

Turning waste heat into opportunity in industrial facilities

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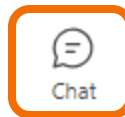


Before we get started...

If waste heat is energy that your facility has already paid for, what is the strongest reason not to leave it unused?

- A. We could reduce fuel use
- B. We could reduce costs
- C. We could improve energy performance
- D. We could reduce exposure to energy price changes
- E. We do not yet know enough to judge the opportunity

**Type your response
in the chat!**



Q&A



People



Raise



React

Why recovering waste heat matters

Even small recovery opportunities can deliver meaningful value.

Waste heat recovery supports:

- Reductions in fossil fuel and natural gas consumption
- Cost savings
- Stronger operating margins
- Competitiveness
- Progress toward climate targets



Expanded Energy Management (EEM) program overview

The Expanded Energy Management Program (EEM) is offered by Save on Energy with financial support for industrial facilities from Natural Resources Canada (NRCan) as part of its Green Industrial Facilities and Manufacturing Program. It provides support for industrial, commercial and institutional facilities in Ontario to improve their energy performance with energy savings opportunities in four areas:

- Energy manager support
- Expanded Strategic Energy Management cohorts & curriculum
- Energy management systems (EMIS)- Industrial only
- Energy practitioners training - Industrial only



Learn more at saveonenergy.ca/eem

Benefits of participation in Energy Manager



Up to 50% of Hiring or Retention Cost

- Recruitment
- Salary
- Benefits
- Training
- Professional dues



Coaching

- Periodic check-ins with a coach to monitor progress and develop an energy management plan



Activities

- Energy Management Assessment (EMA)
- Development of an M&V approach
- Optional Energy Scan



Training

- Optional meet-ups and clinics to support strategic planning
- Access to asynchronous learning

•Funding limit: up to **\$100,000** per facility per year

Energy management information systems (EMIS)

EMIS incentives are available through Save on Energy's Expanded Energy Management Program.

Industrial facilities can receive incentives covering up to 50% of eligible costs for EMIS implementation:

1. \$50,000/facility with $\leq 400,000$ GJ in annual baseline consumption (all fuels)
2. \$250,000/facility with $> 400,000$ GJ in annual baseline consumption (all fuels)

An EMIS includes measurements, networks, data storage, energy management information, people and management processes.

Projects must be completed before **February 2027** while funding is available. To start your application process, **please email** SEM@ieso.ca.

Financial support for industrial facilities participating in the Expanded Energy Management Program is provided by Natural Resources Canada (NRCan) as part of its Green Industrial Facilities and Manufacturing Fund.

Welcome our guest expert



John Rathbone, P.Eng.
Chief Executive Officer
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What you will be able to do by the end



Identify common waste heat recovery sources



Understand basic screening logic



Recognize common pitfalls

Follow along in the Participant Workbook!



Have the workbook open or printed out to follow along

Where to find the workbook:

- Included in the invitation
- In the chat

Watch for this icon to help follow along



What might happen every day

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Compressor works

The compressed air system is working hard. Significant heat is produced.



Heat is discarded

Heat is being pushed away as a nuisance. No one sees it as a resource.



Meanwhile...

Energy is purchased to heat nearby spaces. A recoverable resource goes unused.



Looking at the compressed air scenario, what does this make you notice or wonder about waste heat recovery in your own facility?

Heat is invisible and unowned

What a strong waste heat opportunity looks like

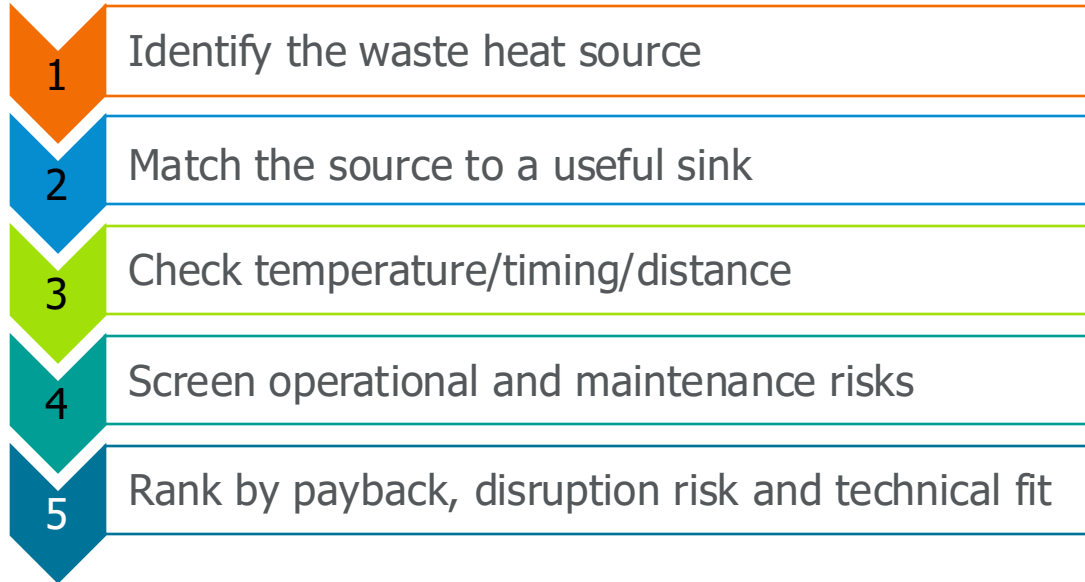


Waste heat becomes an opportunity when it has:

