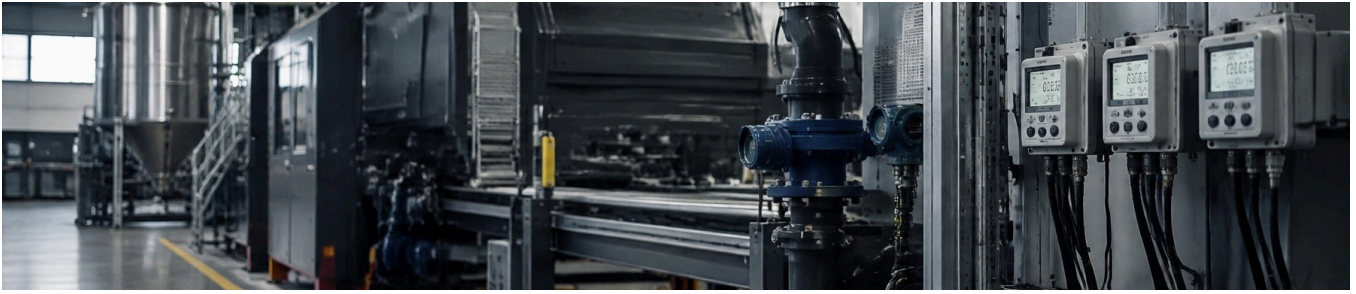


Heat in Manufacturing

Assessing usable heat sources and demands before committing to any technology.



West Yorkshire Manufacturing Services (WYMS) is a charity built by manufacturers, for manufacturers, supporting the future of manufacturing and engineering through workforce development, industry collaboration and business support. This session was delivered at Junction25 at WYMS, Brighouse.

Start with the audit, not the technology

Heat decisions go wrong when the technology is chosen first. The disciplined sequence is to establish what heat the site rejects, what heat it needs, and whether the two can be matched. That means pinning down every significant heat source and every significant demand on three things: temperature, timing and location.

Sources and demands: what to characterise

Temperature

The grade of the heat. A heat source is only usable for a demand at or below its temperature, and every temperature lift required by a heat pump carries an efficiency and cost penalty.

Timing

When heat is available and when it is needed. A steady source paired with a steady demand is straightforward. Mismatched profiles may need storage or scheduling.

Location

The physical distance between source and demand. Heat is expensive to move over distance, so proximity often determines whether an opportunity is practical at all.

Assumed known

This download assumes you are already familiar with heat cascading and heat recovery basics: using high-grade heat first, then passing lower-grade reject heat to lower-temperature demands rather than venting it. The focus here is on the assessment that decides whether those principles have something to work with on your site.

Heat pumps: a site-specific decision

Heat pumps are frequently presented as a default choice. On manufacturing sites they are a genuine engineering and commercial judgement, and the honest framing is a trade-off between emissions and operating cost:

- **Emissions.** Electrifying heat removes combustion at the point of use. Whether site emissions actually fall depends on the carbon intensity of grid electricity, which has trended downward and continues to do so. This is an emissions argument that strengthens over time.

- **Operating cost.** Electricity per kWh costs more than most fuels per kWh. A heat pump offsets this through its coefficient of performance: it delivers more heat energy than the electricity it consumes, and the ratio improves the smaller the temperature lift. Whether the site is better or worse off in cash terms depends on the temperature grades involved, the fuel being displaced, current tariffs and future electricity price expectations. Neither argument resolves on its own. The honest test is simple: set your site's numbers against what the existing or replacement combustion plant would have cost to run and to maintain. Which case wins? Where the temperature lift is small and the heat demand is steady, the case is usually stronger. If the temperature lift is large or the demand is intermittent, look harder before you commit.

Practical sequence

- Map every heat source above ambient, with its temperature, quantity and hours of availability.
- Map every heat demand, with the temperature it actually requires, when it is needed and where.
- Match before you buy: recovery and cascading first, because they move existing heat at low cost; heat pumps where a specific, well-characterised demand justifies the electricity premium.

Solar and the electricity question

Electrifying heat, or adding heat pumps, increases site electricity demand. That has two consequences worth checking before any heat decision is finalised:

- **Supply capacity.** New electrical load adds to peak demand on the existing connection. Confirm the headroom available before committing.
- **Solar as a counterweight.** Where additional electricity demand is expected, on-site generation can offset part of it. Whether solar could meet that additional demand depends on the site's roof or land availability, the scale of the new load, and crucially the timing: solar generates in daylight hours, so it offsets electricity used during the day far better than electricity used overnight or in winter. Assess the additional load's profile against the generation profile rather than assuming a simple offset. Solar sizing is covered in its own download in this series. The point for heat decisions is simply that the two should be considered together, not in sequence.

Next step

Heat projects live or die on site-specific assessment. If the source and demand match view suggests something worth pursuing on your site, we can run the full feasibility and the DNO and supply capacity work behind it. Email hello@hawleyenergy.co.uk to start the conversation. www.hawleyenergy.co.uk/wyms | 01484 958761

Scan for the full WYMS resource hub: guides, spreadsheets and templates, no account needed.
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About Hawley Energy

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