Forging Manufacturers

Application Notes

by FreePoint Technologies Inc.

About **Forges**

INDUSTRY OVERVIEW

Forging manufacturers shape metal by using calculated force and extreme temperatures. Typically using a power hammer or die, the metal is shaped for its intended purpose.

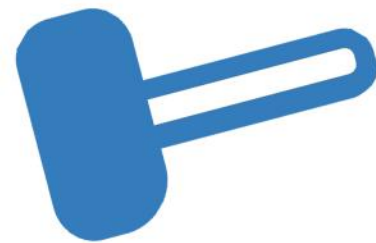Forged parts vary in size and can be customized to fit any shape or purpose.

Examples of Machines Monitored:

• Induction Furnaces

• Forge Hammers

• Trim Presses

• Cutting Saws

A typical forging workflow starts at the saw, followed by moving the metal through to the induction furnace, into the forge and onto the trim press.
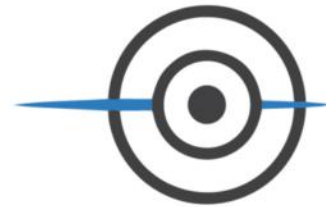
The Challenge

Induction furnaces radiate heat and RF (radio frequency) energy that can interfere with nearby devices. Even though frequencies emitted by induction furnaces are below a problematic range, multiple induction ovens operating in close proximity may still cause interference.

Because of this, forges are a difficult environment for most electronics that rely on RF communication, such as:

• Cellphones & Walkie-Talkies

• BlueTooth & Wifi

• IoT & Industrial Sensors

Legacy machines can also pose a challenge, as they may still be productive and effective, but their outdated controls make them hard to connect to data collection systems. Their size also makes them challenging to replace, whereas upgrading the control systems would be expensive.
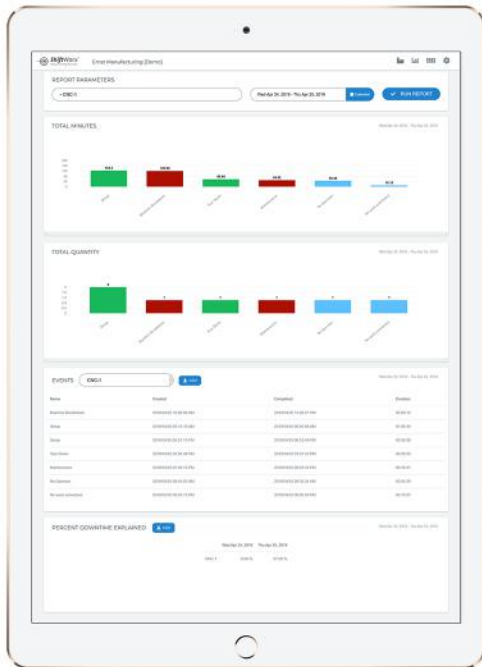
A forging operation tested bluetooth technology for monitoring their energy consumption on induction furnaces. However, the technology was unable to reliably monitor and transmit information due to interference.
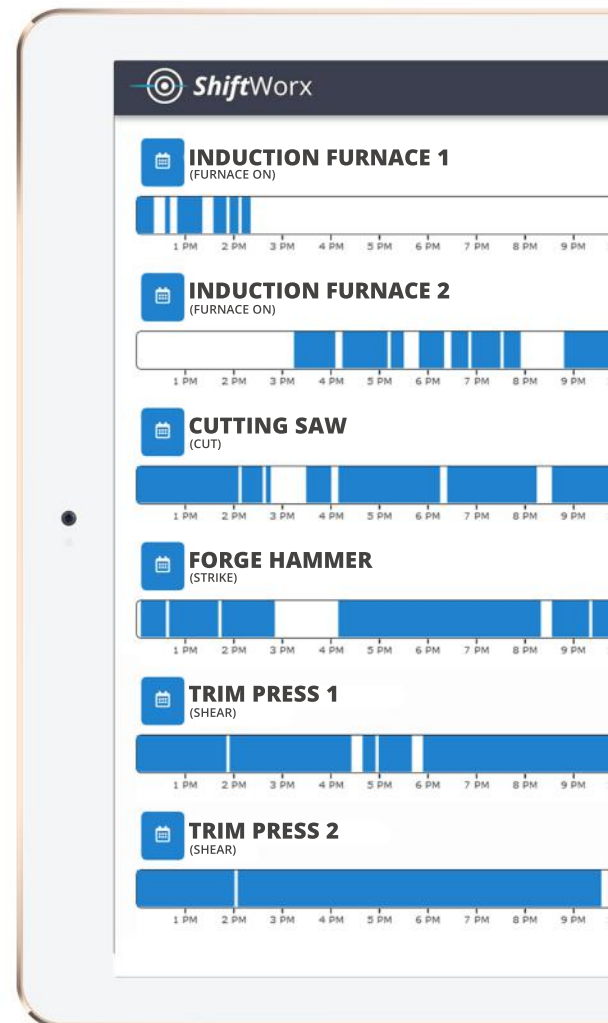
> **Regardless of heat, noise, or interference - FreePoint can monitor uptime data on your forging operation.**