- A useful heat source
- A real destination
- A practical path
- And there is a clear reason to proceed

Source-to-sink screening workflow

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Several key concepts to consider:

- Source quality
- Heat demand
- Temperature fit
- Time coincidence
- Location
- Site-specific constraints
- Operability and maintenance
- Business case and ownership

Case study: A promising opportunity

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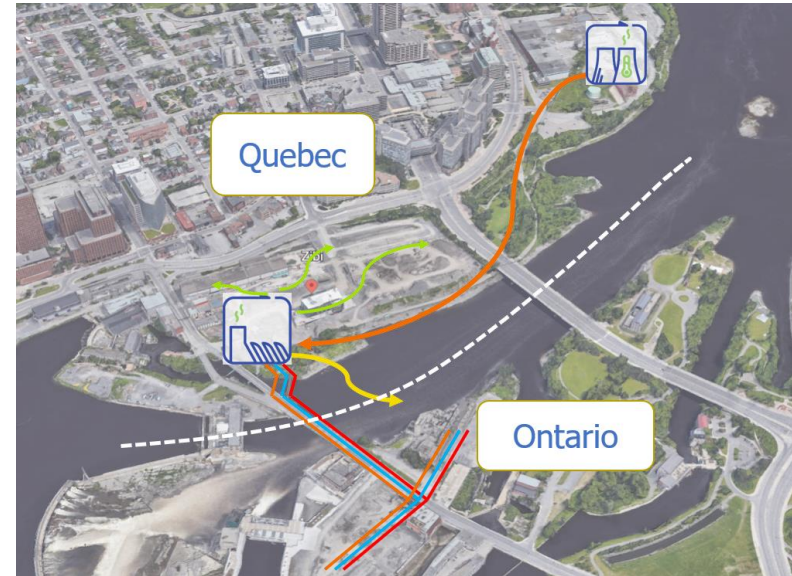
Need: Net-zero community goal

Source: Kruger tissue mill waste heat

Sink: Heating and domestic hot water demand

Path: District energy system and utility ownership

Value: Grants, operating savings and resilience



Case study: Would Zibi pass a first-pass screen?



Screening question	First pass
Is there a usable source?	Yes.
Is there a real sink?	Yes.
Does the timing work?	Mostly yes.
Can the heat be moved?	Yes, but it with difficulty.
Can it be operated reliably?	Only after solving issues.
Is the value strong enough?	Yes.

Capture risk

Paper debris clogged the heat exchanger, so filters were added.



Distribution risk

Piping had to cross the Ottawa River, bridges and rocky site conditions.



Case study: Unexpected risks during implementation

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Construction quality

Pipe ends were left unprotected during construction, allowing dirt and rock into the system.



Accidental pipe damage

An excavator accidentally damaged buried district energy piping during nearby construction.



Case study: Zibi project results (at full build-out)



- Energy consumption reduction of 27,576 GJ below baseline (61.5%)
- Water reduction of 8,000 m³/year from district energy system closed-loop design that does not require decentralized cooling towers
- Four hectares of contaminated land put back into productive use
- Reduction from 20 °C to 6° C in the temperature of industrial effluent water returned to the Ottawa River in winter, removing a pocket of water that supports invasive species in winter months

Practice scenario: Worth a first-pass screen?

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Read the scenario in your workbook and answer the question:

Using the screening workflow, what should the team do next?

- A. Rule the option out because compressor heat is too low grade.
 - B. Identify operational and maintenance risks before proceeding.
 - ✓ C. **Prioritize the option for a first-pass screen and gather basic data.**
 - D. Install a heat recovery ventilator or glycol loop.
- What is the one missing piece of information you would want first?**



Case Study: Ivaco Rolling Mills

- Energy-efficiency projects supported by Save on Energy incentives
- Waste heat from furnace to preheat scrap metal
- \$4,988,000 (Total incentive)
- 21,700 MWh (Total annual electricity savings)
- 2.2 MW (Total annual demand savings)
- \$1 million (Expected total annual cost savings)
- 8 years (Expected project payback)



What would you do next?

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Identify one possible waste heat source

Gather basic source/sink information

Check timing or distance with operations

Speak with maintenance staff about operability

Flag one opportunity for further screening

Additional support and resources

- **Team up for energy savings: Waste heat recovery**: A guide with practical, low-cost waste heat recovery opportunities and retrofit ideas for energy managers
- **CanmetENERGY's free INTEGRATION software**: Free software that helps identify heat recovery opportunities in boilers, refrigeration and compressed air systems
- **Reducing energy waste with heat recovery**: An overview of heat recovery with concepts applicable to industry
- **Waste heat recovery basics**: A resource hub with links to waste heat recovery publications, tools and guidance
- **Heat recovery with compressed air systems**: A fact sheet outlining heat recovery opportunities for compressed air systems

Stay connected with tools and resources

- Virtual one-on-one coaching: [Post-webinar support intake form](#) for tailored support for organizations to manage energy resources effectively
- Monthly bulletin: [Sign up](#) to receive monthly training updates on all Save on Energy training and support for new tools and resources
- [Live training calendar](#): Visit this page to easily register for upcoming events and workshops
- [Training and support webpage](#): Visit this page to access all training and support materials

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