Renata - IIT/IIM Team

IoT, AI and Automation

renata
IoT, Data & Automation

Solutions

IoT, AI and Automation

Smart Manufacturing

- Machine Productivity
- Manpower Productivity
- Raw Material Productivity
- Product Traceability
- Digital Twin
  - Predictive Maintenance
  - Quality Control
  - Process Optimization
- AR/VR for
  - Maintenance, Safety, Assembly Training
  - 3D Product Prototyping

Industrial IoT

- Utilities – Grid supply, Solar, Fuel, PNG, Water, Gases, Compressed Air
- Environmental Sensors – Temperature, Humidity, Pressure
- Machine Health Monitoring - Vibration, Noise, Load etc.
- Industrial Appliances - Compressor, UPS, Chiller

AI

- Machine Vision based
  - Defect Inspection
  - Product Count
  - OCR
  - Barcode
  - Child-part Check
  - Product Classification
- CCTV Based
  - Safety
  - Compliance
  - Activity Monitoring
- Statistical Analysis + AI Recommendations

Process Automation

- Digitalization of SOPs
- SOP Monitoring
- RPA – Robotic Process Automation
- Robotics Integration
- CNC Tool Offset Automation
- Mechanical Automation
  - Sensors
  - Actuators
  - Scanners
  - Cameras

renata
IoT, Data & Automation

Customers

Hero

Continental

Subros

ASHIMORI

ROOP

JBM Group

CLUTCH F.C.C. TECHNOLOGY

DELFINGEN

75 DIDWANIA

BÖLLHOFF

MARELLI

GARWARE TECHNICAL FIBRES

ADVANCE VALVES
Changing the way you think about valves

dorsët

TRANS ACNR

interface

FSM
Smart Manufacturing Simplified

SONIC BIOCHEM
Nourishing Today, Building Tomorrow.

usha siam

OEL
Optiemus Electronics Limited

renata
IoT, Data & Automation

Vision Based Defect Inspection

renata
IoT, Data & Automation

Requirement Definition

Background: Customer’s customer wanted quality inspection on the product sticker

Process:

- Barcode scanned first
- This activated the picture capture
- AI software identified the quality of printing
- OK or NG status identified and correlated to the barcode
- Status and barcode stored in a local database (cloud-based data backup)

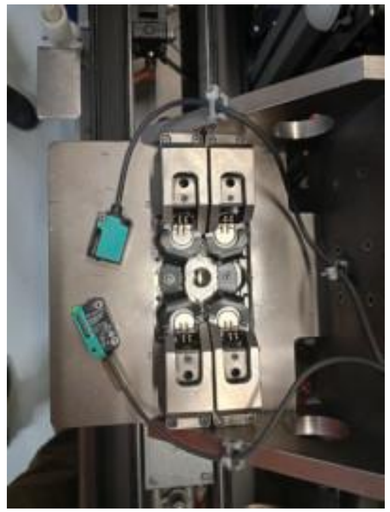
Solution Architecture

- Quality of print of product traceability sticker (otherwise very subjective)
- Validation of various serial numbers (OCR) on the product sticker
- Validation of bar-code on the same sticker
- Creation of traceability database
- Communication with downstream and upstream machine servers in real-time for sequential processing

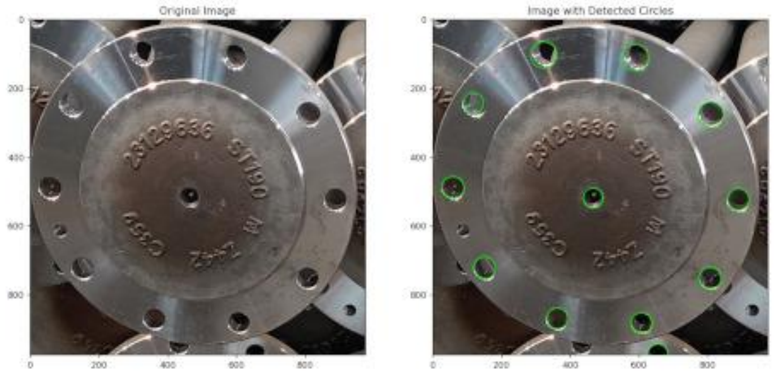
renata
IoT, Data & Automation

Other Use-cases (1)

- Detection if the contact pins are bent or straight



- Feature counting
- Child part presence



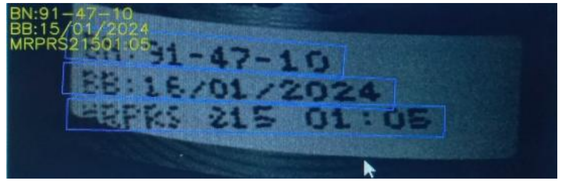
- Checking coloured O-ring overlap detection to prevent leakage in the seam

- Detection of cracks in metallic parts

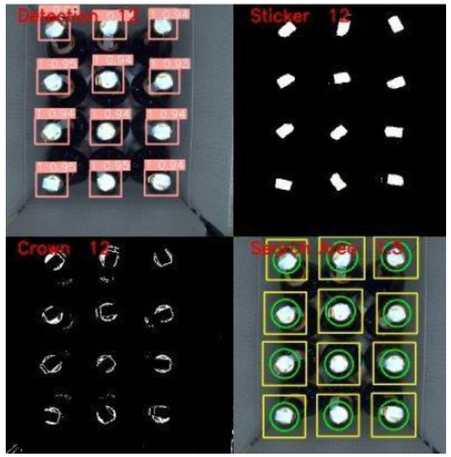
renata
IoT, Data & Automation

Other Use-cases (2)

- Complex OCR detection – inkjet, laser, metal base, sack

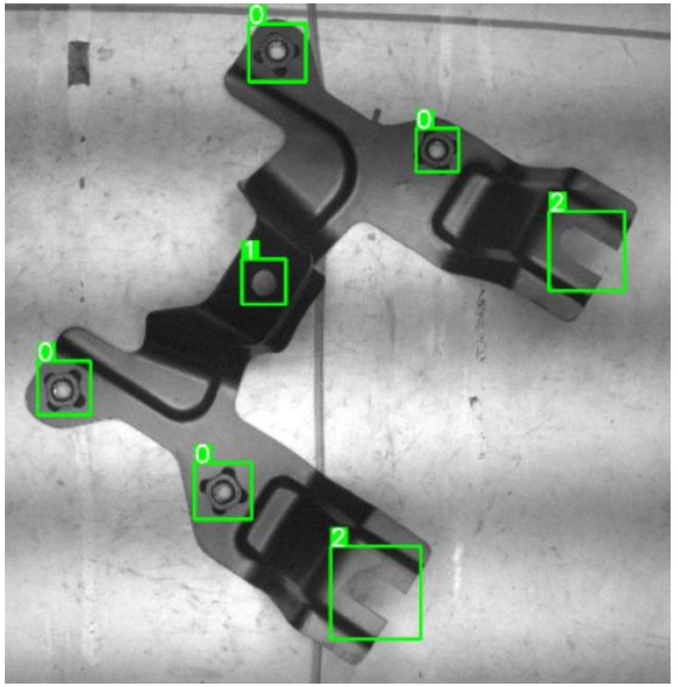


- Bottle, sticker, crown detection
- Counting



- Packet detection in a box

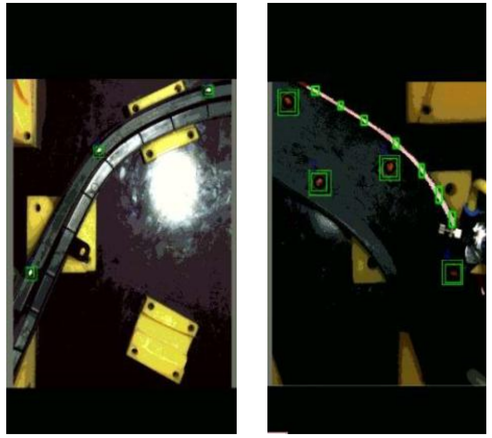
- Sheet metal defects detected in any orientation



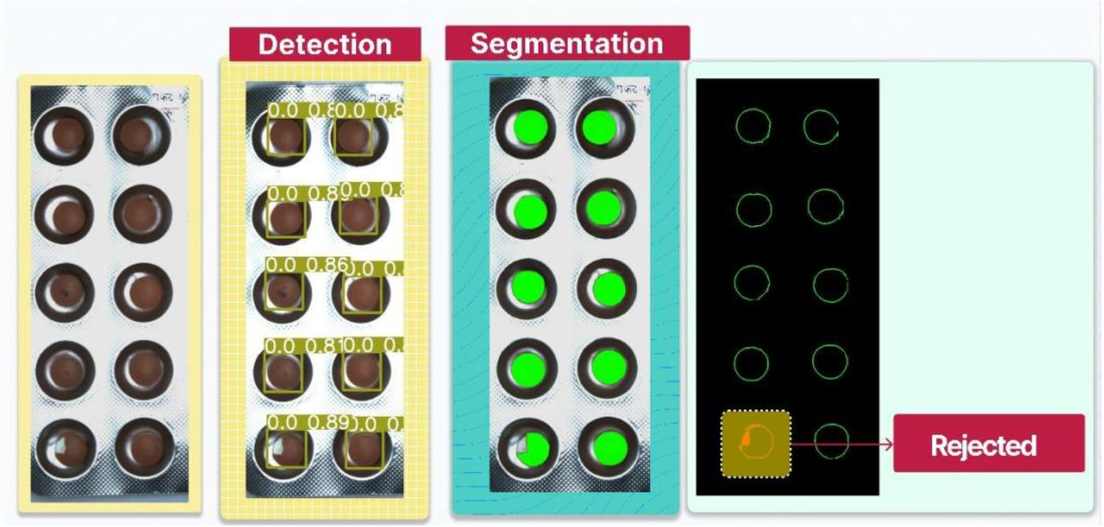
- Metal embossed print detection

Other Use-cases (3)

