

Success story:

# A solar solution

**Introducing renewable energy to mobile network sites**



**ERICSSON**

In partnership with



December 2021



# Powering a cleaner network

In a decisive step towards net-zero emissions, Deutsche Telekom has partnered with Ericsson to bring solar power to commercial mobile broadband sites for the first time ever.

## Harnessing renewables

In an effort to reach net-zero by 2040, Deutsche Telekom has set itself the ambitious target of bringing down its direct and indirect emissions (scope 1 and scope 2), as well as pledging to get 100 percent of its energy from green sources and efficiency programs.

By partnering with Ericsson to bring solar power to a network site, Deutsche Telekom is signalling to the rest of the world that it takes its environmental responsibilities seriously.

Solar modules have never been used to power commercial mobile broadband sites in European markets, but Ericsson has teamed up with Deutsche Telekom to demonstrate how the Ericsson Power System can be used to run a site on renewable energy.

Solar panels were installed at Deutsche Telekom's mobile site in Dittenheim, Germany during the second half of 2020. The 12sq m panels were designed to be compatible with the same

management system that controls the Radio Access Network (RAN), so the transition was smooth and intuitive.

With the Ericsson Site Controller managing the Ericsson Power System and the solar voltage conversion, the solution was able to contribute to more than two-thirds of the site's total power – even during peak hours. In fact, thanks to the efficiency of the radio equipment, at times of high solar irradiation, even larger shares were possible. The operator could track and supervise the solar energy harvest continuously via Ericsson Network Manager (ENM).

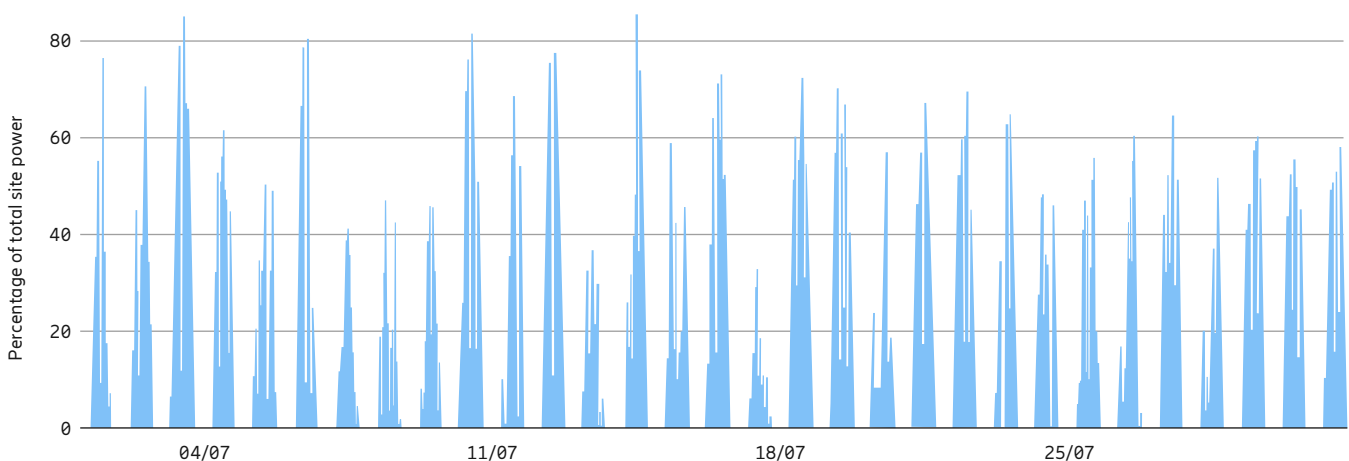
We will evolve the Ericsson sustainability solutions using Ericsson Controller 6610 and facilitate remote management and monitoring beyond solar, for example the usage of wind turbines and fuel cells and combining local energy production with features such as peak load shifting and peak shaving in the radio network to maximize usage of the renewable energy. Over the course of July 2021, the solar panels contributed an average 14 percent

“The benefits of autonomous power supply for mobile sites are twofold. First, it helps to reduce our CO2 emissions by sourcing power from renewable sources of energy, an important measure to achieve net zero. Second, it will also help enabling network expansion in locations where development costs were previously not economical.”

