



TMMIN TAM
QCC GRAND CONVENTION 2023

TOYOTA
INDONESIA
PT Toyota Motor Manufacturing Indonesia

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Suggestion System

Eliminate Muda with Kanban
Digitalization to Achieve
Enjoyable Process



INTRODUCTION

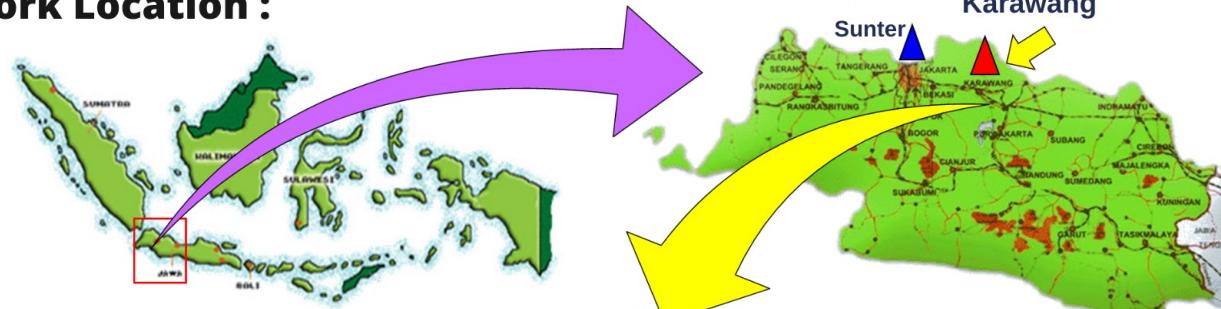


Sunu Aji Wicaksono

1425629

Body & Frame Prod. Eng

Work Location :



Body & Frame Prod. Eng

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Section :
Equipment, Process, &
Manufacturing Support

Product → White body for:



