Today's Speaker

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Contact Richard for any questions after the webinar
Agenda – Industrial Waste Heat Recovery

- What is it
- Potential
- Benefits
- Barriers
- Government support to address barriers
- How to access Government help
Industrial Waste Heat Recovery – What is It?

- Valuable technique to improve the efficiency of industrial plant and processes
- Can produce a range of benefits, including:
  - Reduced operating costs
  - Improved environmental performance (CO$_2$, NOx, SOx), and
  - Improved process control and productivity
- Three necessary components to it:
  - An accessible source of waste heat (e.g. combustion and process exhausts, cooling fluids, air compressors)
  - A heat recovery technology (e.g. regenerators and recuperators, economizers, waste heat boilers, thermoelectric generators)
  - An end use of recovered heat (pre-heating, hot water and steam generation, electricity generation)
Industrial Waste Heat Recovery – Hierarchy of Projects

1. Don’t produce the waste heat in the first place, then ✗
2. Minimise the waste heat from the process, then
3. Recover and reuse in the process that generated it, then
4. Recover and reuse in a process directly linked to the process that generated it, then
5. Recover and reuse elsewhere in the site not linked to the process that generated it
6. Sell to a third party, only then
7. Reject the heat to the environment ✗
There is significant potential for waste heat recovery and reuse in UK industry

The technologies necessary to tap into this potential are, in the main, available now

Industrial Decarbonisation Roadmaps for all eight of most heat intensive sectors have waste heat recovery featuring as an important measure for decarbonisation to 2050

Separate work carried out for the Government identified 48 TWh of waste heat being generated at 73 largest UK industrial sites

It is technically feasible to recover and reuse 11 TWh of this heat, with 7 TWh being economically recoverable and 5 TWh being commercially recoverable

The projects in scope include those for recovery and reuse in the same process on the same site, reuse in different processes on the same site, reuse on an adjacent site and power generation

The actual potentials will be larger than this, as the figures only relate to 73 large industrial sites in eight sectors
Industrial Waste Heat Recovery – Benefits

- Reduction in fuel costs faced by industry
- Reduction in CO₂ and other combustion related emissions, such as NOx and SOx
- Increased industrial productivity
- Improved position against Climate Change Agreement targets (if you have one) and financial position within EU ETS (if you are covered).
Industrial Waste Heat Recovery – Barriers (Financial)

- High up-front costs beyond ‘business as usual’ considerations, exceeding the CAPEX available
- Payback periods are too long, with payback periods of 1-3 years typically being sought by industry
- Even when an acceptable length, the payback period is longer than for other investment opportunities competing for the same funds, resulting in lower priority for heat recovery projects
Industrial Waste Heat Recovery – Barriers (Technical)

- Technical challenges with understanding the feasibility of heat recovery projects
- Limited technical resource for identifying and evaluating heat recovery opportunities
- Sites not having confidence in payback calculations for heat recovery technologies presented by suppliers of those technologies
Government considers that decarbonisation of industrial heat is a key if the UK is to meet its longer term decarbonisation targets.

Government considers that CO₂ associated with industrial heat will have to reduce by 70% by 2050 c.f. 2009.

Improving the efficiency with which heat is generated and consumed is a near term measure capable of making a significant contribution to industrial heat decarbonisation.

Heat recovery and reuse is a major part of improving the efficiency with which heat is generated and consumed in industry and is an important measure underpinning the decarbonisation Action Plans for the most heat intensive industries.

There is significant untapped potential for waste heat recovery and reuse in industry.

But, there are a number of barriers getting in the way of this potential being fulfilled.

Taking all of the above into account, Government has decided to intervene by providing support to industry to overcome these barriers - Industrial Heat Recovery Support (IHRS) Programme.
Industrial Heat Recovery Support (IHRS) Programme (General)

What is it – Grant funding programme run by Department for Business, Energy and Industrial Strategy (BEIS) to support the scoping out and implementation of projects to recover and utilise surplus heat

Launched - October 2018

Purpose - Address the previously mentioned financial and non-financial barriers. Bring forward heat recovery projects in industry that otherwise wouldn’t happen. Build industry confidence in implementing projects. Provide demonstration exemplars

Who is eligible – Manufacturing sites located in England and Wales whose activities fall under Standard Industrial Classification (SIC) codes 10-33. Also open to data centre HVAC and ancillary systems

How much money is available - £18m available in total. £4.2m for feasibility studies and preliminary engineering. £13.8m is available for detailed design and capital delivery
Industrial Heat Recovery Support (IHRS) Programme (Types of Project You Can Apply for)

- You can apply for projects that recover heat from an **existing** process and use it in one of the following ways:
  - On site to satisfy existing or potential heating or cooling demand.
  - Off site to satisfy existing or potential heating and cooling demand.
  - Convert it to mechanical or electrical power