**Leif Heitzer, Senior Vice President  
Technology Guidance & Economics,  
Deutsche Telekom**

to the site's overall power supply. However, Figure 1 shows that this increased to about 83 percent between the hours of 12:00 and 2:00. This enabled average solar energy harvesting of 11.5kWh per day in June, increasing to 15.1kWh on sunny days. Figure 2 highlights the power contribution of the solar panels in each month of 2021 from January to June.

Figure 1: Percentage of total site power covered by solar system power



### The challenge

- Solar modules have not yet been used to power commercial mobile broadband sites in markets with stable electricity grids.
- To harness solar power as a supplementary source of power.

### The solution

- Solar energy used for mobile broadband sites at a Deutsche Telekom site in Dittenheim.
- Ericsson Power System handles maximum power point tracking and necessary voltage conversion.
- Solar solutions integrated with the same management system as the RAN.

### The result

- Solar energy can contribute to more than two-thirds of the site's total power during peak hours.
- Site electricity costs are lowered.



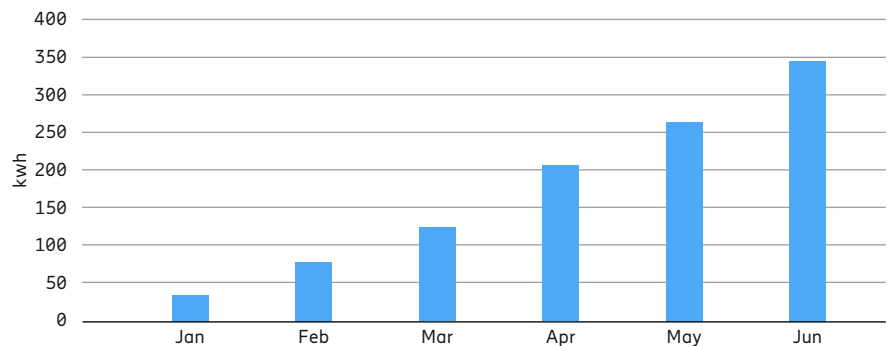
Ericsson and Deutsche Telekom have partnered to bring solar panels to a RAN network site.  
Image source: DFMG Deutsche Funkturm GmbH

The total average energy consumption of the RAN equipment on the site in Dittenheim is 21,000kWh per year, which equates to 60kWh per day. Across the entire year, including winter months, solar is forecast to contribute to about 11 percent of Dittenheim's total RAN site energy. This could be increased by optimizing the size, positioning and inclination of the solar generator, as well as using solar-optimized MPPT hardware at no additional capex. Another way to push this even further is to increase the size of the solar panels themselves to more than the current 12sq m.

### Economical as well as environmental

Ericsson estimates that the annual global energy cost for running mobile networks is about USD 25 billion. This is unsustainable from both an environmental and financial perspective. One of the primary factors preventing companies from embracing solar is the high upfront cost of buying, installing and maintaining the equipment. However, the tests carried out by Ericsson and Deutsche Telekom showed that the long-term advantages of solar power go way beyond the obvious environmental benefits.

Figure 2: Solar energy production (January to June 2021)



### About the customer

- Deutsche Telekom is one of the largest telecommunications companies in the world, with nearly 250 million mobile customers, 27 million fixed-network lines and 22 million broadband lines.
- Present in more than 50 countries and employing more than 226,000 people, Deutsche Telekom provides a range of internet, mobile and ICT solutions to individual and corporate customers.
- By 2030, Deutsche Telekom is aiming to reduce its carbon emissions by 90 percent compared to 2017.
- Deutsche Telekom aims to become carbon neutral for its own direct and indirect emissions by 2025, including a reduction up to 90 percent compared with 2017.
- Deutsche Telekom will become carbon neutral across the whole value chain by 2040 at the latest.

## About Ericsson

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

[www.ericsson.com](http://www.ericsson.com)