



National Star college is a independent specialist college. The college in the past was heated by 20 separate oil boilers. As well as being costly with high energy bills, the system was old and subject to leaks. The college decided to replace the heating system with a environmentally friendly solution.

## Biomass Boiler

The chosen solution was two fully automatic, high efficiency Froling Turbomat wood chip boilers, 500kW & 320kW. These are installed in a new energy centre with 15,000 litres of buffer tanks, with two oil boilers of 630kW each, connected to a new 600m district heating scheme.

The Turbomat boiler is fully automated with features including; automatic ignition, fully modulating combustion control, full moving grate for high fuel quality tolerance, automatic ash extraction to external bin, vertical boiler tubes with automatic mechanical tube cleaning system and automatic fly ash extraction. It has an efficiency (as tested by TÜV) of over 90% throughout the modulation range.





### Installation

As part of Econergy's full turnkey solution, Econergy provided a complete design and installation project from the empty boiler house shell, including all distributed pipework and 14 local connections.

### Operation

- Fuel is delivered by a large tipping trailer into the excavated bunker of 120m<sup>3</sup> total volume (estimated 80m<sup>3</sup> working volume)
- Fuel is automatically extracted and transferred to the ground level boilers by a hydraulic scraper floor system and fuel transfer augers.
- Expected fuel delivery frequency could be up to 3 deliveries of 50m<sup>3</sup> per week in cold weather, less in milder conditions.
- Annually the boiler would use approximately 1,200 tonnes of wood chip at 30% moisture content to supply an estimated 90% of the projected year-round heating requirement.
- The wood boilers will act as lead boilers, working with buffer tanks to minimise use of standby oil plant.
- The two oil boilers will provide 100% standby for the diversified system load in the event of no wood fuel plant being available. They will also act to supplement the wood boilers if the load exceeds 820kW for an extended period.
- The 15,000 litres of buffer will greatly reduce oil boiler utilisation. They will store 523kWh of energy, acting with the wood boilers to provide the peak diversified load for 90 minutes without any oil usage.
- In the summer the 320kW wood boiler would provide the diversified DHW demand within its normal turndown range, with the buffer taking the peaks.
- In colder weather the 500kW wood boiler would be used, with the 320 coming on automatically for the coldest weather.

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