

# FOR GREATER SAVINGS

*A reduction in heat loss of more than 40% was achieved at one factory using heat recovery technology.*

**W**hen the Thorn EMI/Ericsson factory at Scunthorpe was extended it was decided to include a heat recovery system in order to realise greater energy savings. In fact a 41% reduction was achieved on the total energy losses of the building.

The building measures 90m by 43m and is some 6.5m high; it is used for the manufacture of telecommunications equipment. Design requirements stipulated a ventilation rate of between 1.5 and 2 air changes per hour, summer and winter. The external winter design temperature was set at -3°C with an internal design temperature of +20°C.

The Hoval LHW system was chosen for the project for several reasons: balanced fresh air/extract ventilation is standard; heat recovery is standard on this system giving substantial reductions in running costs; heat recovery reduces the overall maximum heat requirement resulting in lower duty Medium Pressure Hot Water (MPHW) system of pipework, pumps, valves, etc; stratification is avoided with LHW units, due to a patented air injector on each supply air outlet, which also eliminates cold draught problems in summer.

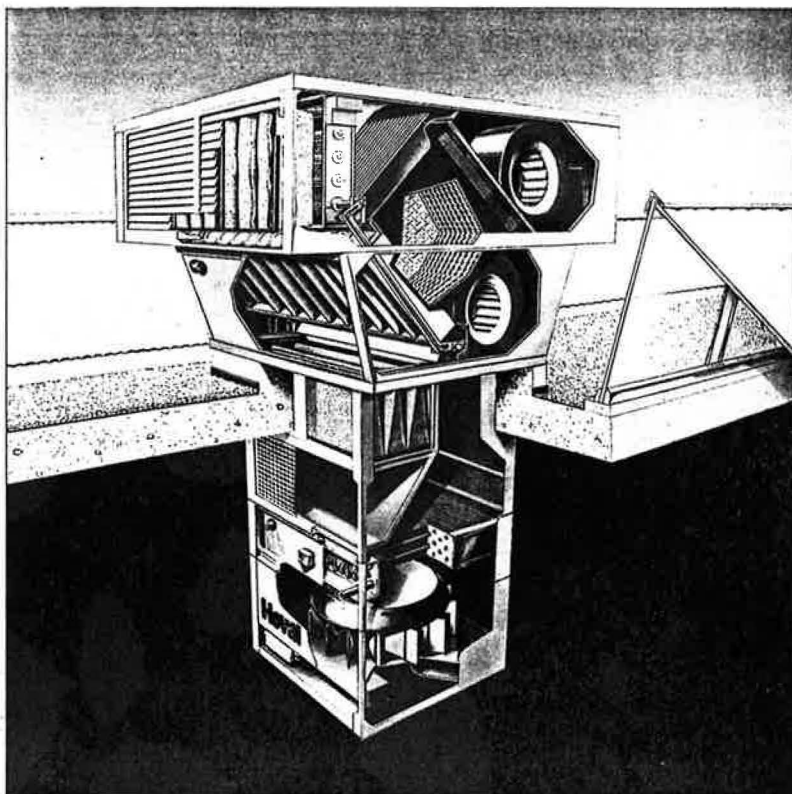
Nine LHW 5 units, each handling 5000 m<sup>3</sup>/h of supply and extract air, were installed. Each unit comprises two fans, filters, plate heat exchanger, air control dampers, MPHW heater battery with frost thermostat, and air injector with variotronic control.

The variotronic controls sense the supply air/room temperature difference and automatically adjust the supply air pattern. Hoval supplied a complete control package including control panel, room sensors, supply air sensors and three-way zone valves.

During the daytime, the units operate on a full fresh air/extract basis with room temperature control by modulation of heat recovery and heating in sequence.

Overnight the units maintain a setback temperature for building frost protection in the full recirculation mode. For preheat before occupation, the units again recirculate and quickly achieve full room temperature.

The plate heat exchanger transfers heat from the



*An exploded view of the LHW unit.*

exhaust air to the incoming fresh air at an average efficiency of 65% without cross contamination. The winter design heat losses were substantially reduced as a result of heat recovery as indicated in Table 1.

These represent a 41% reduction in total heat losses. Apart from the running cost benefits, there are also savings in the installation cost for the lower duty MPHW system.

For factories needing winter fresh air ventilation, the LHW system provides not only full space heating, high quality ventilation and distribution, but also heat recovery with the attendant substantial running cost savings.

Circle 130

**Table 1: Heat Losses**

	Without Heat Recovery kW	With Heat Recovery kW
<b>Fabric losses</b>	<b>201</b>	<b>201</b>
<b>Ventilation losses</b>	<b>347</b>	<b>122</b>
<b>Total losses</b>	<b>548</b>	<b>323</b>