

## Case study – Manual data & process management

**Abstract :** DALNEX developed the WELD INSIGHT solution for welding at heavy engineering industries like Thermax & Inox to help monitor welding machine production parameters and resources which resulted in increased plant efficiency.



### Problem statement

The quality standards and deadlines are becoming more stringent for industrial projects. Keep complete track of weld quality, operators, machines and resources at scale is difficult resulting in downtimes, losses and reduced efficiencies.



### Description of the solution

DALNEX developed Weld Insight for industries to help monitor SAW & TIG welding machine production, quality, energy consumption, track machine performance, raw material & operator utilization and projects at hand.

Weld Insight is an end to end IoT solution starting from parameter identification, data generation, data analytics, reporting and representation dashboard. The architecture includes PLCs-HMI panels, sensors, IoT Gateways, database and a Web based dashboard.



### Business impact / RoI

WELD Insight enabled:

- Better Production
- Improved Resource Planning
- Reduced Unwanted Losses
- Efficient Reporting
- Higher Quality

The solution took approximately 4 months for designing and deployment.

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**Weld-Insight** Admin

Dashboard Console Master Operations Analysis Reports About

Shop 1 Date: 08/12/2020 GO

**Code: inx002**  
Name: Machine2

Energy Consumption: 0 kWh  
Wire Consumption: 0 kg  
Arc Time: 00:00:00  
Down Time: 00:00:00

**Code: inx003**  
Name: Machine3

Energy Consumption: 0 kWh  
Wire Consumption: 0 kg  
Arc Time: 00:00:00  
Down Time: 00:00:00

**Code: inx004**  
Name: machine4

Energy Consumption: 0 kWh  
Wire Consumption: 0 kg  
Arc Time: 00:00:00  
Down Time: 00:00:00

**Code: inx005**  
Name: machine5

Energy Consumption: 0 kWh  
Wire Consumption: 0 kg  
Arc Time: 00:00:00  
Down Time: 00:00:00

**Code: inx006**  
Name: Machine 6

Energy Consumption: 0 kWh  
Wire Consumption: 0 kg  
Arc Time: 00:00:00  
Down Time: 00:00:00

**Code: saw001**  
Name: Machine Saw

Energy Consumption: 1268 kWh  
Wire Consumption: 1404 kg  
Arc Time: 00:00:00  
Down Time: 01:26:20

**Code: saw002**  
Name: Machine saw 2

Energy Consumption: 776 kWh  
Wire Consumption: 733 kg  
Arc Time: 00:00:00  
Down Time: 01:26:20

**Monthly Machine Wise Report**

Shop 1 saw002-Machin December 2020 GO

PDF EXCEL

Energy Consumption [kWh]	Wire Consumption [kg]	Arc Time [HH:MM:SS]	Down time [HH:MM:SS]
27498	27159	00:00:00	01:08:40

Day	Energy Consumption [kWh]	Wire Consumption [kg]	Arc Time [HH:MM:SS]	Down time [HH:MM:SS]
1	5891	5846	00:00:00	00:02:30
2	12622	12439	00:00:00	00:04:40

**Weld-Insight** Admin

Dashboard Console Master Operations Analysis Reports About

Daily Analysis Machine Wise

Step 1 saw002-Machin Date: 01/12/2020 GO

Hour Wise Shift Wise

Energy Consumption [kWh] Wire Consumption [kg] Arc Time [HH:MM:SS] Down time [HH:MM:SS]

5891 5846 00:00:00 00:02:30

**Energy Consumption [kWh]**



**Wire Consumption [kg]**



**Arc Time [HH:MM:SS]**



**Down Time [HH:MM:SS]**



# Top 10 Industry 4.0 Use cases

## Manual data & process management

**Solution:** Shop floor digitisation using AI and analytics  
**Business benefit:** Process improvement, paperless operation, high productivity and efficiency

## Manual inventory management

**Solution:** Paperless inventory management using AI & Analytics  
**Business benefit:** Lower material management cost

## Frequent machine failures

**Solution:** Predictive maintenance using IoT, AI and Analytics  
**Business benefit:** Planned shutdown, lower production loss, lower machine failure cost

## High Energy Cost

**Solution:** Smart Energy Management using AI, ML and IoT solutions  
**Business benefit:** Improved energy efficiency

## Product quality issues

**Solution:** Computer Vision/IoT Solutions for Quality Inspection  
**Business benefit:** Better quality control

## Low market reach

**Solution:** VR based plant visits  
**Business benefit:** Better customer reach

## IoT security

**Solution:** Cybersecurity based solutions  
**Business benefit:** Data protection, User access control, better security

## Compliance Management

**Solution:** Computer vision and AI based solutions  
**Business benefit:** Safety & Compliance

## Managing worker health & safety

**Solution:** AI & IoT based remote monitoring of worker's health  
**Business benefit:** Better worker mgmt.

## Remote customer / expert support

**Solution:** AR/VR based solutions  
**Business benefit:** Quick problem solving, remote outreach

