

Combined Heat and Power

What is Combined Heat and Power?

Combined Heat and Power (CHP) is the use of a heat engine to generate electricity and useful heat at the same time (the simultaneous cogeneration of electricity and heat).

Cogeneration is a highly efficient use of fuel or heat, because otherwise wasted heat from electricity generation is put to some productive use. The proposed CHP plant uses a gas engine and can achieve primary energy savings of approximately 40% compared to the separate purchase of electricity from the electricity grid and gas for use in a boiler.

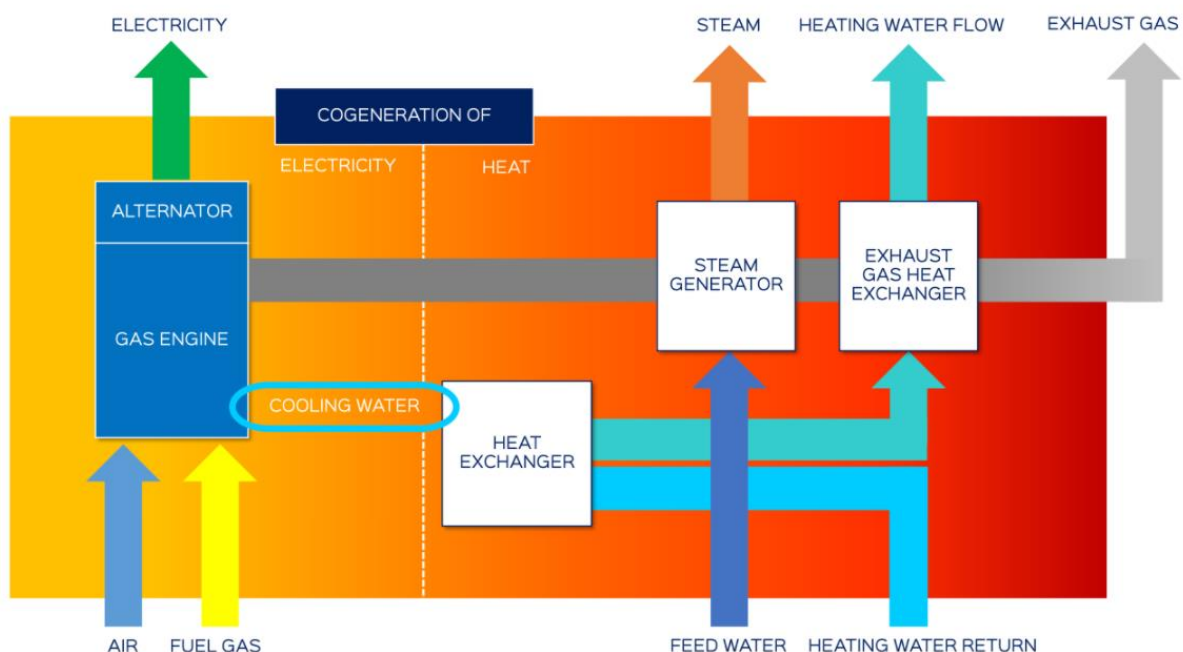
CHP plants are typically located close to the end user (in this case within the Kepak site in Pengarnddu Industrial Estate), which helps reduce transportation and distribution losses, improving the overall performance of the electricity transmission and distribution network.

How does CHP work?

During combustion of the air-fuel mixture, mechanical energy is released and converted into electricity via the alternator.

This is similar to the process used in traditional gas power stations, but CHP systems recycle the excess heat that is released as a by-product of power production. Recovered heat can then be used for space heating, hot water, steam, and industrial processes.

CHP Schematic



Who will the power supply?

The power generated by the proposed CHP would be supplied to Kepak / St Merryn (a meat factory and key local employer) at a discounted rate under a Power Purchase Agreement. Due to the nature of the business, Kepak are a large consumer of energy, which continues to be a significant aspect of the organisation's environmental impact. Kepak are continually exploring opportunities to improve energy efficiency throughout its activities and supply chain. This includes process improvements, investment in more energy efficient equipment, and the development of new technologies.

What are the benefits of CHP?

The high efficiency of a CHP plant compared with conventional bought in electricity and site-produced heat provides a number of benefits including:

- Reduction in emissions compared to conventional electrical generators and onsite boilers;
- On-site production of power, which can help improve a site's resilience in the event of power grid failure;
- Reduced energy costs; and
- No odour.

How is a CHP plant regulated?

The CHP plant will be regulated through an environmental permit with Natural Resources Wales, which is considered as part of a separate application.

Potential Impact on residential amenity

Odour / Air Quality

A CHP plant does not produce any odour and matters of air quality are controlled under the Environmental Permitting (England and Wales) (Amendment) Regulations 2018.

Noise

A Noise Assessment Report has been prepared by Wardell Armstrong in order to consider the potential impact of noise from the proposed CHP on the nearest noise sensitive receptors. The site is within an established industrial / commercial area with limited sensitive properties.

The noise sensitive receptors in the vicinity of the proposed development include residential areas/properties at:

- High Street, Dowlais Top;
- Individual property south-east of the site;
- Bwythyn Pen Y Bryn, Dowlais; and
- Ty Bryn Du, Rhymney Common Road, Dowlais.

The CHP could be operational during the daytime and night-time, therefore to establish baseline levels at existing sensitive receptors, a noise survey has been carried out during the daytime and night-time.

The Noise Assessment Report assesses the results of the noise survey, together with the noise levels from the proposed operation, in accordance with current guidance.

When considering the results of the assessment in the context of the site and its setting, the noise generated by the proposed development will be likely to be inaudible at the nearest receptor. They will therefore have no more than a low impact at either sensitive receptor with no mitigation in place. Therefore, noise is not considered to be an issue for the development and no further mitigation has been recommended to reduce noise emissions.

