Federal Ministry for Economic Affairs and Energy

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Energy security at different levels

With seven ‘penta states’, twelve ‘electrical neighbours’, and all 28 EU Member States having joined the ‘Energy Union’, European cooperation on energy is proceeding well and at different levels. **Find out more**

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The various electricity markets in Europe are growing ever closer. At various different levels, countries are working together to strengthen cross-border energy security and build strong electricity markets for the future. After all, the energy transition will only work out if it is broached using a pan-European approach. A great deal of progress has already been made on cross-border cooperation, but the task of adjusting the energy policies of individual countries in Europe to bring them into line with one another is rather a complex one.

Two years ago, Germany initiated the formation of a group called the 'electrical neighbours' – neighbouring countries that want to strengthen their cooperation on electricity. Austria, Belgium, the Czech Republic, Denmark, France, Germany, Luxembourg, the Netherlands, Norway, Poland, Sweden, and Switzerland have all joined this group. In July, representatives of all these countries came together for a meeting of the electrical neighbours in Berlin.

Flexible and joined-up electricity markets for high levels of energy security

At July's meeting of the electrical neighbours, discussions centred on how our electricity supply and demand can be made more flexible. This is because the more we rely on renewables, the more we need our energy industry to be flexible. In future, the amount of electricity that is available won't solely depend on demand anymore. The amount of power that is being generated from renewables at a given time will also play a key role in this. And this will have an effect not only on individual countries' electricity markets, but on European cross-border trade in electricity, too.

If we are to successfully balance supply and demand in future, we will need to engage in more cross-border trade in electricity. National grid operators will have to increasingly coordinate with one another more closely if they are to achieve high levels of grid stability. And different national governments will also need to cooperate more, to ensure that the right framework is put in place.

Close dialogue between the electrical neighbours

The electrical neighbours all agree that both the supply and demand sides need to become more flexible. In order for this to work, a suitable framework needs to be put in place for the electricity markets. This will first require some remaining hurdles to be cleared. Free price formation and free and unhindered market access for all players are absolutely key.

Enhanced cooperation between the penta states

The Pentalateral Energy Forum also seeks to render the electricity markets more flexible. This forum was established more than 10 years ago and brings together the countries of Austria, Belgium, France, Germany, Luxembourg, the Netherlands, and Switzerland. The smaller size of the group, compared to that of the electrical neighbours, allows for more specific action on flexibility to be prepared in detail. The seven members seek to align their interests with those of the larger group of twelve electrical neighbours – as far as possible.

Delivering energy security at affordable prices – the EU Energy Union of 28

Beyond the Pentalateral Forum and the electrical neighbours, there is also the Energy Union, which brings together all 28 EU Member States. The Energy Union is a blanket term for all EU energy projects that seek to guarantee energy security, a sustainable supply of energy, and a competitive and affordable supply of energy.

FURTHER INFORMATION

[→ Electricity Market 2.0
[→ European Energy Policy

What exactly is ‘hydraulic balancing’?

With some heating systems, it doesn’t matter just how high you turn up the radiators – one will barely heat up at all, another will be too hot. Sound like a familiar problem? If so, you should treat your heating system to a course of hydraulic balancing. This will not only resolve the problem of uneven heat distribution, it will also be a cheap way to help you save a great deal of energy and money.

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Aiming for energy conservation and even heat distribution

Buildings account for almost 35 per cent of our final energy consumption in Germany, with most of this energy going on to be used for heat and hot water. Too much of this energy is still being wasted. ‘Hydraulic balancing’ can help us use and conserve energy in a better way and heat our rooms to a

nice and cosy temperature. But how exactly does it work?

Unless the overall heating system is correctly balanced, radiators that are located further from the boiler won't heat up properly, whilst the radiators closest to the boiler become too hot. This won't just make your home uncomfortable, it also means you're wasting energy.

Hydraulic balancing is a process that involves a specialist firm coming to adjust the heating system to ensure that each radiator gets just the right amount of the hot water circulating in the pipes.