- Detection of tape, holes, clips etc in a single bent wire type component



- Tablet inspection with shape and colour



- Detection of pins, angle, distance
- Calibration of pixels with distance – 10 to 100 microns

- Counting independent of position

renata
IoT, Data & Automation

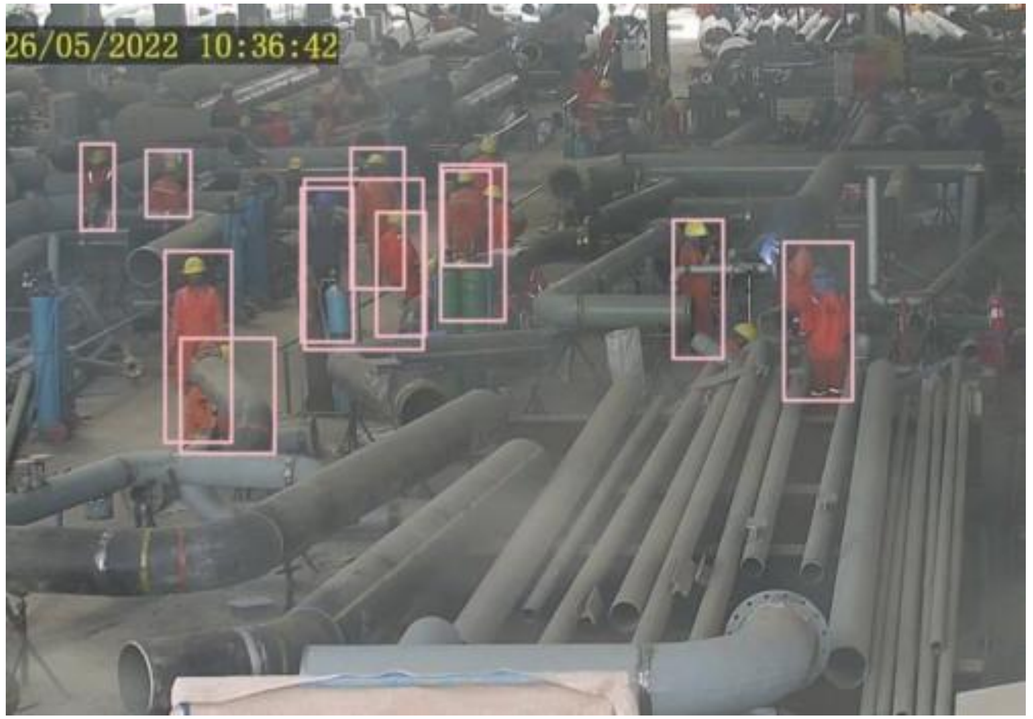
Vision Based Object Detection

renata
IoT, Data & Automation

Object Counting on CCTV Feed

- *Object detection:* Used to determine the presence of a type of object, which leads to object recognition. These objects or entities include people or vehicles and may be used for fire and smoke detection

- Done for a construction site in Madhya Pradesh.
- Counting of no. of workers done on live CCTV camera feed over internet.
- Hourly report created.



renata
IoT, Data & Automation

Industry 4.0 Solution

renata
IoT, Data & Automation

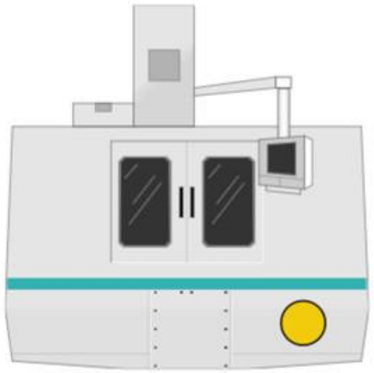
Industry 4.0 – Smart Manufacturing

Data-driven smart manufacturing

Benefits

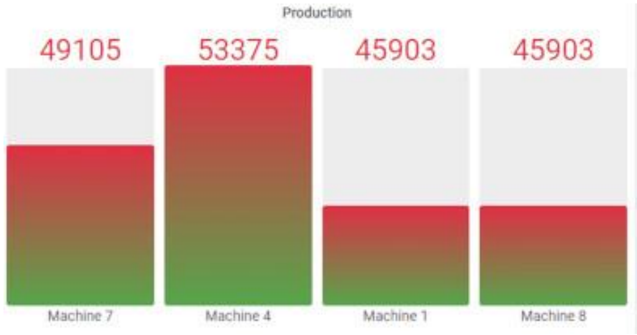
- Lower downtime by 5%-20%
- Lower maintenance cost by 10%-15%
- Increased asset availability 5%-20%
- Increased productivity by 10%-20%
- Improved quality
- Increased process stability
- Better traceability – product, component, defect, process
- Automated data collection and analytics
- Real-time shop floor visibility
- Shop-floor alerts and notifications
- Seamless integration with other systems
- Modular implementation and scalability

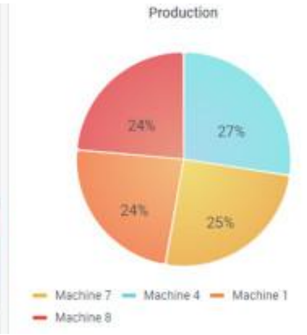
Related Features: Raw Material Tracking, Man Power Productivity, Andon

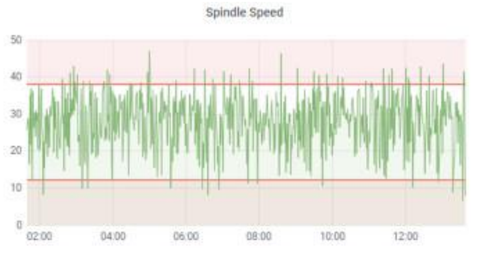


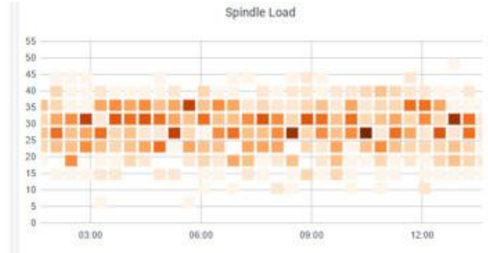
Availability %	98.8
Performance %	76.8
Quality %	96.3
OEE %	73.1

Availability %	74.5
Performance %	97.4
Quality %	72.0
OEE %	52.2









renata
IoT, Data & Automation

Manpower Productivity

Data-driven smart manufacturing

Benefits

- Operator productivity linked to machine productivity
- Trace which operator worked on which machine when
- Enable operator to enter idle time and downtime reasons as mandatory
- Enable access for only the skilled operators for the respective machines
- Enable operators to inform the maintenance teams of the breakdowns
- Enable only maintenance team to authorize machine restart after breakdown resolution
- Faster SMS notification to maintenance teams and faster resolution
- Lower downtime

Biometric Machine used to Interlock the production machine

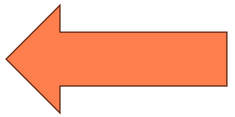
renata
IoT, Data & Automation

Material Productivity

Data-driven smart manufacturing

Benefits

- Track raw material usage from inventory to production
- Track weight of FG products
- Track weight of NG products
- Track weight of scrap
- Perform end-to-end reconciliation of raw material weight
- Minimise material loss through clear visibility



