean design, and that is why we at Prevas expect interest in this design method to rise sharply over the next few years."

CASE

Environmental monitoring from a 360-degree perspective

Photographer: Olof Grind

The intelligent pollution meter sets brand new standards for environmental monitoring. In addition to remote reading of electricity consumption, the environmental monitor also tracks pollutants within the four walls of the home and ensures that ventilation and power consumption go hand in hand in the best possible way.

You've surely experienced it: wood crackling in the fireplace, lit candles everywhere, and drowsiness creeps up on you – not just because of the heat, but also because the air grows thicker and thicker. While candles and fireplace enhance the coziness factor at home in your living room, the indoor climate is subjected to a major test. You may save the outdoor environment from a little carbon dioxide, but the figures from the environmental accounting within the four walls of the home are in the red.

Red indoor climate

These days, you have to make an effort if you want to achieve environmentally correct behavior. Rules and advice about the climate, both outdoors and indoors, are often contradictory. The intelligent pollution meter is the key to environmental monitoring from a 360 degree perspective, making it possible to monitor pollutants both indoors and outdoors and automatically trigger procedures to optimize energy consumption. For example, you will be warned if the indoor climate in the living room should move into the red zone, and you can see on your mobile phone which alarm turned on and what you should do.

Environmental requirements are unbelievably complex and require end-to-end solutions

Intelligent ventilation

The pollution meter can also be expanded with a sensor outside the house, which ensures that ventilation takes place at the best time of day. Such timing is especially important in cities with heavy traffic, where you quite simply should not air out rooms during certain specific time of the day. Here the monitor can be programmed to automatically open windows and ventilation systems when the air outdoors is at its cleanest – at the same time that it turns off all heat. The monitor can also be expanded with a pollen meter that works on the same principles.

Total solution

"The pollution meter is an example of a product that uses existing technology to create a total solution – in this case, a complete environmental monitoring solution. Pollutant monitoring can be seen in a brand new perspective, with a focus on the total picture and user-friendliness. This concept stands in stark contrast to the Government's individual initiatives, such as remote reading of electricity meters, which are only a small piece of the large environmental puzzle. Environmental requirements are unbelievably complex and require end-to-end solutions. A wireless network for monitoring and control can be included in a total solution and create an opportunity for using the intelligent pollution meter," says Rune Court, Chief Technical Officer at Prevas.

The intelligent pollution meter is a prototype that Prevas created at the concept level. The wireless portion of the technology could be placed in a USB drive that could be plugged into an electricity meter, or directly embedded on a next-generation electricity meter.

Extend battery life tenfold

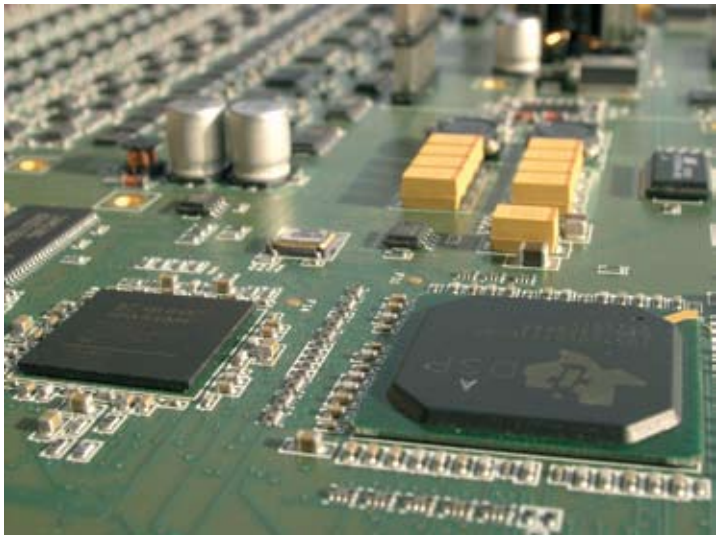
Using FPGA and embedded electronics rather than industrial computers when building electronics into products could reduce electricity consumption in machinery and equipment by up to 90 percent.

You can help the environment a bit and prolong the lifetime of your battery-based devices by using FPGA or other modern components rather than industrial computers, when you embed electronics in your products. Consequently, a growing number of companies are replacing industrial computers as development components for electronics with FPGA. FPGA has several advantages, both in the actual development process and in the finished device. As a development component it is unbelievably flexible and can be reprogrammed several times, and it can be designed and tailored with more advanced components than an industrial computer. All FPGAs now also have the ability to synchronize calculations and functions, which usually improves real-time performance. Users will therefore think they get a "faster" machine.

Ideal for medical devices and mobile equipment

At the machine level, FPGA involves a solid energy savings and is yet another way to safeguard the environment. Electricity consumption can be reduced by up to 90 percent when using FPGA rather than industrial computers, which means that machinery that runs on batteries could run ten times longer on the same battery. This extended lifetime is of particular significance for purposes such as medical equipment and measurement devices, which normally have a battery backup to avoid the effects of any power cuts, as well as for mobile equipment. In the past many medical appliances were built on industrial computers to meet the need for a broad graphical interface, but today it can be included in embedded platforms while running a screen at a resolution of 1024 x 768. Prevas' HM20 module is an example of one such embedded module, which only uses 0.6 W.

In addition to lower power consumption, FPGA also makes it possible to create physically smaller products, which is highly significant for mobile equipment.



FPGA can extend battery life tenfold