TURN KEY PROJECT

Ori Martin S.p.A

Waste heat boiler for an Consteel® electric arc furnace for electric power generation and district heating.

THE PROJECT

Ori Martin operates in Brescia, Italy a 90 t/h EAF equipped with a Tenova Consteel®. The hot off gases leaving the EAF are used to preheat the continuous scrap flow towards the furnace. After leaving the Consteel® hood the off gases still have a temperature of approx. 500 °C. Therefore they were cooled down to 200 °C by a water quenching tower. This technology dissipates energy without any utilization. Since energy costs are a becoming issue and environmental awareness is increasing, Ori Martin decided to install an iRecovery® system.

OUR SOLUTION

The off gases coming from the Consteel® are passed through a refractory lined tunnel into the waste heat boiler. The existing quenching tower is kept as back-up and can work in a bypass. The waste heat boiler is composed by a membrane wall casing, evaporator, economizer bundles and a steam drum. The steam drum stores the boiler water and collects the steam/water mixture returning from the evaporators and walls. Dust sticking to the bundles is removed by knocks coming from a pneumatic rapping system. This dust falls into hoppers and is discharged by a water-cooled chain conveyor. In order to equalize the steam production a Ruth steam accumulator has been installed. The generated steam is fed to two different consumers:

- **In the summer:** to an ORC module which transfers the thermal power inside the steam into electric energy.
- **In the winter:** to a heat exchanger connected the municipal district heating network of Brescia.

The returning condensate of both consumers is forwarded to the feed water station and afterwards pumped back into the boiler.

ABOUT THE CUSTOMER

Founded in 1933, is now a modern EAF steel mill for production of continuous casting billets and hot rolling of wire rod, bars and bars in coils for special applications in the automotive business as: fasteners, spring suspension, torsion bars, and stirring and mechanicals parts.

It is also equipped with thermal treatments for annealing and Q&T. The company is equipped with:
- EAF Consteel® for 85 t
- LF for secondary metallurgy (2)
- Vacuum degassing station VOD
- Continuous casting with 5 strand from 140 x 140 mm to 200 x 200 mm
- Hot rolling mill (bars/bars in coils/wire rod)
- Straightening and controls lines (3)
- Annealing furnace: (12) bell for wire rod, continuous for wire rod (1) and bar
CUSTOMER’S ADVANTAGE
Ori Martin has two main advantages in the application of an iRecovery® system:

On the one hand the electric energy produced in the summer is fed into the electrical grid and is used for more than 700 households. And the heat given to the district heating network in the winter is generating an additional income since 2000 households are receiving the decoupled waste heat.

On the other hand Ori Martin is granted White Certificates and earns additional benefit.

FACTS AND FIGURES:

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<thead>
<tr>
<th>Furnace type:</th>
<th>130 t/h EAF with Tenova Consteel</th>
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<tbody>
<tr>
<td>Heat recovery system:</td>
<td>Waste heat boiler</td>
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<tr>
<td>Duration of project:</td>
<td>15 months</td>
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<tr>
<td>Average steam production:</td>
<td>14 t/h saturated steam</td>
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<tr>
<td>Operating parameters:</td>
<td>13 – 27 bar(g); 195 – 230°C</td>
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<tr>
<td>Consumer:</td>
<td>District heating (winter);</td>
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<td></td>
<td>ORC module (summer)</td>
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<tr>
<td>Electric power generation:</td>
<td>1,8 MW</td>
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<td>Start-up:</td>
<td>2015</td>
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