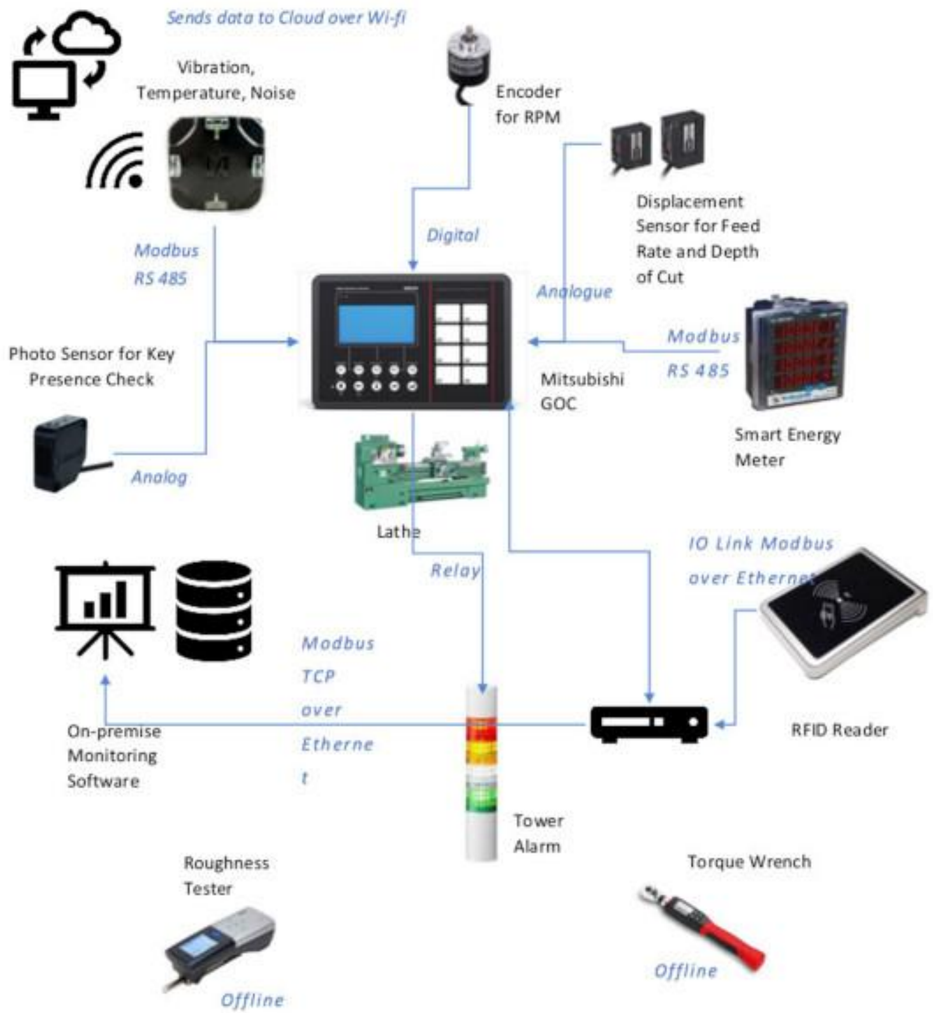
Weighing Machine used to track weight of material used in FG and NG products

Data Analytics built on Essential Machine Automation

Data-driven smart manufacturing

Benefits

- Various sensors and actuators installed on:
  - Manual machines like Lathe, Shearing, Drilling etc
  - Semi-automatic machines with PLCs
  - Fully automatic CNC machines including drilling, milling, honing etc
- Sensors installed depending on the core operations of the machine, the preventive maintenance and safety requirements
- Data collected in PLC, processed through relevant programing and sent to cloud for relevant analytics and notifications



Including sensors for quality inspection

renata
IoT, Data & Automation

Digital Display – SOP, Training Videos, To Do, BoM, Checklists

Data-driven smart manufacturing

Challenge

- Training your manpower on your products and processes.
- Different orders from your customers for different products.
- Your manpower also keeps changing.
- Managing physical documents

Solution

- You can centrally change SOPs (Standard Operating Procedures) and training videos.
- Separate digital screens on individual stations.
- Changeover will be through a single click of a button.

Two options for the screen

- Normal monitor with a controller
- Touch-screen with a controller

- Easier to change production multiple times in a day
- Manpower will still know exactly what they have to do even on changing products

renata
IoT, Data & Automation

IoT Platform and Technology

Relevant for PLC controlled appliances like Machines, HVAC, Boilers, Lifts etc.

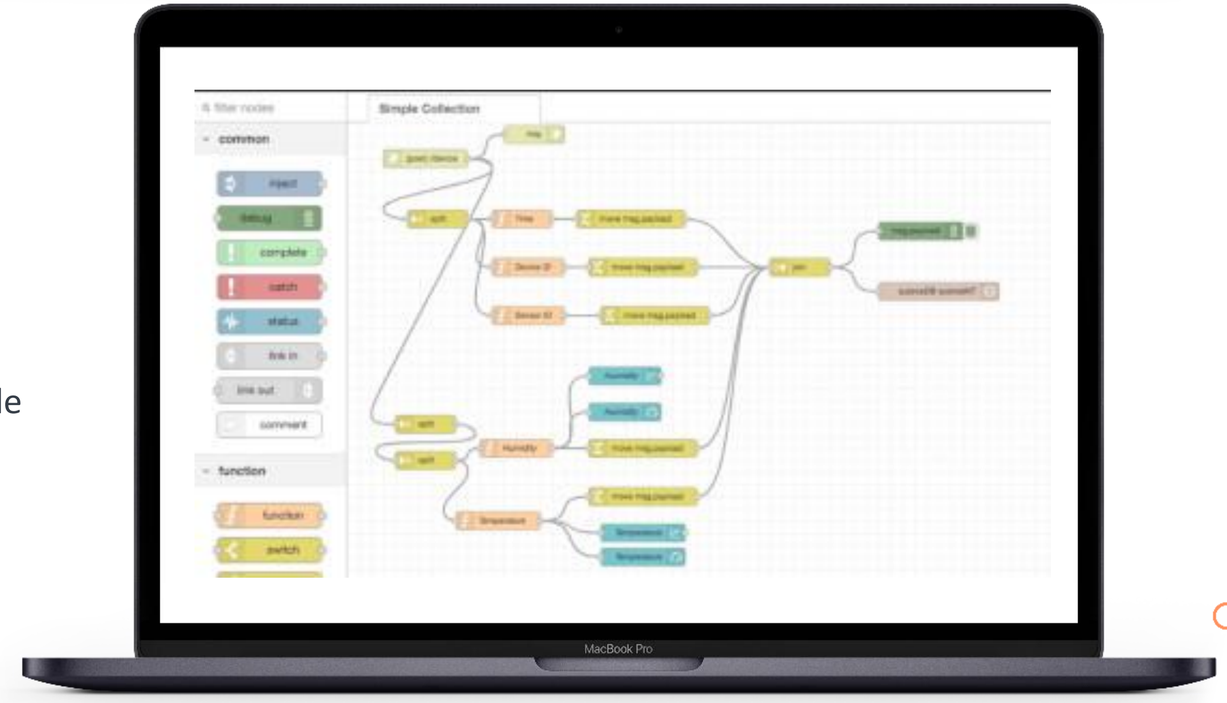
renata
IoT, Data & Automation

Remote Monitoring

Cloud Platform

- User friendly analytics
- Low-code based flexible platform
- Fast to deploy
- Secured data communication over https/mqtt
- Notifications for threshold cross for any parameter
- Distinct but tightly integrated data capture, processing and dashboard layers
- New generation time series influx database to store big-data

Technology based on Internet of Things based Node and Javascript framework for flexible connectivity and complex data processing



renata
IoT, Data & Automation

Offered by Us

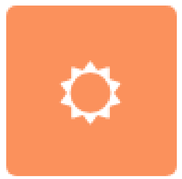
Technology Elements

Process Automation

PLC Programming

CNC

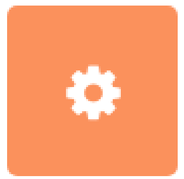
SPM Special Purpose Machines



Sensors

Analytics

Software Development



ERP Integration

renata
IoT, Data & Automation

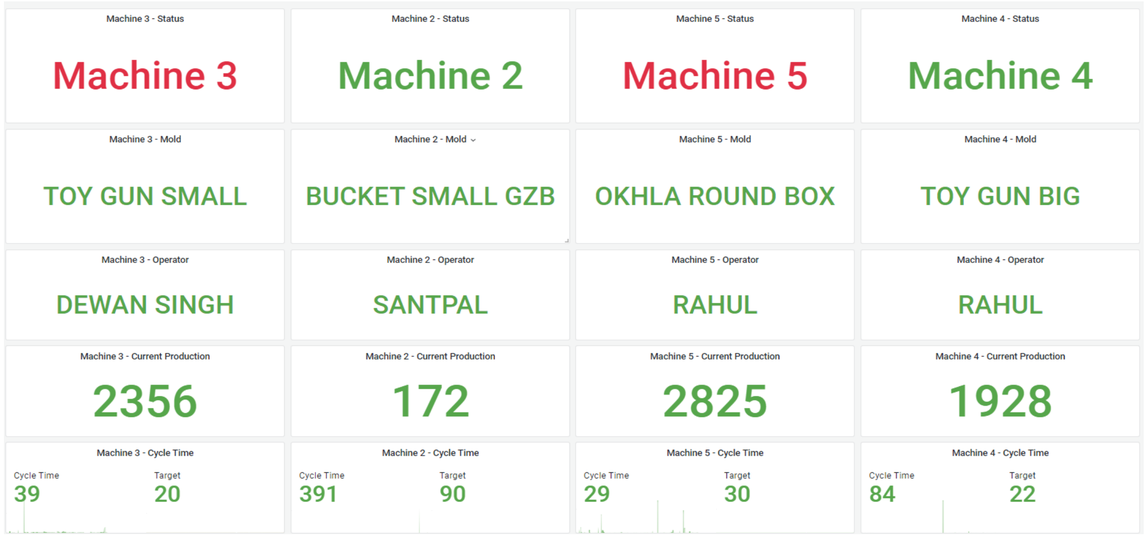
Industrial 4.0 Solution- ATPL (Injection Molding)

