Joint press release

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Bilfinger delivers distribution pipeline for water battery project

- **Pilot project for the storage of energy in Gaildorf, Germany**
- **Distribution pipeline as key component for greater efficiency**

The problem is well-known: With the ongoing expansion of renewable energies, the volatility of natural power generation must also be offset. By storing energy in a so-called water battery – a combination of wind park and a pumped-storage power plant – it is possible to counter such fluctuations in the power supply at short notice. Such a combination of wind and hydroelectric power is currently being built in the southern German city of Gaildorf, with Bilfinger subsidiary Bilfinger VAM Anlagentechnik delivering a distribution pipeline construction for use in the pumped-storage power plant. The order was awarded by Naturspeicher GmbH, in which the Max Bögl group is a shareholder.

“We are delighted that our experts’ many years of experience is being called upon for this pilot project and that we can thus make a contribution to the ecologically-friendly and sustainable storage of electricity”, says Stephan Ebner, Business Unit Head Hydropower at Bilfinger VAM Anlagentechnik.

The water battery in Gaildorf is easy to explain from a technical perspective. The upper reservoirs of the pumped-storage power plant are integrated into the tower base of the wind turbines. The additional hub height that is gained as a result simultaneously contributes to a greater wind yield. An underground pressure pipeline made from polyethylene (PE) that leads into the valley connects the reservoir with three pump turbines with 5.3 megawatts (MW) each. The pumped-storage powerhouse is, in turn, connected to the lower reservoir. Excess energy is used to pump water from the lower reservoir to the upper reservoir where it is stored in the form of gravitational potential energy. When energy is needed, the water is released through the pressure piping from the upper reservoir to the lower reservoir and the turbines, and the generators attached to them, generate electricity.

The distribution pipeline construction from Bilfinger splits the piping on the high-pressure side in front of the pump turbines. The construction helps to reduce the loss of pressure during turbine and pump operation because it was optimized by means of a computer-assisted fluid

simulation. The construction thereby increases the efficiency level. The installation of the distribution pipeline has already begun and is scheduled to be completed in 2018.

“To be able to develop an efficient storage concept, it was absolutely essential for us to integrate state-of-the-art technology like the Bilfinger distribution pipeline in the pumped-storage powerhouse”, says Jürgen Joos, Commercial Director at Max Bögl Wind AG. “The water battery achieves an efficiency level of nearly 80 percent and can switch from electricity production to storage in just 30 seconds. Flexible short-term storage solutions such as this one are, in our view, vital to the future expansion of renewable energies.”

Caption
The distribution pipeline during test assembly in the workshop (Picture: Bilfinger)

Bilfinger is a leading international industrial services provider. The Group enhances the efficiency of assets, ensures a high level of availability and reduces maintenance costs. The portfolio covers the entire value chain from consulting, engineering, manufacturing, assembly, maintenance, plant expansion as well as turnarounds and also includes environmental technologies and digital applications.

The company delivers its services in two business segments: Engineering and Technologies and Maintenance, Modifications & Operations. Bilfinger is primarily active in the regions Continental Europe, Northwest Europe, North America and the Middle East. Process industry customers come from sectors that include chemicals & petrochem, energy & utilities, oil & gas, pharma & biopharma, metallurgy and cement. With its 36,000 employees, Bilfinger upholds the highest standards of safety and quality and generated revenue of €4.044 billion in financial year 2017.

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Using renewable energies more efficiently and forwarding the energy revolution. This is the principle behind Max Bögl Wind AG with its innovative technology solutions. The company is the market leader in Germany for manufacturing, delivery and erection of hybrid towers for hub heights of 130 meters and above. Thanks to their tall height, the hybrid towers made of concrete and steel ensure significant improvements in terms of efficiency and energy yield. With a hub height of 178 meters, Max Bögl Wind AG holds the record for the highest wind turbine tower worldwide. Max Bögl Wind AG is also setting new innovative standards in the energy storage industry. With the water battery, an entirely new type of flexible and small pumped-storage power plant has been developed which for the first time combines renewable energies with large-scale storage facilities. The water battery can store surplus power from the grid and the energy can be reused as required. It acts as a short-term storage facility and helps to maintain stability of the grid, while guaranteeing a continuous, uninterrupted supply. Max Bögl Wind AG is an affiliate company of Max Bögl. The corporate group from Sengenthal near Neumarkt in Bavaria is one of the top ten largest German companies in the construction industry, and has been operating in the wind sector since 2010. Founded in 1929, the family-owned company with around 6,500 employees worldwide has an annual turnover of over 1.7 billion euros. You will find additional information at: www.mbrenewables.com

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