

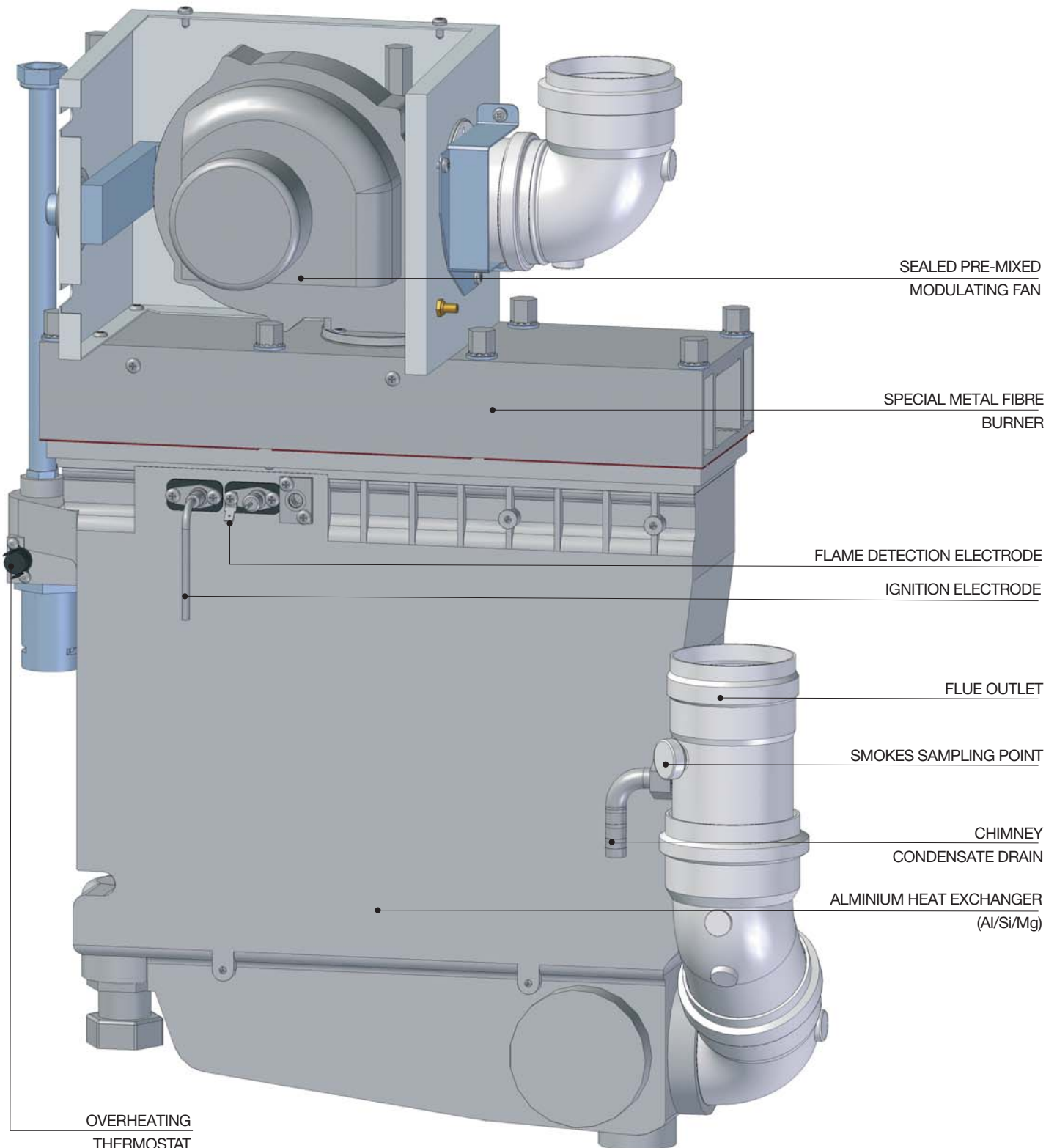


ALKON 50-70.