renata
IoT, Data & Automation

ATPL – Injection Molding Industry 4.0

Background

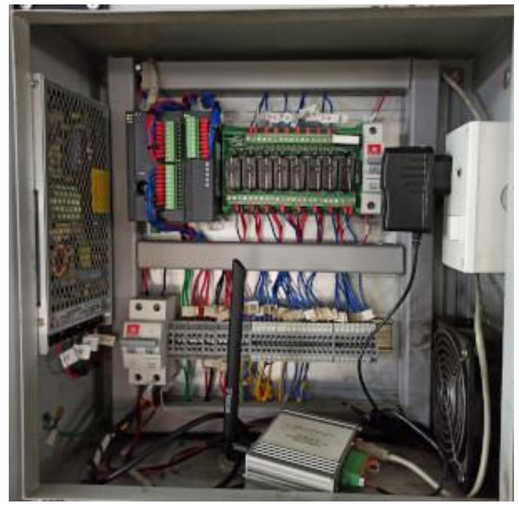
ATPL is an **Injection Molding** contract manufacturing company based in Noida. We have implemented Industry 4.0 solution at their production unit.



Benefits

Management is able to get a clear view of:

- The shop floor operations,
- Production levels,
- Machine efficiency,
- Operator efficiency,
- Tracking of manhour, machine-run and raw material cost



Resulted in

- Better product profitability,
- Prevention of energy wastage,
- Timely delivery to the end-customer,
- Better manpower productivity

renata
IoT, Data & Automation

ATPL – Solution Overview

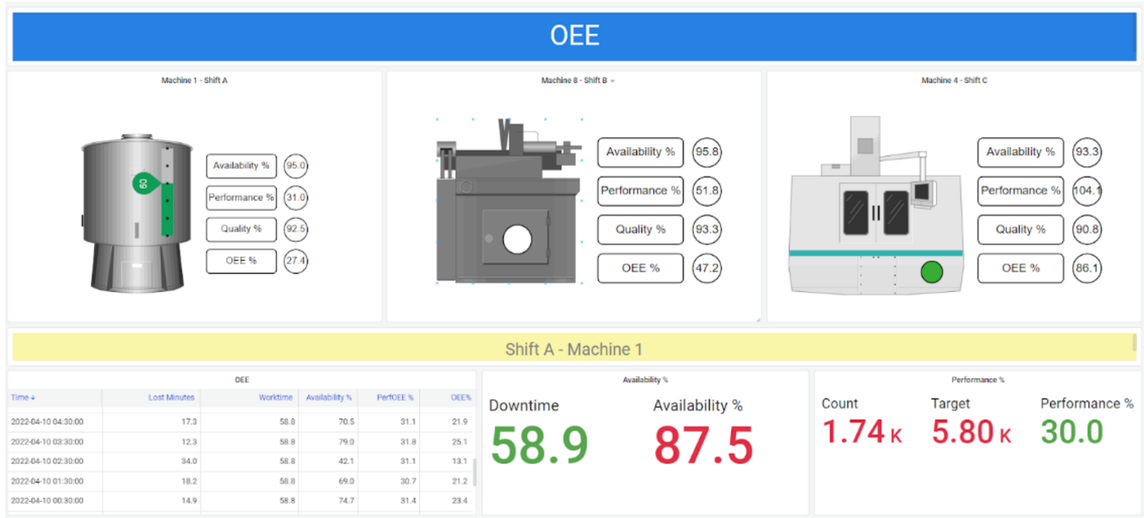
Solution Architecture

Data is collected directly from the machine itself through couple of signals which signify production of a single unit and cycle time.

Data is also collected from the energy meters.

Operators are able to enter data over a tablet for the machine operator start along with mold and operator name.

Data is then sent to a cloud application where historical data is maintained. Real-time notifications (SMS/email) are sent to the user for reporting, anomalies, and workflow management etc.

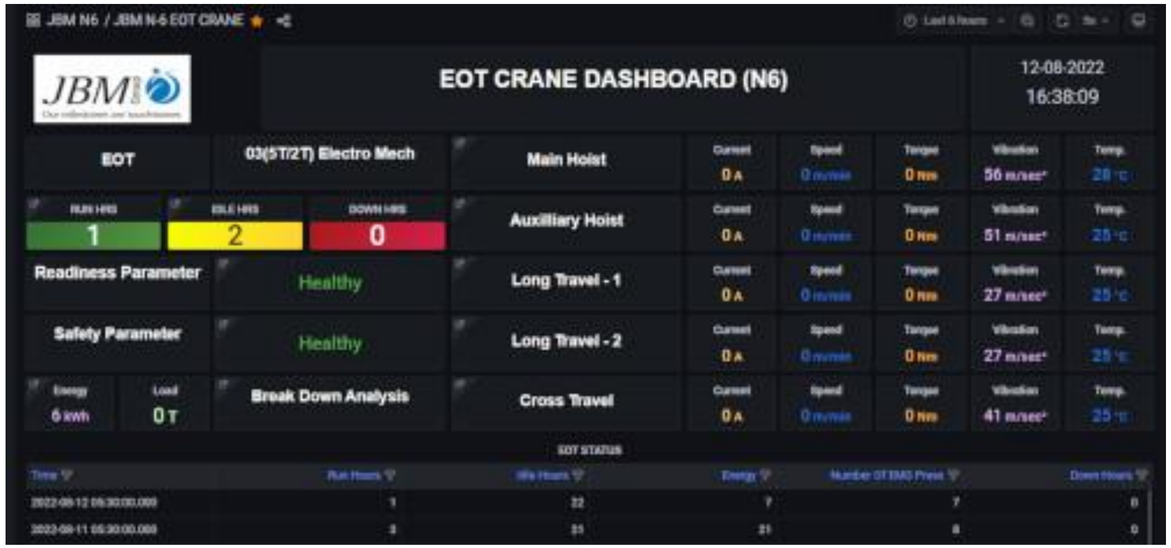


renata
IoT, Data & Automation

Machine Health Monitoring - JBM

renata
IoT, Data & Automation

EOT Crane Health Monitoring



Parameters:

- Run Hours
- Idle Hours
- Breakdown Hrs
- Temperature
- Vibration
- Current
- Torque
- Speed
- Readiness

Conveyor Belt Health Monitoring

Parameters:

- Run Hours
- Breakdown Hours
- Temperature
- Vibration
- Current
- Torque
- MTTR
- MTBF

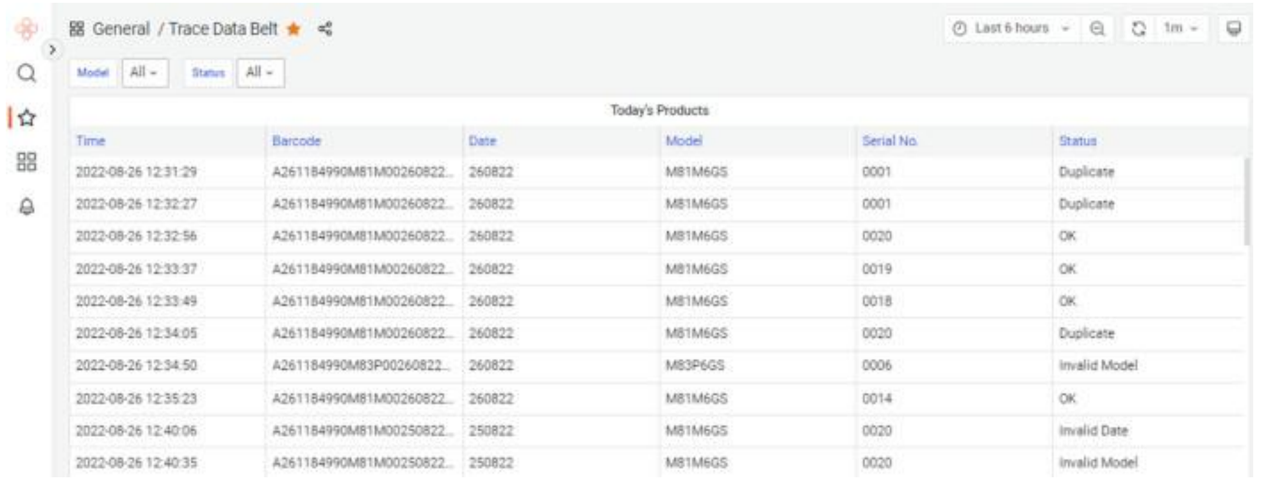
Traceability- Ashimori (Seat Belts for Maruti)

renata
IoT, Data & Automation

Ashimori – Car Seat Belt Barcode Traceability

Background

Ashimori is a Japanese seat belt supplier to Maruti India, based in Neemraana Rajasthan. We have implemented a Traceability solution for their products.



