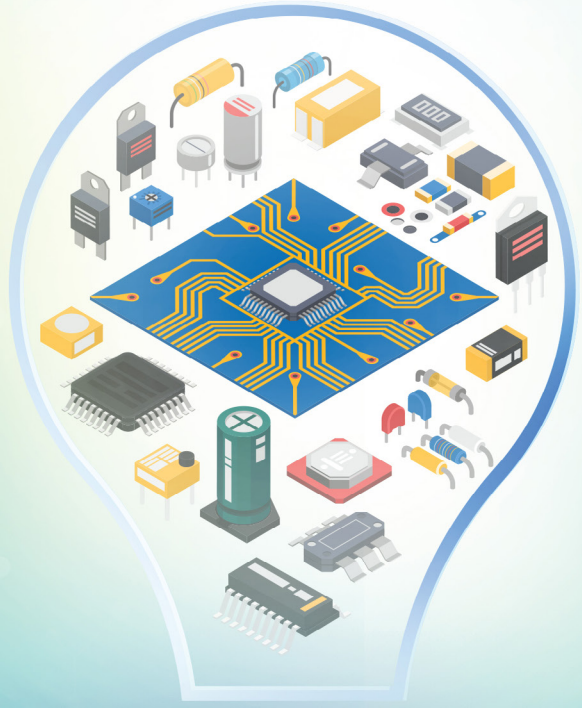
MPC

EEPN
ELECTRICAL AND ELECTRONICS PRODUCTIVITY NEXUS

PRODUCTIVITY THROUGH DIGITALISATION

EEPN End-Users Plugfest Projects Compilation



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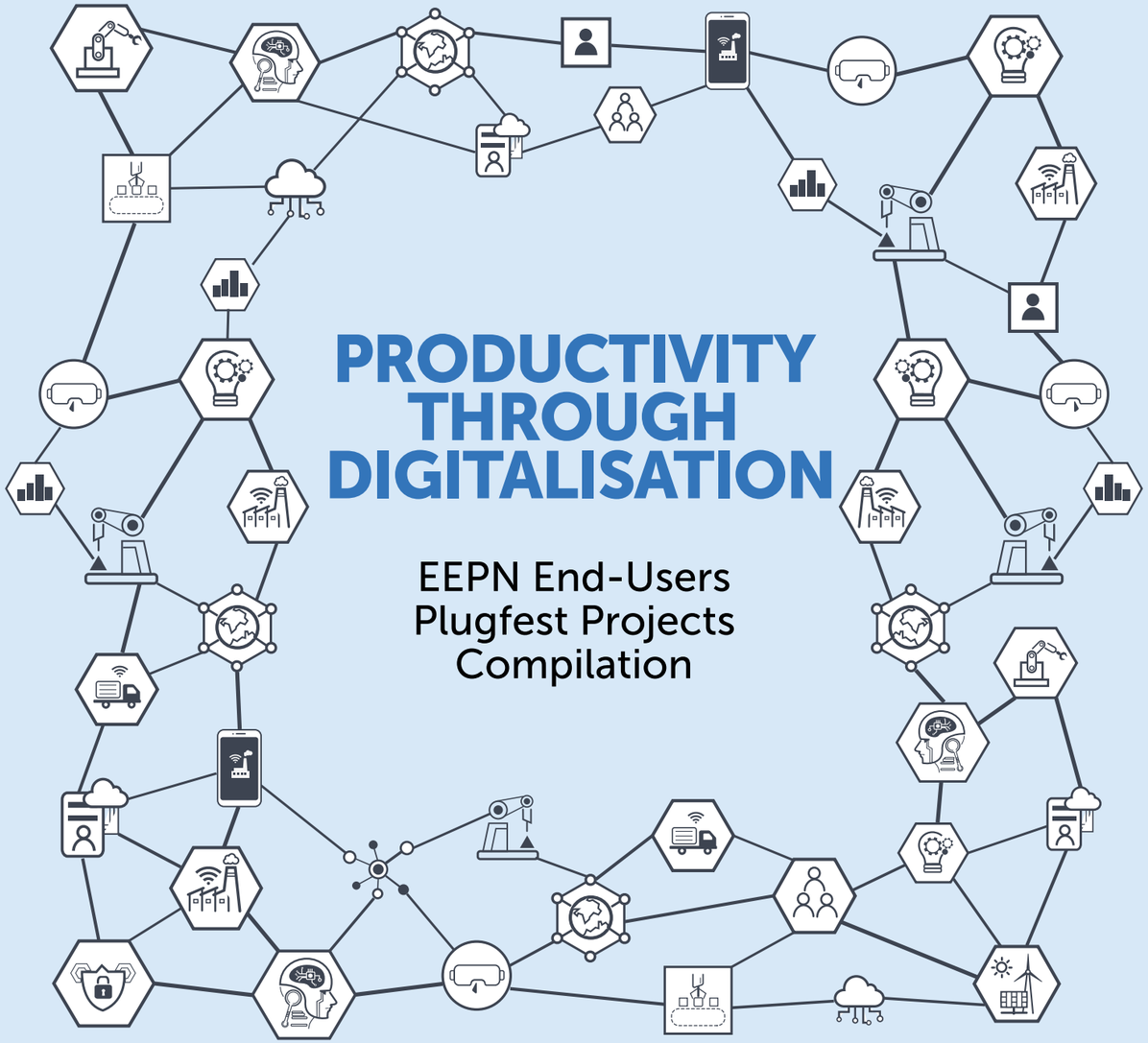


FOREWORD

It gives me great pleasure to pen a few words in this Plugfest Booklet. Since the launch of the Malaysia Productivity Blueprint in 2017, the Malaysia Productivity Corporation (MPC) has been working relentlessly in driving to increase the productivity of the nation. In recent years, labour productivity by added value per employment, expanded by 2.1 percent in 2019 to RM93,973 as compared to RM92,018 in 2018.

With the advent of Industry 4.0, the task of productivity improvement has been made easier, especially with the adoption of the enabling pillars of technologies. MPC is the agency responsible for the Industry4WRD Readiness Assessment, which is a comprehensive programme to help companies in assessing their capabilities and readiness to adopt Industry 4.0 technologies and processes.

Meanwhile, the Electrical and Electronics Productivity Nexus (EEPN), under the purview of MPC, has been spearheading and pioneering the promotion and adoption of Industry 4.0, especially among the local companies and SMEs. One of their initiatives is the Plugfest workshops on Industrial Internet-of-Things (IIoT) and Artificial Intelligence based Machine Vision system (AIoT). Participants of the workshop are required to develop Proof-of-Concepts (POCs) projects, upon completion of the workshop.

MPC takes pride in publishing this compilation of EEPN End-users' Plugfest Proof-of-Concepts (POCs) projects which have benefiting more than 30 companies. As can be seen from these projects, the wide-ranging adoption of Industrial 4.0 is enormous, encompassing the electronics, automotive, plastics, food and beverages sectors. These cases have demonstrated in bringing Industry 4.0 initiatives up to reality. We hope that the other companies would be able to draw some valuable best practices from these POCs projects and to serve as lessons learned in charting the productivity enhancement of their own Industry 4.0 journey.

Let us all embrace the Industry 4.0 revolution through digitalisation to bring about greater agility, accelerate productivity with efficiency and enhance global competitiveness.

Thank you to all who have directly and indirectly contributed to this "Productivity Through Digitalisation: EEPN End-users Plugfest Projects Compilation" booklet.

Dato' Abdul Latif bin Hj Abu Seman
Director General
Malaysia Productivity Corporation (MPC)

FOREWORD

Since the launch of our National Policy on Industry 4.0, known as INDUSTRY4WRD in 2018, numerous programmes have been initiated to promote the adoption of Industry 4.0 by our local companies. The Electrical and Electronics Productivity Nexus (EEPN), established under the Malaysia Productivity Blueprint (MPB) is chartered to improve productivity of the E&E sector. Four key strategies were identified under the EEPN, namely to enhance higher value-added activities, nurture talent development, accelerate the adoption of Industry 4.0 and strengthen SME development.

The Plugfest series of workshops is one of our EEPN's winning formula conceptualised by Dr. Thomas Ooi as the Chairperson of EEPN Key Strategy 3, with the charter to accelerate the adoption of Industrial 4.0. Since its pilot implementation in 2018, our Plugfest has attracted 172 participants from 92 companies. Out of which, a total of 32 Proof- of- Concepts (POCs) projects have been shortlisted to be showcased in this Plugfest Booklet. I would like to recognise the contributions of our principal technology partners (Intel Malaysia and Axiomtek) and programme coordinator (Penang Skills Development Centre) for organising these workshops. I would also like to thank and congratulate all who have worked together in developing this Booklet.

As a result of the overwhelming feedback and encouragement received from our Plugfest participants, EEPN in partnership with MPC, has taken these initiatives to the next national-level, so that its impact can be benefited by a larger community. I am confident that our Plugfest workshops will continue to be a prime catalyst for the manufacturing sector's economic growth in Malaysia.

Dato' Seri Wong Siew Hai
Champion of Electrical and Electronics Productivity Nexus (EEPN)

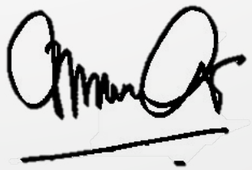
FOREWORD

The National Policy on Industry 4.0, or Industry4WRD, launched by YAB Prime Minister in October 2018, is a crucial step as Malaysia seeks to strengthen its on-going structural reforms to become a developed nation latest by 2024.

Whilst Industry 4.0 adoption is deemed crucial for business survival and further growth in innovation-led value creation, we still do not see an easy path for SMEs to step up to embrace the opportunity, either as the adopter of the trend or a creator of the value.

Under such backdrop, EEPN Key Strategy #3 launched the End-user Plugfest programme to help to straighten the path of SMEs in their pursue of Industry 4.0 journey. We borrowed the word plugfest from its native meaning which is an event where engineers are meeting with their counterparts to test and solve challenges of their products designed with another provider. The end-users of the Plugfest carried the same value where we hope to see end-users bringing in their use case and problems in their environment and get it solved and tested with solutions provided by our esteem partners in the industry. We see this not as an ordinary training process, but one that helps end-users to solve their problems at hand and hoping that they bring home the solutions and see it implemented in their environment.

EEPN KS3 with the help of MPC, has successfully proven that our SMEs can do greater things if they are provided with the right tools and assistance. We have witnessed many of the SMEs have gone through our End-user Plugfest programme that have successfully stepped up to the challenge and lead the transformation in their organisation on Industry 4.0. We sincerely congratulate those that have kick started their transformation journey and hope that they will continue to excel in their business.



Dr. Thomas Ooi Wei Min
Chairperson of Key Strategy#3
Electrical and Electronics Productivity Nexus (EEPN)

INTRODUCTION

Manufacturing landscape in Malaysia

The manufacturing sector has been Malaysia's economic backbone, making up 55.7% of its commercial activity for 2020. Malaysia's manufacturing sector recorded approved investments of RM91.3 billion for 2020, an increase of 10.3% from 2019. The number of manufacturing projects approved also increased by 6.2% from 988 projects in 2019 to 1,049 projects in 2020.

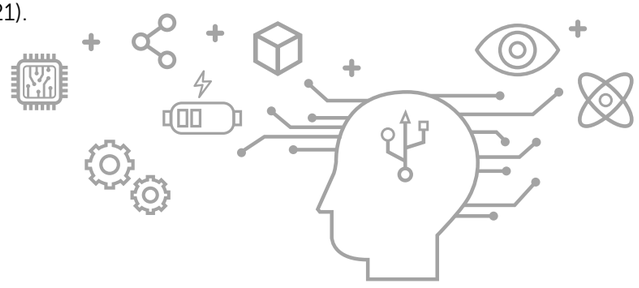
Boosting Productivity Through Digital Technology

The Government's continued push of technology adoption has resulted in the manufacturing sector to be more technologically-advanced. Complemented with Malaysia's well established local supporting industry networks and talented workforce, we foresee that our manufacturing industry will continue to be globally-competitive.

Industry4WRD policy envisions Malaysia as a strategic partner for smart manufacturing, primary destination for high-technology industries and total solution provider for the manufacturing sector and related services in the region.

The importance of the digital technology in sustaining the current economic activities has spurred many Malaysian companies especially SMEs to Rethink, Reinvent and Revitalise during the COVID-19 pandemic. Many business owners are planning to relook at their business model and accelerate their digital transformation plans while restrategising their factory operations to increase productivity and efficiency.

Reforming key service sectors to promote competitive markets and improve competitiveness in manufacturing is crucial in achieving high-income economy for Malaysia
(The World Bank's Aiming High Report, 2021).



EEPN (Electrical & Electronics Productivity Nexus)

EEPN stands for Electrical and Electronics Productivity Nexus, which is one of the nine productivity nexus, under the Malaysia Productivity Blueprint. The blueprint was launched in 2017, which emphasizes the need for productivity to be addressed holistically at all levels to ensure a systemic change across the economy.

EEPN has four Key Strategies, namely:

1. Enhancing Higher Value-Added Activities
2. Nurturing Talent Pool
3. Creating Value Towards I4.0 Ecosystem
4. Strengthening SME Development

The Plugfest workshops series is one of our EEPN's winning formula in creating value towards I4.0 ecosystem, especially among our local companies. Upon completion of Plugfest 1.0 & Plugfest 2.0 training, participants are expected to complete a Proof-of-Concepts (POCs) project at their workplace.

Plugfest 1.0 (Industrial Internet of Things or IIoT)

Plugfest 1.0 focuses on Industrial Internet of Things. In the three full-day workshop, participants will be guided on connecting three types of sensors (light, temperature and humidity sensors) to an analog-to-digital converter (ADC) which in turn is connected to an Internet Gateway.

Participants are also taught Node-RED programming and to use the Dashboard module to visualise the readings from the three sensors.

Plugfest 2.0 (AI-Based Internet of Things or AIoT)

Plugfest 2.0 is an Artificial Intelligence (AI) based machine vision system. The Plugfest 2.0 starter kit consists of an Intel-based industrial PC and powered by Intel® Intel Edge Insights for Industrial and Intel® OpenVINO™ toolkit.

In the six half-day workshop, participants are taught images capturing techniques, images detection and labelling systems, machine learning and model algorithms. Participants are also taught Node-RED programming and to use the Dashboard module to visualise the results of their inferencing.

PLUGFEST **JOURNEY**

Plugfest 1.0
Northern Region
27th - 29th Nov 2018

Plugfest
Convention MPC
7th March 2019

Plugfest 1.0
Central Region
22nd - 24th April 2019

Plugfest 1.0
Southern Region
22nd - 24th July 2019

Plugfest 1.0
East Malaysia
19th - 21st Sep 2019

Plugfest
Industry4wrd Seminar Sabah
26th Nov 2019

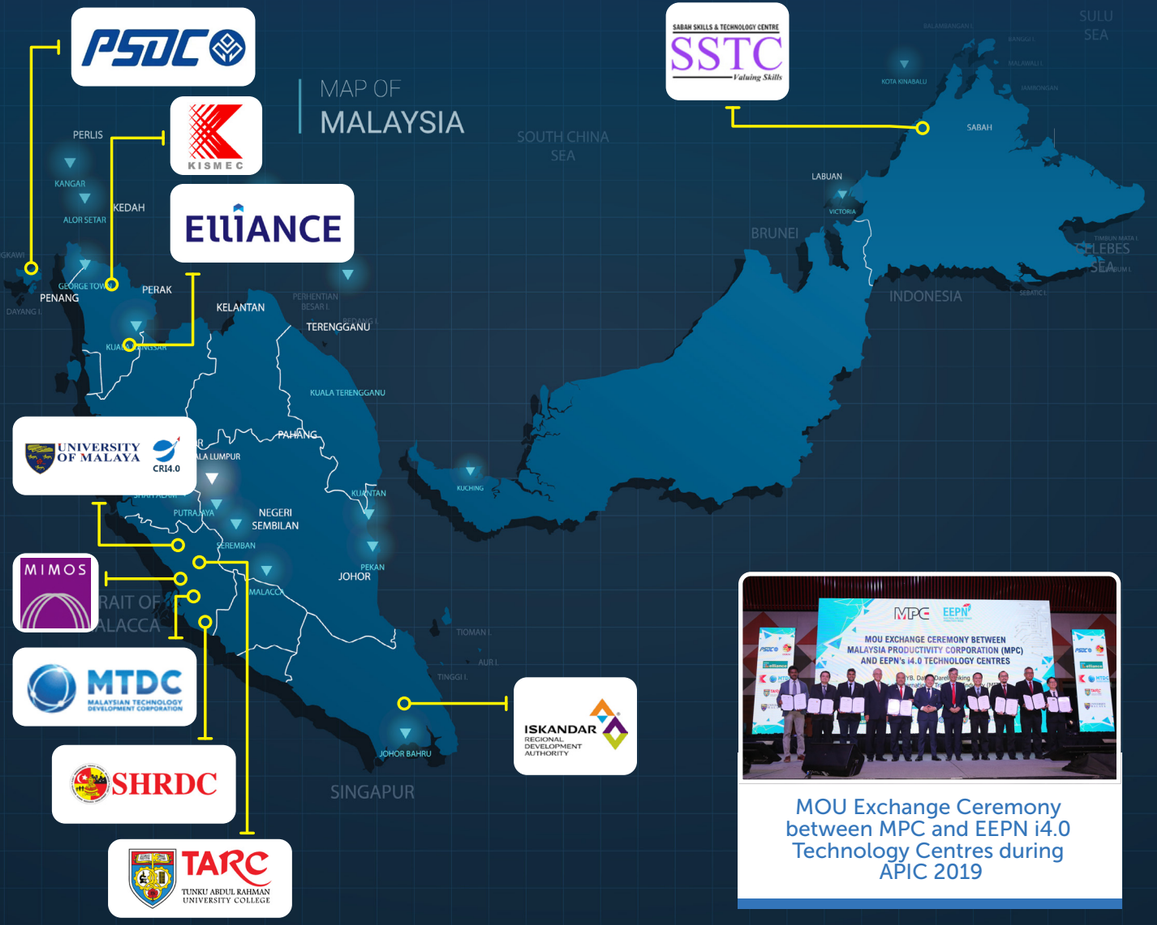
Plugfest 2.0
Virtual Workshop #1
24th - 28th Aug, and
3rd - 4th Sep 2020

Plugfest 2.0
Virtual Workshop #2
19th - 22nd Oct, and
26th - 27th Oct 2020

Way Forward Initiatives[1] 2021
Artificial Intelligence for SMEs (AI4S) and MyReskill IOT

Outcome of Initiatives[1]: To uplift Productivity by using technology; proven that SMEs can do greater things with the right tools and assistance

EEPN INDUSTRY 4.0 TECHNOLOGY CENTRES



MOU Exchange Ceremony between MPC and EEPN i4.0 Technology Centres during APIC 2019

PLUGFEST 1.0 (IIOT) PROGRAMME

Overview

Plugfest 1.0 focuses on Industrial Internet of Things. In the three full-day workshop, participants will be guided on connecting three types of sensors (light, temperature and humidity sensors) to an analog-to-digital converter (ADC) which in turn is connected to an Internet Gateway.

