



Narec's conventional gas boiler which had previously been the primary source of heating a 40m high test facility generated annual energy bills of £60,000.

Narec's Distributed Energy Team conducted a technical feasibility study in order to determine the most suitable technology for the application, the long-term objective was to reduce its energy demand, carbon emissions and effectively demonstrate the application of low carbon technologies.

The Distributed Energy team evaluated various heat distribution systems and conducted an assessment of the facility. As a result of the study a 500kW Binder biomass boiler was selected as the primary heat source, with heat distributed via a series of air handling units which disperse the heat directly to the high voltage test equipment using jet diffusers. A close control system has also been installed to ensure optimal performance and to protect the test equipment from under or over-heating.

The Binder boiler was installed in a refurbished plant room with 10,000 litres of thermal storage, and a user friendly display panel fitted to improve monitoring of system performance. Fuel is stored in two walking floor hook bins which are located adjacent to the plant room, with fuel delivered to the boiler via a screw auger.

The new biomass boiler takes up no more room than the original boiler, and is fuelled by wood chips from local suppliers. Since the carbon produced in the burning of the biofuels, is offset by the carbon absorbed by the plant during its life, Biomass Power is carbon-neutral. Biomass proved an ideal renewable alternative for heating Narec's laboratory because of the readily available local supply of wood-chip fuel. The boiler will also allow Narec to eliminate the financial risk of rises in fossil fuel costs, and reduce its carbon emissions by over 700 tonnes. The biomass heating system has also reduced the facilities annual fuel bill by £25,000.

In addition to the 500kW biomass boiler, two 10kWe Yanmar micro-CHP units were installed.

### *Advancing Renewable Energy*