INNOVA
REBORN



FORTUNER



ZENIX



CALYA



YARIS



VELOZ

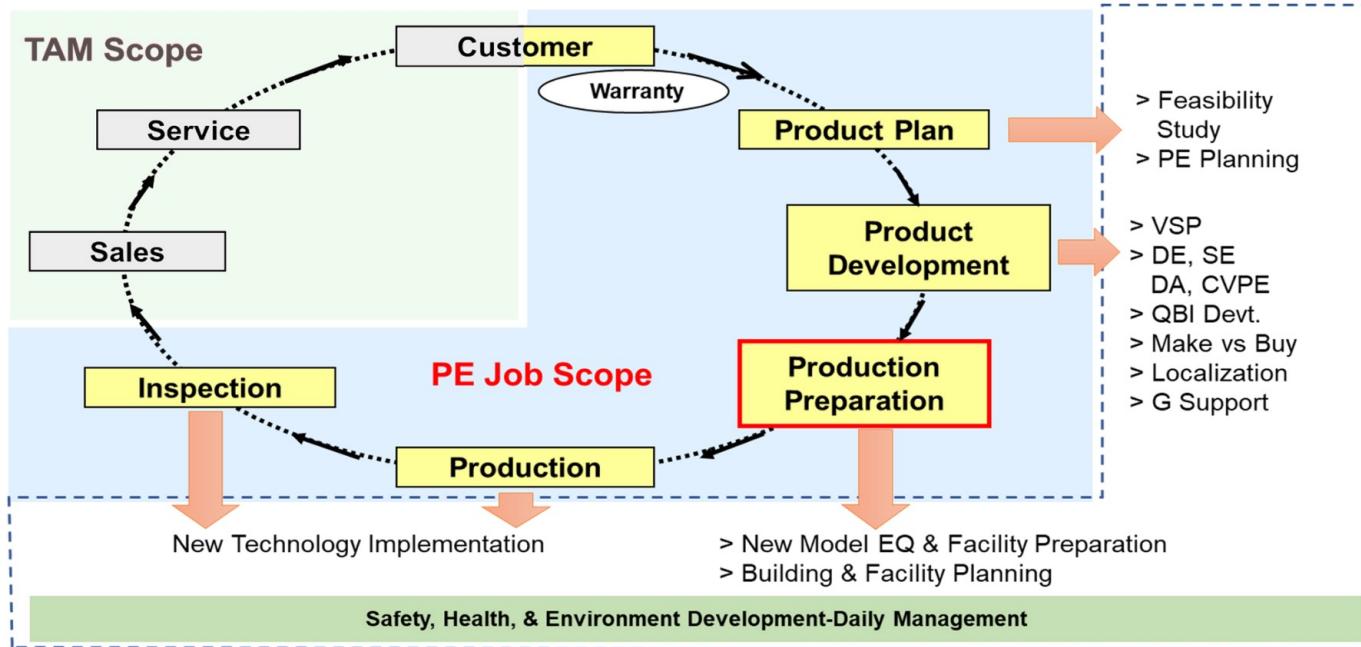


YARIS
CROSS

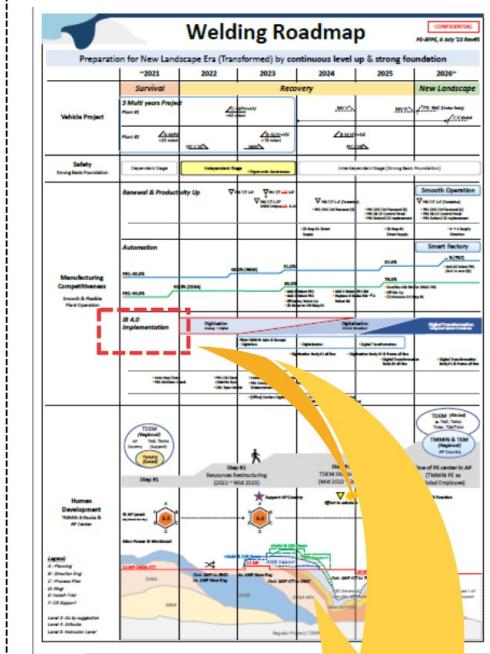
JOB DESCRIPTION



BFPE Dream Toward 2026



MY ROLE



1. Strong safety basic fondation
 2. Preparation for new landscape era
(transformed) by continuous level up
& strong foundation
 3. Renewal & Productivity Up
 4. Automation

5. **IR 4.0 Implementation**

 6. TMMIN Jiritsuka & AP center

PRODUCTION INTRODUCTION

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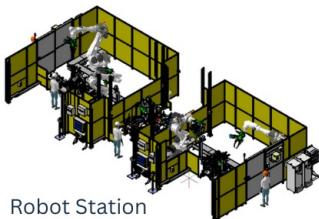
PRODUCTION PREPARATION OF NEW MODEL

Design Stage → Tool & Equipment Preparation → Production Trial → Start of Production

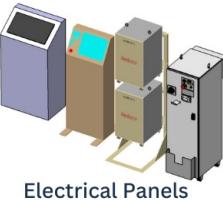
EQ Preparation

Equipment Concept → Equipment Design → Equipment Making → Equipment Buy-Off → Equipment Installation → Equipment Trial → Equipment Handover

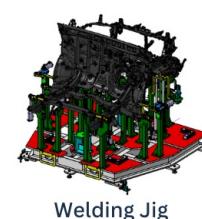
WELDING EQUIPMENT



Robot Station



Electrical Panels



Welding Jig

KANBAN TEAM



Prod. Engineering
[LEADER]