Time	Barcode	Date	Model	Serial No.	Status
2022-08-26 12:31:29	A261184990M81M00260822...	260822	M81M6GS	0001	Duplicate
2022-08-26 12:32:27	A261184990M81M00260822...	260822	M81M6GS	0001	Duplicate
2022-08-26 12:32:56	A261184990M81M00260822...	260822	M81M6GS	0020	OK
2022-08-26 12:33:37	A261184990M81M00260822...	260822	M81M6GS	0019	OK
2022-08-26 12:33:49	A261184990M81M00260822...	260822	M81M6GS	0018	OK
2022-08-26 12:34:05	A261184990M81M00260822...	260822	M81M6GS	0020	Duplicate
2022-08-26 12:34:50	A261184990M83P00260822...	260822	M83P6GS	0006	Invalid Model
2022-08-26 12:35:23	A261184990M81M00260822...	260822	M81M6GS	0014	OK
2022-08-26 12:40:06	A261184990M81M00250822...	250822	M81M6GS	0020	Invalid Date
2022-08-26 12:40:35	A261184990M81M00250822...	250822	M81M6GS	0020	Invalid Model

Benefits

Customer is able to:

- Maintain a historian of the product barcodes
- Get a view of the barcode defects like incorrect model, incorrect date, duplicate barcode
- Perform quality management

Resulted in

- Internal and customer compliance
- Ability to trace defects back to the barcodes & prod. time
- No dependency on machine manufacturer for traceability
- Open solution – no vendor lock-in
- More reliable product delivery
- Ability to assist the customer track a product recall

renata
IoT, Data & Automation

Productivity/Utilization - (Advance Valves)

renata
IoT, Data & Automation

Advance Valves – Productivity Tracking

ADVANCE VALVES
Changing the way you think about valves

Background

Advance Valves is a global market leader in making valves for the Oil & Gas, LNG & Cryogenic, Chemicals & Fertilizers, Power, Steel & Mining etc. They wanted to digitalize their manufacturing processes and increase productivity

Benefits

Customer is able to:

- Digitalise across conventional machines, welding, VMCs, CNCs, Paint Shop, Shot Blasting, Utilities

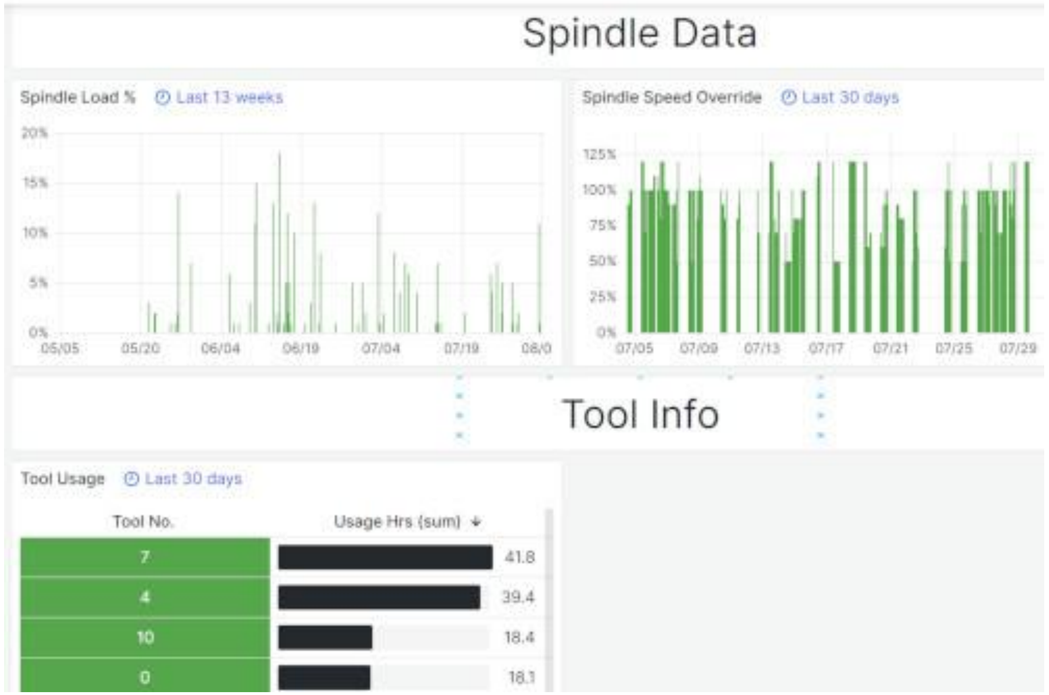
Resulted in

- Increased machine utilization and hence production
- Productivity culture with self-drive and correction based on real-time feedback

renata
IoT, Data & Automation

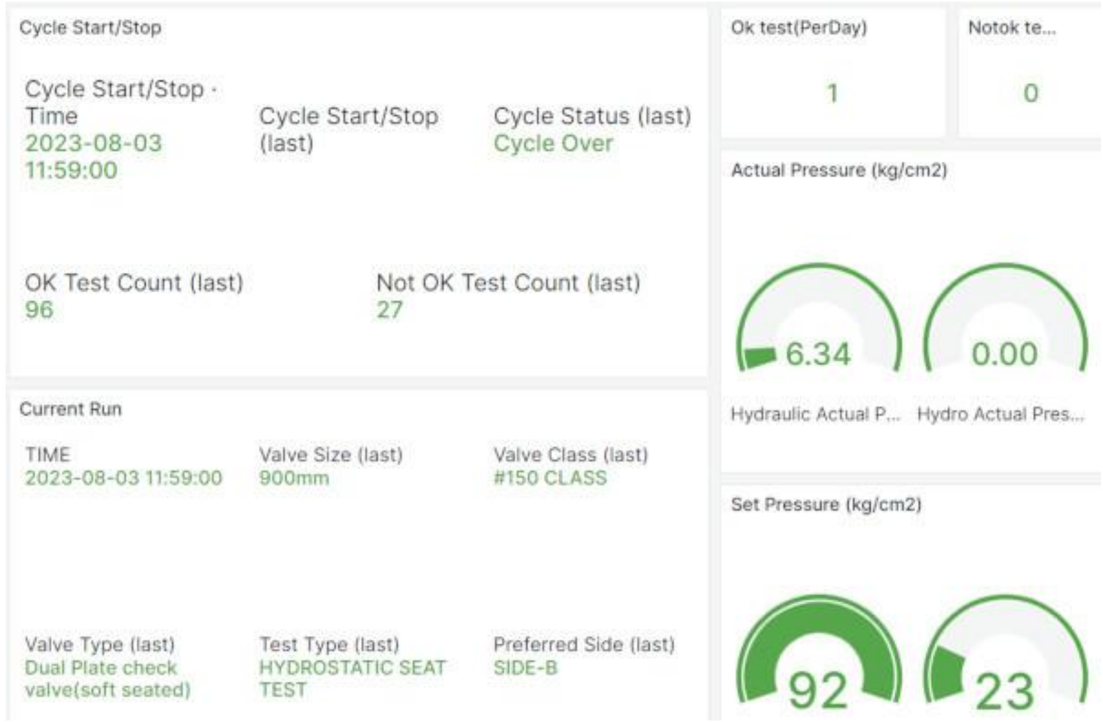
Advance Valves – Solution Overview

ADVANCE VALVES
Changing the way you think about valves



Solution Architecture

- Solution included digitalisation across conventional machines, welding, VMCs, CNCs, Paint Shop, Shot Blasting, Utilities



renata
IoT, Data & Automation

Productivity Increase - Usha Siam (Steel Wire Ropes, Thailand)

renata
IoT, Data & Automation

Ushasiam – Steel-wire Industry 4.0

Background

Ushasiam is a **steel-wire** manufacturing company based in **Thailand**. When faced with new orders, they had to decide whether to go for a new highly expensive machine or increase productivity on the existing one.

