

ESCO – DISTRICT ENERGY SYSTEM - CHARLESTOWN

The Site

Charlestown Town Centre, Dublin was developed in 2006. A mixed use development comprising of 285 apartments, a 18,800m² shopping centre, underground car park and a roof top garden. Frontline manage and run the energy centre including the district heating scheme for this innovative development.

The Objective

To efficiently operate and manage the energy centre including all billing and metering requirements. Identify and implement on-going energy saving initiatives and projects through monitoring and targeting. With a Whole Site Optimisation approach aimed at enhancing the sustainability of the site.



An exemplar District Heating Scheme, providing **significant energy savings throughout**. By combining energy efficient technologies with innovative applications, measurable environmental & financial savings are continually achieved. These measures influence the surrounding community to embrace the green momentum, putting renewable technologies into the heart of a community.

Technical Overview

Combined Heat & Power Unit - CHP providing the base electrical load for the anchor tenant at 228kW, the heat is captured and supplies 358kW of thermal energy to the District Heating Scheme
1.2 MW Biomass Boiler - Powered by locally sourced wood pellets to provide the main heat load for cold weather
Accumulators - Thermal accumulators or buffer storage tanks are used to smooth out peaks & troughs ensuring the system operates at peak efficiency on lower loads
Back Up Boilers - 2 x 1.2MW gas fired back up boilers for short term peak loading and back up.

Services

Energy Centre -

- **Management and operating** of all plant & equipment
- **Metering and billing** of residential tenants
- **User manual** for residential customers giving them an understanding of how the system works & how to program their controls to ensure harmony through the system.

Whole Site Optimisation Initiatives

- **Constant monitoring** through extensive **BEMS (Building Equipment Management Systems)**
- **Night heating setback** introduced to save on gas usage
- Updated **running priority** of the system allowing the wood pellet boiler to run in more marginal weather conditions
- Introduction of **SmartPower**, to monitor and manage energy usage based on tariff projections.

Results

- **Accumulated savings of €96,000** achieved from mid 2010 to early 2012
- 21% savings on running costs for car park lighting. Equal to **122 tons of associated CO2 savings**
- Immediate **10% reduction** to HVAC through control system changes.
- CHP Efficiency– Electrical Conversion 31.8%; Heat 49.9%; Overall efficiency 82.7%.