Eng. Service



Safety



Maintenance



Production



Contractor

Great collaboration of 6 functions

DEFINITION

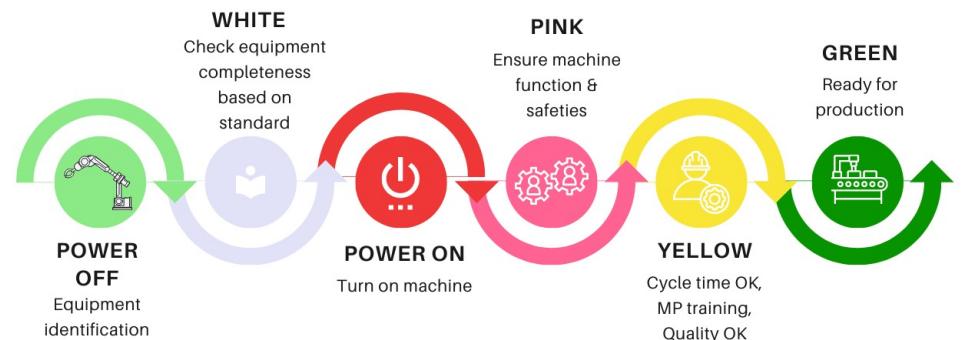
KANBAN MACHINE

A tool to guarantee each stage of equipment installation follow safety & quality standard to achieve enjoyable process



