

THE ELSBETT COOLING SYSTEM

In terms of energy, ELSBETT engines in the seventies and eighties performed better than conventional engines having an efficiency of approximately 40% to 43%. This increased performance was made possible by improving the thermal balance of the engine, causing greater availability of useful mechanical energy and substantially reducing the conversion of energy into useless heat.

As the surface of the combustion chamber wall is reduced in size, and thermal insulation is caused by the excess air surrounding the combustion area, the heat flow and the cooling requirements are minimised.

While in a conventional diesel engine with a precombustion chamber approximately 31% of the energy contained in the fuel is removed from the engine through the cooling system and dispelled into the radiator, (26% in direct injection diesel engines, 28% in petrol engines), in the case of the **ELSBETT** engine only around 14% to 16% of the heat has to be removed.

This reduced demand for cooling makes it possible to dispense with conventional cooling systems. In **ELSBETT** engines the cooling process is carried out by the engine's lubricating oil alone. Water radiators and air-cooling devices are thus dispensed with, and this reduces the number of parts, the weight and the volume of the engine.

The absence of water in the engine makes it possible to cast ribless blocks and to dispense with the head joint. Cracks in engines are more often the result of accentuated temperature gradients rather than the temperature itself. For this reason oil allows for the safer cooling of the engine as it works beyond the boiling point of water and reduces thermal tensions in the engine.

Oil does not boil easily, does not cause internal corrosion or cavitation, does not freeze, and quickly reaches its working temperature.

The lower part of the piston is cooled by means of jets of oil. The jets of oil cool the internal walls of the cylinder and, guided by vanes fitted inside the piston body, reach the lower base of the piston head thereby cooling it.

The engine head is cooled by means of the forced circulation of the oil. The oil itself is cooled by an external radiator.