Participants are also taught Node-RED programming and to use the Dashboard module to visualize the readings from the three sensors.

Upon completion of Plugfest 1.0, participants are expected to complete a Proof-of-Concepts (POCs) project at their workplace.

Three full-day program, with training modules as below:

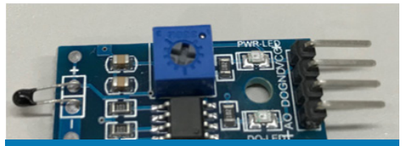
Introduction to Hardware and Software	Starter Kit Setup and Configuration	Node-RED (Basic – Core Modules)	Node-RED (Intermediate - Communications and Visualization Modules)	Moving Forward and Scalability

PLUGFEST 1.0 (IIOT) HARDWARE

Unboxing

IOT Gateway

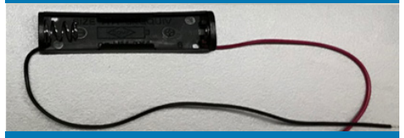
Analog-to-Digital Converter (ADC)



Temperature Sensor

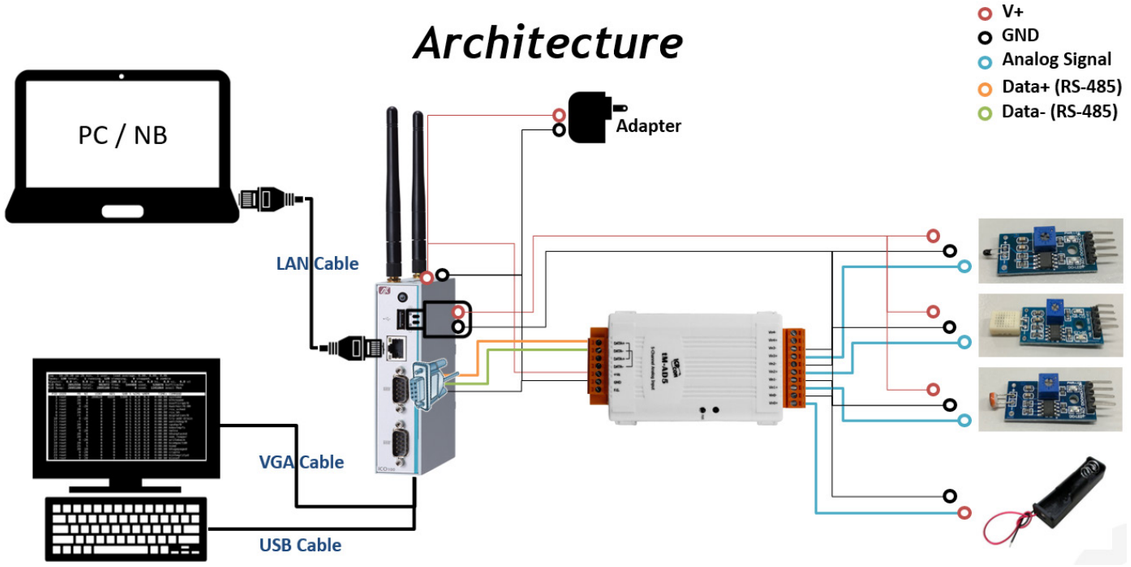
Humidity Sensor

Light Sensor



Battery Case

PLUGFEST 1.0 (IIOT) SOFTWARE



PLUGFEST 1.0 (IIOT) NORTHERN REGION

VENUE	DATES	PARTICIPANTS
PSDC, Penang	27th -29th Nov 2018	32 participants from 17 companies

NUMBER OF PARTICIPANTS
32

SME

NUMBER OF SMEs/LLC
8

MNCs

NUMBER OF MNCs
9

PLUGFEST 1.0 (IIOT) NORTHERN REGION

PARTICIPANTS BREAKDOWN

● SME/LLCs ● MNCs

1 K-ONE	2 ACM	2 CPI	2 INARI			
2 SANDISK	2 OSRAM	2 MOTOROLA	2 TF AMD	2 SANMINA	2 INFINIEON	
2 DELL	2 FINISAR	2 LUMILEDS	2 YTY INDUSTRY	2 NATIONGATE	2 D.E.S ELECTRONICS	2 SWIFTBRIDGE TECHNOLOGIES

PARTNER TESTIMONIAL: PSDC

"Plugfest has successfully demonstrated the adoption of technology which brings productivity and efficiency improvement into manufacturing environment. Kudos to MPC, EEPN and team."

En. Muhamed Ali,
Chief Executive Officer
Penang Skills Development Centre (PSDC)

PLUGFEST 1.0 (IIOT) CENTRAL REGION

VENUE	DATES	PARTICIPANTS
Best Western, PJ	22nd - 24th April 2019	39 participants from 15 companies

NUMBER OF PARTICIPANTS
39

SME

NUMBER OF SMEs/LLC
15

MNCs

NUMBER OF MNCs
5

PLUGFEST 1.0 (IIOT) CENTRAL REGION

PARTICIPANTS BREAKDOWN

● SME/LLCs ● MNCs

1 EXIS TECH SDN BHD	2 HEXA FOOD SDN BHD	2 VICTORIOUS STEP SDN BHD	2 VAYTECH CE-RAMIC FORMERS SDN BHD	2 DAIKIN MALAYSIA SDN BHD	2 STAR MEDIA GROUP	2 INARI
2 DARASH MAJU SDN BHD	2 VENTURE DIECASTING S/B	2 AIN MEDICARE SDN BHD	2 MAH SING PLASTICS INDUSTRIES SDN BHD	2 TQC AUTO-MATION & TECHNOLOGY (M) SDN BHD	2 TG POWER WRAP SDN BHD	2 ICA DYNAMIC ENGINEERING SDN BHD
2 TOP GLOVE SDN BHD	2 PERAK PHCDC	2 SELANGOR SHRDC	2 SABAH SSTC	2 SARAWAK PPKS	2 TAR UC	

PARTNER TESTIMONIAL: MITI

"Discover, share and meet like-minded technology industry players."

Ms. Vimala Murugan
Deputy Senior Director, Industrial Development Division
Ministry of International Trade and Industry (MITI)

PLUGFEST 1.0 (IIOT) SOUTHERN REGION

VENUE	DATES	PARTICIPANTS
Ecoworld, Johor	22nd - 24th July 2019	23 participants from 14 companies

NUMBER OF PARTICIPANTS
23

SME

NUMBER OF SMEs/LLC
14

PLUGFEST 1.0 (IIOT) SOUTHERN REGION

PARTICIPANTS BREAKDOWN

SME/LLCs

2 HQ TOOL INDUSTRIES SDN. BHD.	2 ERABASE INDUSTRY SDN BHD	2 JJWIDE BIOTRADE	2 IMPACT RANK (M) SDN BHD	2 POWER PLUG BUSDUCT SDN BHD
2 OREN SPORT SDN BHD	2 LOCAL BASIC SDN BHD	2 YCL PRECISION ENGINEERING SDN BHD	2 REGEN PRECISION SDN BHD	1 MASE INDUSTRIES SDN BHD
1 RITZ & RICH WORLDWIDE RESORCES SDN.BHD	1 M&A RFID ENTERPRISE	1 ALAM PELANGI ENVIROTECH	1 REGEN PRECISION SDN BHD	

PARTNER TESTIMONIAL: IRDA

"MPC's Plugfest programmes have helped electrical & electronics companies in Iskandar Malaysia to 'Think Big and Start Small' now. Congratulations and we look forward for future collaborations!"

YBhg. Datuk Ismail Ibrahim
Chief Executive
Iskandar Regional Development Authority (IRDA)

PLUGFEST 1.0 (IIOT) EAST MALAYSIA

VENUE	DATES	PARTICIPANTS
Sarawak	19th - 21st Sep 2019	32 participants from 21 companies

NUMBER OF PARTICIPANTS
32

SME

NUMBER OF SMEs/LLC
21

PLUGFEST 1.0 (IIOT) EAST MALAYSIA

PARTICIPANTS BREAKDOWN

● SME/LLCs

2 STAMPIN CONFECTIONARY SDN BHD	2 ROSFANIAGA SERVICES SDN. BHD.	2 BANANA TREE SDN BHD	2 FD CREATIVE SDN BHD	2 ASTEEL SDN BHD	2 PICO FOOD INDUSTRY SDN BHD	2 TOCLAN AGRI-TRADE ASIA SDN BHD
2 LONGI TECHNOLOGY (KUCHING) SDN. BHD.	2 PAWADA FOOD INDUSTRIES SDN BHD	2 LONGI TECHNOLOGY CELL 2	2 COCA FOOD INDUSTRY SDN BHD	1 IANA CORPORATION SDN BHD	1 M.M.B. MARKETING COMPANY SDN BHD	1 ASTEEL AJIYA SDN BHD
1 MUSC FOOD INDUSTRIES SDN BHD	1 LEE FAH MEE SDN BHD	1 SOPHIA TAHA HOLDINGS SDN BHD	1 CASMAT FOOD MANUFACTURE SDN BHD	1 SIPAGUH RESOURCES SDN BHD	1 I.W.H. AGRICULTURE COMPANY	1 JANTAYU STRAWBERRY FARM

PARTNER TESTIMONIAL: MPC SARAWAK

“Plugfest is an amazing platform to introduce IOT technologies and techniques to the industry in order to promote digitalisation and Industry 4.0”

Hajjah Sarimah Misman
Director of MPC Sarawak

PROOF-OF-CONCEPTS (POCS) PROJECTS FROM PLUGFEST 1.0

AllianceCorp Manufacturing Sdn. Bhd.

AllianceCorp Manufacturing Sdn. Bhd.
2006, Jalan Jelawat, Prai Industrial Estate 13700
Seberang Jaya, Penang

Company Background

AllianceCorp Manufacturing Sdn. Bhd. is headquartered in Penang. ACM Sdn. Bhd. is equipped with diverse and specialized machines, facilities and measurement equipment for precision machining, sheet metal fabrication, welding, painting, surface finishing and high-level assemblies.

Project Overview

Remote monitoring of motor 'under testing' from test rig room to central monitoring room.

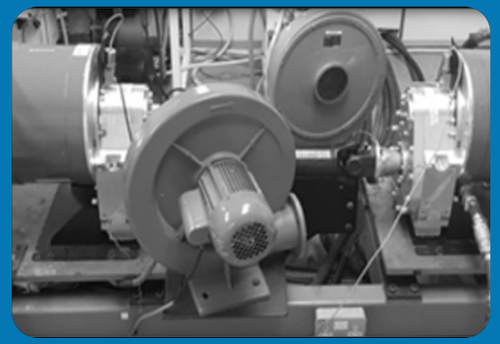
Before:

- Manual monitoring which is prone to errors in logging process
- Safety concerns when readings are taken near the motor under-testing

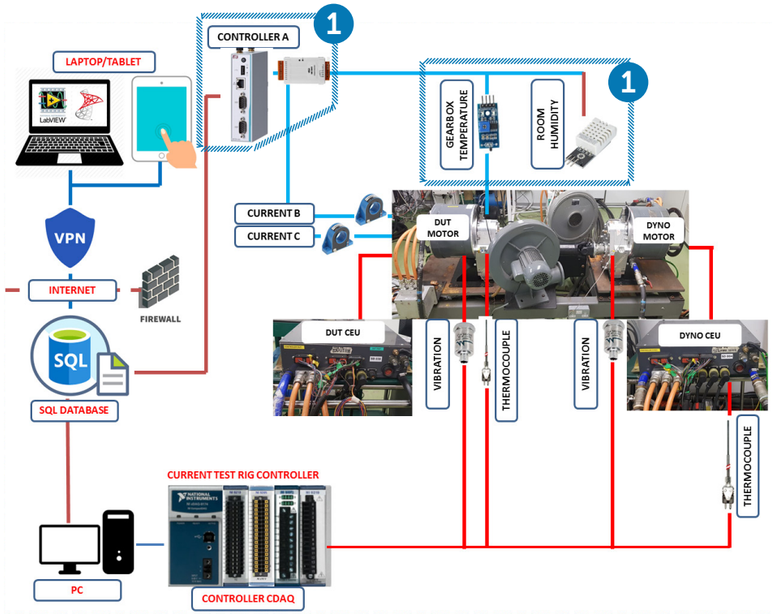
Final Results:

- Enhanced safety because testing is now monitored and controlled in different room (without high pitch noises and no proximity to fast rotating motor)
- Automated emergency 'stop' system, in case any problem arises
- Auto email notifications on product reporting and problems

BEFORE:
Manual monitoring is done near to the moving motor, which exposes safety concerns



ALLIANCECORP MANUFACTURING SDN. BHD.



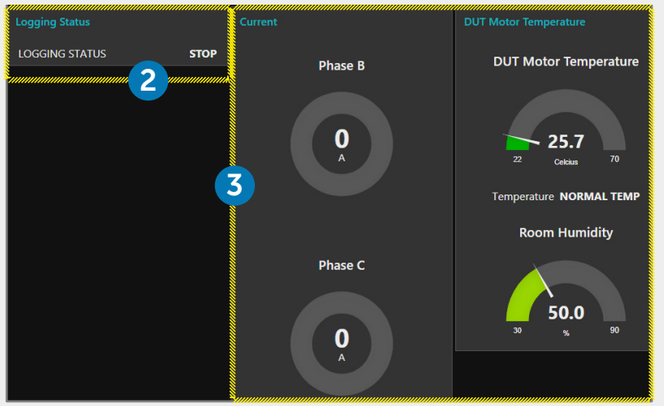
1 Plugfest System and Sensors

AFTER:
Remote monitoring of motor 'under testing' from test rig room to central monitoring room

Start/Stop Logging Switch 2

4 sensors readings 3
Current (X2)
Motor Temp (X1)
Humidity (X1)

AFTER:
Node-RED Dashboard Visualization



Asteel Ajiya Sdn. Bhd.

Lot 712, Block 7, Demak Laut Industrial Park
93050 Kuching, Sarawak

Company Background

Asteel Group is one of the biggest integrated steel mill in East Malaysia, which is a wholly own subsidiary of YKGI Holdings Berhad. Asteel specializes in steel roofing and structures design and build, including downstream industry for other building and construction materials.

Project Overview

Real time temperature monitoring of the 'screw air' compressor, with auto notifications when temperatures exceeds 100°C.

Before:

- No temperature monitoring of 'screw air' compressor
- 'Screw air' compressor will break down when the temperature exceeds 100°C

Final Results:

- Reduction of 'screw air' compressor unscheduled downtime caused by overheating problems

BEFORE:
No auto alerts when 'screw air' compressor temperature rises to dangerous levels (>100°C)

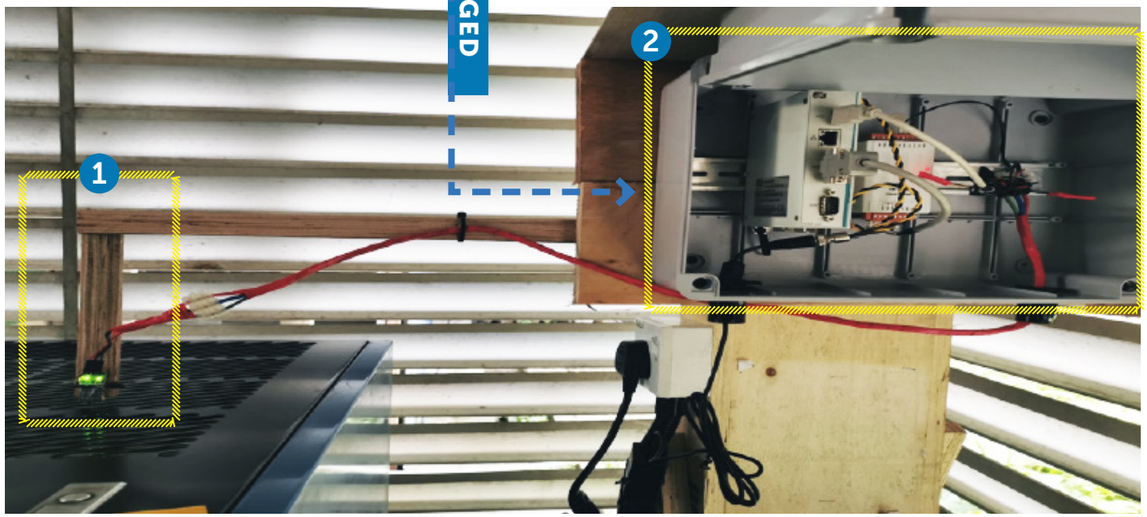
ASTEEL AJIYA SDN BHD

ENLARGED

1. Plugfest Sensors
2. Plugfest System

AFTER:

- Real time temperature monitoring of the 'screw air' compressor
- Auto notifications when temperatures exceed 100°C



CPI (Penang) Sdn. Bhd.

Plot 79, Taman Perindustrian, 7,
Lintang Bayan Lepas 6,
Bayan Lepas Free Industrial Zone Phase 4,
11900 Bayan Lepas, Penang

Company Background

CPI is a fully-integrated Electronic Manufacturing Services (EMS) service provider. CPI also specializes in the supply of precision plastic injection molded parts across various industries including automotive, telecommunications, medical equipment, marine and electrical & electronics.

