EcoKnight
Circulating-type
Gas-fired
Water Heaters

- Recovery rates from 709 to 3819 litres/hour
- Efficiencies up to 96.7%
- Fully modulating pre-mix burner
- Stainless Steel Heat Exchanger
- High Working Pressure – up to 11 bar
- Low NOx emissions ≤40mg/kWh
- Integral Controls
Lochinvar

EcoKnight Circulating-type Water Heaters

EcoKnight gas-fired water heaters are available in 8 different models, with hot water outputs ranging from 709 to 3819 litres/hour, based upon a temperature rise of 50°C. As a circulating water heater, EcoKnight generates fast recovery hot water in the high efficiency stainless steel heat exchanger. This hot water is then transferred to a direct storage vessel or a multiple vessel arrangement, which in turn supplies the building hot water requirements.

This type of water heating method offers a great deal of flexibility, allowing multiple water heater and storage vessel combinations, providing a great deal of installation flexibility. This can be particularly useful where plant rooms have space limitations. The range utilises pre-mixed condensing technology, and offers a highly efficient water heating solution for a wide range of commercial and industrial hot water requirements.

Stainless Steel Heat Exchanger

At the heart of the EcoKnight is a grade 316l stainless steel heat exchanger; this material provides superior resistance to corrosion. The coiled design of the heat exchanger allows for condensation to occur, creating high efficiency, particularly on initial heat up.

Low NOx Emissions

EcoKnight Water Heaters have low NOx emissions, ranging from 27 to 40 mg/kWh depending upon model, and therefore comply with the latest ErP Regulations dated September 2018.

Energy Label

With rated outputs of 41 and 59kW respectively, models EKW46CE and EKW61CE are within the scope of the Energy Label Directive – both models have “Energy Label A”

Note - EcoKnight Water Heaters are designed for installation with Direct Storage vessels (see pages 3 and 4). Energy Label and ErP data on our range of Direct storage vessels is available at www.lochinvar.ltd.uk.

Fully modulating pre-mix burner with 5:1 turndown

All 8 EcoKnight condensing water heaters feature advanced gas/air ratio controlled combustion technology. This technology automatically adjusts fan speed according to demand, providing the optimum proportions of gas and air to enter the burner. The 5:1 turndown feature ensures that fuel consumption is matched from 20% to full demand. EcoKnight Water Heaters can therefore achieve high levels of efficiency as follows:-

- Seasonal Efficiency (Part L2 Gross CV) – up to 96.7%
- Seasonal Efficiency (ErP/Ecodesign) – up to 95%
SMART System Controls

EcoKnight Water Heaters have integral SMART System controls, which provide a wide range of settings without the requirement for a Building Management System (BMS), therefore providing a potential saving on capital cost. This advanced control system includes:

- Multi colour graphic LCD display
- Cascade management of up to 3 x EcoKnight Water Heaters
- Modulating pump control
- Night set back facility – which can also be used for a pasteurisation programme
- Ability to add Contractor/Service company details into the display

The facility to connect to BMS is also available with 0 to 10 volt connections being available for simple BMS connectivity which allows control of burner and set point.

Direct Storage Vessels

Circulating water heaters are designed for installation with separate storage vessels; this provides a great deal of installation flexibility as multiple storage and hot water recovery combinations are available. Our LST and LST GE Direct Storage vessels are specifically designed for use with circulating water heaters and are available with storage capacities ranging from 297 to 2820 litres.

Key Product features include:
- Enamelled steel construction
- Suitable for working pressures up to 8 bar
- Hand hole cleanout
- Tapping(s) for Immersion Heater back-up
- 5-year storage vessel warranty (model LST166)
- 3-year storage vessel warranty (all other models)

For further information on LST Direct Storage vessels, please visit www.lochinvar.ltd.uk

Flue Options

A range of flue options are available including traditional conventional flue or room sealed concentric or twin pipe and with flue runs of up to 60m.

Maximum Flue lengths

<table>
<thead>
<tr>
<th>Model</th>
<th>Concentric</th>
<th>Twin-Pipe*</th>
<th>Conventional</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Flue Dia mm</td>
<td>Max. equivalent flue run</td>
<td>Flue Dia mm</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Flue Dia mm</td>
</tr>
<tr>
<td>EKW46CE</td>
<td>80/125</td>
<td>30m</td>
<td>80-80</td>
</tr>
<tr>
<td>EKW61CE</td>
<td>80/125</td>
<td>30m</td>
<td>80-80</td>
</tr>
<tr>
<td>EKW86CE</td>
<td>100/150</td>
<td>30m</td>
<td>100-100</td>
</tr>
<tr>
<td>EKW116CE</td>
<td>100/150</td>
<td>30m</td>
<td>100-100</td>
</tr>
<tr>
<td>EKW146CE</td>
<td>N/A</td>
<td>N/A</td>
<td>150-150</td>
</tr>
<tr>
<td>EKW176CE</td>
<td>N/A</td>
<td>N/A</td>
<td>150-150</td>
</tr>
<tr>
<td>EKW206CE</td>
<td>N/A</td>
<td>N/A</td>
<td>150-150</td>
</tr>
<tr>
<td>EKW236CE</td>
<td>N/A</td>
<td>N/A</td>
<td>150-150</td>
</tr>
</tbody>
</table>

* Twin pipe flue assemblies can be supplied with single or separate terminals

** Combined length of air inlet and exhaust outlet

Primary Circulation Pump

It is particularly important to maintain a constant flow through the EcoKnight heat exchangers, therefore we offer a range of suitably sized circulating pumps.
Typical Schematic Drawings

EcoKnight Water Heaters and Storage vessel combinations provide a great deal of installation flexibility with multiple water heater/storage vessel options available to cover a wide range of water heating requirements.

