

Energy Efficiency Plan

1 Objective & Scope

This Energy Efficiency Plan (EEP) is written with respect to the operation of Parkham Farms Cheese Factory, Higher Alminstone Farm, Woolsery, Bideford, EX39 5PX (the Site) operated by Parkham Farms Limited (PFL).

2 Scope

This Energy Efficiency Plan (EEP) outlines the measures in place and those proposed to ensure energy is used efficiently across the site. The plan supports the application for an environmental permit and addresses the energy use associated with the treatment and processing of milk, cream and concentrate, as well as the biological treatment of effluent.

The Processes on site can be summarised as:

- Food and drink production processes utilising milk (the dairy) to produce cheddar cheese and cream;
- Production of by-products including whey permeate and lactose via Ultrafiltration (UF) and Reverse Osmosis (RO); and
- Further treatment of permeate water by chlorine dioxide dosing to produce process water for site use.

There are 2 No. fixed Boilers on site (one duty and one standby) used for the production of steam. The Boilers are fuelled by kerosene. The Boilers are detailed in Table 6 below:

Table 6: Boilers for steam production

Boiler number	Size (MWthi)	Grid reference (X, Y)
Boiler 1	1.84	235238, 120766
Boiler 2	1.84	235237, 120762

The EEP aligns with the relevant Best Available Techniques (BAT) Conclusions under the Food, Drink and Milk sector.

3 BAT Requirements

BAT 6 requires that an energy efficiency plan be produced as detailed below:

'An energy efficiency plan, as part of the environmental management system (see BAT 1), entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example for the specific energy consumption) and planning periodic improvement targets and related actions. The plan is adapted to the specificities of the installation'.

BAT 23 requires both techniques below to be employed:

BAT 23a: An energy efficiency plan entails defining and calculating the specific energy consumption of the activity (or activities), setting key performance indicators on an annual basis (for example, specific energy consumption expressed in kWh/tonne of waste processed) and planning periodic improvement targets and related actions.

BAT 23b: An energy balance record provides a breakdown of the energy consumption and generation (including exportation) by the type of source (i.e. electricity, gas, conventional liquid fuels, conventional solid fuels, and waste). This includes:

(i) information on energy consumption in terms of delivered energy;

(ii) information on energy exported from the installation;

(iii) energy flow information (e.g. Sankey diagrams or energy balances) showing how the energy is used throughout the process.

The energy balance record is adapted to the specificities of the waste treatment in terms of process(es) carried out, waste stream(s) treated, etc.

4 Energy Review and Usage Summary

4.1 Key Energy Sources

Key energy sources have been identified as:

- Kerosene-fuelled boilers for steam generation.
- Electricity for process machinery, cooling, packaging, pumping, and Cleaning in Place (CIP) systems.
- Fuel for transport, mainly incoming deliveries and outgoing product dispatch.

4.2 Energy-Intensive Activities

Pasteurisation, evaporation, CIP, refrigeration, and effluent treatment are identified as the most energy-intensive operations. Energy consumption will be monitored to identify opportunities for improvement.

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5 Existing Energy Efficiency Measures

The following energy efficiency measures have been developed at the Site:

- Heat exchangers on pasteurisers
- Heat recovery system
- Economisers installed on Boilers – located on the exhaust of the boiler, the water supplying the boiler is preheated by heat from the outgoing gas.
- Steam recovery in place on both Boilers.
- Boiler maintenance programme to ensure combustion efficiency.
- Regular equipment servicing to reduce mechanical losses and inefficiencies.
- LED lighting in place for the majority of the Site; working towards a figure of 95% LED lighting across Site.
- Manual process control systems
- Renewable energy from solar generation on-site, which provides approximately 30% of the electricity required to operate the Site.

6 Planned and Ongoing and Improvements

Objectives and performance indicators will be reviewed annually as part of the management review process. Where targets are not met, root cause analysis will be conducted, and corrective actions implemented to restore compliance and drive improvement.

Current proposed improvements include:

- Boiler upgrade review: Under evaluation (the carbon footprint of replacing the boiler itself should also be considered too early in the units' lifetime); improved fuel efficiency and potential emissions reduction.
- Pump and motor audit: Planned to reduce parasitic electrical load at every opportunity.
- Heat integration study: Planned; reduce steam demand for other thermal processes.

7 Monitoring and Reporting

Quarterly reviews of energy consumption by process area are conducted. Energy intensity KPIs (e.g., MWh per tonne of milk processed) will be tracked. Annual reporting on energy performance will be submitted as part of ensuring permit compliance.

Energy balance records are kept and reviewed annually and will be reviewed alongside this EEP. For example, energy production in 2024 was recorded to be:

- Mains electricity consumption: 1327.4136 MWh
- Solar electricity consumption (from on-site solar generation): 558.929 MWh

8 Staff Training and Awareness

Energy awareness is embedded in the site's Environmental Management System (EMS). Relevant staff are trained to:

- Recognise signs of energy waste (e.g., steam leaks, inefficient compressor use).

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- Participate in continuous improvement discussions.

9 BAT Compliance Statement

The site’s energy strategy is consistent with the Best Available Techniques for the Food, Drink and Milk sector (BAT Reference Document, 2019), specifically:

- BAT 6: Establishing and reviewing an energy efficiency plan.
- BAT 8: Energy recovery where feasible.
- BAT 10: Preventing energy losses (e.g., via steam and heat losses).
- BAT 11: Monitoring of energy use at key sources.

10 Conclusion

The site is committed to continual improvement in energy efficiency, both for environmental performance and operational cost savings. Implementation of planned measures and adherence to BAT will ensure energy is used responsibly and in line with regulatory expectations.

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