Project Overview

Real time test environment monitoring, to complement the existing stand-alone thermo-hygrometer.

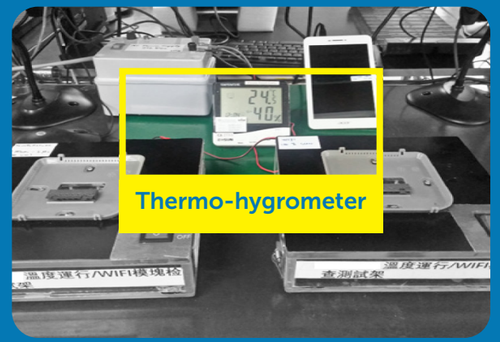
Before:

- No real time monitoring of test environment because the stand-alone thermo-hygrometer is not automated

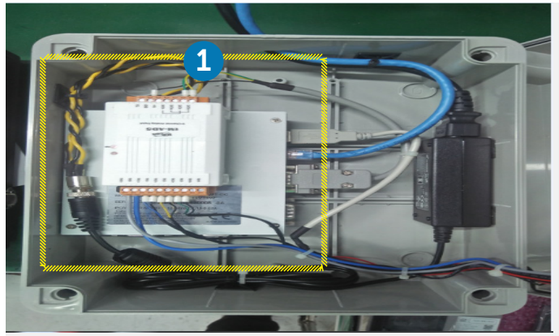
Final Results:

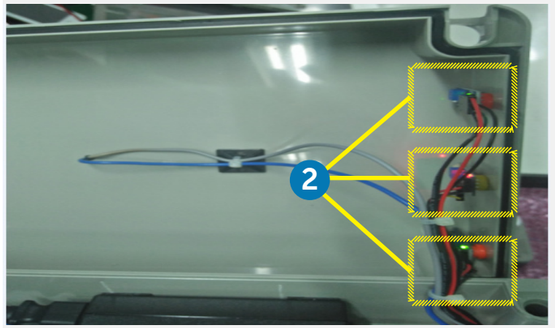
- Automated real time monitoring of test environments
- Enhanced quality and reliability due to better test environments monitoring

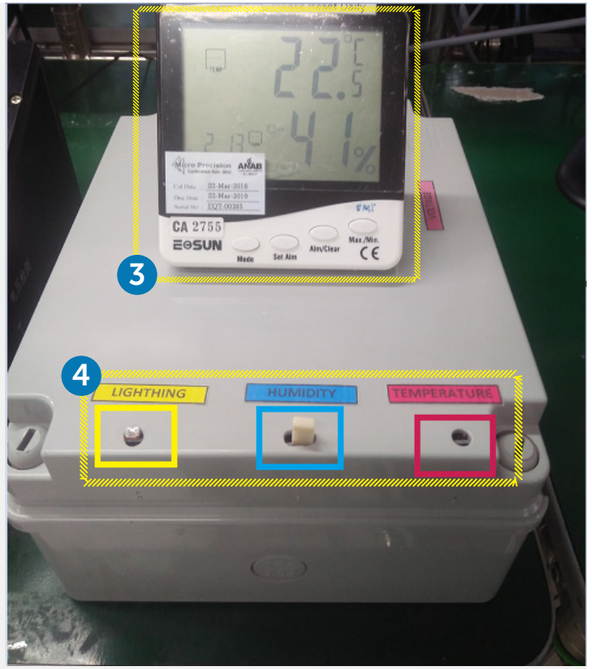
BEFORE:
Thermo-hygrometer used for monitor test environment is stand-alone and not automated



CPI (PENANG) SDN. BHD.







1. Plugfest System
2. Plugfest Sensors (bottom view)
3. Thermo-hygrometer
4. Plugfest Sensors (top view)

AFTER:

- Plugfest sensors (light, temperature and humidity) are installed on the same panel as the thermo-hygrometer
- This provides real time monitoring of test environment
- System will auto trigger if the test environment temperature is out-of-range

Darash Maju (M) Sdn. Bhd.

No. 58-2, Jalan Dataran Jade 6
Dataran Jade, Jade Hills
43000 Seri Kembangan, Selangor

Company Background

Darash Maju (M) Sdn Bhd was established in 2017 and fully bond-able multi-dimensional construction company based in Kajang, Malaysia. The company has demonstrated abilities to undertake diverse projects mainly in automotive industries, plant setup, civil and structural works, precision machining, parts trading and maintenance service providers.

Project Overview

Real time temperature monitoring of the roller tester, displayed at the Main Control Panel (MCP) .

Before:

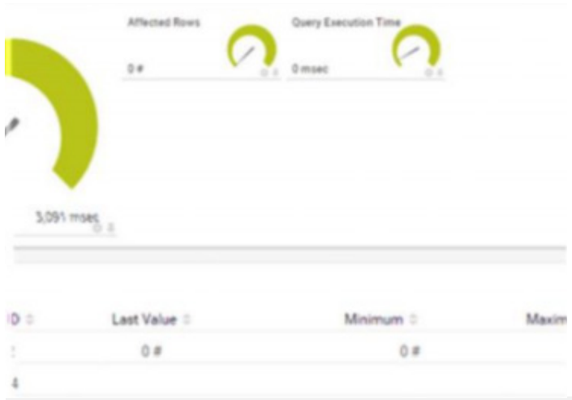
- No automated method to monitor and record temperature at Main Control Panel of Roller Tester

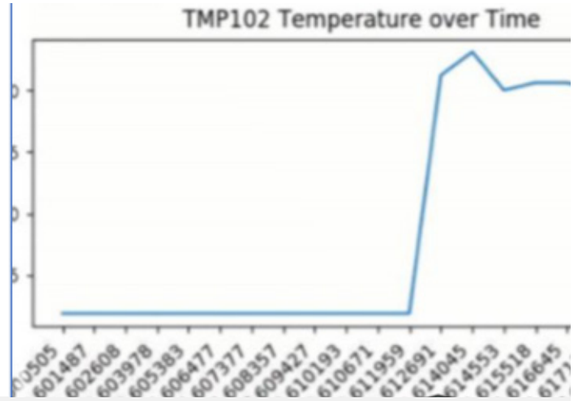
Final Results:

- Module to monitor temperature is now integrated with Main Control Panel (MCP)
- Prevent roller tester equipment from breakdown due to over heating

BEFORE:
Temperature at Main Control Panel (MCP) of Roller Tester is not monitored

DARASH MAJU (M) SDN BHD





AFTER:

- Real time temperature monitoring of the roller tester, with displayed at the Main Control Panel (MCP)
- Data readings are converted into database, and plotted as charts

AFTER: Notifications if temperature exceeds allowable limits

Hexa Food Sdn. Bhd.

Jalan Kebun, Amj Industrial Park
40600 Shah Alam, Selangor

Company Background

Hexa Food Sdn. Bhd. specializes in the supplies of spices, herbs and seasonings products for many food retailers and manufacturers in Malaysia. They process spices and seasoning products in their local factories, which are HALAL and HACCP certified.

Project Overview

Real time environmental monitoring of sorting process, in terms of light intensity, temperature and humidity

Before:

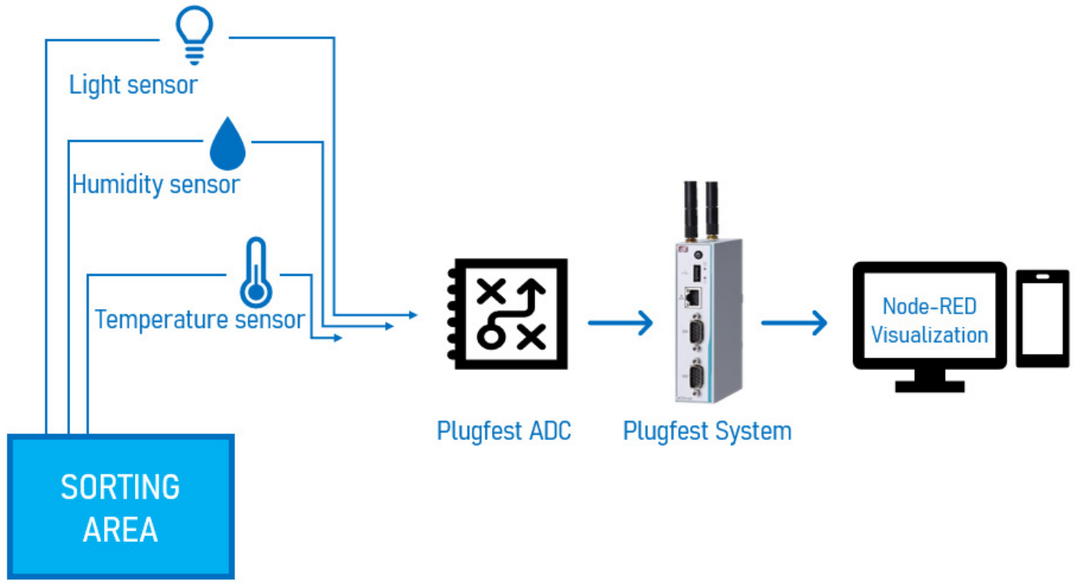
- Monitoring of working conditions is manually recorded
- Poor working conditions and environment has resulted in human errors and low quality of products

Final Results:

- Optimal environment condition has resulted in lower human errors, lesser product quality issues and an increase in Overall Equipment Efficiency (OEE) scorings

BEFORE:
Monitoring of working conditions is manually recorded

HEXA FOOD SDN BHD



AFTER:
Real time environmental monitoring of sorting process, in terms of light intensity, temperature and humidity

Optimal working environment parameters are:

- Optimal amount of light (> 300 Lux)
- Optimal temperature (21°C ~ 25°C)
- Optimal humidity level (50% ~ 80%)

Iana Corporation Sdn. Bhd.

Lot 1314, Miri Waterfront Commercial Centre
98000 Miri, Sarawak

Company Background

Iana Corporation Sdn. Bhd. is a food manufacturer based in Miri Sarawak, specializes in Kek Lapis Sarawak . Their four product brands are Siti Payung, Borneo Outlet Store, Syuqalah and Musuem Kek Lapis Sarawak.

Project Overview

Real time light, temperature and humidity monitoring at the production area, to ensure quality of semi-ready Kek Lapis Sarawak.

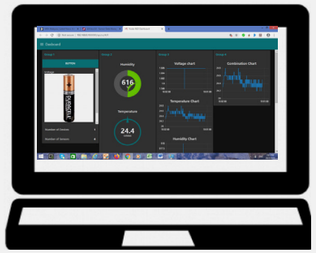
Before:

- Monitoring of working conditions is manually recorded
- Poor working conditions and environment has resulted in human errors and low quality of products

Final Results:

- Environmental monitoring of production area in terms of temperature, humidity and light, with 'live' screen view
- Data monitoring has helped reduce damaged products due to fungus caused by high humidity

BEFORE:
Damaged products due to fungus caused by high humidity



AFTER:

Real time environmental monitoring of production area, as well as the semi-finished Kek Lapis Sarawak cakes storage area

DAMANGED CAKES PREVENTION

Data from Plugfest system is used to identify root causes of fungal attacks and moldy cake products, due to temperature and humidity

II-VI Malaysia Advanced Mfg Center Sdn. Bhd. (formerly known as Finisar)

Plot 1, Kinta Free Industrial Zone
Off Jalan Tunku Abdul Rahman
31200 Chemor Perak

Company Background
Finisar is a global technology leader for fiber optic subsystems and components that enable high-speed voice, video and data communications for telecommunications, networking, storage, wireless, and cable TV applications.

Project Overview
Real time temperature monitoring of production ovens, with auto email notifications when temperature is out-of-range

Before:

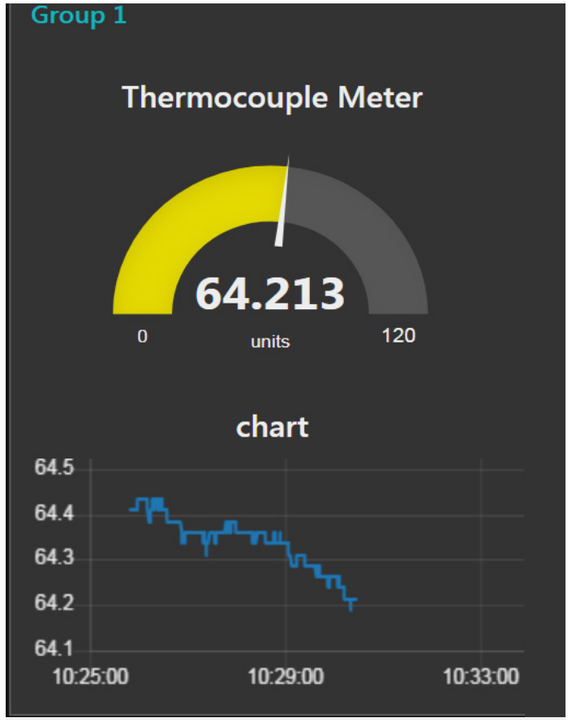
- Temperature readings from oven's thermocouple are gathered monthly, via a data logger
- Sometimes, there are no auto alerts if the thermocouples were disconnected from data logger, in between the monthly readings

Final Results:

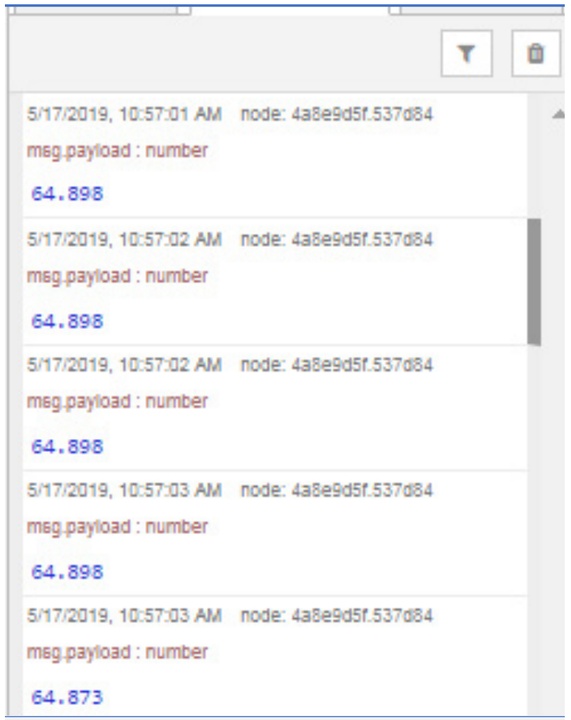
- Oven temperature is maintained within allowable range of 85°C to 120°C
- Auto alerts to the person-in-charge when temperature is out-of-range.
- Temperature readings are plotted in charts for trending purposes

BEFORE:
Manual temperature readings are taken every month

II-VI MALAYSIA ADVANCED MFG CENTER SDN. BHD.



AFTER:
Temperature readings are plotted in charts for trending purposes



AFTER:
Oven temperature is maintained within allowable range of 85°C to 120°C

IMPACT RANK

Impact Rank (M) Sdn. Bhd.

25, Jalan Angkasa Mas Utama,
Kawasan Perindustrian Tebrau 2,
81100 Johor Bahru, Johor

Company Background

Impact Rank is a manufacturer of biodegradable plastic bags; specializing in food-grade bags, as well as double sealed bags for enhanced strength. They are currently doing Research and Development (R&D) in new anti-rust and anti-static applications

Project Overview

Real time monitoring and auto data recording of environment of production control room, for light intensity, temperature and humidity

Before:

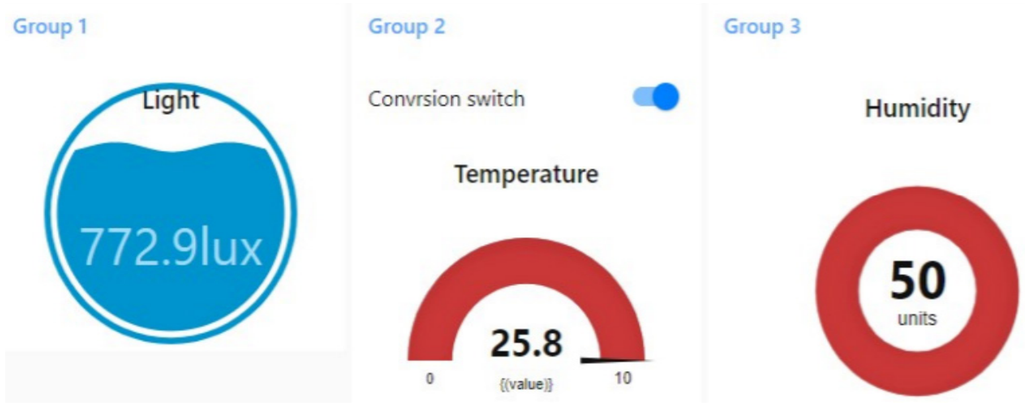
- Environmental readings in production control room are recorded manually.
- Data is not charted or analyzed

Final Results:

- Ability to monitor production control room for lighting, temperature and humidity
- Data is then charted for further analysis

BEFORE:
Environmental readings in production control room are recorded manually

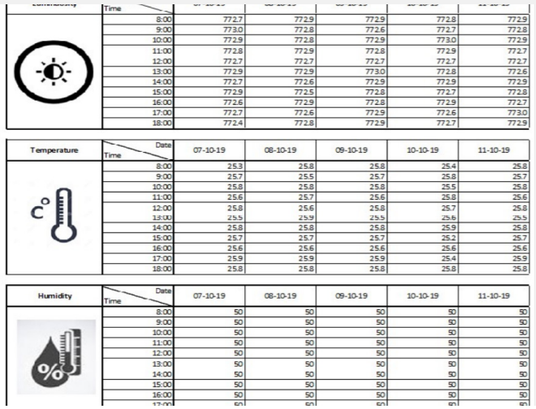
IMPACT RANK (M) SDN BHD



Data is then charted for further analysis

AFTER:

Ability to monitor production control room for lighting, temperature and humidity



Temperature	Date / Time	07-10-19	08-10-19	09-10-19	10-10-19	11-10-19
	8:00	25.3	25.8	25.8	25.4	25.8
	9:00	25.7	25.5	25.7	25.8	25.7
	10:00	25.8	25.8	25.8	25.5	25.8
	11:00	25.6	25.7	25.6	25.8	25.6
	12:00	25.8	25.6	25.8	25.7	25.8
	13:00	25.5	25.9	25.5	25.6	25.5
	14:00	25.8	25.8	25.8	25.9	25.8
	15:00	25.7	25.7	25.7	25.2	25.7
	16:00	25.6	25.6	25.6	25.6	25.6
	17:00	25.9	25.9	25.9	25.4	25.9
	18:00	25.8	25.8	25.8	25.8	25.8

Humidity	Date / Time	07-10-19	08-10-19	09-10-19	10-10-19	11-10-19
	8:00	50	50	50	50	50
	9:00	50	50	50	50	50
	10:00	50	50	50	50	50
	11:00	50	50	50	50	50
	12:00	50	50	50	50	50
	13:00	50	50	50	50	50
	14:00	50	50	50	50	50
	15:00	50	50	50	50	50
	16:00	50	50	50	50	50
	17:00	50	50	50	50	50

Infineon Technologies (Kulim) Sdn. Bhd.

