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Energy efficiency and cost consciousness goes hand-in-hand

And solutions exist to make it happen

By: Lisa V. Pilgaard
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At first glance it might appear to be a dilemma: The two main items on the world's agenda are to save costs while at the same time taking on the climate challenge.

The world has become cost conscious. Although we may have put quite a few months between ourselves and the rocky year of 2009, we are still feeling the after-shocks.

Many economies across the world are still marked – to varying degrees – by a financial crisis that didn't recognize national boundaries and was deeper, longer and more all-consuming than anything we've ever seen before.

Keeping costs down is, however, not the only task at hand. Right now, as we all know, the climate challenge is moving towards the top of the to-do list and investment is needed to speed up the progress in this vital area.

According to Niels B. Christiansen, the two challenges – economy and environment – are not conflicting or contradictory. Solutions already exist that can address both issues at the same time. Niels is the CEO of the global industrial group Danfoss, a market leader – with 26,000 employees across the world



– in producing, developing and supplying a long line of components and solutions for climate and energy-efficiency challenges.

Niels emphasizes that to get things right and apply the appropriate solutions, it is important to have a clear understanding of what the needs are and exactly what challenges are being faced. "When moving forward to address climate change, we need to take into account that we are still in the aftermath of the financial crisis," he says. "Governments are financially restricted in their policies and are not so inclined to come up with investments, introduce tariff programs or offer other incentives that promote energy efficiency.

At the same time, it is also more difficult for governments to tighten legislation and standards. This is not



*Niels Bjørn Christiansen
Vice CEO of Danfoss*

the time to burden companies with more bureaucracy and put their competitiveness at risk. Companies' earnings are under pressure and many consumers are hesitant in their spending. Most are not able to make long-term investments in new solutions that take five to ten years to drive to a volume that is profitable."

Customers go for the low-hanging fruits

There is a real pressure to come up with effective green solutions with a quick payback time. Right now, customers prefer the simple solutions that allow them to pick those low-hanging fruits fast.

This pressure is global. Growing populations and improved standards of living across the world have accelerated energy consumption – estimates suggest it

will have increased by another 45% by 2030 – and renewable energy alone cannot keep pace. Currently renewable energy only makes up a small fraction of this.

"To start making a difference we must focus on energy efficiency, fortunately, the solutions are ready here and now,"

says Niels B. Christiansen and explains that bringing about increased energy efficiency, in a way that will make a global difference means developing and employing a number of different technologies.

"Immediate focus should be on improving efficiency in a number of key areas such as house insulation, heating and ventilation, lighting, electric motor controls and air-conditioning. These areas deliver the



FACTBOX

Examples: Technologies that promote energy efficiency:

- District heating is a clear example of a technology developed by Danfoss that is ready and waiting to deliver results for these huge markets. It is by far the most efficient way to generate and distribute heating – and cooling – and is an ideal solution in densely populated areas. As an added bonus, if waste energy from a power plant is used it may raise the efficiency considerably by utilizing free waste heat.
- Thermostats: Efficient heating control is another obvious answer to the task ahead. Replacing a manual radiator valve with a thermostat can save up to one fourth of the energy consumed.
- Variable speed drives, another area of Danfoss expertise, can also make a significant contribution. By ensuring that the electric motor only runs at the speed necessary to obtain the desired effect, it can typically save forty percent of the energy in pump and fan applications.
- Renewable sources of energy: On the renewable energy front there are also ready-now solutions all set to be deployed. Alongside wind and solar power there are heat pumps, which can ‘upgrade’ free heat from renewable sources – such as air, water and the ground – to optimum temperatures to warm buildings or for use in industrial processes.
- Variable speed compressors for air conditioning: Air conditioning accounts for 16% of the electricity consumed in the US. Over one third of this can be saved by using a high-efficient variable speed compressors for residential air conditioning.
- Refrigeration controls: An example of a low-hanging fruit is efficient control of refrigeration in grocery stores which ensures that energy consumption is automatically adapted to the actual need. An Danfoss ADAP-Kool control system typically helps stores achieve a 20% savings on energy and the pay-back time is only 1-2 years.



most attractive pay-back and Danfoss is active in several of them.” There are ‘quick wins’ to be had here, where Danfoss can deliver well-proven, ‘here and now’ solutions that improve energy efficiency and utilize renewable energy. These could reduce global energy consumption through “simple” means, but they are generally under-used and under-estimated by customers despite the attractive payback.

Different markets have different needs; China, Russia, India and Europe

But what makes Danfoss really stand apart from the crowd is its ability to provide a long line of green solutions which makes it possible to match the individual needs of different markets and geographical areas. There is no one ideal solution for improving energy efficiency across the globe. It depends on a country’s climate, the level of economic development, the current level of energy efficiency and the incentives that are being offered by the different governments. Take, for example, China, where energy consumption is driven upwards by several factors. Growth rates are steep, the housing stock vast and extremely energy-hungry and the production in-

frastructure is huge. However, China is taking steps in the climate challenge, aiming to raise the share of renewable sources of energy to 15% by 2020 and reduce CO2 emissions per unit of GDP by 40-45% from 2005 levels.

Meanwhile, in Russia, the market is defined by bitterly cold winters and an annual GDP growth of 10% per year. On top of that the population has seen the cost of energy rise by 22% in 2010 alone. They too have set the bar high when it comes to energy efficiency, one of President Medvedev’s key priorities, looking to reduce CO2 emissions by 15-25% by 2020 from 1990 levels and to focus on building renovation, heating control and modern district heating solutions in doing so. The weather may be hotter, but the current energy situation is even more eye-popping in India. Here CO2 emissions are expected to triple within the next 20 years – and they already account for 4% of the world’s total. They are targeting an CO2 emission reduction per unit of GDP of 20-25% by putting the focus on refrigeration and air-conditioning. In Europe the approach is somewhat different. The continent is on the whole looking towards renewable sources of energy, as well as introducing more advanced energy-efficient measures.



As a result wind and solar energy are moving forward and there is also a growing awareness of the benefit of heat pumps. Europe is also re-discovering the potential of district energy as the most efficient way to distribute energy in cities and in the future also as the answer to storage of energy which is a big challenge when using renewable sources of energy. Right now research is being done into using excess energy from renewable sources to heat water, which would make it possible to take advantage of the energy generated also after the sun has stopped shining or the wind has stopped blowing.

The European Union is also playing a key role by coming up with legislation that speeds up the progress of the use of climate and energy-friendly solutions on the road to reducing CO2 emissions by 2020 by 20-30% from 1990 levels.

A good example is Germany where a progressive program for solar energy, including feed-in tariffs (payments to ordinary energy users for the renewable electricity they generate) has sparked the German market for solar energy and created 60,000 new jobs along the way.

Ambitious targets offer business opportunities

So there are a number of different challenges and a number of different approaches. But whatever the climate and financial situation, all these global examples provide fertile ground for energy experts like Danfoss. There are ambitious targets across the globe and they offer significant business opportunities in delivering just these kinds of 'green' improvements," says Niels B. Christiansen. "The good news is that all these challenges can be taken on with existing technologies. A lot can be achieved quickly with the solutions already available and with an attractive pay-off too." District heating, radiator thermostats and variable speed drives are examples of such technologies.

To solve the global challenges it is not only important to put a strong focus on energy efficiency and available solutions with attractive payback. It is also essential to understand the diversity of needs across the globe and can deliver the right solution to the right place.

Danfoss has just such a focus and understanding. The company, which started life 77 years ago in a farm in the south of Denmark and has grown into a global force is ready to take on a central role in taking on the defining challenge which faces us all. ■