

Moving from Energy Monitoring to Context-Aware Action with Industrial Internet of Things (IIoT)

Presenter: Jay Mullin

Guest Speaker: Josh Edwards



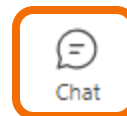
09/02/2026

Before we get started...

Your facility already collects energy and operational data. Which statement best describes your biggest challenge?

- A. We do not have enough or the right data.
- B. We have data, but they do not help answer the questions we need answered.
- C. We know something is not right, but we do not know where to investigate.
- D. We spend too much time reviewing dashboards manually.
- E. I am not sure.

**Type your response
in the chat!**



Why the Industrial Internet of Things (IIOT) matters in energy management

Data alone rarely leads to action.

The IIoT helps energy managers:

- Connect operational and energy data
- Add the context needed to understand what is happening
- Detect meaningful changes sooner
- Respond with greater confidence



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



Josh Edwards

Senior IoT Developer

What you will be able to do by the end



Recognize when the IIoT can add value



Apply the Signal-to-Action Loop



Identify a potential opportunity in your facility

Follow along in the Participant Workbook!



Have the workbook open or printed out to follow along

Where to find the workbook:

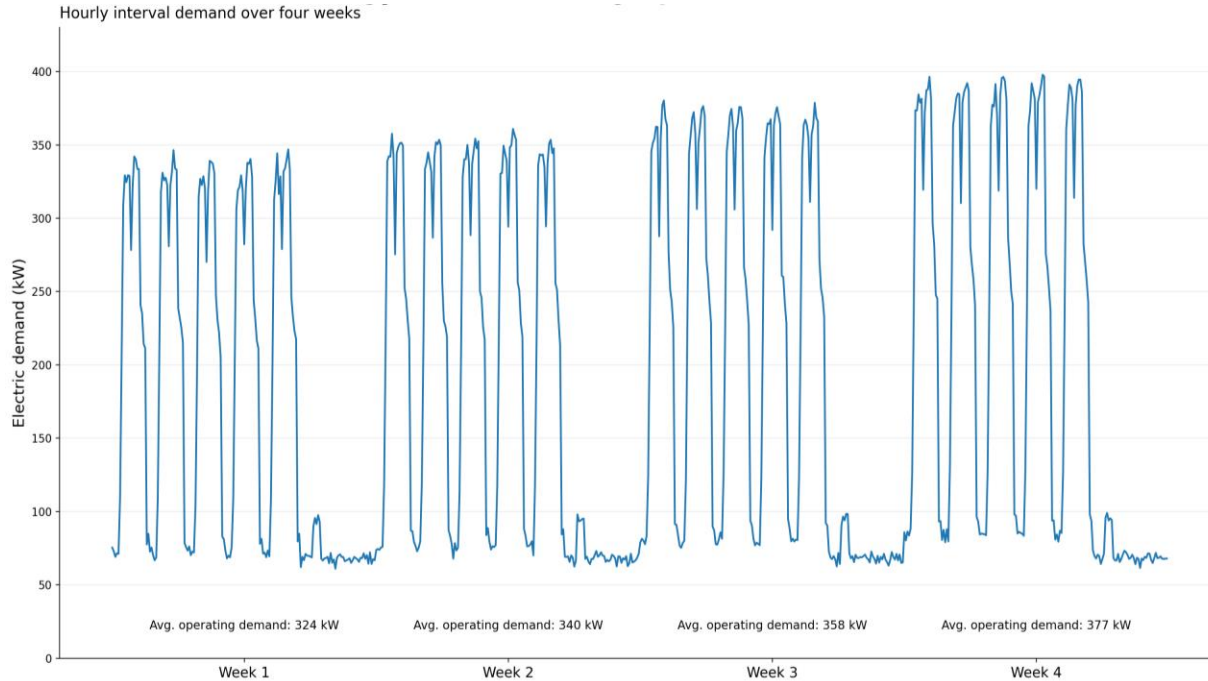
- Included in the invitation
- In the chat

Watch for this icon to help follow along



Something has changed...

1



Different products with various energy needs.

