

Munster Technological University

Installation of 4 no **IMMERGAS** Ares Tec 900kW Gas Boilers

The University

MTU is a multi-campus university with six campuses across the southwest region of Ireland with over 18,000 students. This installation was in their Cork campus, previously known as CIT.



Project Background

In 2021, MTU planned to remove two existing inefficient gas boilers and replace them with energy-efficient modular condensing boilers. Immergas Ares Tec boilers were chosen for the project.



Installation at Munster Technological University

The primary objectives of the installation were to:

- Maximise the efficiency of the boiler plant
- Minimise running costs
- Achieve a high capacity from a small footprint



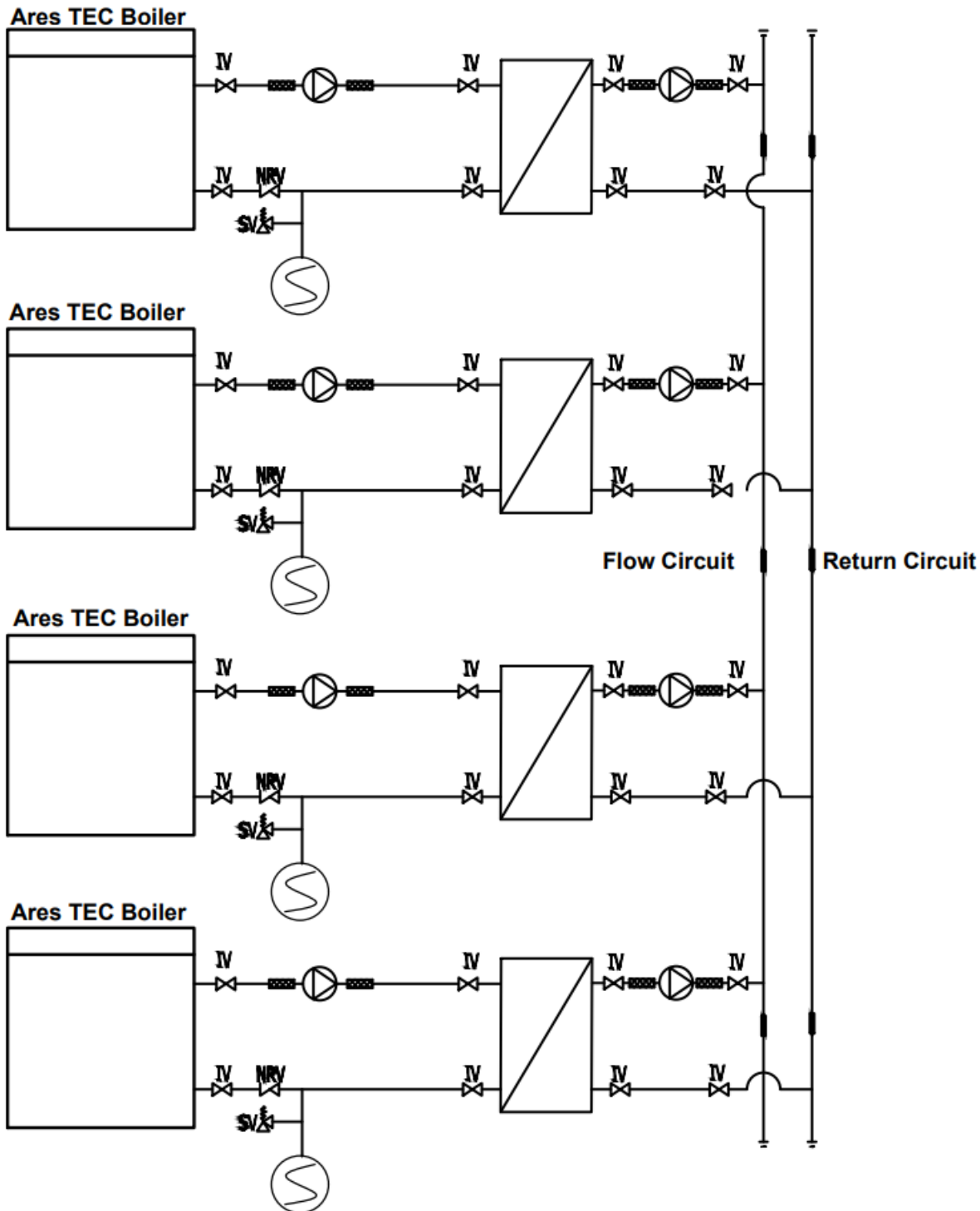
The installation was carried out in October 2021.

Four Immergas Ares 900 Tec ErP NG were installed in a cascade arrangement. The Immergas Ares Tec is a floor-standing condensing boiler with a modular, multi-sectional diecast heat exchanger.