Balancing is a three-step process

This is done in three steps. As a first step, the firm will assess just how much heat each room needs. This depends on the particular properties of the house or flat, i.e. on the level of insulation of the outer walls and on the type of window fitted. As a second step, the firm will calculate the correct amount of hot water that needs to be pumped into the radiators and the right settings for the pump. This data is then used to fine-tune the valves of each individual radiator. Once the process has been completed, each radiator will receive just the correct amount of heat needed to heat up the room to the desired temperature.

How to tell if your heating system needs to be balanced: watch out for gurgling, whistling or white noises

There are several signs that indicate that your home heating system needs to be balanced. If you find, for instance, that you can't adjust your heating as well you'd like and that the rooms won't heat up properly, hydraulic balancing might be the answer to your problem. Or does your heating make gurgling, whistling or white noises? Are some radiators hot, even on a low setting, whilst others will hardly heat up at all, even though they are on full? These are all signs that your heating system might be in need of hydraulic balancing.

It takes just a few hours

In most cases, the process of hydraulic balancing won't take longer than a few hours. After completing the three steps set out above, the firm will then check the overall result and the process is all done. In some cases, your heating system might need some minor repairs such as new valves.

The exact cost of the process will depend on the way your heating system is set up and what kind of state it is in, as well as the number of rooms and the overall size of the building. As a rule of thumb, you can expect to pay something like 500 euros for a single-family home. Specialist firms will be happy to give you a quote. In most cases, you will recover the cost of the process within just a few years, because you will spend less money on heating.

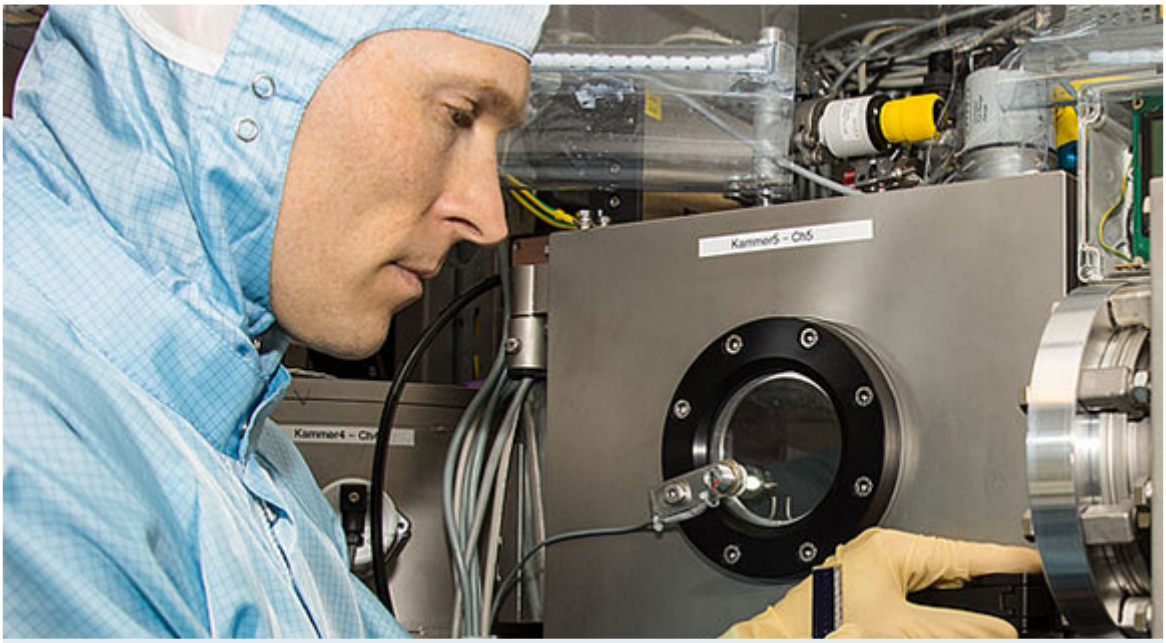
Save even more by having your entire heating system modernised

Anyone looking to modernise their heating system will be eligible for a government grant. The government will cover 30 per cent of the cost of the course of hydraulic balancing and of any associated work, such as new valves. Under the new funding programme for work to optimise heating systems, grants are also available to those who swap their outdated heat pump for a new one. In many cases, having both measures done at the same time will produce the best outcome and save you

the most money. A government grant of 30 per cent is available to anyone who has a highly efficient heat pump fitted.