Benefits

Management is able to get a clear view of:

- Machine downtime
- Energy efficiency

Resulted in

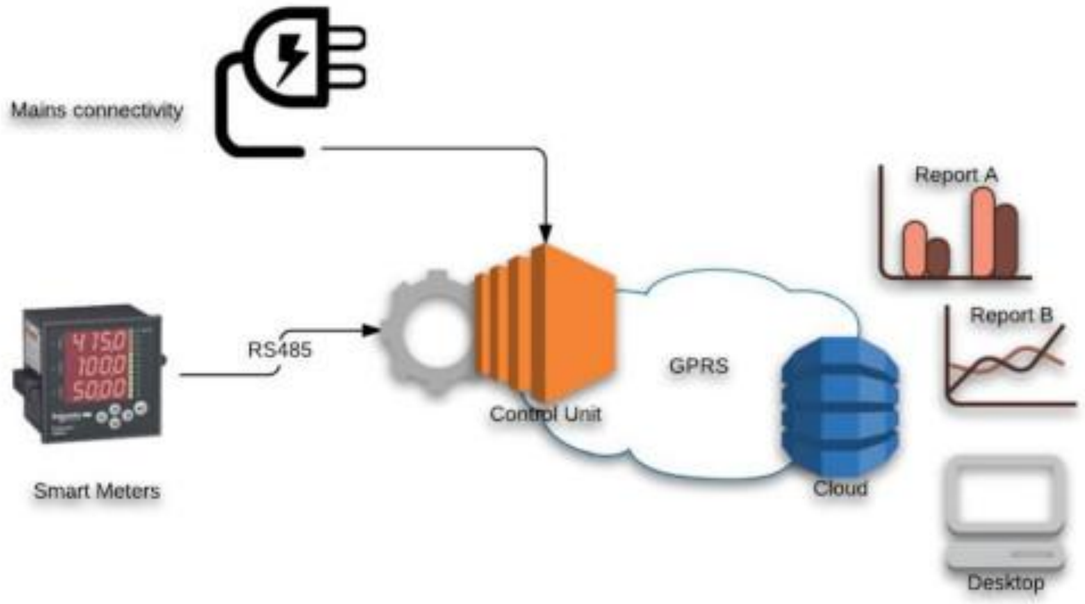
- High savings from not investing in a new machine
- Higher machine productivity
- Higher production
- Energy cost savings

Ushasiam – Solution Overview

Solution Architecture

Machine downtime tracking was done through a simple tracking of machine operations through an energy meter. No complexity of PLC integration but still clear view of the machine uptime and the energy and efficiency levels of the machine.

Data was sent to a cloud application which displayed machine run-hours on the shop-floor through a big real-time display for clear visibility



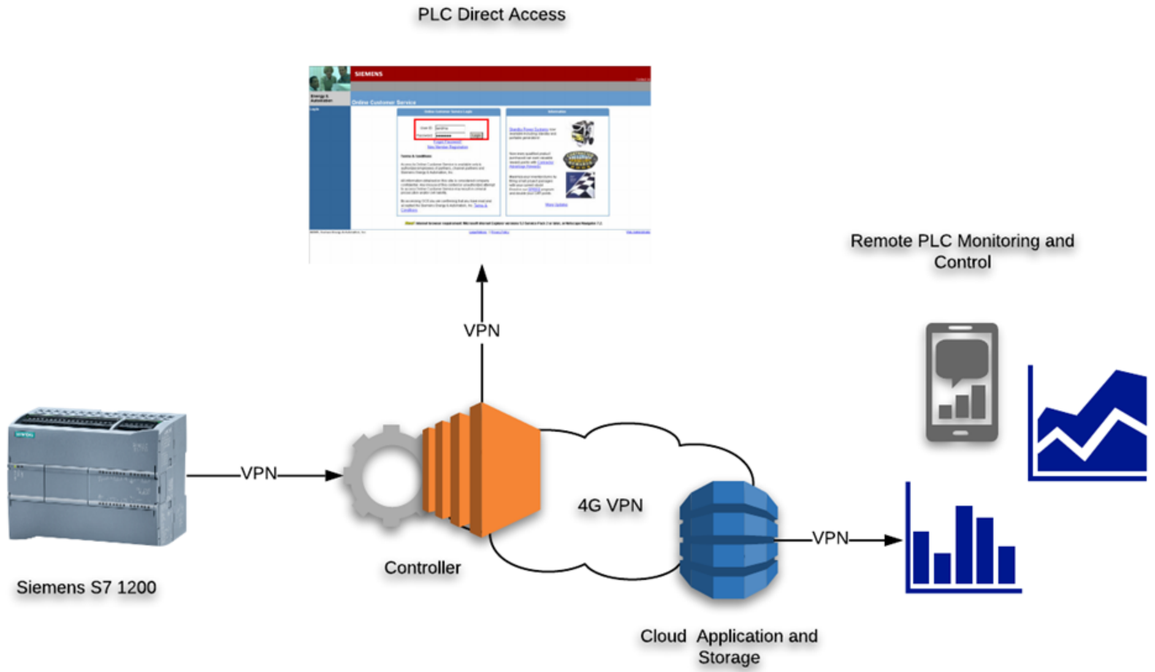
Industrial IoT Solutions

renata
IoT, Data & Automation

Remotely monitor and control your compressors from anywhere, anytime from your laptop or mobile

IoT Scada - Remote Compressor Monitoring and Control

Data-driven smart Remote Operations Management



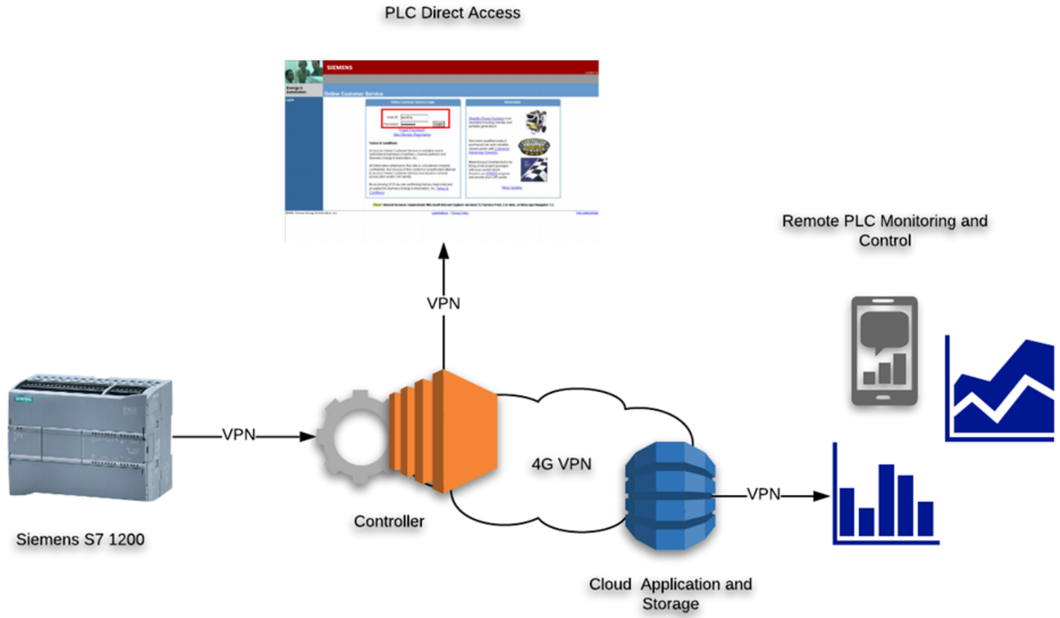
- Save time to respond and reduce machine downtime
- Save manpower cost and travel cost
- Have better control over operations
- Create ease of operations
- Have better end-customer satisfaction
- Strengthen brand differentiation through digitalisation

renata
IoT, Data & Automation

IoT Scada - Remote Boiler Monitoring and Control

Data-driven smart Remote Operations Management

- Save time to respond and reduce machine downtime
- Save manpower cost and travel cost
- Have better control over operations
- Create ease of operations
- Have better end-customer satisfaction
- Strengthen brand differentiation through digitalisation

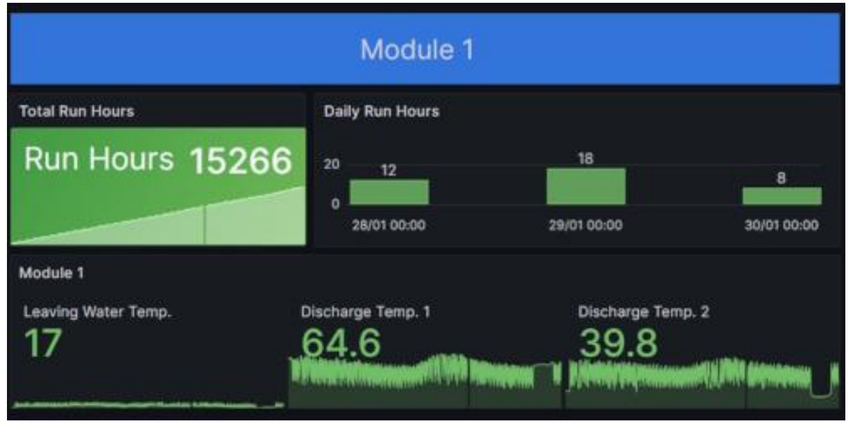


Remotely monitor and control your boilers from anywhere, anytime from your laptop or mobile

Remotely monitor your Chiller from anywhere, anytime from your laptop or mobile

IoT Scada - Remote Chiller Monitoring and Control

Data-driven smart Remote Operations Management



Save energy and reduce operational downtime? Monitor your key energy guzzlers and take action much before the operational issue occurs.