- Note the inclusion of **cooling demand** – Application of Absorption Chillers is in scope

- Where demand satisfied is ‘**potential**’, it must be commercially viable
Industrial Heat Recovery Support (IHRS) Programme (Eligible Activities)

### Project Concept and Definition (Phase 1)

- Feasibility Study
- Preliminary Engineering

### Project Capital Delivery (Phase 2)

- Detailed Design
- Construction
- Commissioning
- Operation and Start-up
- Monitoring and Evaluation
## Industrial Heat Recovery Support (IHRS) Programme (Amount of Funding Available)

<table>
<thead>
<tr>
<th>Phase</th>
<th>Activity</th>
<th>Maximum Aid Intensity*</th>
<th>SME Uplifts</th>
<th>Assisted Areas</th>
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</thead>
<tbody>
<tr>
<td><strong>Phase 1 Concept and Definition</strong></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
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<tr>
<td></td>
<td>a) Feasibility study</td>
<td>Up to 50% of eligible costs</td>
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<td></td>
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<td></td>
<td>b) Preliminary engineering</td>
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<tr>
<td><strong>Phase 2 Project Capital Delivery</strong></td>
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<td></td>
<td>An additional 5 to 15% depending on project location</td>
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<tr>
<td></td>
<td>a) Detailed design</td>
<td>Up to 30% of eligible costs</td>
<td>Up to an additional 20% Medium Enterprise – Up to an additional 10%</td>
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<tr>
<td></td>
<td>b) Construction</td>
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<td></td>
<td>c) Commissioning</td>
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<td>d) Operation and Start-up</td>
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<td></td>
<td>e) Monitoring and Evaluation</td>
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**Additional criteria:**
- Maximum grant award for Ph1(a) + Ph1(b) + Ph2 (a) = £290k
- Maximum grant award for PH2 (b-e) = £1.5 m
Industrial Heat Recovery Support (IHRS) Programme (Opportunities to Apply)

- Applications are being received now
- Continuously open application window running until the end of September 2019
- Applications received are not assessed continuously, but assessed during assessment windows, each of 2 months duration
- There are four assessment windows remaining for each of Phase 1 and Phase 2 applications

<table>
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<tr>
<th>Assessment Window</th>
<th>Submission Deadline for Assessment Window</th>
<th>Assessment Window</th>
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<tbody>
<tr>
<td>Phase 2 Assessment Window 2</td>
<td>29-Mar-19</td>
<td>1-Apr-19 to 31-May-19</td>
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<tr>
<td>Phase 1 Assessment Window 3</td>
<td>29-Mar-19</td>
<td>1-Apr-19 to 31-May-19</td>
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<tr>
<td>Phase 2 Assessment Window 3</td>
<td>31-May-19</td>
<td>1-Jun-19 to 31-Jul-19</td>
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<td>Phase 1 Assessment Window 4</td>
<td>31-May-19</td>
<td>1-Jun-19 to 31-Jul-19</td>
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<td>Phase 2 Assessment Window 4</td>
<td>31-Jul-19</td>
<td>1-Aug-19 to 30-Sep-19</td>
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<td>Phase 1 Assessment Window 5</td>
<td>31-Jul-19</td>
<td>1-Aug-19 to 30-Sep-19</td>
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<tr>
<td>Phase 2 Assessment Window 5</td>
<td>30-Sep-19</td>
<td>1-Oct-19 to 30-Nov-19</td>
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<tr>
<td>Phase 1 Assessment Window 6</td>
<td>30-Sep-19</td>
<td>1-Oct-19 to 30-Nov-19</td>
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1st step is register with BEIS on: https://www.gov.uk/guidance/industrial-heat-recovery-support-programme-how-to-apply

When you register, you will have to tell BEIS what the next step is for your project. This would be either:
- Feasibility Study and Preliminary Engineering
- Preliminary Engineering only (if Feasibility Study already carried out)
- Capital Project Implementation (if all previous stages completed)

You do not have to have completed earlier project stages inside of the programme to be eligible for a later project stage

Then you will be given something known as a ‘Checkpoint Form’ to complete and return

If all is in order, you will be given an application workbook to complete, either for Phase 1 or Phase 2, depending on the stage of your project
Industrial Heat Recovery Support (IHRS) Programme (Assessment Criteria)

● Your application will be assessed against the following criteria:
  – Criterion 1 Technical Concept/Design
  – Criterion 2 Delivery Plan
  – Criterion 3 Cost, Finance and Additionality
  – Criterion 4 Wider Benefits
  – Criterion 5: Value for Money (Phase 2 only)


My Other Blogs


Thank you – Questions?
Todays Speaker

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