

PRESS RELEASE

Turboden produces one of the world's largest Organic Rankine Cycle turbine.

The high 16 MW turbine for a geothermal plant in Croatia.

Brescia, 28th September 2016 – Turboden designed and manufactured a unique single turbine of 16 MW electrical power to be operated in a geothermal power plant in **Velika Ciglena (Croatia) by Geoen – MB Holding**.

Turboden, a group company of Mitsubishi Heavy Industries (MHI), is a leader in Organic Rankine Cycle (ORC) technology for distributed power generation employing renewable sources and waste heat. As of today, Turboden has **334 ORC plants in 35 countries with about 509 MWe installed, 14 turbo-generators for geothermal power plants around the world, of which 8 are in operation.**

The Velika Ciglena project, which will start operating in 2017, will exploit steam and hot water at 170°C to produce electricity to feed the local power grid.

The region of Velika Ciglena is situated in Bjelovar subdepression, the north east of Croatia. The reservoir was discovered in 1990 by INA-Naftaplin, during an underground exploration for oil. The oil was never found, instead, a promising potential for geothermal energy was discovered.

The ORC turbogenerator with a **5-stage axial turbine**, designed and manufactured by Turboden, optimizes the performance with a rotation speed of 1500 rpm, while guaranteeing minimal vibration values (around 1mm/second) and smooth operation.

Thanks to the 5 axial stages of the turbine, the plant will grant a highly efficient behavior in all the environmental conditions as well as at different input levels.

The single pressure level cycle selected by Turboden is the optimum choice according to best match of heat exchange curves and simplest plant configuration. Thanks to this, it is possible to achieve 4% higher net power output with a saving of 8% capex, compared to the possible alternative solutions.

Velika Ciglena project, with the cutting-edge 16 MW ORC turbine, proves the technological reference of Turboden as main producer of large binary ORC plants, while the latest geothermal ORC plants delivered from Europe to Japan, confirm the success of Turboden with field proven performances and reliability.

Turboden, a Mitsubishi Heavy Industries company, is an Italian company and a global leader in the design, manufacture, and after-sales of Organic Rankine Cycle (ORC) turbogenerators, which harness heat to generate electric and thermal power from renewable sources, including biomass, geothermal and solar energy and waste heat from industrial processes, waste incinerators, engines or gas turbines. Turboden has more than 334 plants in 35 countries and offers turbogenerators from 200 kWe to 20 MWe. www.turboden.com

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