clean energy ahead
TURBODEN
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ISO 9001

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PRESS RELEASE

Turboden will supply a 5.5 MW combined heat and power unit to Starwood

The 5.5 MW CHP plant will be supplied by Turboden to Starwood Orman Ürünleri Sanayi A.Ş. for its biomass plant to be installed in Bursa, Turkey.

Turboden provides Organic Rankine Cycle plants up to 15 MW size for power generation and cogeneration, suitable for biomass-fired distributed power systems.

Brescia, September 24th, 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, signed an order with Starwood for a **new 5.5 MW cogeneration plant** in Bursa, Turkey.

Starwood, leader company for the greatest volume of chipboard under a single roof, is specialized in producing thin MDF. Every day Starwood produces 3,300 cubic meters (m3) of chipboard and 750 cubic meters (m3) MDF in four chipboard production lines.

The Turboden ORC system will produce **5.5 MW electric** and **29.5 MW thermal**.
The project is included in a bigger plant that calls for the expansion of Starwood MDF production facility in Bursa.
A 50 MW_{th} biomass boiler fed by bark and chipboard production residues will supply heat for the rotary dryer and for the ORC, that will also produce hot water at 110°C for dryer purposes.

The **ORC turbine**, constructed by the new Turboden Turkish daughter company, **Turboden Turkey ORC Turbo Jeneratör Sanayi Anonim Şirketi**, recently established in Ankara, will grant Starwood the access to the **local content** related additional incentives offered by the Turkish Government for renewable energy generation.
A **Turboden local service team**, already active in the Turkish territory, will provide on-site works and after-sales services.

The **integration of the ORC in an MDF production plant** is an attractive application thanks to the possibility to produce a part of the own consumption of electricity of the plant and to implement cogeneration systems without significant changes to the typical MDF process scheme.
This solution has also the advantage of extremely low operation and maintenance costs and limited additional costs compared to the heat only solution, leading to an optimal pay back of the additional investment.

The effectiveness of this application is confirmed by the decennial operation of the **first Turboden ORC unit supplied to an MDF production facility** in Austria, Hallein, in operation since 2005.

Recently **other three large-sizes cogeneration power plants** have been awarded.
A Turboden 5.5 MW CHP plant will be installed in a sawmill and pellet factory **in Russia** with the Spanish general contractor **Prodesa Medioambiente**, specialized in the supply of turnkey solutions for pellet production.

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In this project, barks and waste branches will feed a thermal oil boiler, coupled with the Turboden ORC unit. The heat generated by the ORC system will feed, on the one hand, the drying chambers of the existing sawmill, that will be enlarged, and on the other, a pellet production line of 80,000 t/y.

A second cogeneration Turboden ORC unit will be installed **in Russia** for the wood industry leader **Modern Lumber Technology LLC**, which is planning to start up, within the first quarter of 2016, an OSB production plant in Toržok with an annual capacity of 500,000 cubic meters (m3) and of 250 prefabricated houses per year. The combined-heat-and-power ORC plant, set up with two Turboden ORC modules, will produce overall **5.6 MW electric** and **13 MW thermal** delivered to the OSB production process. The Turboden power station will contribute to cover part of the thermal and electrical loads required by Modern Lumber Technology's facility, becoming integral part of it.

A further CHP module will be installed in **the Philippines**, the **first biomass** large ORC **plant in South-East Asia**.
The unit will recover thermal power from the combustion of corn cob and rice husk to produce up to **5.8 MW electric.**
The thermal power discharged by the ORC will be efficiently used to dry cereals: the ORC is flexibly designed to deliver high temperature water during rainy seasons and lower temperature water during dry seasons.

In the projects for Prodesa Medioambiente and for the Philippines, the customers will also rely on the capability of the Turboden ORC to work **on island mode**, i.e. to ensure electricity generation to feed the production process consumptions during power failures of the main grid.

Turboden 35 years' experience in the design, implementation and service of ORC turbogenerators permitted to successfully delivered more than 245 cogeneration power plants worldwide, with a total power output of around 280 MW electric, thanks to the flexibility, reliability, high efficiency, ease of operation, low maintenance costs Turboden units are known for.

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 300 plants in 32 countries and offers turbogenerators from 200 kWe to 15MWe. www.turboden.com

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