![Diagram of Single EcoKnight Water Heater with single LST Direct Storage vessel](image1)

**Single EcoKnight Water Heater with single LST Direct Storage vessel**

![Diagram of Three EcoKnight Water Heaters in cascade arrangement with single LST Direct Storage vessel](image2)

**Three EcoKnight Water Heaters in cascade arrangement with single LST Direct Storage vessel**
EcoKnight Water Heater – dimensions

For models EKW46CE and EKW61CE

For models EKW86CE, EKW116CE, EKW146CE, EKW176CE, EKW206CE and EKW236CE

<table>
<thead>
<tr>
<th>Description</th>
<th>EKW 46CE</th>
<th>EKW 61CE</th>
<th>EKW 86CE</th>
<th>EKW 116CE</th>
<th>EKW 146CE</th>
<th>EKW 176CE</th>
<th>EKW 206CE</th>
<th>EKW 236CE</th>
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<tbody>
<tr>
<td>A Height</td>
<td>mm</td>
<td>840</td>
<td>840</td>
<td>1080</td>
<td>1080</td>
<td>1080</td>
<td>1080</td>
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<tr>
<td>B Depth</td>
<td>mm</td>
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<td>567</td>
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<td>1024</td>
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<td>715</td>
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<td>F Air Inlet</td>
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For models EKW46CE and EKW61CE

For models EKW86CE, EKW116CE, EKW146CE, EKW176CE, EKW206CE and EKW236CE
## Technical Specification

<table>
<thead>
<tr>
<th>Water Heater model</th>
<th>EKW 46CE</th>
<th>EKW 61CE</th>
<th>EKW 86CE</th>
<th>EKW 116CE</th>
<th>EKW 146CE</th>
<th>EKW 176CE</th>
<th>EKW 206CE</th>
<th>EKW 236CE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Input (nett) kW</td>
<td>39.6</td>
<td>55.4</td>
<td>75.2</td>
<td>105.3</td>
<td>132.0</td>
<td>158.4</td>
<td>184.9</td>
<td>211.3</td>
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<tr>
<td>Nominal Input (gross) kW</td>
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<td>61.5</td>
<td>83.5</td>
<td>116.9</td>
<td>146.5</td>
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<td>205.2</td>
<td>244.2</td>
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<tr>
<td>Gas Flow Rate (natural gas) m³/hr</td>
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<td>5.9</td>
<td>8.0</td>
<td>11.1</td>
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<td>22.3</td>
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<tr>
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<td>58.7</td>
<td>79.7</td>
<td>110.6</td>
<td>141.2</td>
<td>162.1</td>
<td>187.4</td>
<td>227.2</td>
</tr>
</tbody>
</table>

### Efficiency Data - Building Regulations
- Seasonal Efficiency (Gross CV) % 93.6 95.4 95.4 94.6 96.4 92.2 91.3 93.0

### Efficiency Data - ErP and Energy Label
- Ecodesign Energy Label rating A A n/a n/a n/a n/a n/a n/a
- Seasonal space heating energy efficiency % 95 94 94 93 94 95 95 95

### NOx Emissions
- NOx Emissions (According to EN15502) @0% O2 mg/kWh 33.0 27.3 33.1 40.0 38.0 37.0 34.0 32.5
- NOx class according to EN15502 6

### General Data
- Recovery Rate @ 44°C l/hr 806 1153 1567 2164 2768 3302 3865 4338
- Recovery Rate @ 50°C l/hr 709 1014 1379 1904 2436 2905 3401 3819
- Recovery Rate @ 56°C l/hr 633 906 1231 1700 2175 2595 3037 3409
- Dimensions (Height) mm 840 840 1080 1080 1080 1080 1080 1080
- Dimensions (Width) mm 395 395 395 395 395 395 395 395
- Dimensions (Depth) mm 459 567 503 688 798 925 1024 1153
- Water Content litres 4.9 6.4 9.1 12.9 15.9 15.9 18.9 21.6
- Weight (Empty) kg 75 79 102 129 138 154 168 184
- Weight (Full) kg 80 85 111 142 154 170 187 206
- Flow Connection (Inches) BSP 1¼" 1¼" 2" 2" 2" 2" 2" 2"
- Return Connection (Inches) BSP 1¼" 1¼" 2" 2" 2" 2" 2" 2"
- Gas Connection (Inches) BSP ¾" ½" ¼" 1" 1" 1" 1" 1"
- Flue Connection (Concentric) mm 80/125 80/125 100/150 100/150 N/A N/A N/A N/A
- Flue Connection (Twin-pipe) mm 80/80 80/80 100/100 100/100 150/150 150/150 150/150 150/150
- Electrical Requirements 230V/1ph/50Hz
- Power Consumption W 120 144 180 180 204 322 322 322
- Sound Power Level LWA(dB) 58 60 62 64 66 69 69 69
- Nominal Flue Gas Temperature °C 120 120 120 120 120 120 120 120
- Max Outlet Temperature °C 88 88 88 88 88 88 88 88
- Working Pressure Minimum bar 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5

Ancillary Items – required
- Matched primary circulation pump
- Direct storage vessels

Ancillary Items – optional
- Unvented system kits
- Condensate neutralisation kit
- Range of flue options (see page 3)
- BMS Interface Module

For further information on the EcoKnight Water Heaters, including ICM & User Instructions and our full Warranty Terms and Conditions, please visit our website: www.lochinvar.ltd.uk

Lochinvar Ltd reserves the right to change specifications without prior notice