Contents = Check Sheet, Problem List, & Approval Sheet

6 STAGE OF KANBAN MACHINE



Background

Plan

Do

Check

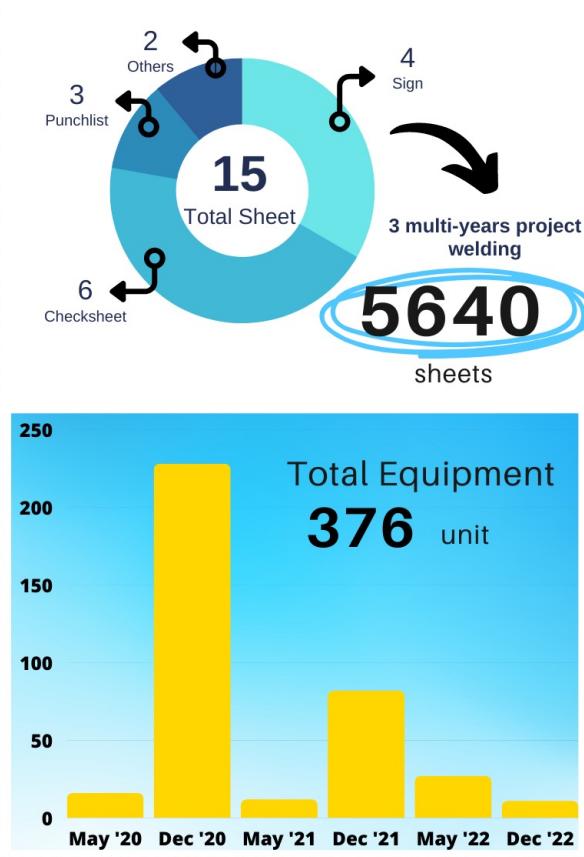
Action

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1

PAPER CONSUMING



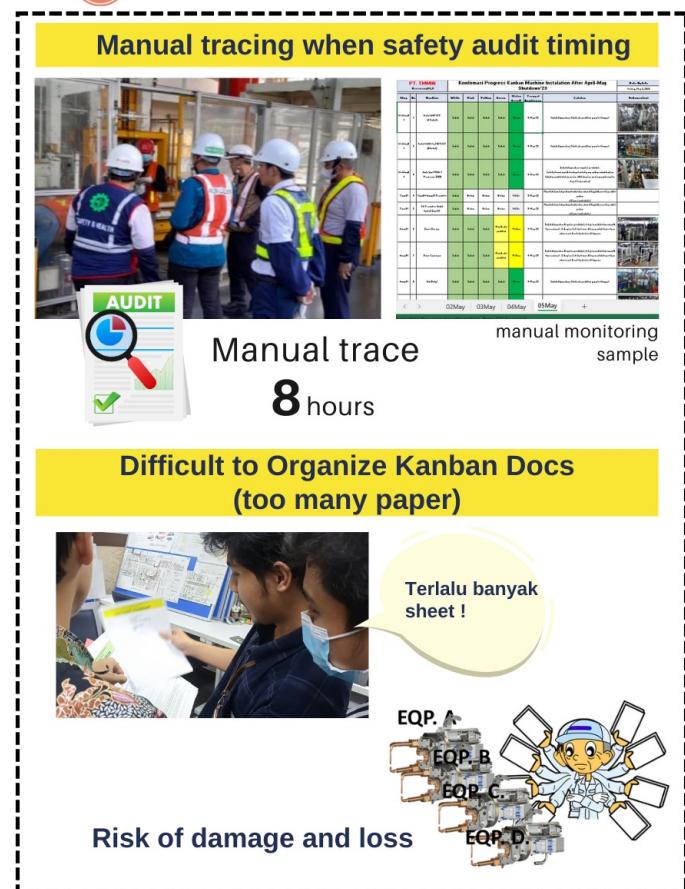
2

MUDA JOB



3

TRACE & ORGANIZE ABILITY



Background

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Do

Check

Action

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④

MONITORING DIFFICULTY

Difficulty on monitoring EQ progress

Pak Sunu, bagaimana progress power ON



Maaf, saya belum tahu update nya..

Limited Information

Lack of Problem Follow Up



Only Limited Person Understand about Equipment/Safety Standard

⑤

5R ISSUE



Mr. Nandi J. :
(TMMIN President Director)
Kanban equipment apakah bisa dibuat lebih rapih ?

- January, 2021



Background

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Management Way of Think

(S) Message :



Secure 3 multi-years Project launching & future project allocation 2025

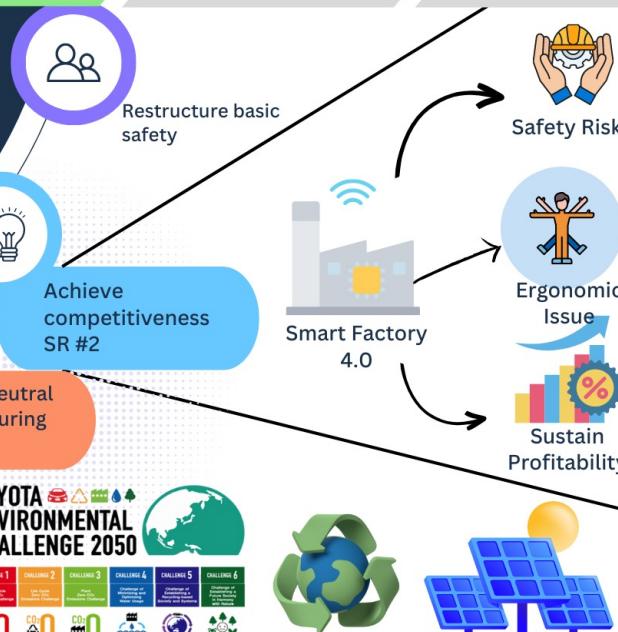
Mr. Hendri H. :
(Division Head PED)



Fiscal Year 2023-2024 is very critical for us to success 3 multi years project.

Please execute & success, in parallel we must prepare for future business. I request to PED management to make strategy to develop your team include your self.

