

Turboden ORC Technology Stands Out in Waste Heat Recovery Cement Plants

The largest cement groups continue to choose Turboden as supplier of ORC systems for waste heat recovery, thanks to the innovative solutions that increase the energy efficiency such as the direct heat exchange system and the heat recovery through pressurized water circuit. In waterless conditions, ORC is also the best solution in terms of efficiency and cost compared to steam technology.

Some Insights on the Latest Projects Awarded to Turboden in the Cement field

Turkey: CTP Team S.r.l., CTN Makina Mühendislik Insaat Celik Konstrüksiyon Otomasyon signed an order with Turboden for the supply of a **7 MWe** ORC plant with air cooled condenser (ACC) to be installed in the **Çimko Cemento Narli** factory (**Sanko Group**) that recovers heat from the exhaust gas coming from the production process.

Since the cement plant is located in an area where there is no water available for the cooling system, the ORC technology wins the competition with the steam technology, because of its higher efficiency and lower cost/kW.

Switzerland: CadCime SA and Holcim Suisse Eclepens (**Lafarge Holcim Group**) choose Turboden ORC technology for a **1.3 MWe** plant that recovers heat from the existing pressurized water circuit, used for the district heating network. Lafarge Holcim, one of the largest Cement Groups in the world, through Cadcime reconfirms its trust in Turboden, purchasing the third Turboden ORC plant for its factories.

Italy: the **2 MWe** heat recovery plant with direct heat exchange installed in **Cementi Rossi** (start-up second quarter of 2018). Turboden supplies its signature **direct heat exchange system that uses a non-flammable fluid** in this case. The Direct Exchange technology brings several advantages: an increase in energy efficiency, the optimization in the use of the exhaust gases, the reduction of capital and operating costs due to the exclusion of the intermediate thermal oil (or pressurized water) loop and the greater plant simplicity that comes with it.

This project received an award from the European Commission under the framework of Horizon 2020, whose main objective is to develop new solutions to recover waste heat in energy intensive industries (EII) such as cement, glass, steelmaking and petrochemical and transform it into useful electric energy (<http://www.tasio-h2020.eu>).

Take a look at Turboden projects in the cement production field.

Customer	Location	Gross electric power (MW)	Status
Ciments Du Maroc	Morocco	2	started up in 2010
Holcim SA (LafargeHolcim Group)	Romania	4	started up in 2012
CRH (former LafargeHolcim Group)	Slovakia	5	started up in 2014
S.C. Carpaticement Holding S.A. (HeidelbergCement Group)	Romania	3.8	started up in 2015
Jura-Cement-Fabriken AG (CRH Group)	Switzerland	2.3	started up in 2016
Cementi Rossi	Italy	2	forthcoming start up
CTP Srl and CTN Group	Turkey	7	under construction
CadCime SA / Holcim Suisse Eclepens (LafargeHolcim Group)	Switzerland	1.3	under construction
8 projects	6 Countries	About 30 MWe	6 plants operational & 2 under construction

Turboden, a Mitsubishi Heavy Industries company, is an Italian firm and a global leader in the design, manufacture and maintenance of Organic Rankine Cycle (ORC) systems, highly suitable for distributed power generation. ORC systems can generate electric and thermal power exploiting multiple sources, such as renewables (biomass, geothermal energy, solar energy), traditional fuels and waste heat from industrial processes, waste incinerators, engines or gas turbines. Turboden has more than 350 plants in 40 countries and offers turbogenerators up to 20 MWe. www.turboden.com