Alongside reliable energy grids, fast Internet connections are also fundamental for the well-being of a region. The planning, construction and operation of fibre-optic networks is a business field with great potential for the future. We laid and placed into operation 450 kilometres of fibre-optic cables for our telecommunications subsidiary NetCom BW last year alone. NetCom BW provides 43,000 customers with a fast Internet connection. A special project is the construction of a 450 kilometre empty pipe network for 30 local communities in cooperation with the administrative district of Karlsruhe. The EnBW subsidiary Netze BW is responsible for 130 kilometres, of which 80 kilometres are already finished. These empty pipes will form the basis for a future data highway that will connect the communities in the administrative district together. Fibre-optic cables can be blown into the empty pipes later on without having to dig up the roads, paths and squares again.

2020

Networked for the future

In the coming years, EnBW will plan the infrastructure for whole city districts. This includes electricity for the household and electromobility, fast Internet and a modern supply of heating – for example, from combined heat and power blocks that generate electricity from waste heat and work in combination with solar power plants on the roof. The area of transport management is also being expanded, for example, with the monitoring of parking spaces.

Development of adjusted EBITDA Grids
in € billion

2025

A smart grid

Solar power plants, electric cars or smart household devices can overload the grid if they consume or feed in electricity in an uncoordinated way. Therefore, EnBW is developing smart technology to predict when the grid will experience peak loads and to what extent. If there is a danger of the grid being overloaded, the grid operator can reduce feed-ins from solar power plants or charge electric cars more slowly. Electricity storage systems will also help to ease the burden on the grids by storing surplus energy and feeding it back in at a later point in time. An interesting option in the future may also be converting the electricity into gas via electrolysis. The energy can thus be stored in the gas grid. Another approach could be to directly transform the electricity from renewable energies into heating or cooling. This will set in motion the networking of sectors that were previously separate within the energy industry.

A look ahead to the future. Three questions for…

Question: Why does the grid infrastructure play such an important role in the Energiewende?

In the past, if more electricity was required, another shovel of coal was simply added at the power plant. This will not be possible in the future. The generation of electricity from the wind and sun is dependent on the weather. The grid of the future will therefore need, on the one hand, a storage system, and, on the other hand, the ability to flexibly adapt consumption to the amount of electricity being generated.

Question: What technical requirements will be necessary for this?

Firstly, the consumption of individual units must be large enough to make flexible management worthwhile. This is the case, for example, for charging stations for electric cars. A smart management system will ensure that the connected batteries are only charged when the grid has sufficient output. A similar principle is conceivable for industrial companies that could use energy management systems to flexibly manage their production plants.

Question: Why is the phrase critical infrastructure being talked about more and more in relation to grids?

The term "grid" or "network" will have a much broader scope in the future. Flexible consumers require not only electricity but also extensive communication links. The security of the entire IT infrastructure for the energy supply system, as well as the data for individual consumers, is necessary in these networks. In addition, we need to work across sectors if we want to generate 80 % of our electricity from renewable energies in the future. One example of this is heat pumps – which link together the markets for electricity and heating. Electricity can also be transformed into gas via electrolysis and thus stored in a neighbouring grid.

"We need to work across sectors if we want to generate 80 % of our electricity from renewable energies in the future."

Stefan Tenbohlen,
University of Stuttgart

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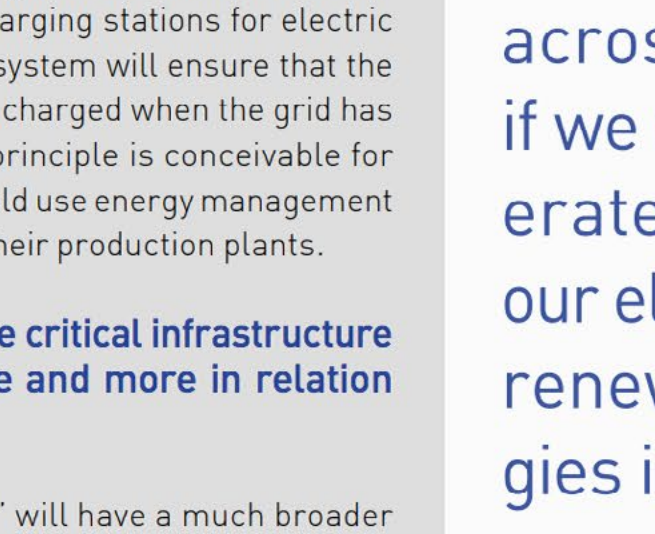

Smart grids can predict how much electricity will be generated and consumed. The required data will flow through fibre-optic cables.