Ansaldo Caldaie S.p.A. has a longstanding history in the manufacture and supply of Waste Heat Boilers with the first plant being built up in 1963.

In 2004, following acquisition by the Sofinter Group, Ansaldo Caldaie established the Waste to Energy Business Unit in order to integrate within one organization the outstanding skills, expertise, and experience available in the diverse companies of the Sofinter Group.

In 2005, as part of the Business and Product development strategy of Ansaldo Caldaie, these capabilities were further enhanced through the acquisition of the CCT Waste to Energy Business Unit from the Marcegaglia Group.

Today Ansaldo Caldaie offers a complete range of waste to energy products burning a wide range of fuels with guaranteed emissions.

**DESIGN**
A range of top, mid, and bottom supported units are available based upon the size of the boiler.

The design of the units is optimized in accordance with the type of fuel/fuels being used.

A primary focus on the design development is resolving the problems related to fouling and corrosion caused by pollutants contained in the fuel.

Extensive experience in Combustion System design guarantees optimal boiler performance with minimal cleaning interventions.

**FUELS**

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Lower Heating Value (LHV) (kJ/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal Waste</td>
<td>7000 ÷ 15000</td>
</tr>
<tr>
<td>Biomass</td>
<td>7000 ÷ 16000</td>
</tr>
<tr>
<td>Refused Derived Fuel (RdF)</td>
<td>11000 ÷ 22000</td>
</tr>
<tr>
<td>Sludges</td>
<td>&lt; 1000</td>
</tr>
<tr>
<td>Bone Meals</td>
<td>12000 ÷ 24000</td>
</tr>
</tbody>
</table>

**Emission Reduction**

- Optimization of combustion and flue gas path
- Special Alloy Cladding of membrane walls and superheater tubes

**Corrosion Protection**

- Water Sprayers for Wall
- Soot-blowers
- Mechanical Rapping System
- Shot Cleaning System

**Heat Exchanger Cleaning and Ash Removal**

- Water Sprayers for Wall
- Soot-blowers
- Mechanical Rapping System
- Shot Cleaning System

**Combustion System**

- Optimization of combustion and flue gas path
- Special Alloy Cladding of membrane walls and superheater tubes

**Flue Gas Recirculation**

- Water Sprayers for Wall
- Soot-blowers
- Mechanical Rapping System
- Shot Cleaning System

**Optimization of combustion and flue gas path**

- Special Alloy Cladding of membrane walls and superheater tubes

**Grate**

- Fluidized Bed

**Air Distribution**

- Best Choice of Combustion System

**Netback of Combustion System**

- Emission Reduction
- Heating Surfaces Cleaning and Ash Removal
- Corrosion Protection

**Grate**

- Fluidized Bed

**Combustion Air Distribution**

- Flue Gas Recirculation
- Water Sprayers for Wall
- Soot-blowers
- Mechanical Rapping System
- Shot Cleaning System
Biomass Fired
DESIGN CONDITIONS
50 T/h   120 bar   520°C

FUELS
Sludges
RdF
Biomass

Bed Nozzles

CORROSION
PROTECTION
CLADDING

The main problem for WTE Tubes is corrosion due to the presence of pollutants in flue gas. The kinetics of corrosion depends on the following parameters:
· Chlorine Content in flue gas
· Metal Skin Temperature
· Flue Gas Temperature
· Melting salt at low temperature in flue gas

In the area between the red and the white line the cladding protection guarantees long life operation.

As Shown in the Graphic below a combination of those values defines two zones. A zone above which corrosion is possible and often considerable (High Corrosion Zone) and a zone where the kinetics of corrosion is very slow or absent (Low Corrosion / No corrosion Zone).

CLADDED HEATING SURFACE

Erection - Bottom Supported Type
Maximization of shop prefabrication to optimize erection time and quality.

Erection - Top Supported Type
Maximization of shop prefabrication to optimize erection time and quality.

FLUE GAS TEMPERATURE °C

FLUE SKIN TEMPERATURE °C

CLADDING AREA
LOW CORROSION / NO CORROSION ZONE

HIGH CORROSION ZONE

Grate Combustion
Bottom Supported Type

Grate Combustion
Top Supported Type

Grate and Biomass Combustion

FUELS
Municipal Waste
RdF
Biomass
Bone Meal

DESIGN CONDITIONS
64 T/h   75 bar  460°C

FUELS
Municipal Waste
RdF
Biomass
Bone Meal

Erection
Top Supported Type
Maximization of shop prefabrication to optimize erection time and quality.

Erection
Bottom Supported Type
Maximization of shop prefabrication to optimize erection time and quality.

steam drum
erection

boiler walls inconel 625 cladding

Top supported arrangement