Lot 10 & 11, Jalan Hi-Tech 7
Industrial Zone Phase II
Kulim Hi-Tech Park
09000 Kulim

Company Background
Infineon's wafer fabrication facility in Kulim High Tech Park, Kedah is the company's first and only water fabrication facility in Asia and positioned as the competence center for megatrend technologies focusing on automotive, energy efficiency and Sensors for Internet of Things with headcount of close to 2,900 employees.

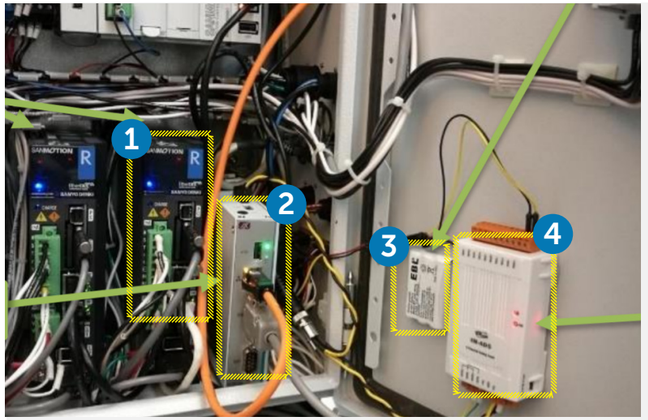
Project Overview
Monitoring of Stocker servomotor's encoder backup battery condition and performance, including auto-notifications

Before:
- Unable to monitor servomotor backup battery conditions
- If the backup battery is weak and the position information is lost after power interruption, it can post potential safety and quality issues

Final Results:
- Dashboard to monitor Stocker servomotor's encoder backup battery condition and performance, including auto-notifications
- Minimizing safety and quality issues, because now the servomotor position can be identified and located, after any power interruption

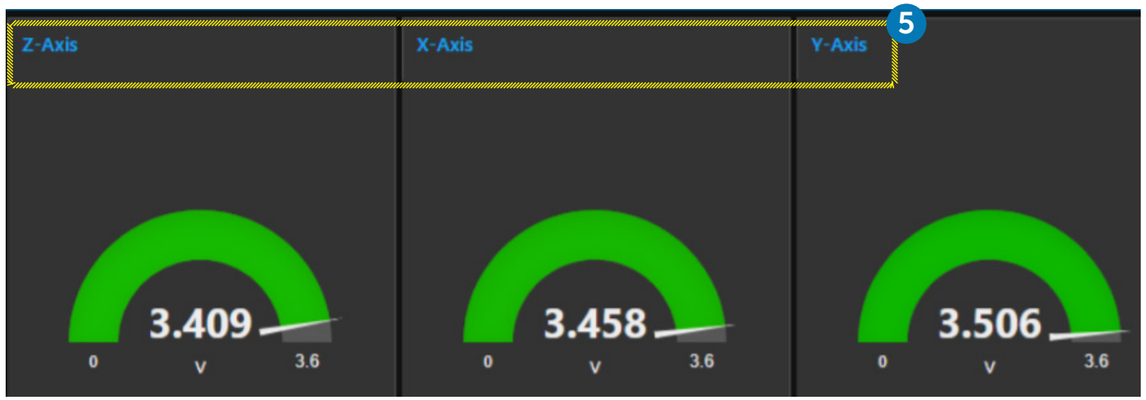
BEFORE:
Unable to monitor Stocker servomotor's encoder backup battery performance

INFINEON TECHNOLOGIES (KULIM) SDN. BHD.



1. Servomotor Amplifier
2. Plugfest System
3. Stocker servomotor's encoder backup battery
4. Plugfest ADC
5. Battery's voltages for Z-axis, X-axis and Y-axis

△ AFTER: Ability to monitor servomotor's backup battery condition, including auto-notifications



K-One Technology Berhad

66 & 68, Jalan, Jalan SS 22/21,
Damansara Jaya
47400 Petaling Jaya, Selangor

Company Background

K-One is a one-stop technology solution provider focusing on innovation, design, development and manufacturing of IoT products, medical/healthcare devices and consumer technology lifestyle gadgets.

Project Overview

Transform production environment to be more data-centric, by tracking station status, cycle time and output units

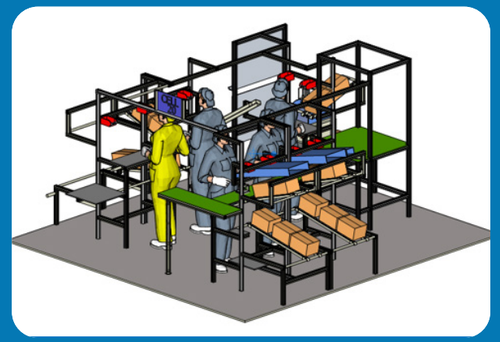
Before:

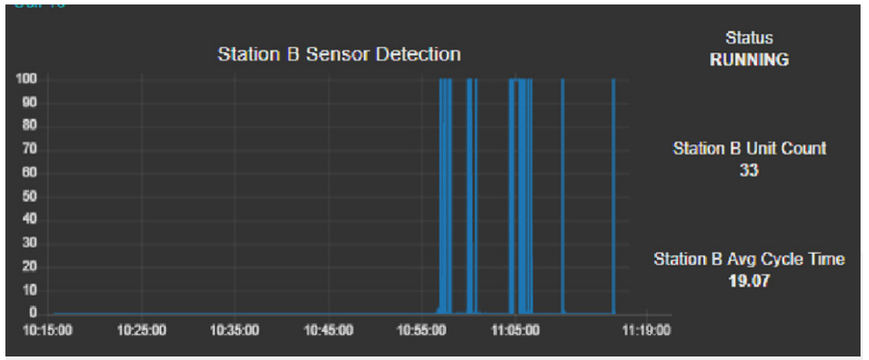
- Operator does data recording on paper, and data aggregation is performed on spreadsheet.
- Slow procedure, inefficient process and data is not easily available

Final Results:

- Remote and real time monitoring eliminates wasted time and improves productivity
- Real time dashboard keeps the production floor informed of any anomalies and alerts
- Condition-based maintenance reduces downtime

BEFORE:
Production data is not shared seamlessly: ineffective in monitoring and decision making

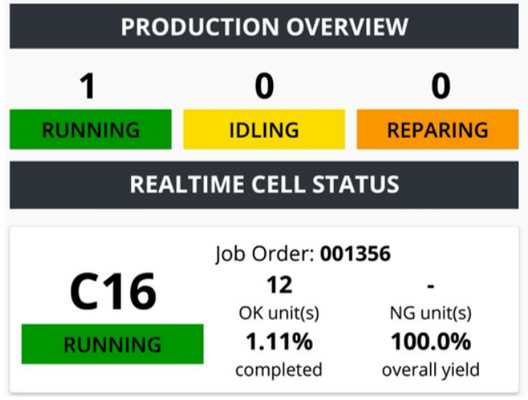


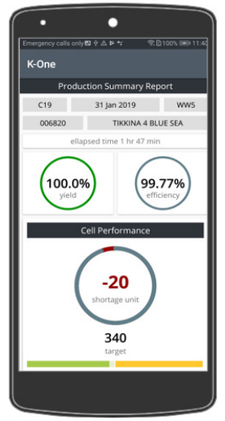


AFTER:

Sensors installed onto equipment are able to track station status, cycle time and output units

Status of all stations is aggregated into production summary report, viewable on cellphone





Leading Platform (M) Sdn. Bhd

No 53, Jalan Nilam 1/2
Subang Hi-Tech Industrial Park
47500, Subang Jaya, Selangor

Company Background
Manufacturer of metal tubing and pipe components for automotive sector. Current Tier-1 customer is Proton. Other customers include Hicom Diecasting, Sapura Brake Technology and PEPS JV.

Project Overview
Digital production reporting system with IOT-enabled visualization notification for support team

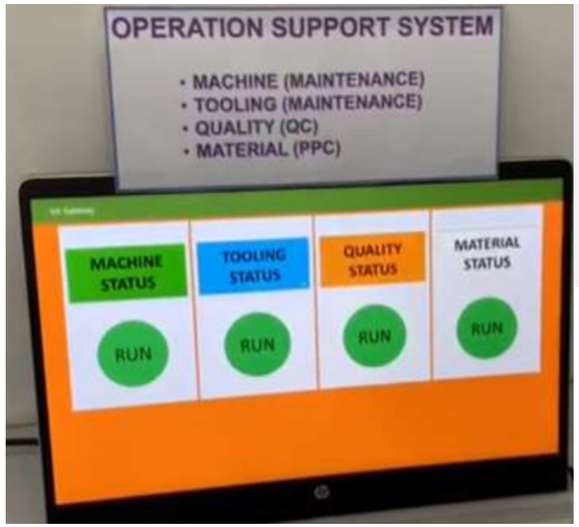
Before:

- Production staff needs to walk to respective supporting team's bay for support
- Production staff needs to wait or search around at other places if there is no one at the bay

Final Results:

- Plugfest system is connected to production floor equipment panel
- Status of the production floor is now available, and being displayed at the support bay

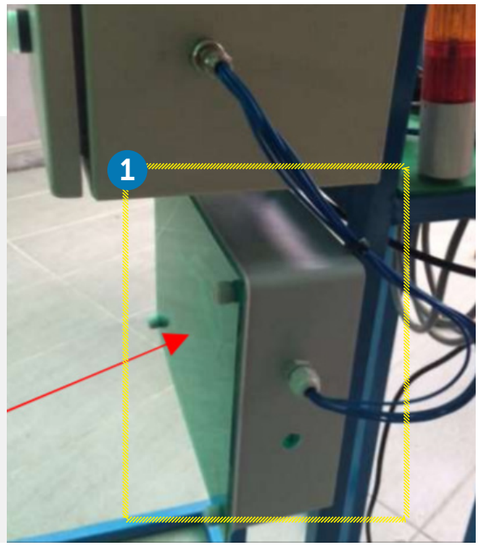
BEFORE:
Technicians at support bay can not monitor status of production floor



AFTER:
Status of the production floor is now available, and being displayed at the support bay

AFTER:
Plugfest system is connected to production floor equipment panel

Plugfest System 1



Mah Sing Plastics Industries Sdn. Bhd.

Lot 9, Lingkaran Sultan Mohamed 1
Kawasan Perindustrian Bandar Sultan Suleiman
42000 Pelabuhan Klang, Selangor

Company Background

Mah Sing Plastics Industries Sdn. Bhd. (MSPI) was incorporated in Malaysia in 1979. They are one of the largest high-tech plastic product (such as plastic pallets or plastic containers) manufacturers in Malaysia

Project Overview

Real time monitoring of inverter machine condition, allowing maintenance team to conduct minor repairs and avoid machine replacement

Before:

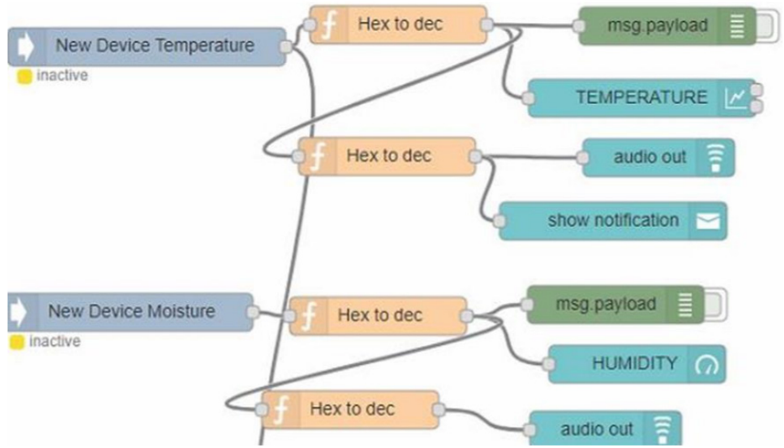
- Inverter's alarm will notify with alerts if it operates beyond ideal level.
- In most cases, inverter is damaged beyond repair when the alarm is triggered.

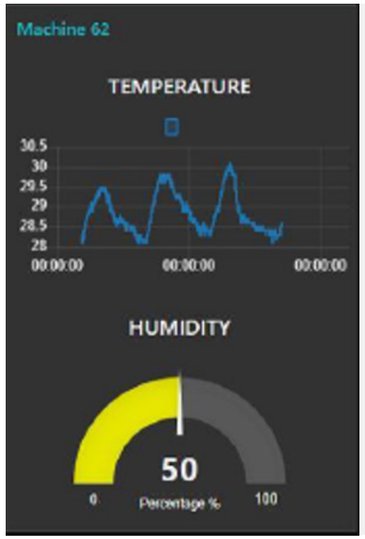
Final Results:

- The implemented Plugfest system allows the maintenance team to monitor the inverter's condition real time
- Major repairs are replaced with minor repairs which allows cost savings of ~ RM5,000 for each new inverter replacement

BEFORE:
Inverter machine conditions are not being monitored real time

MAH SING PLASTICS INDUSTRIES SDN BHD





AFTER:

- Temperature and humidity sensors are placed at inverter unit
- Node-RED programming is being used to gather readings (top)
- Reading are displayed real time (left)
- Auto notification alerts will be triggered and send to tablet as will as manager's office PC

OSRAM

OSRAM Opto Semiconductors (Malaysia) Sdn. Bhd.

Real-Time Oven Monitoring

Company Background
OSRAM Opto Semiconductors offers a spectrum of infinite possibilities of high-quality products in the field of illumination, visualization and sensor technology

Contact Us:
OSRAM Opto Semiconductors (Malaysia) Sdn. Bhd.
Bayan Lepas Free Industrial Zone Phase 1
11900 Bayan Lepas Penang

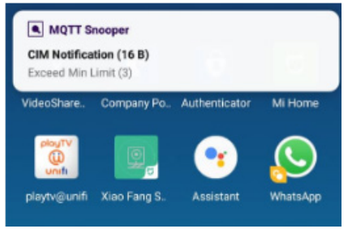
OSRAM OPTO SEMICONDUCTORS (MALAYSIA) SDN BHD

Project Overview

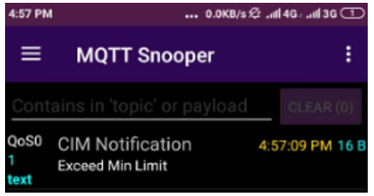
Real time monitoring of oven temperature, with auto notifications.

Before:
- No method to tap, monitor and record oven temperature for equipment without SECS/GEM
- Process engineers do not have data to conduct analysis

After:
- An application to monitor oven temperature
- A dashboard for monitoring and recording temperature data



Final Results:
- A module to tap and monitor oven temperature
- A dashboard for monitoring and recording temperature data
- Cost avoidance of RM140K (7 units of non-SECS/GEM equipment at RM20K per equipment)



When the temperature exceeds the limits, the Message Queuing Telemetry Transport (MQTT) broker will send out auto-notifications

Pawada Food Industries Sdn. Bhd.

2024, Jalan Semangat
Bintawa Industrial Estate
93450 Kuching, Sarawak

Company Background
Pawada is a local producer of Halal food, based in Borneo. Their food products are made from specially selected ingredients of the best grade and quality. Some of their products include Sarawak black pepper sauce, chilli sauce, tomato sauce, vinegar, corned beef. Pawada's mission is to bring excellence to the Halal branding

Project Overview
Monitoring of temperature and humidity of the incubation control room for soybean fermentation process

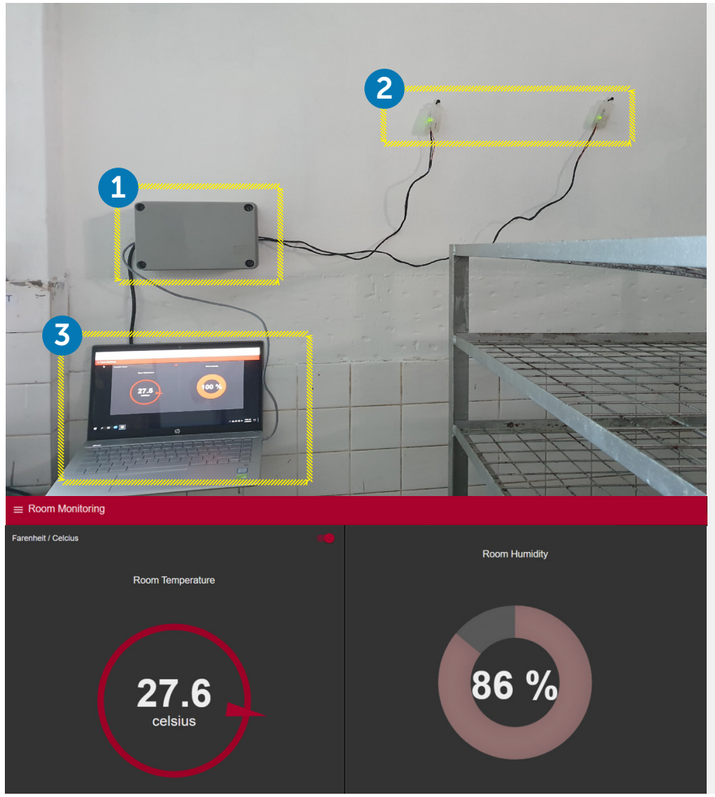
Before:

- The temperature of the soybean fermentation process needs close monitoring to ensure quality
- Temperature monitoring and control process are done manually
- Currently, there is no alarm system if the temperature and humidity are out-of-range

Final Results:

- The temperature and humidity readings of the incubation room are monitored real time
- Resulting in improvement of the quality of the inoculated soybean mixture, due to better controls

BEFORE:
Manual monitoring of the incubation control room for soybean fermentation process



1 Plugfest System

2 Plugfest Sensors

3 Node-RED visualization

AFTER:
Auto monitoring of temperature and humidity for soybean fermentation process. Setup

AFTER:
Display of control incubation room environmental conditions

Power Plug Busduct (PPB) Sdn. Bhd.

