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16 MW ORC turbine powers geothermal plant in Croatia

By TMI Staff & Contributors · On October 1, 2016



Turboden has designed and manufactured a 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-Naftapljin, 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.

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

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