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Gas Networks Ireland

Natural gas solutions for the commercial buildings sector

Case study

State-of-the-art manufacturing facility in Portlaoise is one of Ireland's first large-scale facilities to achieve a nearly zero energy building (NZEB) standard, using natural gas.

Greenfield Global Ireland has been in operation in Portlaoise since 2020. The facility consists of warehouse space, production space, quality control (QC) labs, cleanrooms, offices and plant rooms. The design of the facility is centred on energy efficiency and cost effectiveness.

Greenfield Global in Portlaoise achieved NZEB requirements with natural gas

Energy system benefits

- Annual energy saving of circa €70,000
- Payback on investment in less than 4.5 years
- Projected average of 5,475 CHP operating hours per annum
- CO_2 reduction of 36 tonnes per annum
- Meets 65% of the building's total heat demand and 40% of the building's total electrical demand
- Reduced maintenance costs and carbon tax

Greenfield Global is the largest producer of high-purity alcohol and ethanol in North America and produces and packages a wide range of speciality alcohol and bio-based chemicals.

This manufacturing facility was constructed under the new Part L 2017 Building Regulations. These regulations require all new buildings to use up to 60% less energy than a similar building constructed under the previous Part L 2007 regulations. They also require up to 20% of the final energy demand to be met from renewable energy sources, including renewable energy produced on-site or nearby.

The building design was led by DPS Engineering, in conjunction with Greenfield Global. As a well-proven technology that yields significant economic and environmental benefits, Combined Heat and Power (CHP) technology, fuelled by natural gas was chosen as the optimum energy solution.

"We have seen the significant savings achieved by generating electricity using CHP Technology. The ability to independently generate electricity on site, at a cost less than grid market costs, gives our business a significantly lower cost base to help us drive profitability."

Ken Finegan, Managing Director, Greenfield Global

"Once the CHP unit was commissioned we were generating 110 kW of electricity on site in Portlaoise and the unit was meeting all the facility's heating and power demands. There were times that we were not importing electricity from the grid."

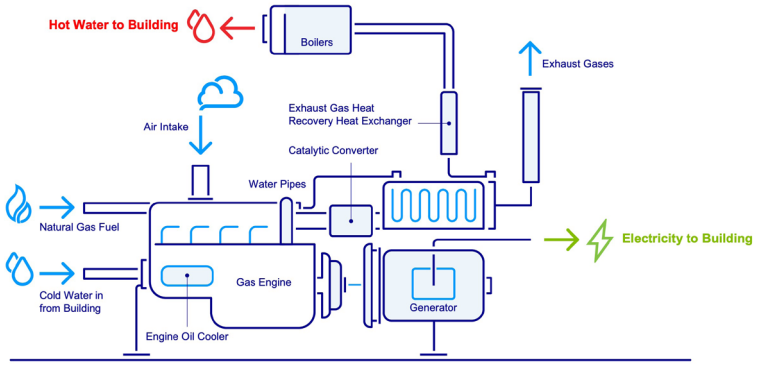
Conor Murphy, Senior Process Engineer, DPS Engineering

Why CHP makes sense for Greenfield Global

Due to potential inefficiencies in electricity generation and the resulting cost of electricity from energy suppliers, significant savings can be made by generating electricity to meet requirements onsite. In addition to these savings, high-efficiency CHP plants are eligible for relief from Natural Gas Carbon Tax (NGCT). As these CHP plants operate at a high energy efficiency, and are considered environmentally friendly, they receive relief from standard carbon charges that are applied to natural gas, solid fuel, and mineral oil when used as a fuel.

Combined Heat and Power technology (CHP) is the simultaneous production of electricity and heat, usually in the form of hot water or steam from a primary fuel such as natural gas. Electricity is generated on site by using natural gas to drive an alternator connected to the engine. The heat from exhaust fumes generated by the engine is harvested to provide heating and hot water to the manufacturing facility, while some of the energy within the hot water can also be used to provide cooling and air conditioning by using absorption chillers, if required.

Greenfield achieved an average annual savings of c. €70,000 on an overall investment of €320,000. This represents a 4.5 year payback on their capital expenditure, when compared with purchasing both gas and electricity from their respective grids to meet the sites electrical and heat demands.



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