17, Jalan SILC 1/4
Kawasan Perindustrian SiLC
79200 Nusajaya, Johor

Company Background

Power Plug Busduct Sdn. Bhd. is a manufacturer of quality and reliable busway trunking system and conduits. They support various sectors including industrial, commercial and hospitality facilities, public transport systems, airports and logistics facilities

Project Overview

Real time temperature monitoring on product (electrical busway), and to provide alerts if temperature exceeds maximum allowable limits

Before:

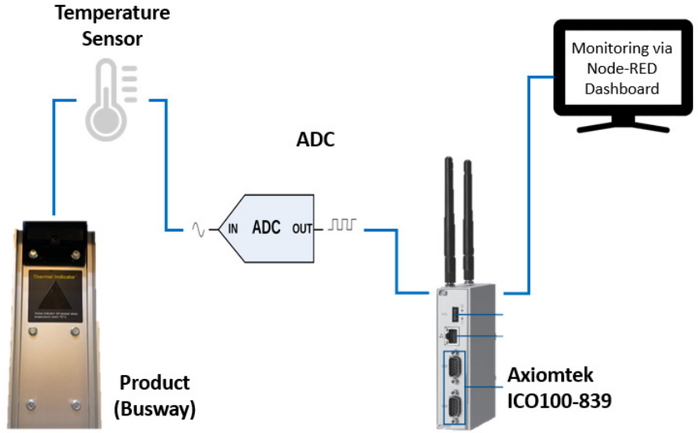
- Not able to monitor the temperature of electrical busway product
- No capability to receive alerts if electrical busway product temperature exceeds maximum limits

Final Results :

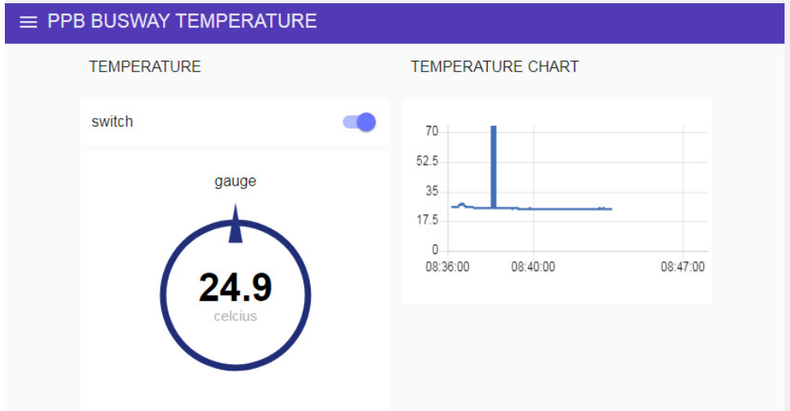
- Ability to monitor product temperature real time
- Avoid product burning accidents, with auto-notifications

BEFORE:
Not able to monitor temperatures of Busway product in real time

POWER PLUG BUSDUCT (PPB) SDN BHD



AFTER: Architecture diagram



AFTER: Busway temperature readings are monitored real time and temperatures chart can be plotted

Rosfaniaga Services Sdn. Bhd. (D-Frentz)

Lot 1769, Eastwood Industrial Estate
Jalan Miri By Pass,
98000 Miri, Sarawak

Company Background

Rosfaniaga Services Sdn. Bhd. has been manufacturing fish-based food products since 2009, specializing in keropok lekor. Their processing factory are in Miri, Sarawak

Project Overview

Real time production environment monitoring to ensure good quality of keropok lekor, which needs
to be crispy, smooth texture and easy to cook

Before:

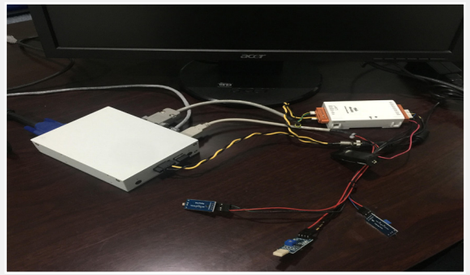
- Sub-optimal production environment is affecting the productivity of the operators
- Difficulties in maintaining consistent quality of keropok lekor

Final Results:

- Conducive production environment has resulted in improved product quality, reduced human errors and increased productivity

BEFORE:
Inconsistent quality of *keropok* lekor due to inability to monitor production environment

ROSFANIAGA SERVICES SDN. BHD (D-FRENTZ) SDN BHD



AFTER:

Dashboard makes information easily accessible to everyone

Data collected is used to analyze the quality of keropok lekor

Date	Time	Temperature (°C)	Humidity (%)	*Keropok Lekor* Appearance (scale 1-5)	Remarks
25/2/2020	08.00 AM	25	50	3	
25/2/2020	09.00 AM	25	51		
25/2/2020	10.00 AM	25	51		
25/2/2020	11.00 AM	26	51		
25/2/2020	12.00 PM	26	50		
26/2/2020	08.00 AM	25	54	4	
26/2/2020	09.00 AM	25	54		
26/2/2020	10.00 AM	25	54		
26/2/2020	11.00 AM	25	54		
26/2/2020	12.00 PM	26	53		
27/2/2020	08.00 AM	25	50	3	
27/2/2020	09.00 AM	25	50		
27/2/2020	10.00 AM	25	50		

SANMINA®

Sanmina-SCI Systems (M) Sdn. Bhd.

202 Lorong Perusahaan Maju 9
Bukit Tengah Industrial Park
Penang

Company Background

Sanmina is an Original Equipment Manufacturer (OEM) in the communications and computer hardware field. Sanmina in Penang specializes in two-ways radios and battery systems

Project Overview

Remote monitoring of the 'Label Applicator' machine status and duration of downtime, to improve Overall Equipment Efficiency (OEE)

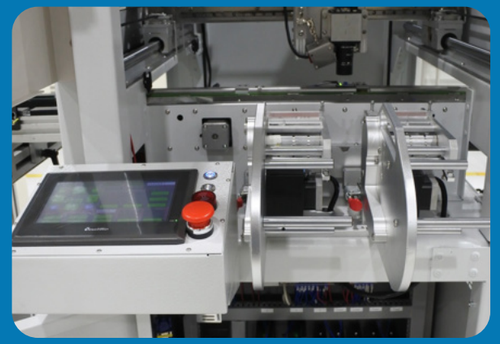
Before:

- Not able to remote monitor the 'Label Applicator' machine status and duration of downtime

Final Results:

- Engineer is able to conduct remote monitoring on machine status and duration of downtime for 'Label Applicator' machine
- Reduced 'Label Applicator' machine idle and downtime, resulting in improved Overall Equipment Efficiency (OEE)

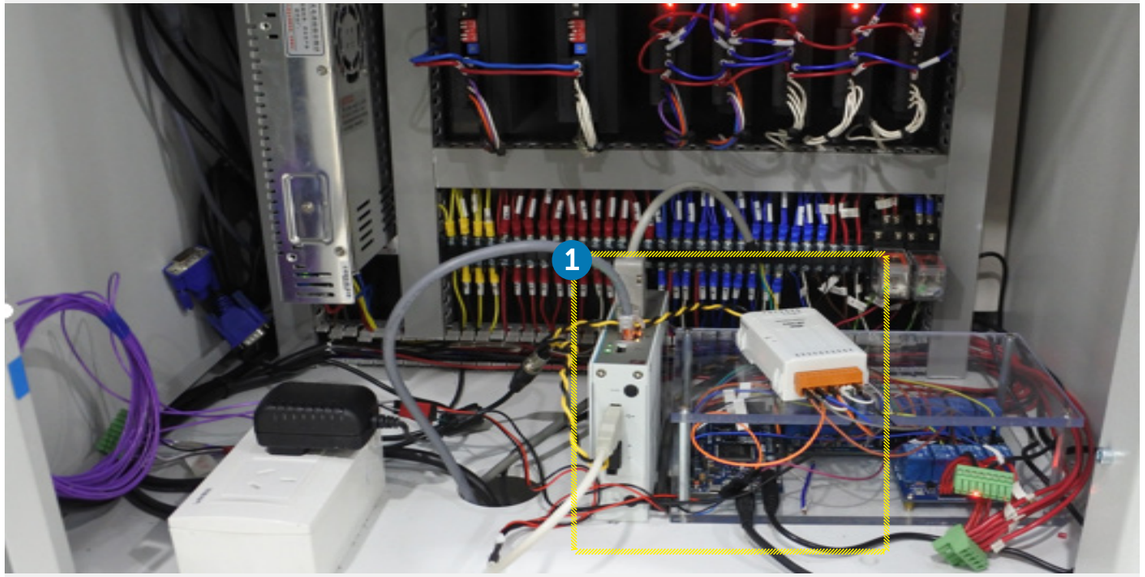
BEFORE:
Not able to remote monitor the 'Label Applicator' machine status and duration of downtime

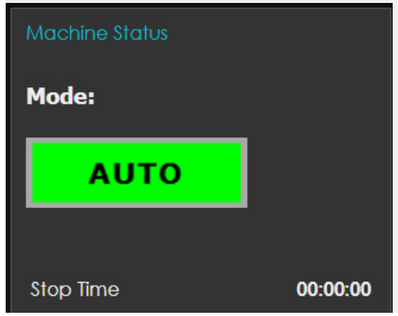


SANMINA-SCI SYSTEMS (M) SDN. BHD.

AFTER: The Plugfest system being installed at the 'Label Applicator' machine

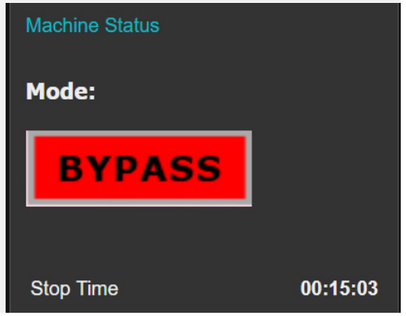
1 Plugfest System





AFTER:

Display of remote monitoring on machine status and duration of downtime for 'Label Applicator' machine



Sophia Taha Holdings Sdn. Bhd.

Lot 802 Taman Perindustrian, Demak Laut
Jalan Bako, 93764 Kuching, Sarawak

Company Background

Sophia Taha is a manufacturer of stingless bee honey-based products, operated in Kuching, Sarawak. They are a producer of F&B and cosmetics products with Halal, MESTI, and GMP certifications

Project Overview

Real time light, temperature and humidity monitoring at the production process, to ensure product quality

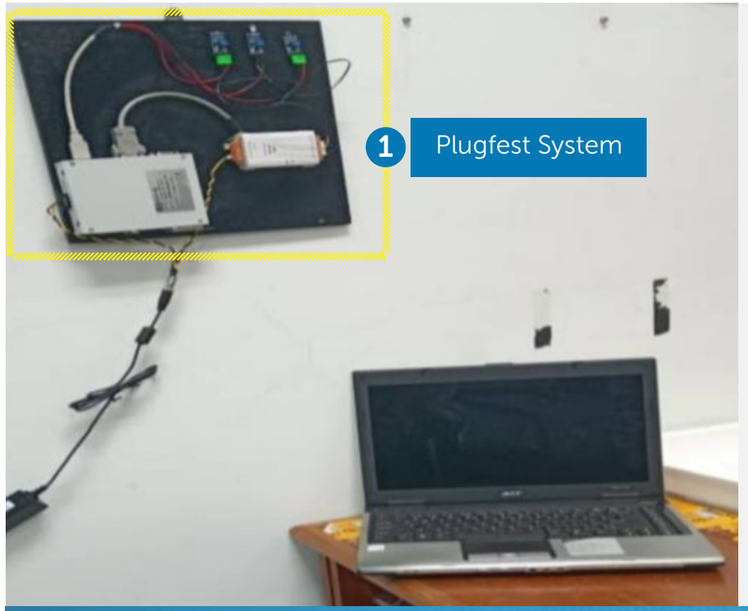
Before:

- The room temperature and lighting need close monitoring to ensure product quality
- Production process area does not have any real time monitoring system

Final Results:

- Production process area is equipped with real time monitoring
- Light and temperature readings are readily displayed for easy attention
- Auto alerts if the temperature and light are
- out-of-range

BEFORE:
Production process area does not have any real time monitoring system

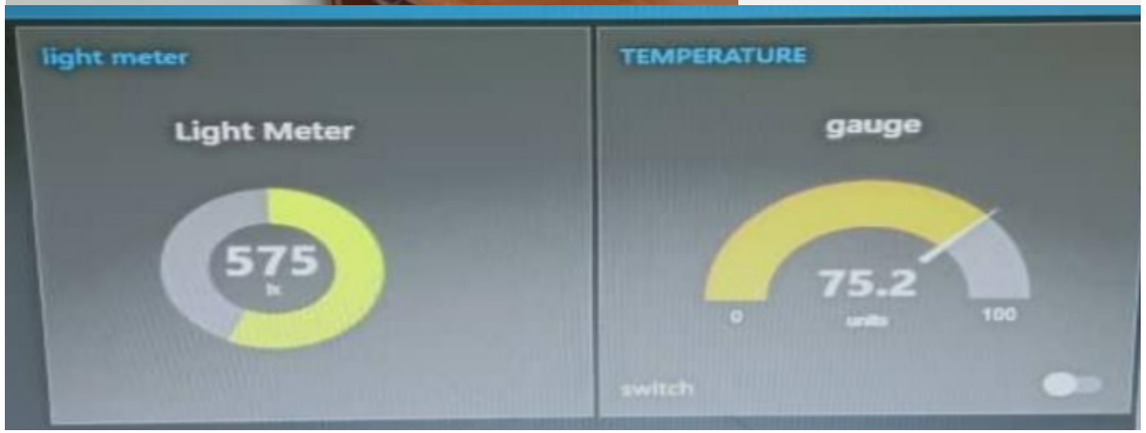


1 Plugfest System

AFTER:

Production process area has Plugfest System to allow for real time monitoring

Light and temperature readings are readily displayed for easy attention



TG Power Wrap Sdn. Bhd.

Lot 52, Jalan Pknk 1/6
Kawasan Perusahaan Sungai Petani
08000, Sungai Petani, Kedah

Since 1942
THONG GUAN
INDUSTRIES BERHAD
(COMPANY NO: 199401038519)
(324203-K)

Company Background

TG Power Wrap, a subsidiary of Thong Guan Industries Berhad, is a manufacturer of high-quality PVC food wrapping film for local and overseas markets

Project Overview

Real time monitoring of the silo's filter condition by auto capturing the duration of the filter's loading cycle

Before:

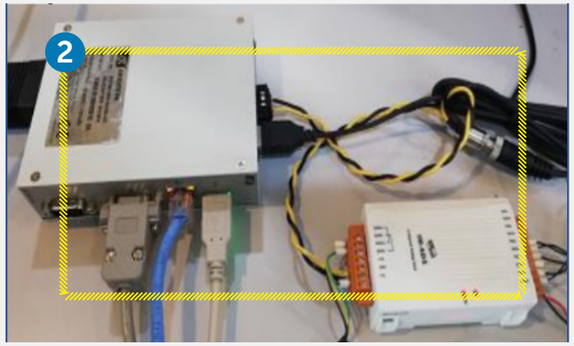
- Real time monitoring of the silo's filter condition by auto capturing the duration of the filter's loading cycle

Final Results:

- No filters break down due to choking as a result of timely cleaning of filters
- Filter's lifespan data allows for better spare parts management

BEFORE:
Silo's filters are replaced every 4 weeks, irregardless of their usage or condition

TG POWER WRAP SDN. BHD.



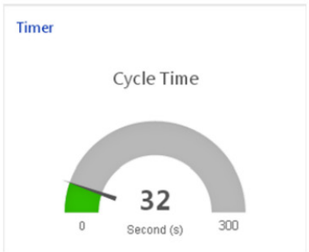
1 Silo System

2 Plugfest System

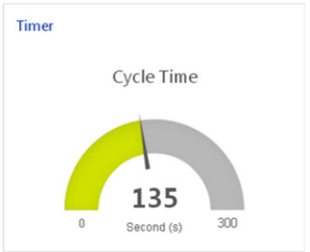
AFTER:

The silo system (top left) is fitted with Plugfest system (top right)

The filter's condition can be detected by monitoring the duration time of the filter's loading cycles; the results are displayed by categories



Good



Poor

Plan to clean Filter

Bad

Stop immediately and clean Filter

TF-AMD Microelectronics Sdn. Bhd.