Thanks



Hoshin

| | |
|--------------------|--|
| Company | 2e. Transform business model through DX to increase efficiency |
| Directorate | 10. Small scale pilot project for DX implementation to realize "Smart Factory" Development DX agent by collaboration |
| Division | 8. Plant transformation through advance technology (automation & TPS 4.0) to eliminate safety risk, ergonomic issue, & sustain profitability |

Priority Theme :

Smart factory 4.0 with eliminate muda and environment issue

Background

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Target

Optimize machine kanban process in manufacture area with implementing DX

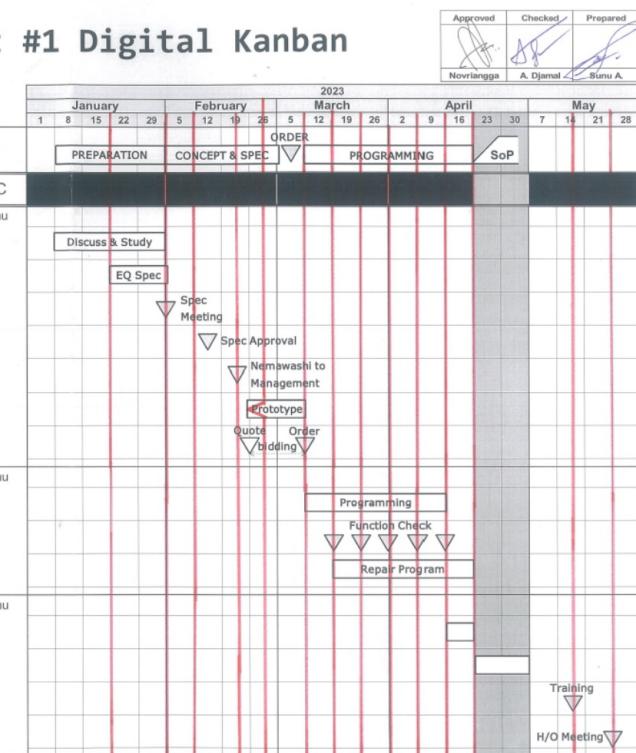
SCHEDULE



Welding Plant #1 Digital Kanban

GENERAL SCHEDULE

| No | Activity List | PIC |
|----|--|------|
| 1 | ADMINISTRATION Discuss, study, & collect data Equipment Concept Making Spec meeting Spec Approval Nemawashi Prototype Making Order to Maker | Sunu |
| 2 | ACTION Programming Function Check Repair & Feedback | Sunu |
| 3 | APPLICATION Preparation Execution Training Other Shop Handover to Safety Team | Sunu |



Challenge

Implement on Lebaran 2023
Shutdown Timing

TASK FORCE MEMBER



Leader



Supporting Team



Safety Advisor



IT Support



Other User



UI/UX Support



Direction from Mr. Warih

"I" View "U" View

Enjoyable work



COMMUNICATION STYLE

| How to | Internal Discussion by individual | Collaboration (Start on January '23) Invite internal & IT | Nemawashi (Start on February '23) Invite top management | Strong Execution (Start on March '23) Invite supporting |
|-----------------|--------------------------------------|---|---|---|
| Participant | Internal Welding PE | Other PE & ISTD Team | Manager Level | Vendor & ISTD Team |
| Discussion Item | Concept, schedule, budget allocation | Technical discussion, safety standard | Concept & management advise | Collaborative improvement & support |