Energy use is trending up.

Thinking about your own facility, where do you rely on experience or manual investigation to determine whether something has actually changed?

How do we know when the IIoT is the right solution?

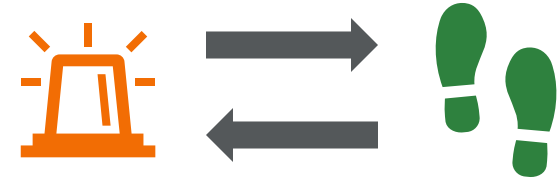
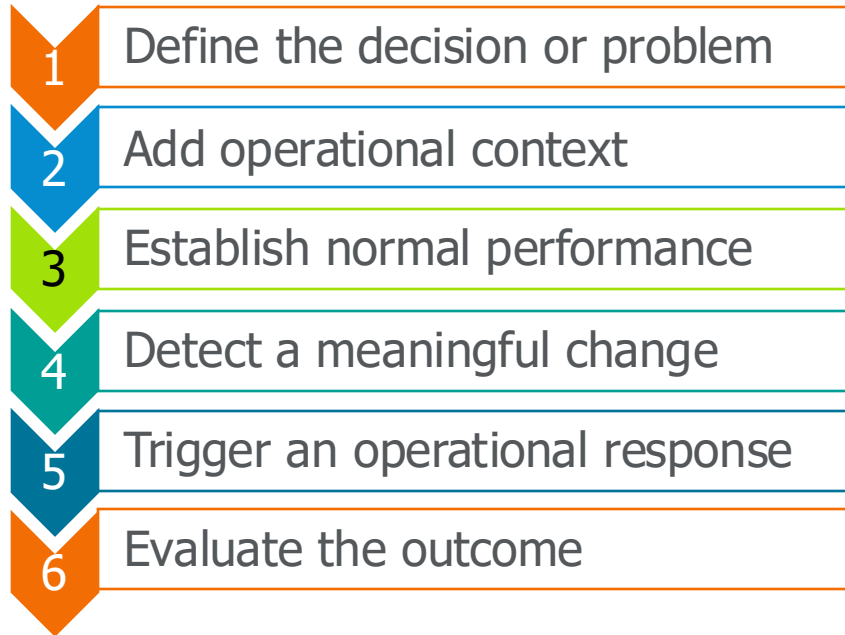
What a strong IIoT use case looks like



A successful IIoT initiative:

- Solves a meaningful operational or energy challenge
- Produces information that people can act on
- Leads to timely investigation and better decisions

Signal-to-Action Loop



Is the IIoT the right tool?

4

When multiple data sources and operational context are needed



When a single source or simple alarms are enough



A high-volume automotive press shop

- 52 presses
- 12 stamping lines
- Around 2,000 units per day

The hidden issue: a press could meet quality and production targets and used more energy than needed.



**No scrap. No alarm.
Still wasted energy.**

Existing signals

- Motor power
- Press tonnage
- Press settings
- Part and die identity

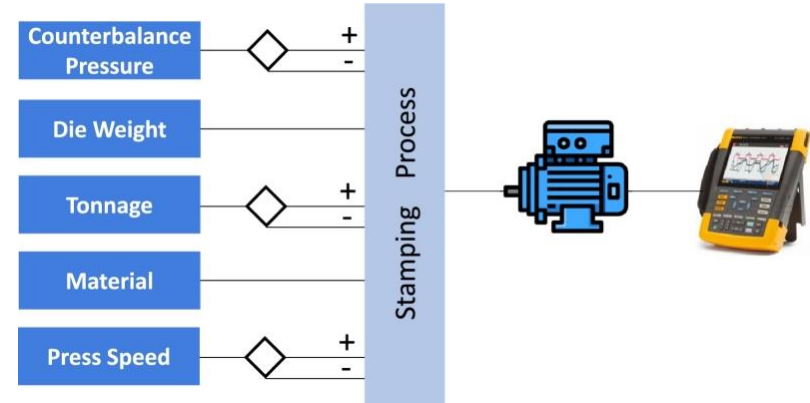


Diagram of the variables that affect energy use

This part + this die + this setting = this energy use

Case study: from hidden signal to one precise change

5

- Roof panel pressed at up to 2,300 tonnes
- Same operation on another line: ~1,500 tonnes
- Cause traced to new settings after a die transfer
- Action: slide regulation height increased by 2 mm