Pintasan Kampung Jawa 1
Kawasan Perindustrian Bayan Lepas
11900 Bayan Lepas, Penang

Company Background

AMD Penang is one of pioneer electronics companies to established in Penang in 1972. It has since been renamed to TF-AMD. Its core business is the assembly and testing of microprocessors

Project Overview

Live status monitoring of Despatch Oven temperatures, with auto triggering for out-of-limits temperatures

Before:

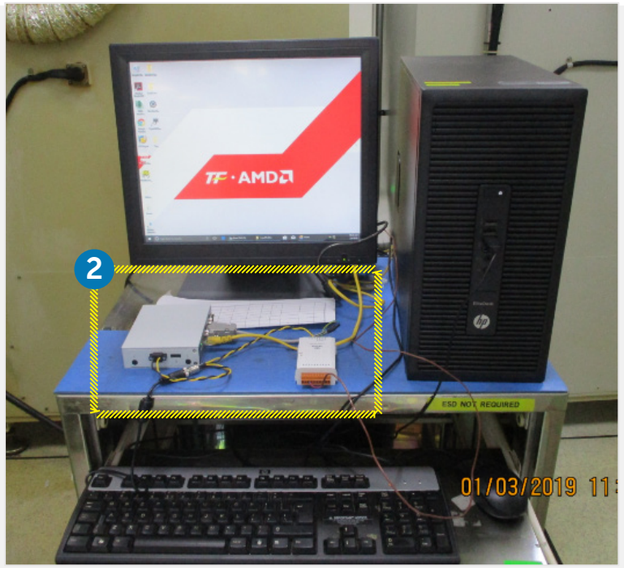
- Despatch oven data points plotted from the graph are not clear
- Important information (e.g. time and date) are not accurate enough for engineer's review
- Charting paper needs to be replaced every 1~2 months

Final Results:

- Live monitoring of Despatch Oven temperatures
- Auto recording, plotting and reporting of temperatures
- Auto triggering and alarm for out-of-limit temperatures
- Cost saving on manual paper recorder

BEFORE:
Despatch Oven temperatures are manually tracked and recorded

TF-AMD MICROELECTRONICS SDN. BHD.



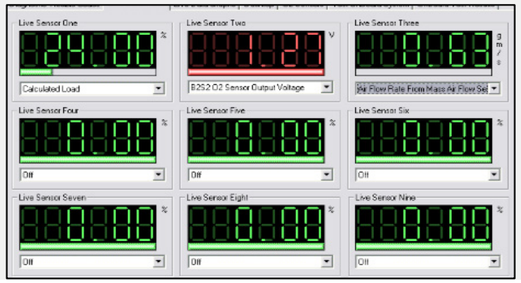
1 Despatch Oven

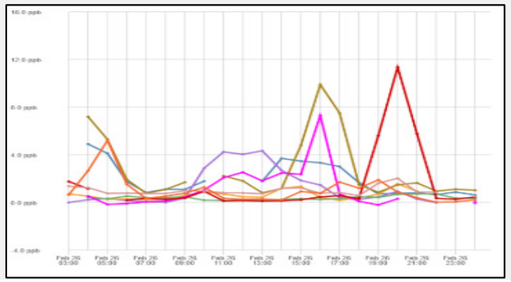
2 Plugfest System

AFTER:

Live monitoring of Despatch Oven temperatures

Auto recording, plotting and reporting of temperatures





Top Glove Corporation Berhad

TOP GLOVE
TOP QUALITY, TOP EFFICIENCY

Level 21, Top Glove Tower
16, Persiaran Setia Dagang
Setia Alam, Seksyen U13,
40170 Shah Alam, Selangor

Company Background

Top Glove Corporation Berhad is a Malaysian rubber glove manufacturer which specializes in face masks, condoms, dental dams, and other rubber-based products

Project Overview

Monitoring the lighting conditions of vision inspection camera

Before:

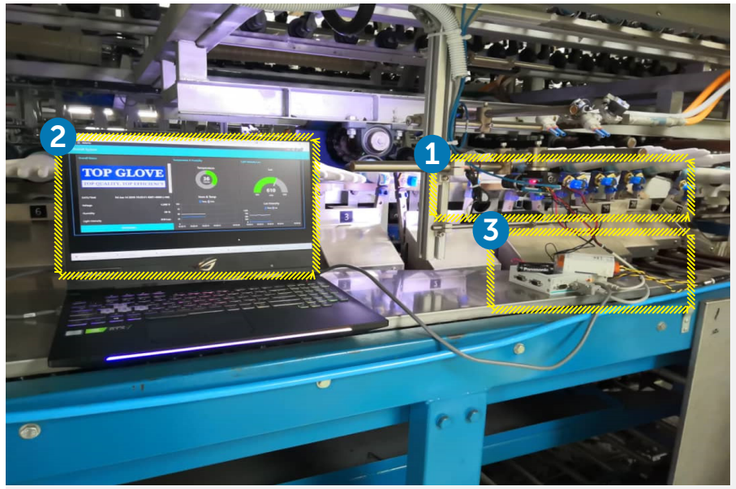
- The environmental conditions in the production line where these cameras are located are not monitored
- These conditions are critical to the efficiency of the inspection system.

Final Results:

- The lighting condition around camera system is within acceptable range
- Temperature in the production line (35.7°C) is also within the maximum allowable operating temperature of the camera which is 45°C

BEFORE:
No monitoring of lighting condition of vision inspection cameras

TOP GLOVE CORPORATION BHD.

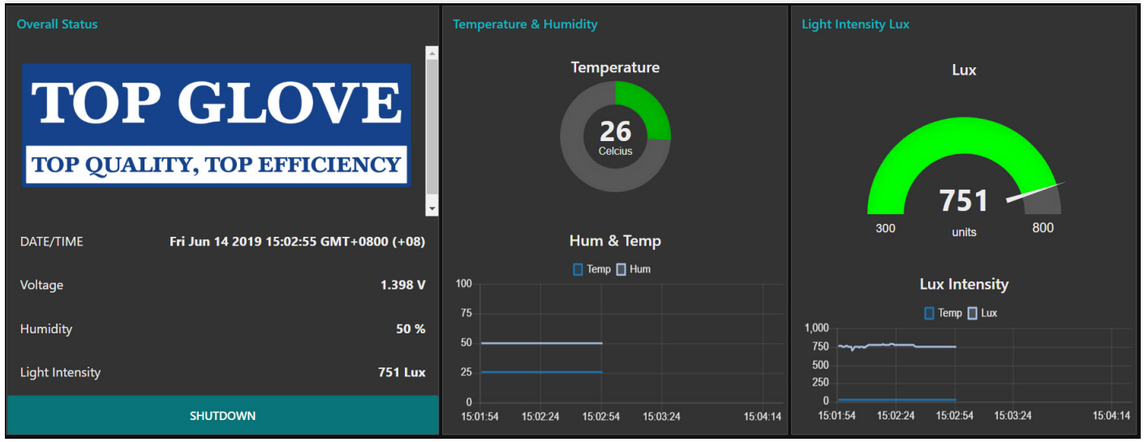


1. Plugfest Sensors
2. Node-RED Visualization
3. Plugfest System

AFTER:

- Light intensity around camera location are monitored
- If the surroundings are too dim or too bright, the performance of the inspection system will be affected

AFTER: Display of light, temperatures & humidity



Venture DieCasting Sdn. Bhd

No. 4, Jalan Spring 34/23,
Off Jalan Bukit Kemuning,
40470 Shah Alam, Selangor

Company Background
Venture DieCasting, established in 2004, specializes in manufacturing of Aluminum die-casting and machining. The clients are from the automotive, power generation, medical, oil and gas industries

Project Overview
Real time environment monitoring and alerts, to prevent fungus growth due to high humidity

Before:
- Products damaged due to fungus growth caused by high humidity
- No system to monitor current factory environment, particularly temperatures and humidity

Final Results:
- Real time monitoring of production area
- Auto notifications to Quality Assurance (QA) department when abnormalities occur
- Effortless data collection and simplified data recording
- Data analytics to study and correlate data with fungus rejection rates

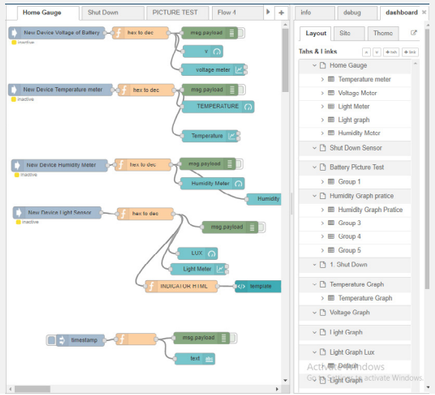
BEFORE:
Products damaged due to fungus growth caused by high humidity

VENTURE DIECASTING SDN BHD.

BEFORE:
Personnel checks daily at 9 am; checking only maximum and minimum temperatures

Personnel can now check temperature and humidity readings on a single page

AFTER:



PLUGFEST 2.0 (AIOT) PROGRAMME

Overview

Plugfest 2.0 is an Artificial Intelligence (AI) based machine vision system. The Plugfest 2.0 starter kit consists of an Intel-based industrial PC and Axiomtek AI Suite which contains Intel® Intel Edge Insights for Industrial and Intel® OpenVINO™ toolkit.

In the six half-day workshop, participants are taught images capturing techniques, images detection and labeling systems, machine learning and model algorithms. Participants are also taught Node-RED programming and to use the Dashboard module to visualise the results of their inferencing.

Upon completion of Plugfest 2.0, participants are expected to complete a Proof- of-Concepts (POCs) project at their workplace

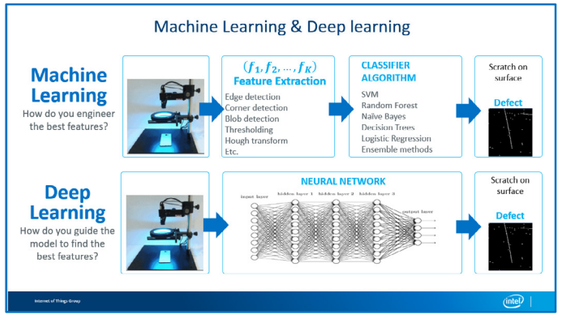
Six half-day programme, with training modules as below:

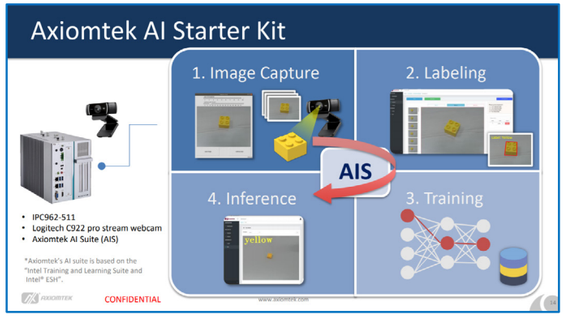
Training Modules

1. Introduction to AI and deep learning
2. Images capturing techniques
3. Images detection and labelling systems
4. Machine learning and model algorithms
5. Artificial Intelligence (AI) and inferencing
6. Visualisation via Node-RED programming

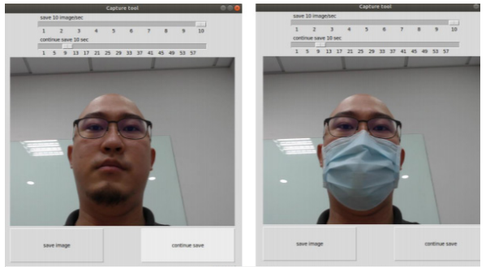
PLUGFEST 2.0 (AIOT) PROGRAMME

Theories

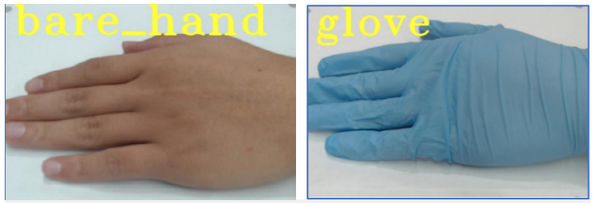




Hands-on Practical



Face Mask Detection

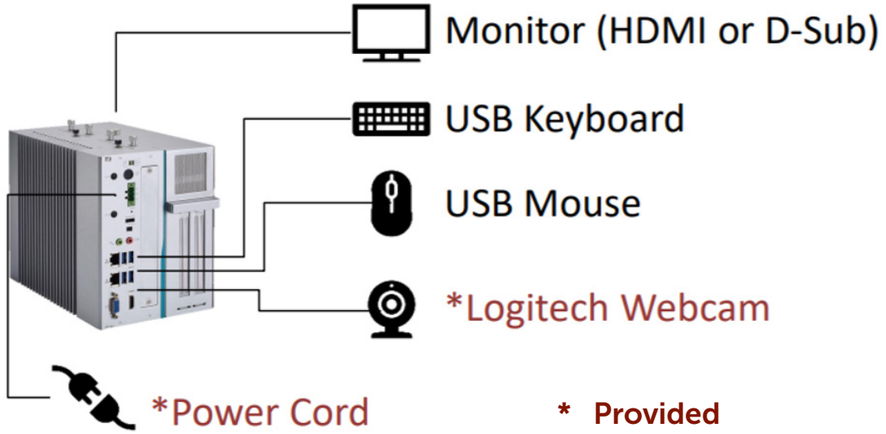


Hand Glove Detection

Colored Bricks Detection

PLUGFEST 2.0 (AIOT) HARDWARE

High Performance AI Edge Platform



IPC962-511

- Processor: LGA1151 Intel® Core CPU, up to 65W
- Rich I/O connectivity: 4 USB3, 2 GbE & dual views
- Wide operating temp. from -10°C to 60°C
- Built-in Axiomtek AI Suite (AIS), a training and inference toolkit
- Dual half-size PCIe interface for accelerator cards
- Integrated 120W power for accelerator from Riser
- 24 VDC

PLUGFEST 2.0 (AIOT) SOFTWARE

Integrated solution based on Intel® OpenVINO™ toolkit

Build high performance computer vision and deep learning inference, optimizing existing models, running inference where you need it

OpenVINO™

A toolkit to accelerate development of high **performance computer vision & deep learning inference into vision/AI applications from edge to cloud.** It enables deep learning on hardware accelerators and easy deployment across multiple types of Intel® platforms (CPU, CPU with integrated graphics, FPGA, VPU)

Who needs it?

1. Computer vision, deep learning developers
2. Data scientists
3. OEMs, ISVs, system integrators

Usages

Security surveillance, robotics, retail, healthcare, AI, office automation, transportation, non-vision use cases speech, text) & more

High performance AI at the edge

Streamlined & Optimizeddeep learning inference

Heterogeneous, cross-platform flexibility

PLUGFEST 2.0 (AIOT) VIRTUAL WORKSHOPS

DATES

Two workshops held in 2020

Workshop #1:
24th - 28th Aug, and 3rd - 4th Sep 2020

Workshop #2:
19th - 22nd Oct, and 26th - 27th Oct 2020

PARTICIPANTS

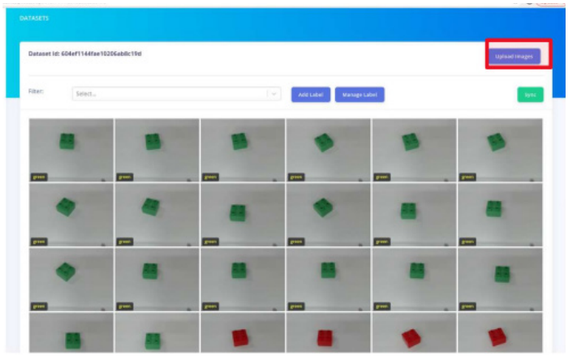
25 companies, 2 pax per company,

with a total of ***46 pax*** have participated over the two workshops

PLUGFEST 2.0 (AIOT) VIRTUAL WORKSHOPS

Machine learning by capturing images of green-coloured bricks

Machine Vision System
capturing one image



Minimum number of image captured
> 30 to be statistically significant for
the machine learning model

PARTNER TESTIMONIAL: AXIOMTEK

Plugfest 2.0 (AIOT) workshop is a very comprehensive training that provide the participants a good foundation of understanding about AI-Vision applications in the industry, particularly the Machine Learning and Inferencing.

Lee Chee Chiang (C.C Lee)
General Manager
Axiomtek (M) Sdn. Bhd.

PROOF-OF-CONCEPTS (POCS) PROJECTS FROM PLUGFEST 2.0

Amlex Technology Sdn. Bhd.

799, Lorong Perindustrian Bukit Minyak 7
Taman Perindustrian Bukit Minyak
14100, Simpang Ampat, Penang

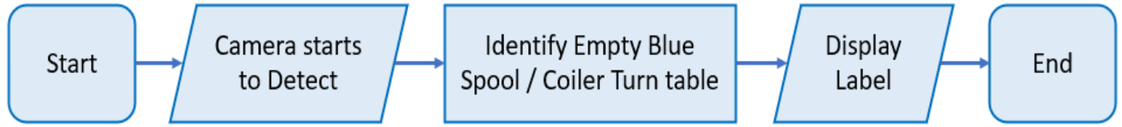
Company Background
Amlex Group provides electronic packaging and interconnect solutions to the global semiconductor and electronics industries. Their customers consist of Outsourced Semicon Assembly and Test (OSAT) houses as well as Original Equipment Manufacturers (OEMs)

Project Overview
Auto detection of 'Empty Blue Spool' and 'Coiler Turn table' to replace manual Process Traveler scan-in and scan-out

Before:
- Technician has to scan-in and scan-out the PT (Process Traveler) before and after every process
- Occasionally, technician forgets to scan-in and scan-out the PT
- Resulting in inaccuracy of performance of Overall Equipment Effectiveness (OEE)

Final Results:
- Machine Vision system replaces the repetitive manual human dependable task
- Achieved result is consistent and accurate data collection for OEE performance

BEFORE:
Technician has to scan-in and scan-out the Process Traveler before and after every process

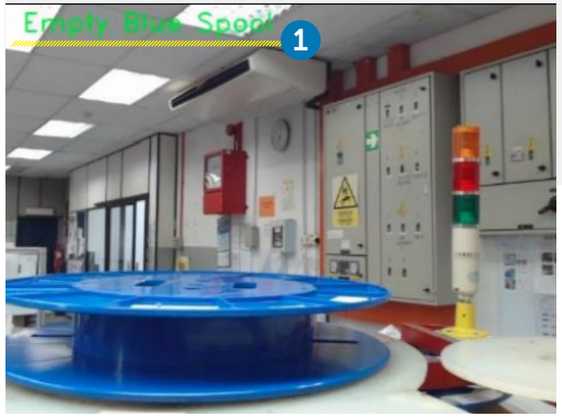


AFTER:
Flowchart of 'Empty Blue Spool' and 'Coiler Turn table' detection process

1 Vision system detects the 'Empty Blue Spool'

The camera will detect 'Empty Blue Spool' as the start of the process to replace Process Traveler scan-in

AFTER:



2 Vision system detects the 'Coiler Turn Table'

The camera will detect the empty 'Coiler Turn Table' as the completion of the process to replace Process Traveler scan-out

AFTER:

Eng Teknologi Sdn. Bhd.

