

INTERVIEW WITH WOLFGANG TAUSEND, GRID CONSTRUCTION TECHNOLOGY DIVISION

MR TAUSEND, YOU WORK IN THE GRID CONSTRUCTION TECHNOLOGY DIVISION AT TRANSNET BW - AMONGST OTHER THINGS AS AN EXPERT ON "WEATHER-DEPENDENT OVERHEAD LINES". CAN YOU FIRST BRIEFLY EXPLAIN WHAT CONTROL OF THE TRANSMISSION SYSTEM HAS TO DO WITH THE WEATHER?

The conductor cables of an overhead line warm up when power flows through them. The more power flows through it, the warmer the line becomes. Every line has a standardised, pre-determined power threshold, so we can run power through the line up to that limit without taking any further precautions.

Four weather factors primarily determine the actual load capacity of a line: the temperature, the sunlight intensity, the wind speed and the wind direction in relation to the line.

We have to monitor these four weather conditions to maintain flexible control of the grid, for the standard threshold of overhead lines can often be exceeded. Falling ambient temperatures or strong wind ensure the overhead lines cool off - which makes them capable of transmitting more power.

This applies not only in winter. Weather conditions in Baden-Württemberg can fluctuate quite wildly at times. Sometimes they can vary significantly over the course of a day or in different locations at the same time of day. The topology of the landscape also plays a role in this.

To find out how we can use these weather conditions to optimise our use of the grid, we have commissioned meteorological studies.

WHAT EXACTLY WAS INVESTIGATED IN THOSE STUDIES AND WHAT INDICATIONS DID YOU RECEIVE AS A RESULT?

All four weather parameters were investigated - temperature, sunlight, wind speed and wind direction, at every hour of a year, for instance, or locally along a few sample overhead lines. The weather patterns were mapped on a detailed grid - exactly the way detailed weather forecasts are commonly made and required for farming and aviation purposes.

With the help of this modelling exercise, the weather conditions at any time and at certain points within our transmission system can be simulated in a realistic manner.

We can identify where and how the weather affects the power capacity of our lines and of course where it works in our favour.

The next step is so-called overhead line monitoring, where we install weather stations on selected masts within our transmission system.

HOW CAN THESE WEATHER STATIONS HELP YOU AND YOUR COLLEAGUES IN THE CENTRAL SWITCH STATION IN PARTICULAR TO CONTROL THE GRID MORE EFFECTIVELY?

Accurate weather data and weather forecasts enable us to manage the grid flexibly and maximise its performance. In a few years' time, accurate weather data will tell us what power capacity our grid is capable of transmitting at a certain time of day in a particular region.

We now have to consider very carefully at what intervals we install these weather stations within the TransnetBW transmission system, in order to gain the maximum possible scope for high-capacity yet safe power transmission.

Other challenges to do with "weather-dependent overhead line use" are already on the horizon.

We need an overall concept for transmitting and evaluating the weather data and presenting the results to our grid management colleagues.

With a view to the grids of the future, we will share the meteorological findings we already have to aid nationwide grid expansion planning - in collaboration with the other German transmission system operators.