Unical

High quality ...



...point by point

■ *Aluminium heart*

Applying the same technology used in the motorcar industry, the ALKON's 50 motor is a cast aluminium/silicon and magnesium heat exchanger/condenser. Its major features are the lightweight and compact design: weighing only 10 kg and measuring 12 cm in depth, 47 cm high and 43 cm wide. The very severe final tests (according to the Standard EN 303-1, with a pressure of 26 bar) brilliantly passed, testify the high quality of this casting. The technology (Unical patent), already experimented on the range of high and average output MODULEX boilers, has permitted the construction of a compact heat exchanger which, as well as favouring an elevated heat transfer, also consents self-cleaning of the flue side.

Thus, the following benefits are guaranteed:

- *Long lasting performance, thanks to the absence of lime scale.*
- *Extremely easy servicing*

Moreover, thanks to the 100% wet surfaces in the heat exchanger, a maximum lifespan and reliability is ensured, thanks to the optimum circulation which never overburdens it.

■ *Blue flame*

The combustion system is sited in a special sealed box, placed above the heat exchanger, composed by a modulating fan, gas valve, gas/air mixer, ignition device, flame control and a special 'metal fibre' burner which produces the so-called "blue flame" pre-mixed combustion, with a CO₂ emission equal to 9% at minimum and maximum output.

■ *Silent performance*

Thanks to the pre-mixed modulating fan's low operating pressure, capable of developing a soft flame, the ALKON boiler ensures quiet operation.

■ *Low NOx microflame*

The microflames which develop internally undergo a very quick cooling down process with a subsequent reduction of the volumetric thermal load.

■ *Class 5 Low NOx*

In the ALKON boiler, the particular blue flame pre-mixed combustion, with an equivalent flame temperature, transmits greater energy than that obtained with traditional combustion. Thanks to the practically total oxidization of the molecules of natural gas, the very low polluting emissions produced promote the ALKON boiler into the selective Class 5 Low NOx category (EN 483). Moreover, the absence of turbulences ensures absolute safe operation.

■ *Optimum long flue lengths*

The pre-mixed combustion, thanks to the available manometric head, guarantees flue outlet systems upto 30 metres long with a diameter of 80 mm.

■ *High resistance and long life*

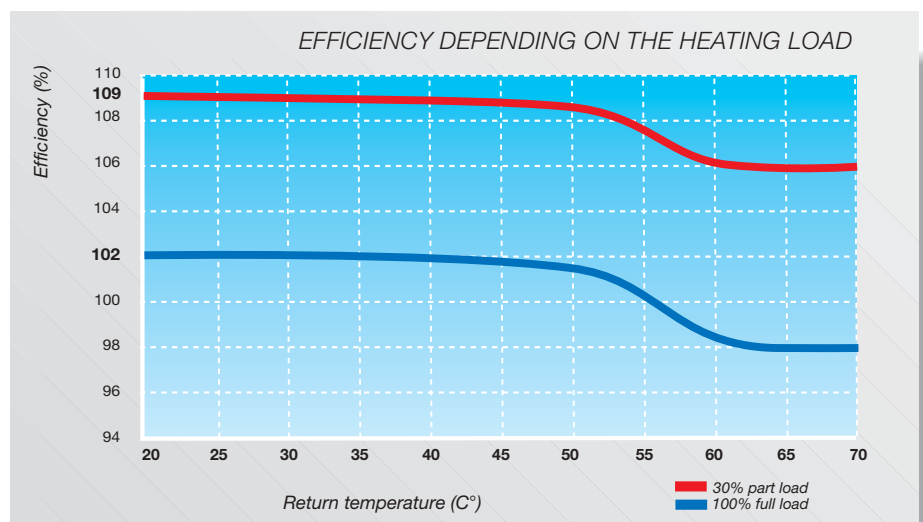
The physical unalterability of the burner's metal fibre construction limits the mechanical and thermal stresses, ensuring long life. Servicing is facilitated thanks to the reduced use of components and ease of access.

