Let your fuel take you further. By combining diesel and gas technologies in one engine, the MAN 51/60DF gives you absolute fuel flexibility. There’s no better way to keep your engine running effectively and economically. Full steam ahead.

Benefits at a glance

- High power output
- Lowest fuel consumption over entire engine load
- Best load acceptance behaviour
- Full fuel flexibility
- High reliability and long TBOs
Minimum centreline distance for twin engine installation: 4,800 mm

LHV of fuel gas ≥ 28,000 kJ/Nm³

(Nm³ corresponds to one cubic meter of gas at 0 °C and 1.013 bar)

Last updated August 2016

Output

<table>
<thead>
<tr>
<th>Speed</th>
<th>514</th>
<th>500</th>
<th>rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>mep</td>
<td>20.0</td>
<td>20.6</td>
<td>bar</td>
</tr>
<tr>
<td>MAN 12V51/60DF</td>
<td>12,600</td>
<td>12,600</td>
<td>kW</td>
</tr>
<tr>
<td>MAN 14L51/60DF</td>
<td>14,700</td>
<td>14,700</td>
<td>kW</td>
</tr>
<tr>
<td>MAN 16L51/60DF</td>
<td>16,800</td>
<td>16,800</td>
<td>kW</td>
</tr>
<tr>
<td>MAN 18L51/60DF</td>
<td>18,900</td>
<td>18,900</td>
<td>kW</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Cyl. No.</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>10,254</td>
<td>11,254</td>
<td>12,254</td>
<td>13,644</td>
</tr>
<tr>
<td>L₁</td>
<td>9,088</td>
<td>10,088</td>
<td>11,088</td>
<td>12,088</td>
</tr>
<tr>
<td>Dry mass</td>
<td>187</td>
<td>213</td>
<td>240</td>
<td>265</td>
</tr>
</tbody>
</table>

Cylinder output (MCR)

<table>
<thead>
<tr>
<th>At 500/514 rpm: 1,050 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power-to-weight ratio: 14.0 – 14.8 kg/kW</td>
</tr>
</tbody>
</table>

General

- Engine cycle: Four-Stroke
- No. of cylinders: 12, 14, 16, 18
- Bore: 510 mm – Stroke: 600 mm
- Swept volume per cyl: 122.6 dm³

Fuel consumption at 85 % MCR

- Diesel Mode: 180.2 g/kWh
- Gas Mode: 7,265 kJ/kWh

Compliance with emission regulations

- IMO Tier II
- IMO Tier III (Gas mode)
- IMO Tier III (Diesel mode with MAN SCR)

Main features

- Turbocharging system
  High efficiency constant pressure MAN TCA series exhaust turbocharging system
- Engine automation and control
  MAN in-house developed engine attached Safety and Control System SaCos®one
- Air management
  Variable turbine area allowing improved adaption for Diesel and Gas mode operation while maintaining highest turbocharger efficiency over entire engine load

Fuel system

- Common Rail pilot fuel injection system
- Conventional main injection system
- Variable injection system for lowest fuel consumption while meeting IMO Tier II emission limits in Diesel mode

Gas system

- Cylinder individual low pressure gas admission system, 5 bar(g) at inlet of gas valve unit

Cooling system

- 2-string high and low temperature cooling water systems

Starting system

- Starting air valves within cylinder heads

Engine mounting

- Resilient or rigid mounting

Optional equipment

- Fuel Sharing mode for highest fuel flexibility
- 100 % Power Take-Off at engine free end available
- Variable inlet valve timing for improved combustion in part load operation

MAN Diesel & Turbo, 86224 Augsburg, Germany
Phone +49 821 322 0, Fax +49 821 322 3382
info@mandieselturbo.com, www.marine.man.eu