Solar energy – ever faster and ever more efficient

The Baden-Württemberg Centre for Solar Energy and Hydrogen Research (ZSW) has set a new efficiency record for thin-film solar cells of 22.6 per cent. What is also impressive is that the past three years have seen several all-time records in solar cell efficiency set – right across the globe.



© Baden-Württemberg Centre for Solar Energy and Hydrogen Research (ZSW)

Solar cells smaller than a fingerprint are big enough for world records to be broken. Just a few weeks ago, researchers at the Baden-Württemberg Centre for Solar Energy and Hydrogen Research (ZSW) set a new efficiency record for thin-film solar cells. It was here that they created a solar cell that has a surface of just half a square centimetre, but has an efficiency rate of 22.6 per cent – surpassing the former leading technology from Japan by 0.3 percentage points.

Thin-film solar cells can be used as an alternative to the more commonly used silicon wafer solar cells. Whilst current thin-film solar cells have yet to become as efficient as their competitors, they also offer clear benefits. They are cheaper to produce, more light-weight, and can be manufactured using fewer resources. The next challenge to be mastered is to scale up production, with work on this already progressing well.

Records being broken at an ever-faster pace

With efficiency rates in photovoltaics increasing exponentially, it is likely that the next record is not too far away. The past three years alone have seen faster improvements in efficiency rates for thin-film solar cells, which are made of copper indium gallium selenide (CIGS), than the fifteen years previous.

Between 1998 and 2013, new records were only achieved every two to three years. On average, efficiency rates used to improve by 0.1 to 0.3 percentage points per year. Today, the comparative figure is just under 0.7 per cent – which means that world records are being broken every semester. Just a few months ago, the European efficiency record stood at 22 per cent. The scientists from the ZSW think that it is entire possible that the 25 per cent efficiency mark could be reached in just a few years' time from now.

Better efficiency, cheaper solar power

The fast development seen in solar-cell efficiency is likely to benefit consumers as well, with higher efficiency rates bringing down the cost of solar power. This is an effect that can already be observed on a global scale. According to the International Renewable Energy Agency (IRENA), solar power now accounts for two per cent of global power generation. By 2030, this figure could go on to rise to 13 per cent – particularly as a result of falling prices.

FURTHER INFORMATION

Massive potential for solar power across the globe
[→ Energy research and innovation
[→ Online portal for solar power research

Quote of the week

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"The EU has an ambitious emissions reduction target, one I am convinced we can achieve through the collective efforts of all Member States."

Miguel Arias Cañete, EU Commissioner for Energy and Climate Action introducing the package of measures to accelerate the transition to low-level carbon emissions in all sectors of the economy in Europe.

State Secretary Baake congratulates pilots on completing first solar-powered flight around the world

Bertrand Piccard and André Borschberg have just flown right around the world in their solar aircraft “Solar Impulse 2”, which is powered by four solar electric motors.

Bundesnetzagentur explains how the planning approval procedure works

The Bundesnetzagentur, the national regulatory authority, has published information about how the exact routes of the new grids are being determined. The information is provided in a form that is clear and easy to understand.

Denmark and Germany sign first cooperation agreement on mutual cross-border pilot auctions for PV installations

On 20 July, the Danish and the German governments signed a cooperation agreement on the mutual opening of auctions for PV installations. This cooperation agreement is the first of its kind. It sets the framework for two pilot auction rounds to be held in Denmark and Germany in 2016 allowing for cross-border participation of installations for the first time.

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