Car body part - roof

- Applied force on the roof panel was reduced by **674 tonnes**.
- Energy consumption was reduced from **416 kWh to 359 kWh** over one hour of operation, saving **57 kWh or 13.7%**
- Part quality was maintained after the press setting was adjusted.
- When the same approach was applied across **10 car body parts**, the manufacturing settings for only one part had been optimized. Adjusting the press parameters for the **other nine parts** resulted in **overall energy savings of 7.18%**.

Source: "A framework to reduce energy consumption in a press shop floor based on industrializable IIoT," Heliyon, 2024.

From IIoT insight to an XLerate Opportunity I

The case study demonstrated how IIoT can:

- Combine production, operational and energy data.
- Detect excessive press force that did not affect product quality.
- Identify a precise adjustment that reduced energy consumption.
- Verify that energy savings were achieved while maintaining production quality.

Identifying the opportunity was the first step. The Save on Energy XLerate program can help support the implementation of eligible industrial process improvements

From IIoT insight to an XLerate Opportunity II

The XLerate Program specifically supports:

- Large-scale energy-efficiency projects
- Projects applied to an industrial process
- Measurement and verification (M&V) of results
- Projects achieving at least 600 MWh/year electricity savings



From IIoT insight to an XLerate Opportunity III

- Potential XLerate support
 - Feasibility study: 50% cost-shared funding, up to \$100,000.
 - Project support: Guidance from initial scoping through measurement and verification.
 - Project incentive: \$300/MWh, up to 75% of eligible costs and a maximum of \$15 million.
- This is exactly the type of industrial process opportunity that could lead to a larger energy-efficiency project.
- Similar projects in Ontario may be eligible for support through Save on Energy's XLerate Program

XLerate Program highlights

Incentives for large-scale energy-efficiency projects in support of an **industrial process**



Project feasibility study

funding, 50% cost shared up to \$100,000



Comprehensive support services

from initial scoping to measurement and verification



Project incentives of **\$300/MWh up to 75% of eligible costs, up to \$15 million**

Practice scenario: detecting unexplained compressed air use

6

Read the scenario in the Participant Workbook and answer the following question: **Which approach would best distinguish normal production-related demand from unexplained compressed air consumption?**

- A. Model airflow from total units produced and shift schedule, then flag sustained deviations from the fitted baseline
- B. Model airflow separately for each product and production rate, then flag readings above the expected range for each product
-  C. Model airflow from product, cycle count, machine state and pressure, then flag sustained deviations from healthy operation
- D. Model compressor power from total plant output and system pressure, then flag changes in the calculated base loads

Once a sustained deviation is detected, who should receive the signal and what investigation should it trigger?

What would you do next?

7

Define an operational question you want to answer

Discuss a potential IIoT use case with operations and maintenance staff

Identify where additional operational context could help address an existing energy management challenge

Evaluate whether an existing problem can be resolved using current systems before considering the IIoT

- **Digitalization in electric motor driven systems**: a concise overview of how digitalization turns operating data into energy improvements
- **Operations that support energy management information systems**: a resource that explains why monitoring technology alone does not create savings
- **What have we learned about motor system efficiency?** a short 2026 reflection emphasizing system-level optimization rather than improving individual components
- **ISA-95 evolves to support smart manufacturing and the IIoT**: a resource that discusses the importance of contextualizing data from different plant systems
- **Leverage points: places to intervene in a system**: a systems-thinking essay explaining why better information flows and feedback loops can improve an entire system without rebuilding its physical infrastructure

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

Thank you

SaveOnEnergy.ca

saveonenergy@ieso.ca



@SaveOnEnergyOnt



facebook.com/SaveOnEnergyOntario



linkedin.com/showcase/SaveOnEnergy-Ontario



instagram.com/saveonenergy