Each boiler has a capacity of 900 kW with a total plant capacity of 3.6MW. The system has a turndown ratio of 160:1.

It provides excellent load matching due to the high levels of modulation. This results in high seasonal efficiency.

Hydraulic Scheme

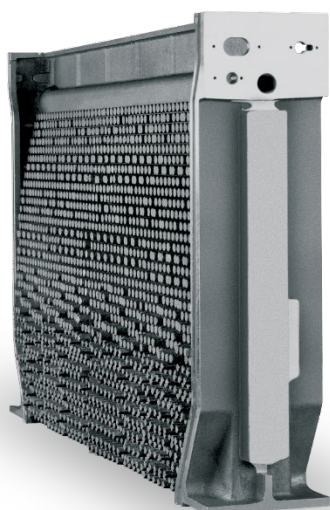
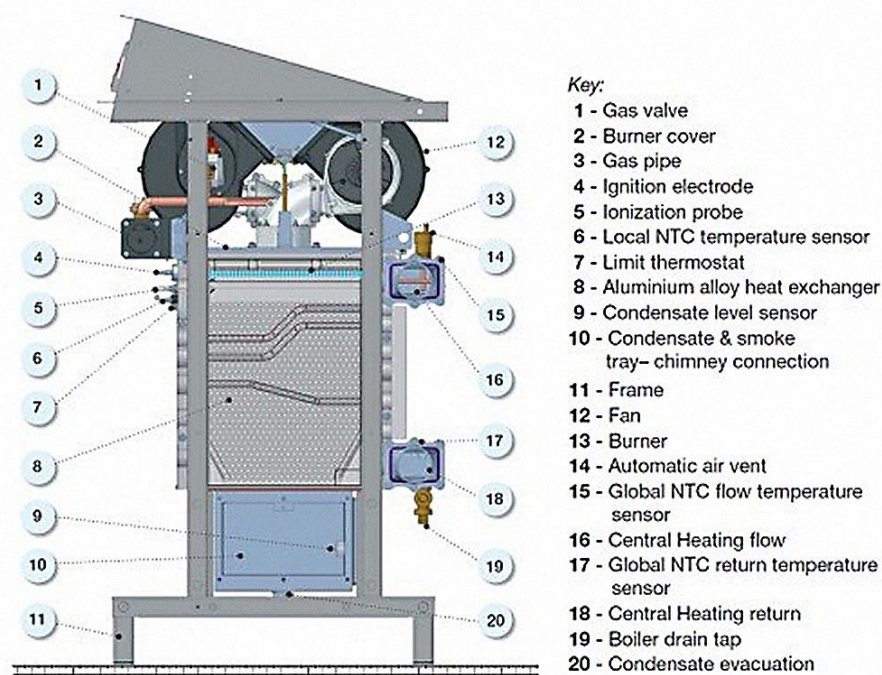


Four Ares 900 Tec ErP NG were installed in cascade, as shown in the schematic. Each boiler was isolated from the system by a gasketed plate heat exchanger. The heat exchangers were selected to minimise the temperature difference between the primary and secondary circuits, thus maximising boiler operating efficiencies.

Modular design - high seasonal efficiency

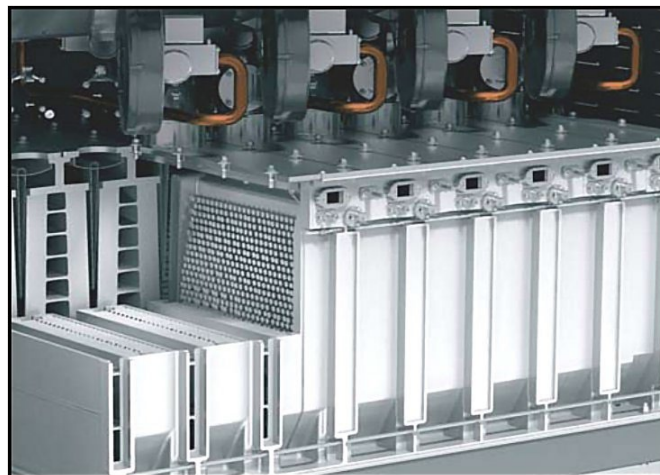
Eight individual Thermal Elements per boiler

The Ares Tec range has several modular "thermal elements". Each element includes a premix modulating radiant burner, modulating gas valve, electronic ignition, NTC temperature probes, safety thermostats, and flame sight glass. In boilers up to 350kW, each thermal element is 50 kW. In larger capacity boilers, 108kW thermal elements are used.