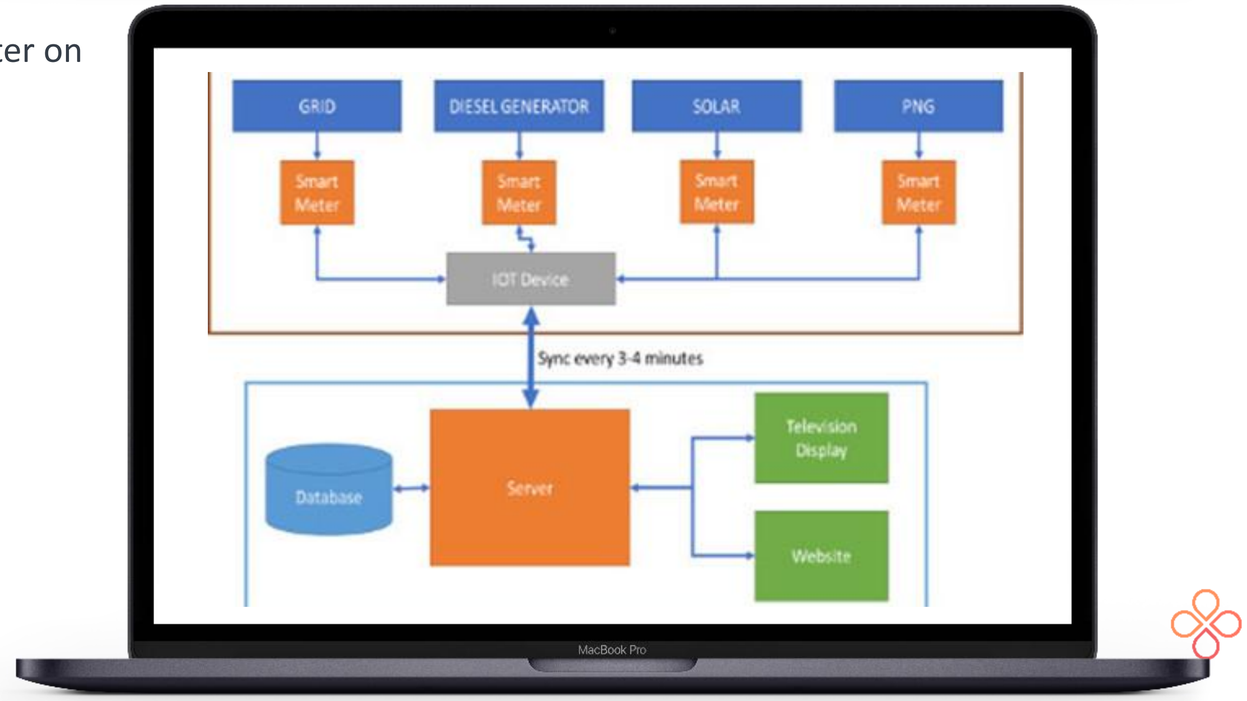
Chiller Monitoring -
👉 Maintain correct temperature levels
👉 Arrest abnormal behaviour
👉 Get notified of the system faults in real-time
👉 Get a visibility of the load
👉 Prevent unnecessary energy consumption

renata
IoT, Data & Automation

Remote Energy Monitoring

Energy Monitoring

- Remote electricity monitoring for – Grid, Solar and DG
- Prevent energy losses - ensure equipment health
- Reduce operational risks and unplanned downtime
- Lowering maintenance costs – predict failures
- Monitor shutdown hours
- Prevent penalties
- Predict energy demand for energy bidding to save more
- Notifications for threshold cross for any electrical parameter on smart meters



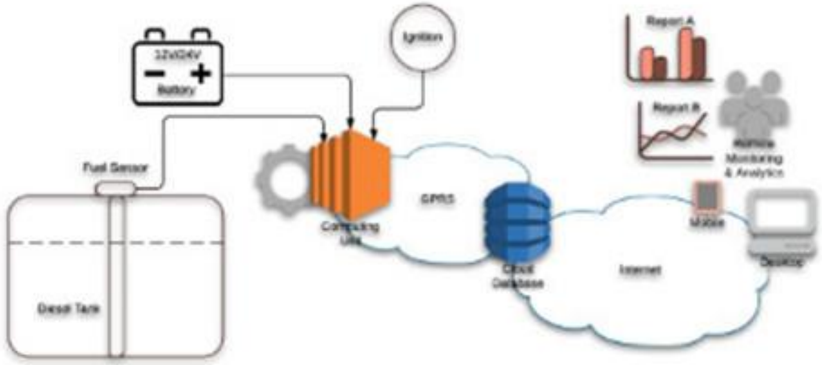
Grid, Solar, DG, PNG, Water etc. all parameters can be monitored on the same platform for a single view

Both cloud based and in-premise solutions are available

renata
IoT, Data & Automation

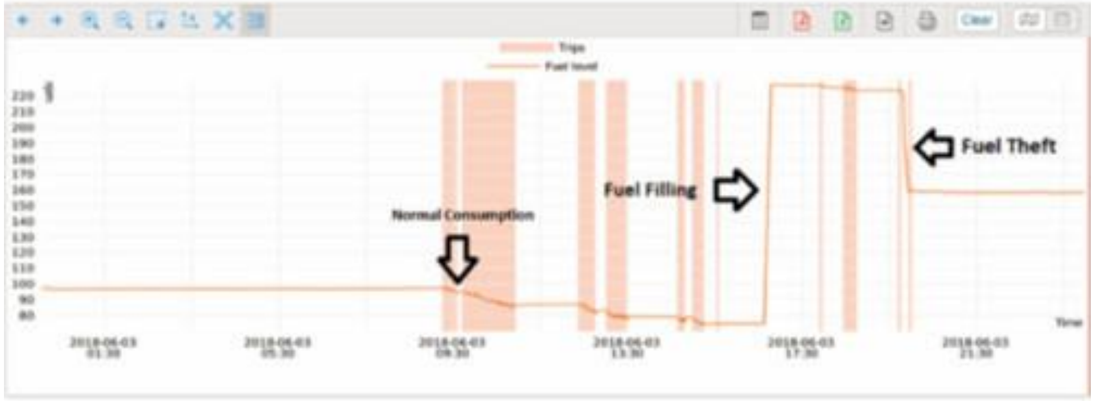
Fuel and Load Monitoring

Near real time information of fuel volume present in tank



- Real-time accurate data anytime anywhere
- Ensure complete 3rd party re-conciliation
- Prevent fuel pilferage
- Be in control of fuel cost – filling, consumption, fuel taken out
- Monitor asset efficiency
- Manage load optimally
- Reduce overall fuel consumption

Pilfered fuel volume (if any), with date, time, location



renata
IoT, Data & Automation

UPS Monitoring

Real-time information on UPS operations

Maintain business continuity

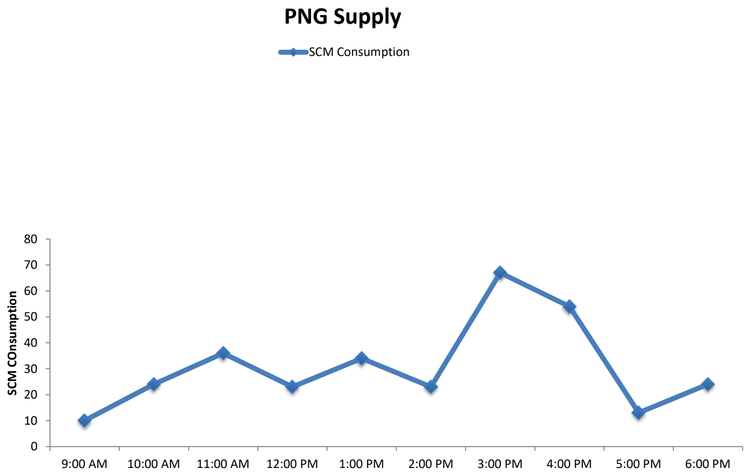
- Get notified about any UPS malfunction in real-time
- Make sure that you achieve high level of uptime
- Reduce revenue losses due to power cuts to the plant shop-floor
- Ensure business continuity
- Prevent any future failures through relevant analytics about UPS downtime

renata
IoT, Data & Automation

Remote Gas Monitoring

- SCM (Standardized Cubic Meter)
- Pressure
- Flow rate
- Temperature

SCM Volume Converter



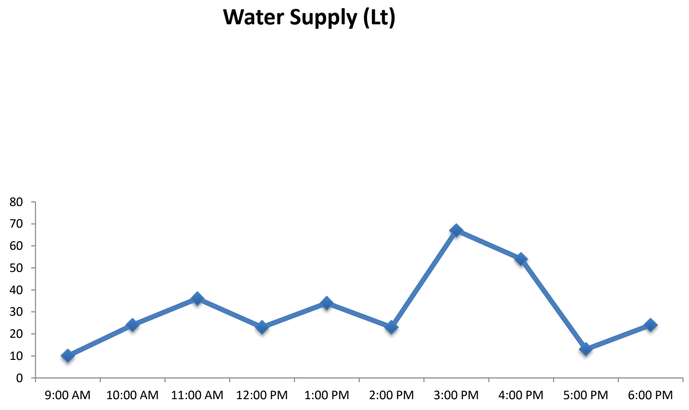
PNG Consumption Meter

renata
IoT, Data & Automation

Remote Water Monitoring

- Water consumed
- Flow rate

Water Data Converter



Water Flow Meter

renata
IoT, Data & Automation

Compressed Air/Gas Leakage Detection

- Flammable or non-flammable gases
- High accuracy
- Online pressure / temperature measurement
- Wide range of flow rate
- High velocity measurement
- Maintenance-free without moving parts