Plot 69-70, Pesara Kampung Jawa
Bayan Lepas Industrial Zone
11900 Bayan Lepas, Penang

Company Background

Engtek is a pioneer in the precision engineering manufacturing and technology industry for more than four decades. They specialize in high precision casting and machining

Project Overview

Visual detection of production parts; and base on the image captured, able to identify which is the correct process stage

Before:

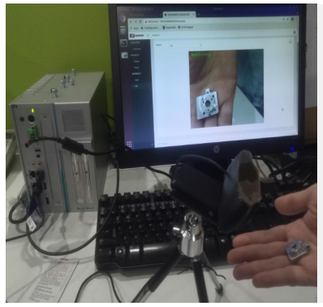
- Production operator manually inspects the production part to determine which is the correct process stage

Final Results:

- Vision system can automatically identify a production part has gone through which process stage
- This shortens the 'inspection' cycle time and helps improve efficiency

BEFORE:
Manual Inspection of production part to determine which is the correct process stage

ENG TEKNOLOGI SDN. BHD.

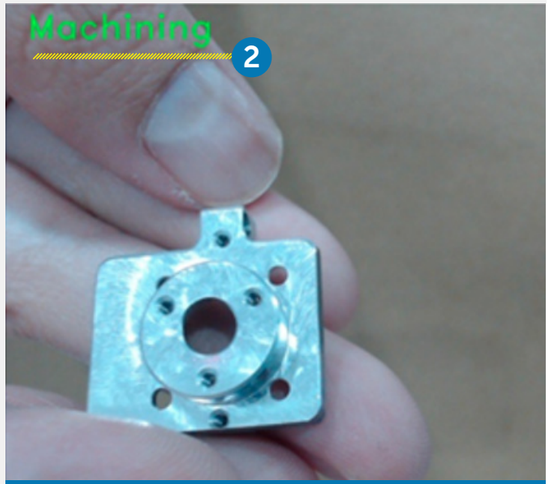


AFTER: Camera captures image of production parts, and detect any missing processes during manufacturing

1 Vision system detected a 'Casting' part

Vision system can identify whether a part has gone through 'casting' process

2 Vision system detected a 'Machining' part



or whether a part has completed 'machining process'

Estek Automation Sdn. Bhd.

12A, 7, Jalan Sungai Tiram 4
11900 Bayan Lepas, Penang

Company Background

Estek Automation is an equipment manufacturer for vision inspection systems in the semiconductor and LED industry. They develop their own equipment and software, specifically test and pack turret machine, wafer partition software and wafer inspection systems

Project Overview

Vision system to detect damaged Integrated Circuit (IC) components due to broken pins, missing pins and/or tilted pins

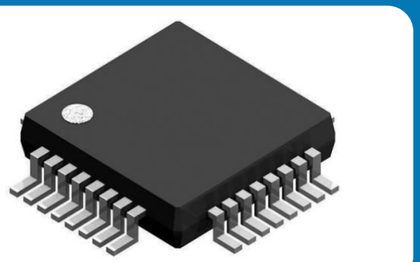
Before:

- IC inspection from top view is challenging especially when checking for tilted pins

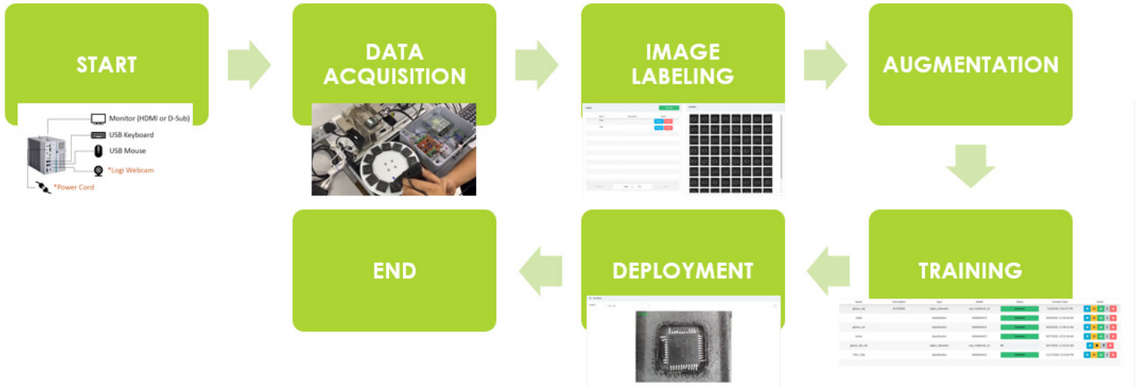
Final Results:

- Vision system can detect damaged IC components due to broken pins, missing pins and/or tilted pins
- No more 'missed process' for damaged IC pins during manufacturing

BEFORE:
IC inspection from top view is challenging especially when checking for tilted pins



ESTEK AUTOMATION SDN. BHD.

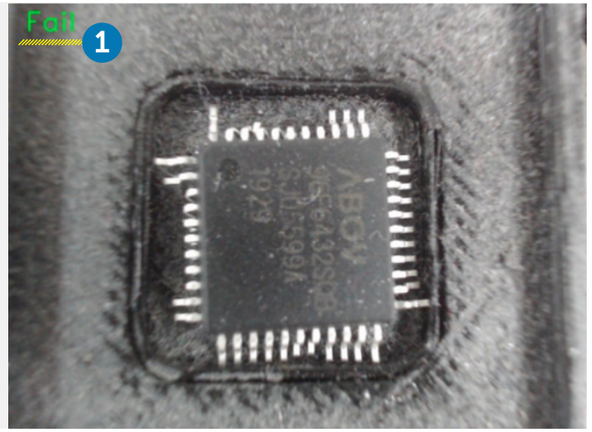


AFTER:
Process flow for training the AI model

Able to detect damaged IC due to broken pins, missing pins and/or tilted pins

AFTER:

Vision system is able to detect a 'Fail' for a damaged IC component (1)



Greatech Integration (M) Sdn Bhd

Plot 287 (A), Lengkok Kampung Jawa Satu,
Bayan Lepas FIZ Phase 3,
11900 Penang

Company Background

Greatech is one of the world's leading automation solution providers in the areas of factory automation. Their core products and services include automation solutions, design & engineering and in-house manufacturing facilities

Project Overview

Visual defects detection (including dots and scratches) on printed contents and labelling samples

Before:

- Manual inspection to detect visual defects on printed content and labels, for different shapes, sizes and colors
- Inconsistent quality of visual inspections due to human dependency

Final Results:

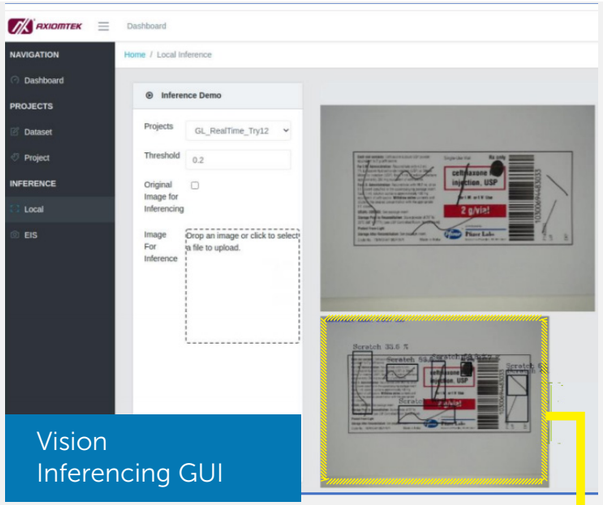
- General scratches and dots can be detected on different label samples
- Plugfest software enables easy training and inferencing process for AI machine learning

BEFORE:
Manual inspection to detect visual defects on printed content and labels

GREATECH INTEGRATION (M) SDN. BHD.

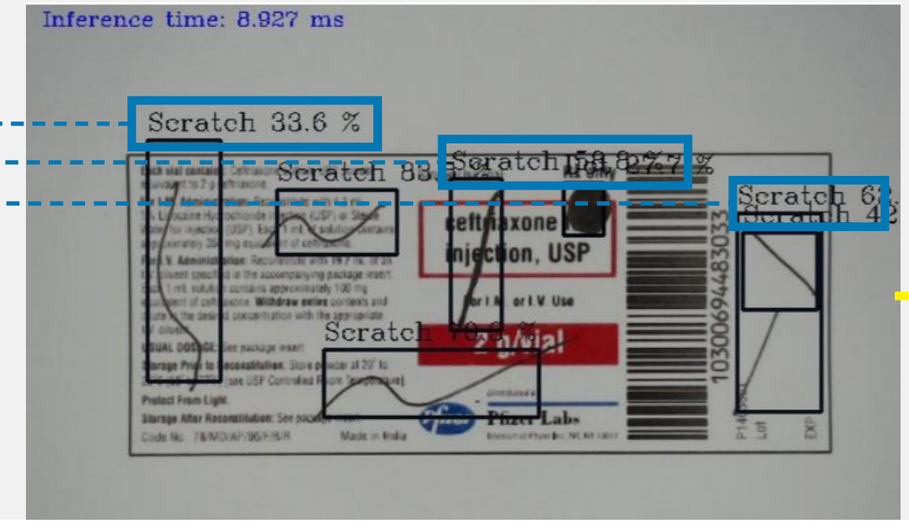
Vision system can detect scratches and dots on printed contents and labelling samples

AFTER:



Vision Inferencing GUI

The display will show type of defects e.g. scratches, together with percentage accuracy



Kayel Tyre Retread Sdn. Bhd.

KIT LOONG
KAYEL TYRE RETREAD
吉隆•轮胎翻新

No 10 Jalan Anggerik Mokara 31/50
Kota Kemuning, Shah Alam
40460, Selangor

Company Background

Kayel Tyre Retread Sdn Bhd is a manufacturer of retread tyres. They focus on products development and manufacturing, including offtake projects for international tyre manufacturers and private brands for different markets' needs

Project Overview

Vision inspection and identification of skive holes on retread tyres, to determine the retreadablility and its effect on quality

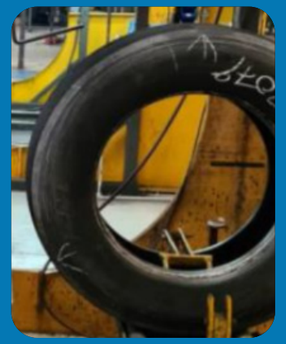
Before:

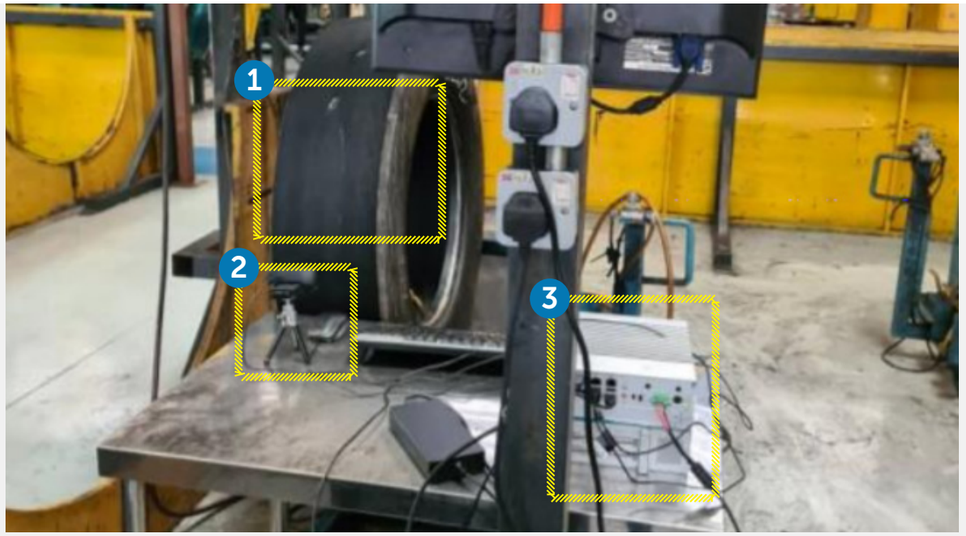
- A technician to manually count and record the total number of skive holes
- Technician then decides the retreadablility and what retread casing brand would be required

Final Results:

- Productivity improved by ~ 10% as less time is spent on skive holes inspection
- Increased output rate (savings of ~ 20 minutes per tyre)
- Improved quality due to elimination of human errors

BEFORE:
Manual identification of skive holes on tyres



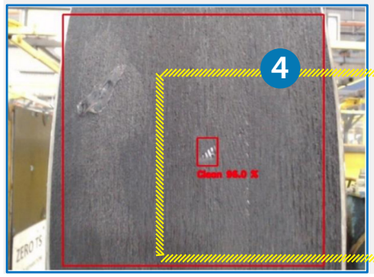


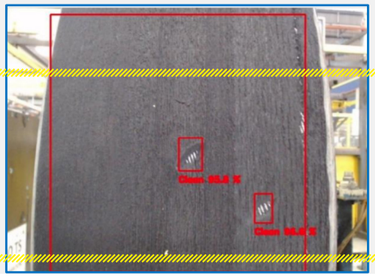
AFTER:

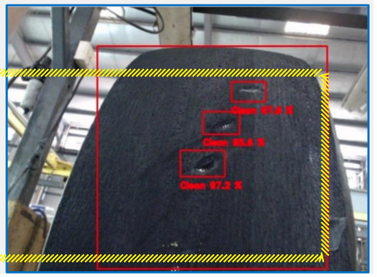
Auto visual inspection system on retread tyres, to determine the retreadablility and its effect on quality

4 Auto dentification of skive holes on tyres

1 Tyre under inspection
2 Plugfest Camera
3 Plugfest System







K-One Technology Berhad

66 & 68, Jalan, Jalan SS 22/21
Damansara Jaya
47400 Petaling Jaya, Selangor

Company Background
K-One is a one-stop technology solution provider focusing on innovation, design, development and manufacturing of IoT products, medical/healthcare devices and consumer technology lifestyle gadgets

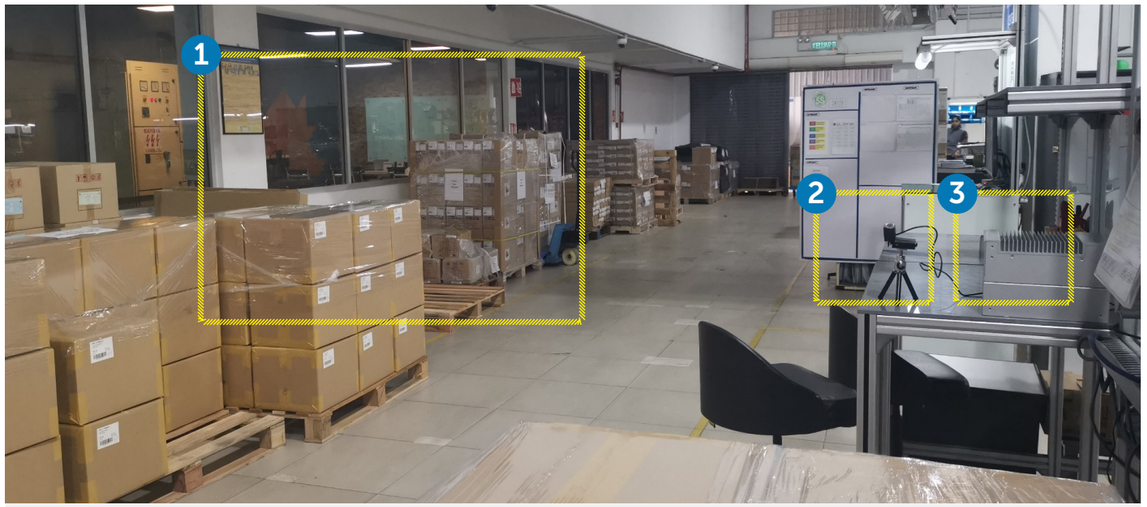
Project Overview
AIoT based solution to trigger remote operators whenever any crates or boxes are available at the warehouse area

Before:
- No triggering system whenever carton boxes are ready for transfer
- Operator from another building needs to walk every 15 minutes to check status
- This process is inefficient and consumes unnecessary time and energy

Final Results:
- Remote operators from another building will be alerted whenever any crates or boxes are available at the warehouse area
- This saves time and energy, so that operator can focus on other tasks
- This is a Just-In-Time (JIT) breakthrough, using AIoT technology

BEFORE:
No triggering system whenever carton boxes are ready for transfer

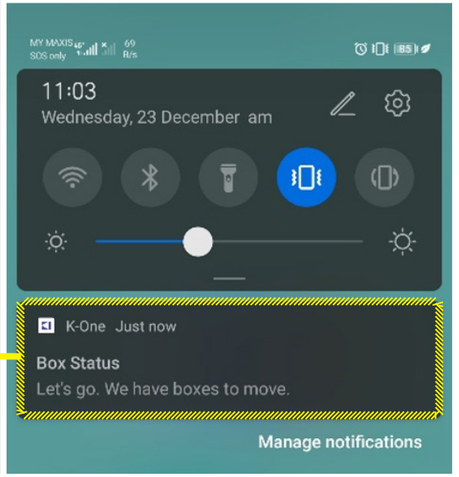
K-ONE TECHNOLOGY BERHAD



AFTER: AIoT based solution to inform remote operators whenever any crates or boxes are available at the warehouse area

1. Focus area of camera vision
2. Plugfest Camera
3. Plugfest System

Auto-notifications on handphone when vision system detects presence of carton boxes



Leong Bee & Soo Bee Sdn. Bhd.

3007, Tingkat Perusahaan 5,
Prai Industrial Park, 13600, Perai, Penang.

