STEAM BOILERS
Market leader, more than 11,000 boilers in South America

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Fire tube boilers for burning oil, gas and dual fuel

Wet back with three gas passes

Low level of emissions due to optimization of the integration of burner with furnace

High efficiency (91%)

Higher capacity and efficiency can be reached by installation of economizer

Easy maintenance due to access doors and reduced number of tubes

Supplied as a compact and complete unity on skid, facilitating installation

Can be supplied, with steam super heater as option

### MISSION™ 3-Pass

**Aalborg Industries**

**Fire tube boilers**

**Wet back with three gas passes**

**Low level of emissions**

**High efficiency (91%)**

**Higher capacity and efficiency**

**Easy maintenance**

**Supplied as a compact and complete unity on skid**

**Can be supplied, with steam super heater as option**

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity with water feeding @ 20°C (kg/h)</th>
<th>Efficiency (%)</th>
<th>Oil consump 1A (kg/h)</th>
<th>Natural gas consump (Nm³/h)</th>
<th>GLP consump (kg/h)</th>
<th>Diesel consump (kg/h)</th>
<th>Dimensions (mm)</th>
<th>Weight (ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(note 1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lenght</td>
<td>Width</td>
</tr>
<tr>
<td>M3P-2.0</td>
<td>2.000</td>
<td>89.6</td>
<td>152</td>
<td>158</td>
<td>130</td>
<td>144</td>
<td>5.655</td>
<td>2.540</td>
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<tr>
<td>M3P-2.5</td>
<td>2.500</td>
<td>89.9</td>
<td>189</td>
<td>197</td>
<td>162</td>
<td>179</td>
<td>5.847</td>
<td>2.660</td>
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<tr>
<td>M3P-3.2</td>
<td>3.200</td>
<td>90.2</td>
<td>241</td>
<td>252</td>
<td>207</td>
<td>228</td>
<td>6.044</td>
<td>2.860</td>
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<tr>
<td>M3P-4.0</td>
<td>4.000</td>
<td>90.4</td>
<td>300</td>
<td>314</td>
<td>258</td>
<td>285</td>
<td>6.412</td>
<td>2.920</td>
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<tr>
<td>M3P-5.0</td>
<td>5.000</td>
<td>89.9</td>
<td>378</td>
<td>395</td>
<td>325</td>
<td>378</td>
<td>6.962</td>
<td>2.970</td>
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<tr>
<td>M3P-6.5</td>
<td>6.500</td>
<td>89.9</td>
<td>491</td>
<td>512</td>
<td>421</td>
<td>466</td>
<td>7.130</td>
<td>3.260</td>
</tr>
<tr>
<td>M3P-8.0</td>
<td>8.000</td>
<td>89.7</td>
<td>606</td>
<td>632</td>
<td>520</td>
<td>575</td>
<td>7.389</td>
<td>3.340</td>
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<td>M3P-10</td>
<td>10.000</td>
<td>89.9</td>
<td>755</td>
<td>789</td>
<td>648</td>
<td>716</td>
<td>7.594</td>
<td>3.510</td>
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<tr>
<td>M3P-12</td>
<td>12.000</td>
<td>90.1</td>
<td>905</td>
<td>944</td>
<td>876</td>
<td>857</td>
<td>8.052</td>
<td>3.850</td>
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<tr>
<td>M3P-15</td>
<td>15.000</td>
<td>90.5</td>
<td>1.128</td>
<td>1.175</td>
<td>967</td>
<td>1.066</td>
<td>8.780</td>
<td>4.390</td>
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<tr>
<td>M3P-17</td>
<td>17.000</td>
<td>90.9</td>
<td>1.270</td>
<td>1.326</td>
<td>1.090</td>
<td>1.202</td>
<td>9.350</td>
<td>4.370</td>
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<tr>
<td>M3P-20</td>
<td>20.000</td>
<td>90.5</td>
<td>1.500</td>
<td>1.567</td>
<td>1.288</td>
<td>1.421</td>
<td>8.090</td>
<td>5.580</td>
</tr>
<tr>
<td>M3P-24</td>
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<td>90.5</td>
<td>1.801</td>
<td>1.880</td>
<td>1.546</td>
<td>1.706</td>
<td>8.400</td>
<td>5.760</td>
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<tr>
<td>M3P-30</td>
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<td>90.7</td>
<td>2.246</td>
<td>2.345</td>
<td>1.928</td>
<td>2.127</td>
<td>8.900</td>
<td>6.020</td>
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<tr>
<td>M3P-34</td>
<td>34.000</td>
<td>91.1</td>
<td>2.534</td>
<td>2.646</td>
<td>2.175</td>
<td>2.397</td>
<td>9.400</td>
<td>6.260</td>
</tr>
</tbody>
</table>