■ *Exceptional modulation ratio*

The prerogative for obtaining a high seasonal efficiency is to be able to dispose of a "flexible" boiler. To be able to modulate down to an output of only 8,8 kW means that the boiler is able to adjust itself to the required output to meet the system's minimum loads, without making the burner fire/turn off excessively, dispersing energy uselessly. This same flexibility guarantees a reserve of energy, which is always ready to satisfy extreme requirements, such as a great demand of immediate heat output.

■ *Casing*

The casing is in steel plates, painted with epoxy-polyester powders and internally insulated with reflecting polyethylene materials 5 mm thick.



Money saving ...

Operating efficiency levels upto and over 108%!

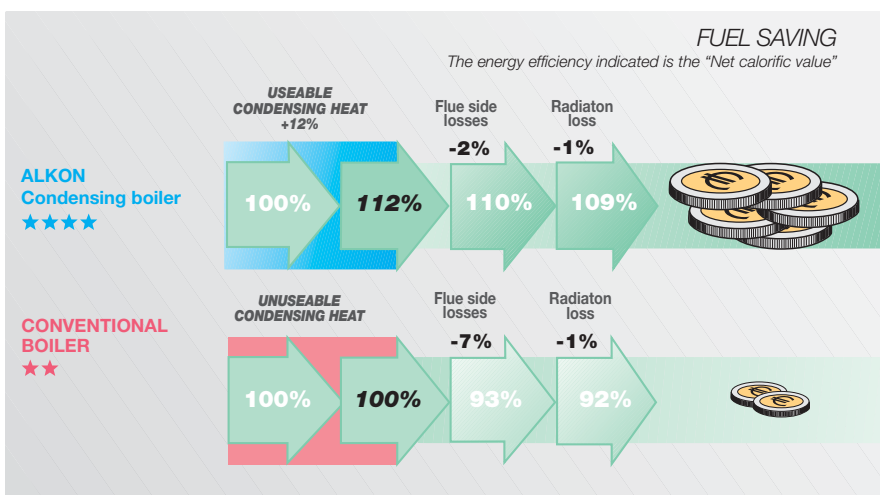
The condensing technology has the primary scope of drastically reducing latent heat (contained in water vapour), which is lost through the flue system, thereby exploiting to the utmost the energy contained in the gas burned and giving the condensing boiler an exceptionally high level of operating efficiency, impossible to reach with conventional boilers.

The ALKON's 50 heat exchanger/condenser has been designed so that the system's returning cold water passes through its terminal part: the contact of the flue gases with this cold surface causes their transition from the vapour phase to the liquid phase (condensate), with the subsequent release of heat to the C.H. system water.

This process therefore enables the boiler to recover nearly 1 kW per m³ of gas burned, which normally, with traditional combustion, would be lost to the environment with the flue gasses.



Combustion/condensation phenomenon



Thus the ALKON 50's and ALKON 70's useful efficiency reaches 109%!

