

PRESS RELEASE

Turboden expands into the Asian geothermal market: 6 MW started up in Japan and 50 MW to be supplied in the Philippines

An innovative 6 MW geothermal power plant operating commercially in Japan since June 2015.

Turboden selected as official technology provider of a 50 MW geothermal Organic Rankine Cycle (ORC) system in the Philippines.

Brescia, December 14, 2015 – Turboden, a group company of Mitsubishi Heavy Industries (MHI), leader in Organic Rankine Cycle (ORC) turbogenerators for distributed power generation employing renewable sources and waste heat, announces the **successful operation of an innovative 6 MW (gross) geothermal power plant in Japan.**

The plant has been built **in cooperation with Mitsubishi Heavy Industries** for the **largest geothermal power generation developer in Japan.**

The plant, commissioned in June 2015, is the **first Turboden plant in Japan, fed by a two-phase geothermal resource** at ca. 140°C. In particular, after the separation, the steam phase condenses in the evaporator, while the preheater receives only a liquid phase.

For this project, Turboden supplied its **highly efficient ORC turbine** and **process engineering** along with **commissioning** and **start-up of the plant.**

Along this growth in the Asian market, Turboden has recently been selected to supply a **50 MW (gross) geothermal plant in the Philippines.**

Last September Turboden, **in consortium with the Spanish Company TSK**, has been awarded the turnkey construction of the 50 MWe geothermal power plant in **Oriental Mindoro: four ORC turbogenerators** will deliver electric energy to the **local Electric Cooperatives, ORMECO** and **OMEKO.**

Emerging Power Inc (EPI) is the first private investor in Renewable Energy in The Philippines, aiming at a total installation of 300 MW portfolio in the next three years. The listed miner Nickel Asia Corporation (NAC) is the major shareholder of EPI.

The plan provides for full completion of the 50 MW capacity, before the end of 2017, which consists of different project phases.

Turboden turbogenerators will be installed at **two different well pads** where geothermal source is separated into steam and brine before feeding the ORCs. Turboden has tailored **optimized machines according to the characteristics of the geothermal source**, of the ambient condition and of the environment.

The organic fluid expands into a **multistage axial turbine**, a proprietary technology of Turboden, in order to produce mechanical power and then electricity through the alternator. The organic fluid was selected to maximize the efficiency.

The award was celebrated in Bilbao on September 29th at presence of Guido Alfredo Delgado, CEO of EPI, and Martin Antonio Zamora, President of EPI and Senior Vice President at NAC.

The Philippine Ambassador in Spain also attended the event, witnessing the successful collaboration between The Philippines and Spain: a joint venture between EPI and the Spanish Company Tamoin, Tisco, is appointed to operate and maintain the geothermal power plant.

Taking part in the ceremony, **Paolo Bertuzzi, Turboden CEO** and **Andrea Magalini, Turboden Sales Director**, commented: "As leader provider of ORC technology we work hard every day to provide a **robust product, reliable and easy to operate that perfectly fits variable thermal sources and projects in remote places**. We are very pleased with this achievement and honored to supply our technology to top level renewable energy players".

Turboden 35 years' experience in the construction of ORC turbogenerators made it possible to construct units **from 1 MW to 20 MW per single shaft** with high performance as well as high reliability, and with low maintenance and operational costs.

Turboden's geothermal fleet currently accounts for **11 plants** (99 MW), located in **Turkey, Europe, the Philippines and Japan**. Overall Turboden has **more than 310 ORC plants worldwide** (ranging from Australia to Canada) of which more than 260 are already operational with a capacity installed of around 340 MW (further 160 MW are under construction), with an estimated cumulative working time of more than 7 million hours.

Turboden, a Mitsubishi Heavy Industries company, is an Italian company and a global leader in the design, manufacture, and service 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 310 plants in 33 countries and offers turbogenerators from 200 kW to 20 MWe. www.turboden.com

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