Background

Plan

Do

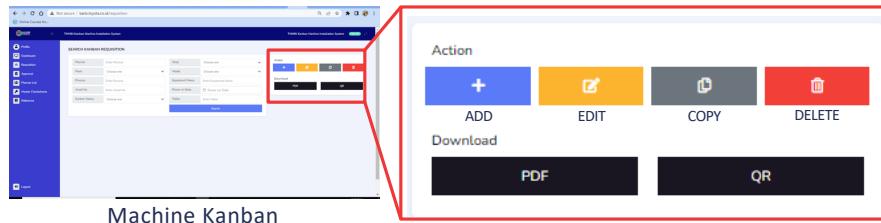
Check

Action

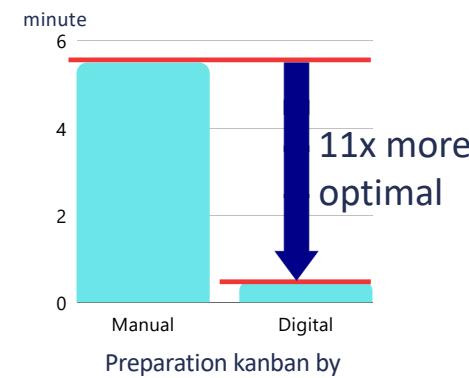
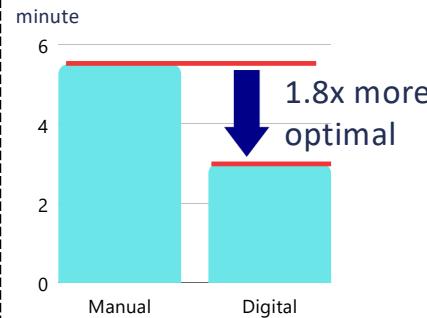
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Problem : Tired of writing the same machine identity over and over again
Improve : Create copy - paste - edit feature



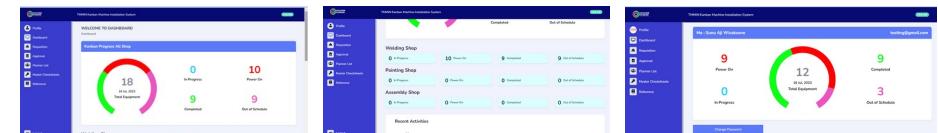
Evaluation



Problem : Difficulty when monitoring machine kanban status
Improve : Create dashboard system to monitor both total all shop & each PIC



Dashboard UI made user friendly that shown both total shop & each shop progress



Dashboard shown progress each account

Background

Plan

Do

Check

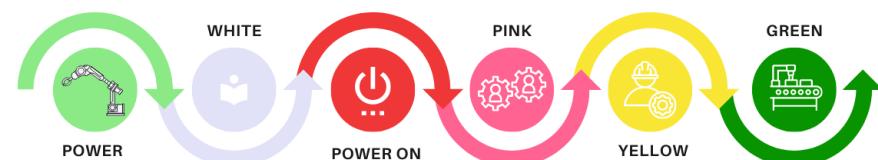
Action

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Problem : Tracking & follow up for each kanban machine stage & problem list are difficult
Improve : Create auto system for GO NO GO each kanban stage (A rank follow up)

System made that when A rank problem found, next stage kanban can no be proceed



Problem list could be download & monitor online, so easy to be followed up

KANBAN PUNCH LIST

Function

| NO | DEFICIENCY | TYPE | RISK LEVEL | INITIATOR | COUNTERMEASURE |
|----|------------------------|-------|------------|-------------|------------------|
| 1 | Spare part belum order | Other | Rank B | Maintenance | Order spare part |

Safety

| NO | DEFICIENCY | HAZARD TYPE | RISK LEVEL | | |
|----------|------------|-------------|------------|--|--|
| SEVERITY | FREQUENCY | AVOIDANCE | | | |
| | | | | | |

Problem : Each machine control panels have their own voltage necesity
Improve : Create auto calculation (OK/NG) based on voltage & phase

Evaluation

MEGA OHM CHECK
VOLTAGE CHECK
AND PHASE ROTATION CHECK
FOR LOW VOLTAGE INSTALLATION (< 600 VAC)

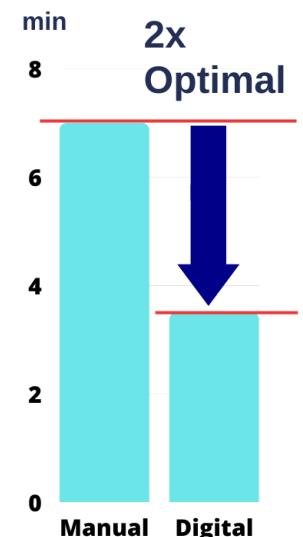
| | |
|--------------------------------|----------------------|
| Eqp. Name: FBT 6-2 | Eqp. ID: - |
| Inspector: Sunu Aji Wicaksono | Voltage: 400V - 440V |
| Phase: 3 Phase Without Neutral | |