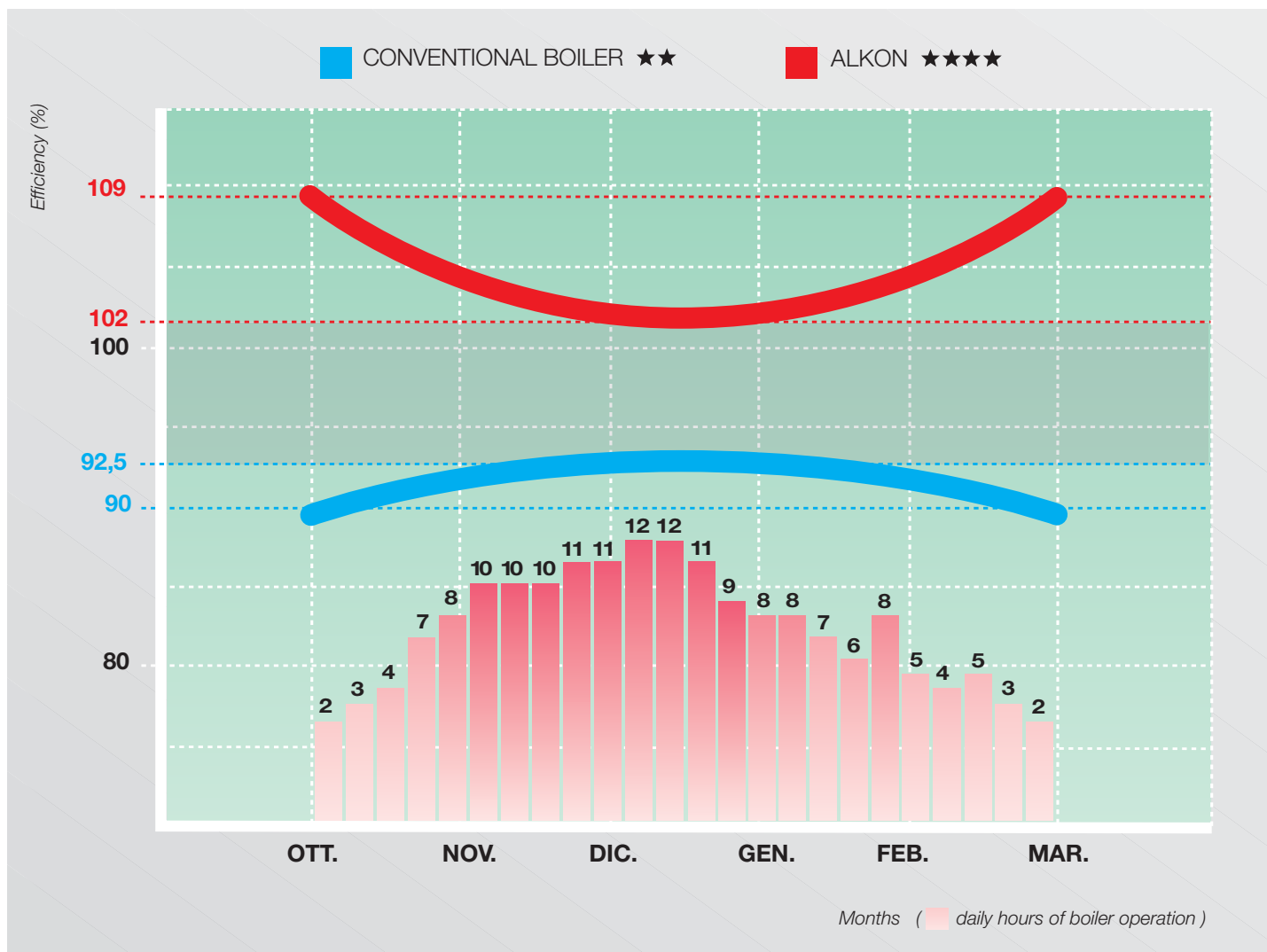
Seasonal efficiency, which is strongly influenced by the heating load factor, which is to say, by the variations of usage according to the climatic conditions and the type of heating system, always maintains itself at very high levels, placing this boiler at the top of today's technology.

