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Cooperation of technological leaders: DEHN and Max Bögl collaborate on a wind tower project

How to prevent damage to a wind turbine as best as possible if lightning strikes the exposed tower? This was the question posed to simulation experts from DEHN along with the Max Bögl Group in a project. Now both companies are benefitting from the results.

The Max Bögl Group cooperated for more than three years with the lightning protection specialists DEHN to optimise the lightning protection concept for the second generation of Max Bögl's wind tower system. The two partners recently successfully completed the project, which yielded new scientific findings.

The Max Bögl Group not only works in its core competence of construction, but also develops highly successful, integrated regenerative energy concepts, which the company plans and implements both at its own operating locations and for other industrial companies. "When we began developing our *Wind Tower mb 2.0* a few years ago, we did not only want to improve the production, assembly and transport, but also the lightning protection concept", explains Josef Bayer, who initiated and guided the project as Head of Research & Development Energy Systems at Max Bögl. With the previously known methods, lightning protection for the new wind tower could only be calculated inadequately. The company found the right partner for this challenging task in the lightning protection experts DEHN.

As well as developing and producing products for lightning and surge protection and safety equipment, DEHN also operates a modern test centre. Customers can have the lightning and surge protection of their products, installations and systems checked here. Clients from the wind energy sector regularly make use of DEHN's services. However, for the staff in the DEHN Test

Centre, the job of simulating lightning and surge protection on a tower more than 100 metres in height and testing this in a laboratory was anything but a routine task.

"Using complex calculations, we have modelled the path the lightning flows when it strikes the wind tower," explains Dr Martin Hannig, Computer Simulation Specialist at DEHN. "In laboratory tests, we then verified this situation and analysed the effects of the calculated surges and lightning currents in more detail," says Bernd Moosburger, Test Engineer at DEHN. A special lightning current generator was also used for this purpose, which is one of the most powerful models of its kind in the world. The system enables very high lightning currents to be generated. The result of the trials? The developed lightning protection concept passed the tests, which Max Bögl can now demonstrate to its customers with a test certificate.

For DEHN, the assignment, which initially began as a service task, developed into an insightful research project. In the wind tower of a wind power facility in Deining in the district of Neumarkt, the engineers at DEHN have installed the new DEHNdetect measuring system. It measures lightning current distribution under real-life conditions. The DEHNdetect lightning current measuring system detects long-stroke and impulse currents. The simulations can therefore be verified. With the help of DEHNdetect, computer simulations can be compared with the effect of real lightning.

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The Max Bögl Group cooperated for more than three years with the lightning protection specialists DEHN from Neumarkt to optimise the lightning protection concept for the second generation of Max Bögl's wind tower system.
Image: Max Bögl Group

About DEHN SE

DEHN SE is a leading, globally active, family-owned company for electrical engineering with around 2,000 employees worldwide and provides innovative products and solutions as well as comprehensive services in the fields of surge protection, lightning protection and safety equipment. DEHN focusses on protecting plant and building technology, transport, telecommunications and process industry systems, photovoltaic systems and wind turbines alongside many other applications. The company's continuous growth is based on more than 100 years of experience as well as the highest quality standards and consistent customer and market orientation.