Company Background

Leong Bee & Soo Bee (LBSB) Group is a leading manufacturer of high precision mechanical components and assemblies for photonics, laser and fiber optics communications plus semiconductor, medical and imaging equipment.

Project Overview

Vision system to monitor the different colors of 'status' tower lamps, resulting in better tracking of machine utilization.

Before:

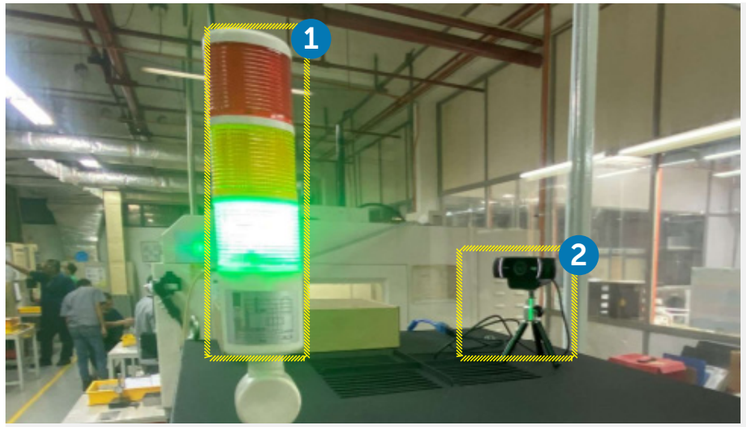
- Operator walks around production floor and conducts random spot-checks on 'status' tower lamps of machine.
- Compiled data is uses to analyze machine bottle-necks on the production floor.
- Inaccurate data of color of 'status' tower lamps results in inaccurate analysis.

Final Results:

- The machine 'run', 'idle' and 'down' time are logged by the system.
- Remote monitoring display can accurately capture the timing of 'status' tower lamp change.
- Increase efficiency due to improved accuracy of machine status.

BEFORE:
Operator walks around production floor and conducts random spot-checks on 'status' tower lamps of equipment

LEONG BEE & SOO BEE SDN. BHD.



AFTER:

Vision system with Plugfest camera monitoring the different colors of 'status' tower lamp

1 Plugfest System

2 'Status' Tower Lamp

AFTER:

Remote monitoring display can accurately capture the timing of 'status' tower lamp change

Pawada Food Industries Sdn. Bhd.

2024, Jalan Semangat
Bintawa Industrial Estate
93450 Kuching, Sarawak

Company Background

Pawada is a local producer of Halal food, based in Borneo. Their food products are made from specially selected ingredients of the best grade and quality. Some of their products include Sarawak black pepper sauce, chilli sauce, tomato sauce, vinegar, corned beef. Pawada's mission is to bring excellence to the Halal branding

Project Overview

Vision system for detecting bottles labels, caps sealing and expiry dates, before packing process

Before:

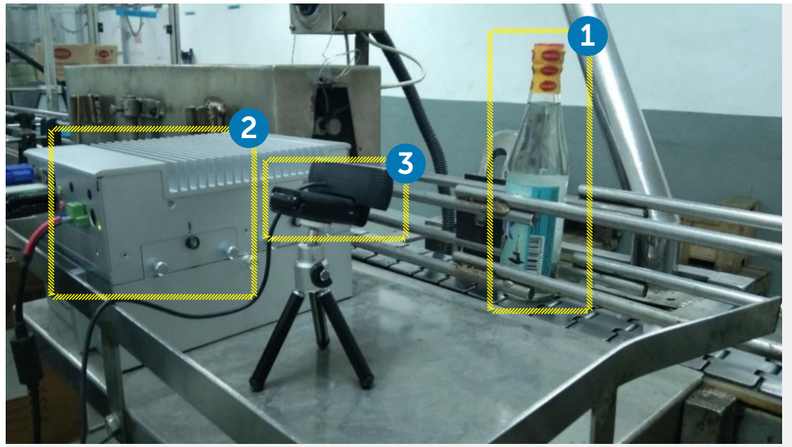
- There are unsealed, unlabeled and expired bottles when the product is finished
- There are feedback of incomplete bottles without labels, cap seals and/or expired that are not clearly displayed

Final Results:

- Productivity improvements as fewer operators are needed to detect bottles before packing process
- Time savings due to faster auto detection of defective bottles

BEFORE:

No vision system to detect completed bottles, before packing process



1 Vinegar bottle under inspection
2 Plugfest System
3 Plugfest Camera

Detection of vinegar bottle without label

AFTER:

Auto visual inspection for all completed bottles at the packing area's conveyer system

vinegar bottle with label

Sophia Taha Holdings Sdn. Bhd.

Lot 802, Taman Perindustrian Demak Laut
Jalan Bako,
93764 Kuching, Sarawak

Company Background

Sophia Taha is a manufacturer of stingless bee honey-based products, operated at Kuching, Sarawak. They are a producer of Food and Beverages (F&B) and cosmetics products with Halal, MESTI, and GMP certification

Project Overview

Vision system to ensure Quality Control (QC) of completed bottles, after 'sealing and packing' process before 'storage'

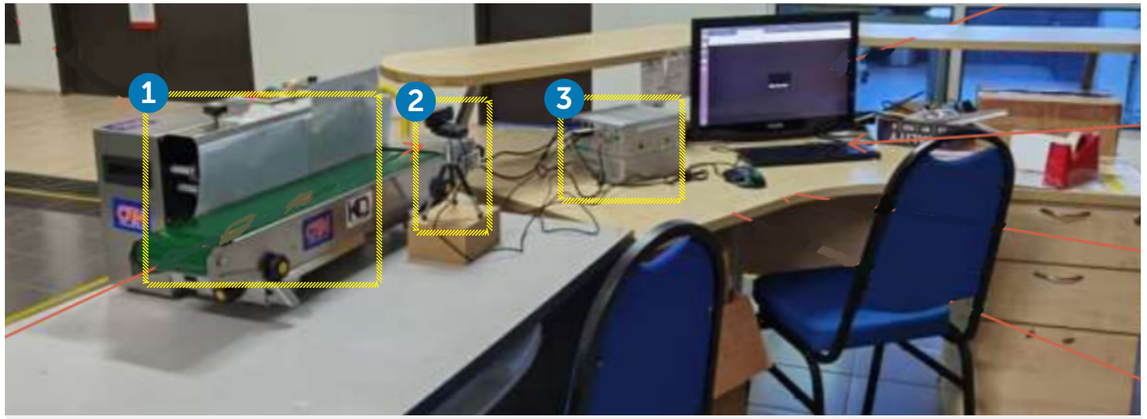
Before:

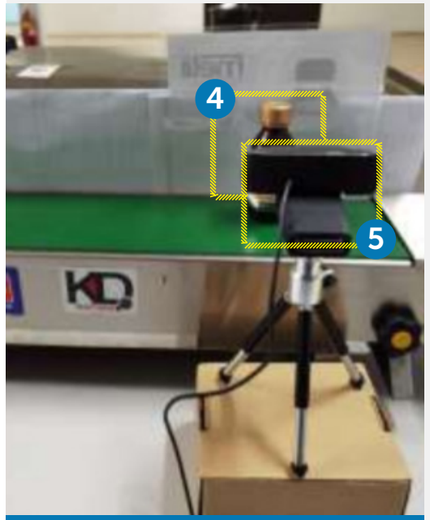
- Manual Inspection of completed bottles
- Manpower resources is needed to ensure 100% quality check
- Inspection process takes long lead time

Final Results:

- Reduced manpower resources needed for Quality Assurance (QA) checking process
- Automated and accurate recordings of QA results

BEFORE:
Manual Inspection of completed bottles before storage





Close-up of a bottle under inspection

AFTER:
Complete visual inspection for all bottles on the conveyer

1. Conveyer
2. Plugfest Camera
3. Plugfest System
4. Bottle under inspection
5. Plugfest Camera

Completed bottle correctly detected

Stratus Automation Sdn. Bhd.

Plot 73 A, Lintang Bayan Lepas 3
Bayan Lepas Industrial Park
11900 Bayan Lepas, Penang

Company Background

Solution Provider for Automated Material Transport System. Specialized in material transport and control, ultra-clean systems, automated material loading, vision system integration, plus robotics and motion control

Project Overview

Vision system to prevent mixing of different bearing enclosure casings assembly at conveyor

Before:

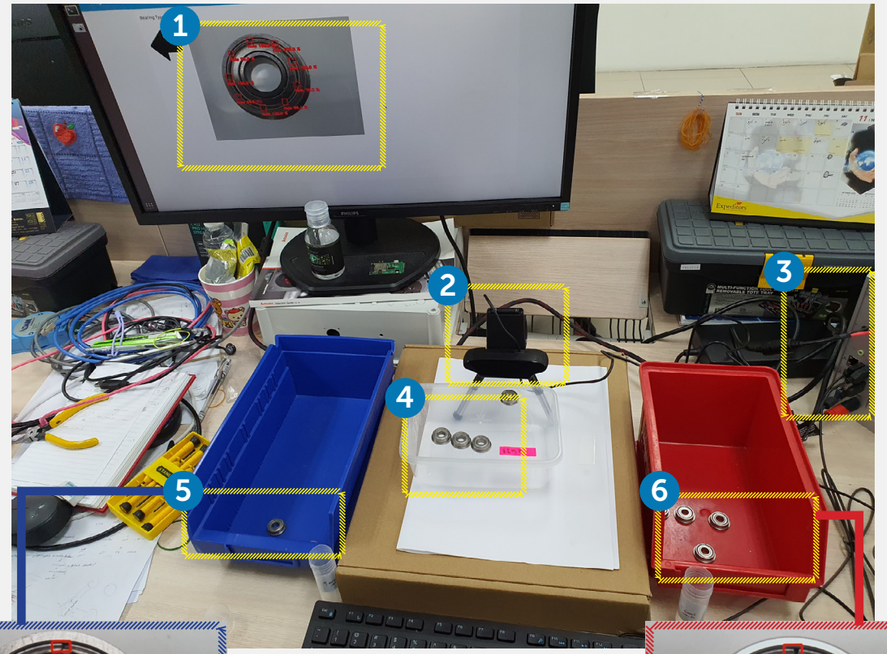
- Operator uses ruler or pointy object to count the groove on each bearing manually
- However, operator may carelessly misplace the bearing into wrong bins or miscount

Final Results:

- Increased work efficiency and zero rework at production floor
- Lower manpower requirement, resulting in reduced overtime
- Consistently quality and improved Internal Quality Control (IQC) process

BEFORE:
Operator uses ruler or pointy object to count the groove on each bearing manually

AFTER: Vision system to prevent mixing of different bearing enclosure casings assembly at conveyor



9-groove bearing to be placed in Blue Bin

1. Monitor
2. Plugfest Camera
3. Plugfest System
4. Bearings for sorting
5. Blue Bin(9 groove)
6. Red Bin(11 groove)

11-groove bearing to be placed in Red Bin

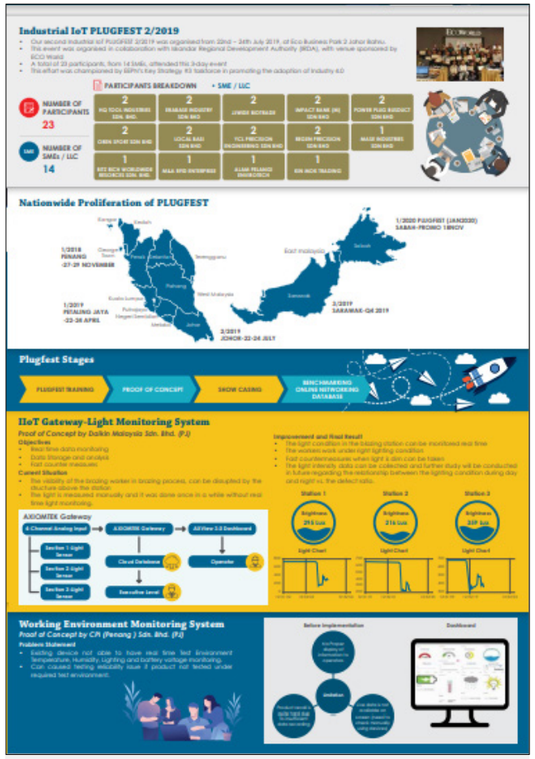
EEPN PLUGFEST **OUTREACH**

IIoT Plugfest 1/2019

conducted in
Best Western PJ,
22nd - 24th April 2019,
participated by 39 participants
from 15 companies
(Source: EEPN Newsletter 1/2019)

IIoT Plugfest Convention

MPC Penang, 7 March 2019
(Source: EEPN Newsletter 1/2019)



IIoT Plugfest 2/2019

conducted in Ecoworld Johor
Johor 22nd - 24th July 2019,
participated by 23 participants
from 14 companies
(Source: EEPN Newsletter 2/2019)

EEPN PLUGFEST **OUTREACH**

Plugfest 2.0 Workshop Creating Value towards Key Technology of Industry 4.0

Sin Chew Daily, 28 Nov 2020

Plugfest is an experiential training for AI-based machine vision system whereby all participants will have to develop Proof-of-Concepts (POCs) which upon completion of this Plugfest. It is organized by Electrical & Electronics Productivity Nexus (EEPN) under the Malaysia Productivity Corporation (MPC) with Penang Skills Development Centre (PSDC) as delivery partner and collaboration partner with INTEL & AXIOMTEK.

Seizing Opportunities by Embarking Industry 4.0 Journey in this New Normal

Sin Chew Daily, 12 Oct 2020

By implementing Industry 4.0 can help to improve the competitive advantage of a manufacturing company in this COVID-19 situation. The E&E Productivity Nexus (EEPN) established under MPC has driven many initiatives over the years and is an example of a good partnership where the private and public sector work together to drive change. Unlock value of I4.0 by Accelerate adoption of I4.0 & Focus on Artificial Intelligence (AI) Technology to help SMEs to develop capabilities and strategies on how to grow their business using Industry 4.0.

AIoT Plugfest 2.0

conducted virtually on 2020,
participated by 46 participants
from 25 companies
(Source: EEPN Newsletter 2/2020)

ACKNOWLEDGEMENTS

The formulation of this EEPN End-users Plugfest Projects Compilation Booklet was prepared through the collaboration with multiple partners. The Malaysia Productivity Corporation (MPC) and Electrical & Electronics Productivity Nexus (EEPN) would like to express our appreciation to the following organisations for their invaluable contributions in providing insight, conducting trainings and completing the Plugfest projects.

We would like to thank the Ministry of International Trade and Industry (MITI) and Economic Planning Unit (EPU) for their support rendered to our Plugfest programmes.

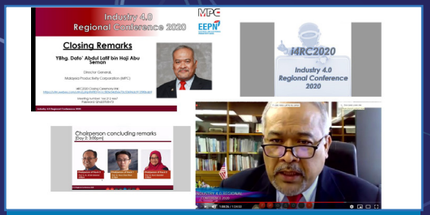
In addition, none of the above would have been possible without the assistance of our principal technology providers: Intel Malaysia and Axiomtex as well as our programme coordinator: Penang Skills Development Centre.

Finally, our appreciation to our participating companies for their consent and willingness in sharing their Proof-of-Concepts (POCs) projects in this compilation, namely: AllianceCorp Manufacturing Sdn. Bhd., Amlex Technology Sdn. Bhd., Asteel Resources Sdn. Bhd., CPI (Penang) Sdn. Bhd., Darash Maju (M) Sdn. Bhd., Eng Teknologi. Sdn. Bhd., Estek Automation Sdn. Bhd., Hexa Food Sdn. Bhd., Greatech Integration (M) Sdn. Bhd., Iana Corporation Sdn. Bhd., II-VI Malaysia Advanced Mfg Center Sdn. Bhd., Impact Rank (M) Sdn. Bhd., Infineon Technologies, Kayel Tyre Retread Sdn. Bhd., K-One Technology Berhad, Leading Platform (M) Sdn. Bhd., Leong Bee & Soo Bee Sdn. Bhd., Mah Sing Plastics Industries Sdn. Bhd., OSRAM Opto Semiconductors (Malaysia) Sdn. Bhd., Pawada Food Industries Sdn. Bhd., Power Plug Busduct (PPB) Sdn. Bhd., Rosfaniaga Services Sdn. Bhd. (D-Frentz), Sanmina-SCI Systems (M) Sdn. Bhd., Sophia Taha Holdings Sdn. Bhd., Stratus Automation Sdn. Bhd., TG Power Wrap Sdn. Bhd., TF-AMD Microelectronics Sdn. Bhd., Top Glove Corporation Berhad and Venture DieCasting Sdn. Bhd.

Collage of EEPN Key Strategy#3 Creating Value Towards Industry 4.0 Ecosystem (2018-2020)

INTEL – EEPN Next Gen Manufacturing Conference 2018

IIoT Plugfest Convention MPC Penang, 7th March 2019



I4.0 Regional Conference 2020

Launching Ceremony of Elliance i4.0 Technology Centre: on 29th Feb 2019

One of the EEPN Key Strategy#3 CREATING VALUE TOWARDS i4.0 ECOSYSTEM Meeting, held in AMCHAM KL Sentral

LIST OF ABBREVIATIONS

used throughout the Booklet

ABBREVIATION	DEFINITION
ADC	Analog-to-digital Converter
AIoT	AI-Based Internet of Things
COVID – 19	Corona Virus Disease 2019
EEPN	Electrical and Electronics Productivity Nexus
GUI	Graphical User Interface
HACCP	Hazard Analysis and Critical Control Point
I/O	Input and Output
I4.0	Industry 4.0
IC	Integrated Circuit
IIoT	Industrial Internet of Things
LED	Light-Emitting Diode
MPC	Malaysia Productivity Corporation
PoC	Proof – of – Concept
QA	Quality Assurance
QC	Quality Control
SME	Small and Medium – sized Enterprises

Malaysia Productivity Corporation
Lorong Produktiviti Jalan Sultan,
46200 Petaling Jaya, Selangor
Tel : +603-7955 7266 | Fax : +603-7957 8068
Email : marketing@mpc.gov.my

More information, please visit
http://www.mpc.gov.my/
https://wayup.my/electrical-electronics/

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