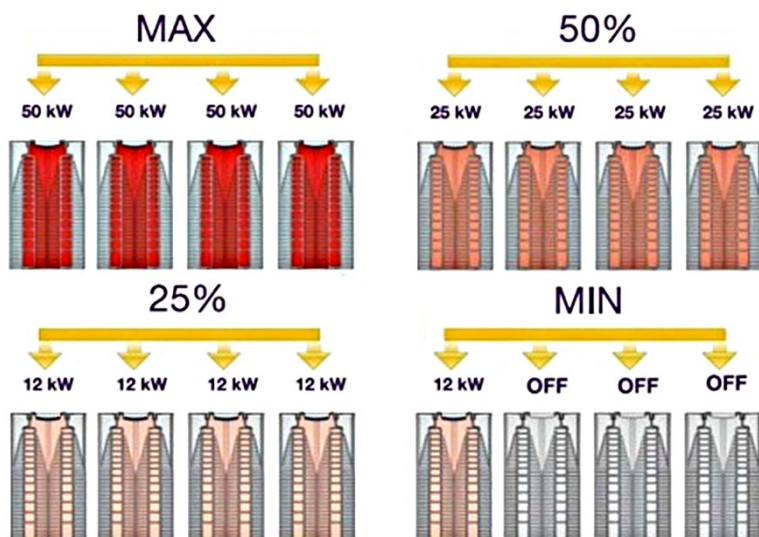
This modular design offers wide turndown levels. When installed in cascade, the turndown range widens further. This ensures excellent load matching in applications where part-load operation is essential – such as district heating systems, apartments, hotels, and other applications. The reduction in ON-OFF cycles results in significant energy savings in these applications.

The modular design of the Ares Tec offers excellent reliability. Should one module lockout or enter an error state, the load will be distributed between the other modules. This provides the reliability of a cascade installation in a single boiler. In addition, a separate in-built backup controller offers further peace of mind.



Advanced control strategies

The built-in boiler control unit optimises efficiency by firing the maximum number of thermal elements at the minimum possible power.



The system will always ensure maximum efficiency by constantly varying the heat output.

When the power reduces, the power of each thermal element will be reduced to an appropriate level.

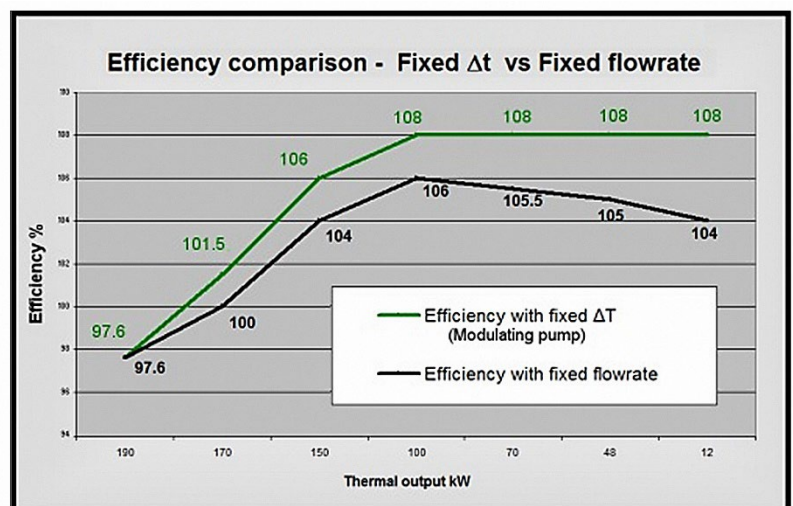


Some thermal elements will be switched off if the required power is below the sum of minimum thermal element outputs. There is a daily rotation of the thermal element sequence to ensure even thermal element running hours.

Modulating pump control

The Ares Tec range support 0-10V modulating pumps as standard. The boiler control unit monitors the temperature difference (ΔT) between boiler flow and return.

This information is used to control the modulating pump output by increasing the pump flow rate when the ΔT increases, and reducing the pump flow rate when the ΔT decreases. The effect is to increase efficiency by ensuring that the return temperatures are kept as low as possible to reduce flue gas temperatures. As a result, boiler efficiency is improved.



Flue and accessory options

RVR Energy Technology can design and supply flue solutions in stainless steel, and UV stabilised plastic for the full Ares Tec range. Accessories such as hydraulic separators and isolation heat exchangers are also available.

Applications

The Ares Tec range consists of 10 condensing boilers ranging from 150kW to 990kW, making it a perfect solution for light and large commercial applications.

Applications include:

- Universities and Schools
- Hospitals
- Hotels
- Nursing Homes
- District Heating
- Light Commercial applications



Benefits:

- Compact dimensions & good power-to-weight ratio
- High reliability with strong redundancy and fail-safes
- Very High seasonal efficiency



Parties involved

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