ShiftWorx

INDUCTION FURNACE 1
(FURNACE ON)
1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM

INDUCTION FURNACE 2
(FURNACE ON)
1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM

CUTTING SAW
(CUT)
1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM

FORGE HAMMER
(STRIKE)
1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM

TRIM PRESS 1
(SHEAR)
1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM

TRIM PRESS 2
(SHEAR)
1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM

The Solution

FreePoint's IIoT implementation works successfully and non-invasively in this harsh forging environment - without modifications to machines or their control systems. Our hardware utilizes the *802.15.4 (IEEE standard)* as the physical connection layer and we have developed a *proprietary application layer* that solves the interference problem.

Most forge related machinery (induction furnace, forge hammer, trim press) have sealed control cabinets. By placing the *FreePoint 4i box* inside the control box and extending an external antenna, the 4i input box is protected from the environment as well as radio frequencies.

Also, the external antenna can be placed in an optimum position for communicating to the *CellMonitor* data collection unit.

With a 4i input box connected to the machine, you can track:

• **Machine Uptime/Downtime**   • **Part Count**   • **Hammer Count**

Narrative

By empirically capturing the uptime periods, FreePoint's Narrative software also allows all the downtime periods to be empirically captured and 'narrated' for cause, giving management critical insights into the reasons for downtime.

Notifications

Using our "Notifications" module, supervisors, managers and maintenance staff can be alerted via text or email whenever a critical machine has stopped for a defined period of time, minimizing or eliminating unnecessary down time.

The Outcome

Using the inputs gathered from the 4i input box, additional information can be calculated and measured empircally, such as:

• Strokes Per Part

• Scrap

• Downtime Reasons & Duration

• Available Capacity

Reports can also be generated for uptime by period, downtime by period, and available capacity.

This increased transparency often results in an increase in productivity right away. Engaging the operators through a very simple, intuitive "Narration" tool, does two things:

1. It collects empirical downtime information that facilitates "data driven decisions" on future investments

2. It engages the operators and makes them part of the solution, not the problem.

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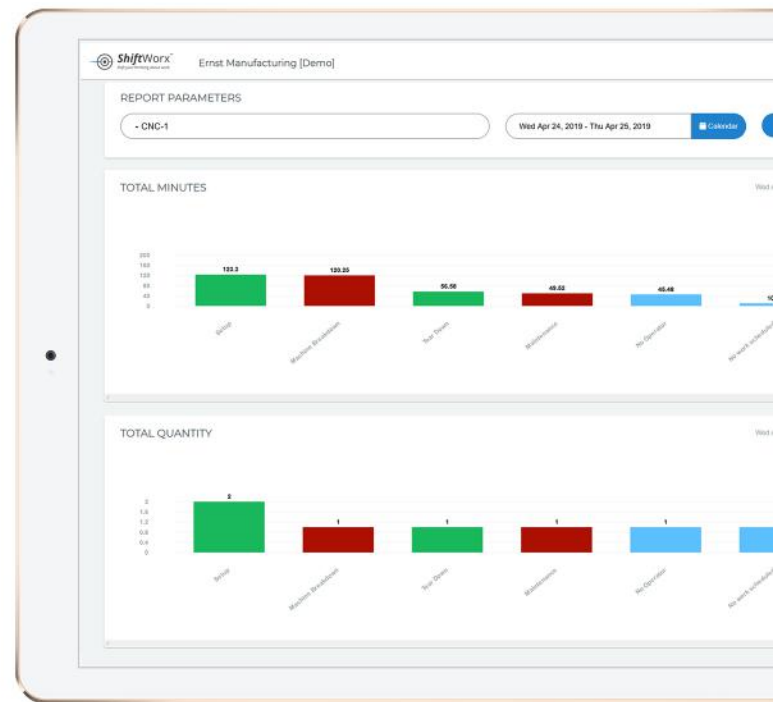
FreePoint's machine monitoring solutions meet the challenges of the harshest manufacturing environments.

Interested in an IIoT Solution?

Reach out to us today to speak with an Account Manager.

+1.800.682.0486
info@getfreepoint.com

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Technologies Inc.