Remote Data Available

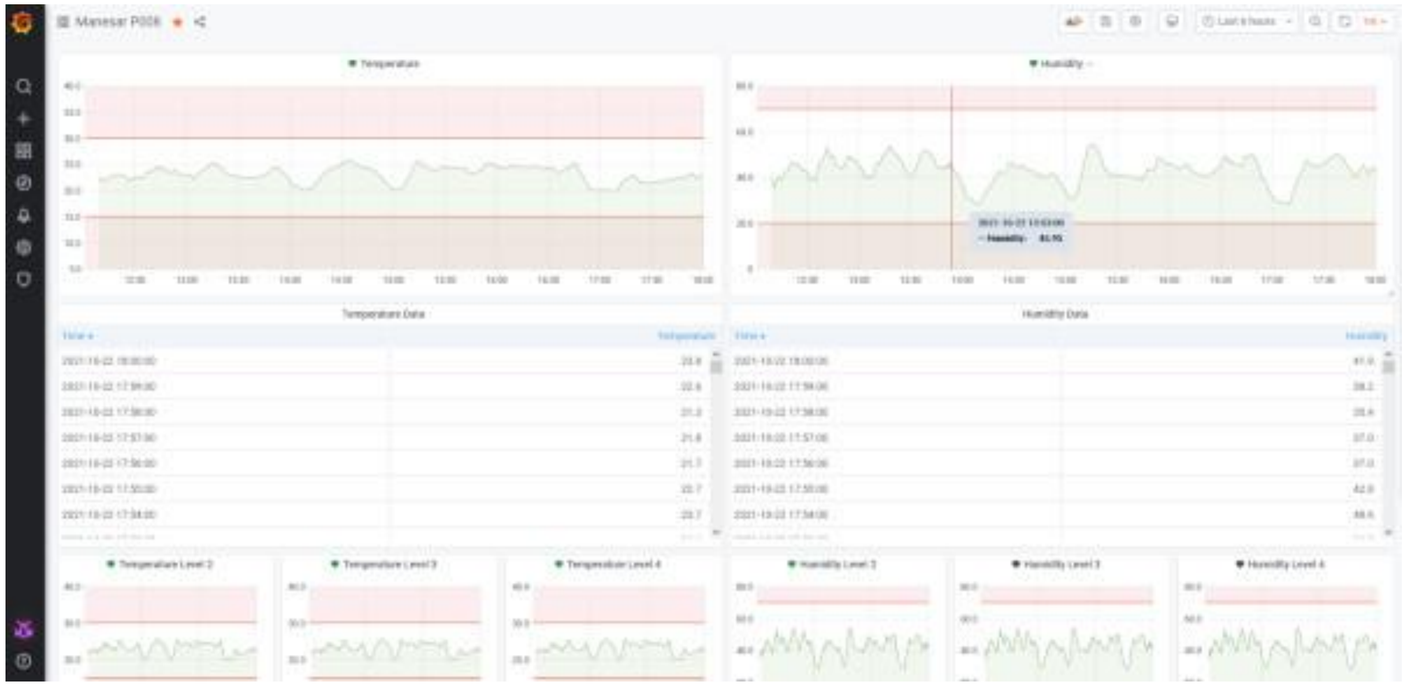
Gas Flow Meter

renata
IoT, Data & Automation

Remote Temperature Humidity Monitoring

SOLUTION

- Temperature
- Humidity
- Multiple sensors can be connected to same IoT Gateway within 300m
- Email and SMS Alerts
- Access from desktop
- Access from mobile
- Access on User Authentication
- Modbus RS485 Communication
- 4G connectivity (use own SIM)



Web Dashboard

SENSOR

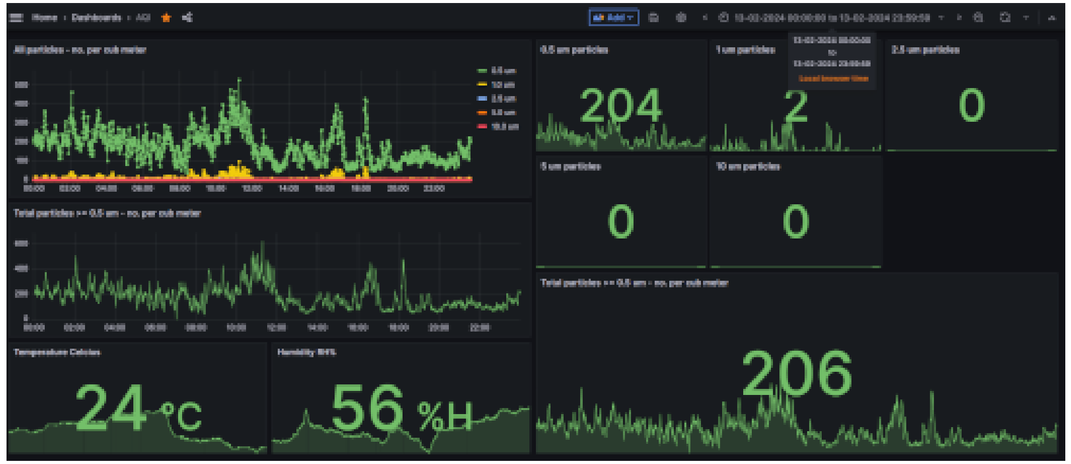
- Temperature Range:-40℃~60℃
- Temperature Precision:+/-0.5℃
- Temperature Resolution:0.1℃
- Humidity Range:0%RH~80%RH
- Humidity Precision:+/-3%RH
- Humidity Resolution:0.1%RH
- Work Temperature:-40℃~85℃
- Work Humidity:0%~95%RH

Sensor

renata
IoT, Data & Automation

AQI – Air Quality Index Monitoring

- Choose the parameters that you would like to monitor
- Add other parameters or sensors that are relevant for you



Parameters

- PM 10
- PM 2.5
- CO2
- CO
- SO2
- NO2
- NH3
- O3

Remote Datacenter Monitoring

BENEFITS

- Real-time alerts enabling business continuity
- Historical view for trend analysis
- Single platform for end-to-end monitoring
- Display on a single screen
- Monitoring across multiple datacenter sites

Aspects Monitored

- Temperature & Humidity
- Corrosion
- Water Leakage Detection
- Access Control & Monitoring
- Fire Alarm Status (existing system integration)
- CCTV (existing system integration)
- UPS
- Energy
- Any other relevant items

renata
IoT, Data & Automation

Building Management System

Pump Control

Cooling Line Control

AHU Damper Control

Other Items

- Customer-wise energy Monitoring
- Lighting and chiller timer as per contracted office hours
- Ammonia monitoring in toilets
- Room temperature monitoring

SMARTWORKS

renata
IoT, Data & Automation

Business ROI Examples

UshaSiam – Machine Utilization Increase
Customer was able to increase production of 1 extra container of wire ropes every month by increasing the machine utilization – Extra revenue of 30K USD/month, ROI within a month

Ashimori – Product Traceability
A vendor of safety belts to Maruti Suzuki, was able to get a local solution from us as expansion support not available from the existing Japanese vendor. Business continuity and compliance fulfilment provided to Maruti Suzuki through our solution. Immediate ROI.

Dorset – Cycle Time Reduction
CNC Machine cycle time reduced by 25% 12 sec to 8 sec. ROI achieved within 0.13 months.

Monthly Production (Units)	9000
Price/Item (INR)	1000
Monthly Revenue (INR)	9,000,000
Increased Revenue (INR)	2,250,000
ROI in months	0.13

Marelli – Machine Vision AI - Product Traceability
A vendor of Automatic Gear Transmission Kit to Maruti Suzuki, was asked to ensure quality of traceability stickers on their kit so as to ensure 100% product traceability. Business continuity and compliance fulfilment provided to Maruti Suzuki through our solution. Immediate ROI.

Didwania Compressors – IoT based Scada System
Didwania compressors was able to win the project of 75 CNG compressors from GAIL. Capability development through our remote IoT Scada system enabled business win and provided immediate ROI. At the same time their ability to provide remote support and operations management reduced their AMC cost by 35%

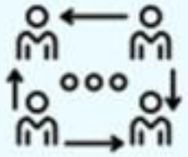
renata
IoT, Data & Automation

Value Added Services

Training & Knowledge Transfer

AMC Included

Consulting



Single Platform for all Solutions

Proactive Analytics & Insight Reporting

~20% Customization

THANK YOU

RENATA IOT PRESENTATION

https://www.linkedin.com/company/renataiot/

anil.sagar@renataiot.com
+91 9810217013
www.renataloT.com
Delhi, Gurgaon

renata
IoT, Data & Automation