Leader Sign:

Sign:

Voltage, Phase Selection with auto calculation (NG/OK)

| CRITERIA | BEFORE SWITCH ON MEGA OHM CHECK | | AFTER SWITCH ON OPERATING VOLTAGE CHECK | | REMARK |
|----------------|------------------------------------|--------|--|--------|--------|
| | DATA CHECKED | RESULT | DATA CHECKED | RESULT | |
| PHASE 1 TO GND | 2000 | o | 230 | o | |
| PHASE 2 TO GND | 2000 | o | 231 | o | |
| PHASE 3 TO GND | 2000 | o | 232 | o | |
| PHASE 1 TO 2 | 2000 | o | 397 | o | |
| PHASE 1 TO 3 | 2000 | o | 401 | o | |
| PHASE 2 TO 3 | 2000 | o | 402 | o | |



Background

Plan

Do

Check

Action

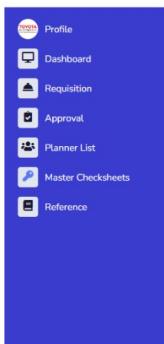
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Problem : Common check sheet not suitable with all equipment

Improve : Make special check sheet for different equipment

Check sheet items according to the equipment/machine

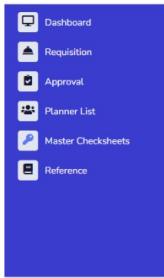


Showing 1 to 4 of 4 entries

Painting

Add New

| Equipment Type | Shop | Last Update | Action |
|----------------|----------|---------------------|--------|
| Lifter | Painting | 2023-07-16 20:24:37 | |
| OH/C | Painting | 2023-07-16 20:23:54 | |
| Others | Painting | 2023-05-09 07:06:59 | |
| Robot | Painting | 2023-07-16 20:22:00 | |



Showing 1 to 5 of 5 entries

Welding

Add New

| Equipment Type | Shop | Last Update | Action |
|----------------|---------|---------------------|--------|
| Others | Welding | 2023-05-09 07:06:59 | |
| Robot Station | Welding | 2023-05-09 07:07:00 | |
| Sealer | Welding | 2023-05-19 08:31:25 | |
| Trafo | Welding | 2023-06-02 02:58:32 | |

Problem : Network are not available for some areas, e.g. Toso Shop

Improve : Create offline feature for machine kanban check inside Toso Shop



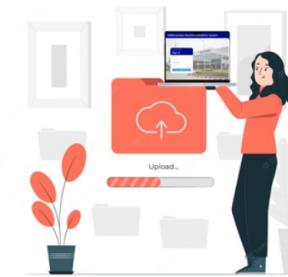
Checking kanban machine activity even no internet connection



Open Web in Office Area
(by TMMIN Network)