...with condensation

Mathematical intelligence

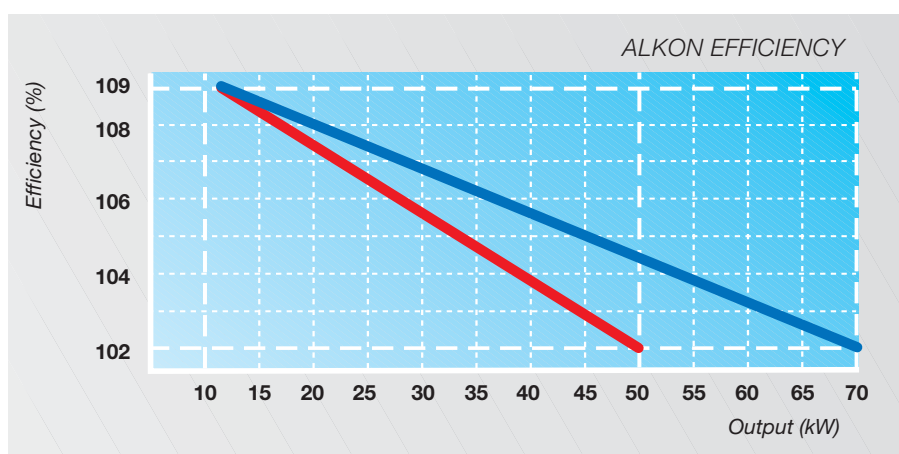
As evidenced in the diagram, with the same hours of boiler operation, if you compare a conventional boiler with an ALKON boiler, you can see that the efficiency of this last boiler is proportionally the opposite to the heat input requested by the heating system, always maintaining itself greater than a very efficient conventional boiler.

In fact, the ALKON can supply a 10% higher efficiency rate compared to a conventional boiler. Moreover, during the milder season, at the minimum load, the differential in favour of the ALKON reaches up to 19%.



CASKAD

increases output and efficiency



The ALKON offers flexible operation and high operating efficiencies

We have seen that the individual ALKON boiler has an approved efficiency which, when the output reduces, increases progressively from 102 to 109% (in condensing mode).

This is possible because to the heat exchanger increases its efficiency, and flue temperature decreases, when the input is reduced.

In order to increase the total operating efficiency of the ALKON CASKAD, the E8 heating controller maintains the major number of ALKON units in the multiple boiler installation, firing at the lowest possible rate (as shown in the besides examples).

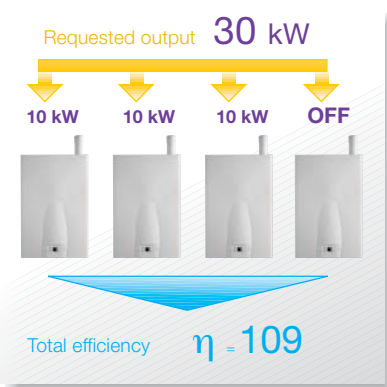
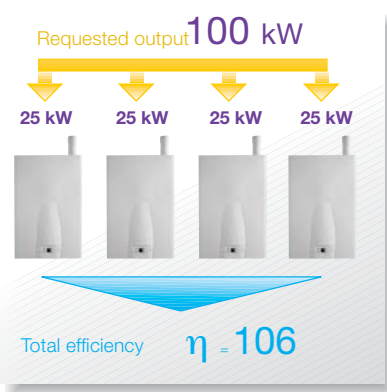
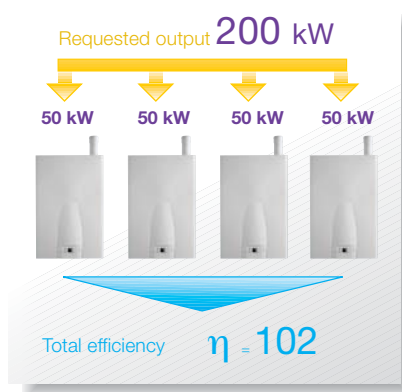
Using this method the heating system will always operate at the maximum possible efficiency, independently from the rate supplied.

Always with the same operation principle, when the heating load slowly reduce itself, the output of each module will also be controlled and proportionally reduced.

As the minimum rate of each module is 10 kW, if the required load is inferior to the total minimum output of the single units (n° units \times 10 kW), only the ALKON boilers, needed to reach the requested output at the maximum efficiency level, will be fired and the other units will be shut down.

Moreover, in order to ensure an equal daily rotation of each module, every 24 hours each unit will be fired alternately, so as to ensure that each one operates for the same number of hours.

Output sharing with 4 x 50kW modules in cascade



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