**Note 1:** Efficiency according to DIN1942 based on low heat value, oil fuel type 1A with PCI = 9.750 kcal/kg.

**Note 2:** Chimney until 9.0 m height can be connected directly to the oil gas outlet.
ATA H3N SMALL BOILERS

CARACTERISTICS

- Fuel
  - Oil
  - Gas
  - Dual
- Efficiency
  - 85+2% (ATA – 2 a 6)
  - 88+2% (ATA – 8 a 14)
- Nationwide after sales service
- Heat treatment of pressure parts
- Radiographed weldings

NOTES FOR TABLE BELOW:

- The data presented refer to the boilers with design pressure of 150psig and operating pressure of 135psig
- The dimensions informed refer to the maximum size for boiler transportation
- The data below must be taken only as reference. Aalborg Industries reserves the right to make changes on the information presented in this catalog without previous notice.

<table>
<thead>
<tr>
<th>DESCRIPTION / ATA BOILER</th>
<th>UNITY</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam Production (water 20°)</td>
<td>kg/h</td>
<td>500</td>
<td>650</td>
<td>800</td>
<td>1000</td>
<td>1300</td>
<td>1600</td>
<td>2000</td>
</tr>
<tr>
<td>Steam Production (water 80°)</td>
<td>kg/h</td>
<td>550</td>
<td>720</td>
<td>880</td>
<td>1100</td>
<td>1430</td>
<td>1760</td>
<td>2200</td>
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<tr>
<td>Heat Surface</td>
<td>m²</td>
<td>16.5</td>
<td>20</td>
<td>27</td>
<td>31</td>
<td>41.5</td>
<td>54.5</td>
<td>65</td>
</tr>
<tr>
<td>Maximum consumption of natural gas</td>
<td>Nm³/h</td>
<td>43</td>
<td>56</td>
<td>69</td>
<td>83</td>
<td>108</td>
<td>133</td>
<td>166</td>
</tr>
<tr>
<td>Maximum consumption of oil</td>
<td>kg/h</td>
<td>39</td>
<td>51</td>
<td>62</td>
<td>75</td>
<td>98</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>Water volume - normal level</td>
<td>m³</td>
<td>0.7</td>
<td>0.9</td>
<td>1.2</td>
<td>1.6</td>
<td>2.3</td>
<td>3.0</td>
<td>3.8</td>
</tr>
<tr>
<td>Installed power in motors</td>
<td>kW</td>
<td>4.2</td>
<td>5.3</td>
<td>5.3</td>
<td>5.7</td>
<td>8.6</td>
<td>11.9</td>
<td>11.9</td>
</tr>
<tr>
<td>Installed power in the heater / service tank</td>
<td>kW</td>
<td>5.5</td>
<td>5.5</td>
<td>8.0</td>
<td>8.0</td>
<td>12.0</td>
<td>12.0</td>
<td>13.5</td>
</tr>
<tr>
<td>Boiler net weight</td>
<td>ton</td>
<td>2.4</td>
<td>2.8</td>
<td>3.5</td>
<td>4.1</td>
<td>5.2</td>
<td>7.2</td>
<td>8.4</td>
</tr>
<tr>
<td>Maximum length of the boiler</td>
<td>mm</td>
<td>2900</td>
<td>3400</td>
<td>3500</td>
<td>4100</td>
<td>4600</td>
<td>4900</td>
<td>5200</td>
</tr>
<tr>
<td>Maximum height of the boiler</td>
<td>mm</td>
<td>2000</td>
<td>2000</td>
<td>2200</td>
<td>2300</td>
<td>2500</td>
<td>2900</td>
<td>2900</td>
</tr>
<tr>
<td>Width height of the boiler</td>
<td>mm</td>
<td>1900</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
<td>2100</td>
<td>2400</td>
</tr>
<tr>
<td>Diameter of gas outlet</td>
<td>mm</td>
<td>170</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>340</td>
<td>340</td>
<td>340</td>
</tr>
</tbody>
</table>

WASTE HEAT RECOVERY BOILER AV-4

AV-4 is a totally automatic fire tube type recovery boiler, with horizontal and vertical construction and one or two gas passes, offering proven efficiency, robustness and low heat loss, designed for steam and hot water generation. It uses combustion gases from gas and oil engines, turbines or furnaces as heat sources, generating up to 15 t/h of steam with an operational pressure of up to 20 barg. With a compact construction, the boiler is supplied as a complete package, ready for installation at site. Designed with spiral gas tubes which allow an improvement in the thermal exchange coefficient due to turbulence caused by combustion gases. Optimized in all details by the high technical competence and innovation of Aalborg Industries S/A.

FOR GAS TURBINES

| Turbine outlet capacity:                                     | 1 – 8 Mwe |
| Temperature of exhaust gases:                               | < 600 °C  |
| Exhaust gases flow:                                         | Until 75 kg/s |
| Steam production capacity:                                  | 5 – 15 th  |
| Steam pressure:                                             | Max. 25 barg |
| Pinch Point:                                                | Minimum typical 20-30°C |
| Steam temperature:                                          | Saturate or superheated |

FOR GAS/DIESEL/OIL ENGINES

| Engine outlet capacity:                                     | 1 – 20 Mwe |
| Temperature of exhaust gases:                              | No limit   |
| Flow of exhaust gases:                                     | Until 75 kg/s |
| Steam production capacity for engine:                      | Until 15 th |
| Steam pressure:                                             | < 25 barg  |
| Pinch Point:                                                | Minimum typical 20-30°C |

PRODUCER’S NOTE

This catalog does not present dimensions and tables for WHR boilers due to the diversity of engines and turbines. Various solutions for heat recovery can be presented, and therefore for each proposal, there will be detailed information on the equipment, as well as of its components. Aalborg Industries S.A. has a goal of providing the best technical solutions and supplying a product with unparalleled quality, within ISO9001 and ASME standards.
Aalborg Industries Group
www.aalborg-industries.com

The Danish Group Aalborg Industries, is a global organization who has as main business marketing and development of steam boilers, thermal fluid heaters with advanced combustion technology. Aalborg Group’s philosophy aims at establishing global leadership positions in all of its main business. Such goal will be achieved through the offer of quality products, technologically differentiated and with the best return of investment.

Aalborg Industries S/A, located in Petrópolis-RJ, is specialized in the production of boilers, thermal fluid heaters and combustion technology for the industry and marine sectors. We are more than just an equipment vendor, we are the best choice for a cooperative partnership, now and in the future. With excellence in maintenance services (industrial and marine), fast spare parts supply and a broad net of agents, we guarantee immediate and reliable support for all our clients’ needs.

QUALITY, YOUR SAFETY ASSURANCE
ASME & ISO 9001:2000

Aalborg provides its clients with the highest quality products, duly approved by international renowned entities.

After Sales Service
With its Factory located in Petrópolis/RJ and a branch in São Paulo/SP, Aalborg guarantees a fast and efficient support to all of Mercosul, offering specialized workmanship relying on high quality parts and components.

Spare Parts
In order to cover future demands in a feasible time, Aalborg stores spare parts for all of its products. The orders may be placed directly with our office in Rio or through our São Paulo branch.