Genba check & fill in kanban machine on site



Upload the data when connected to the network





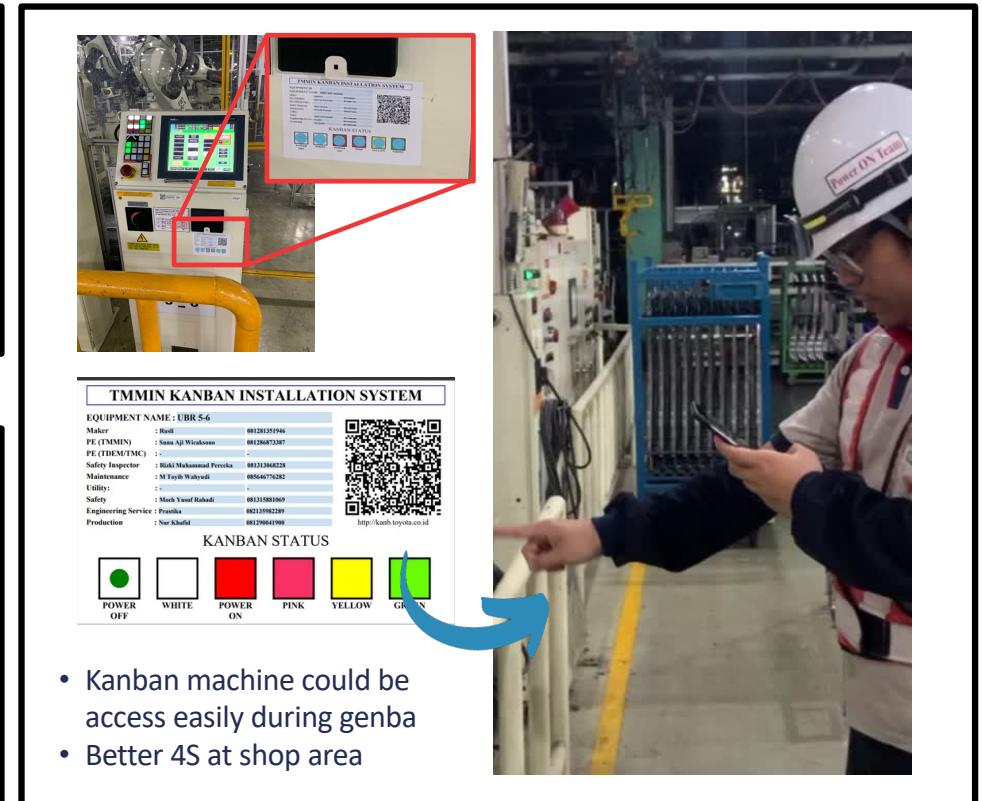
Problem : Document machine kanban was dirty, damage, & hard to access

Improve : Create QR sticker that shown kanban machine status & data

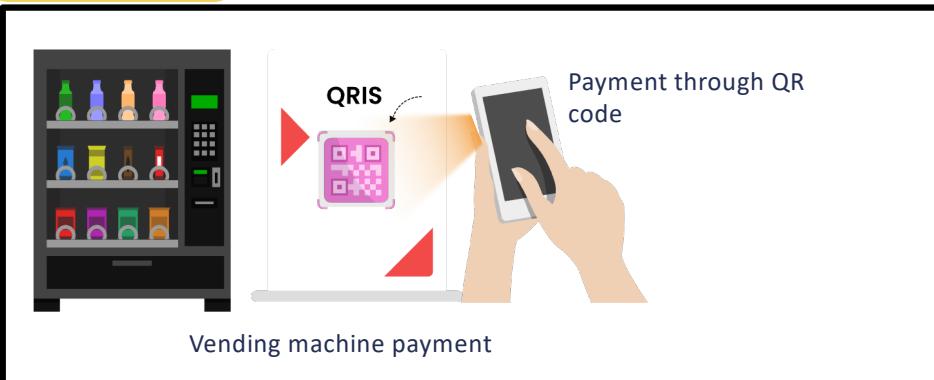
Before



After



Inspiration



Quality & Environment



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Quality



Tidy Documents

Less Error

Auto Sync Data



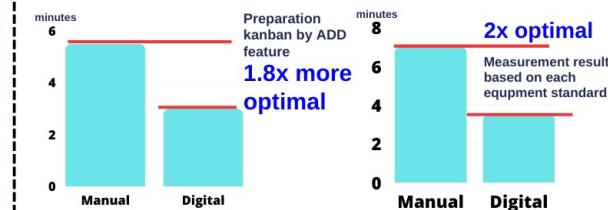
Auto Calculate Data



All Information on Your Hand

Productivity

In average, preparation-execution-monitoring by digital kanban are **5x optimal**



Environment

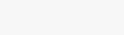
Welding shop

200 eqp/year
= 3k papers

WTA shop

600 eqp/year
= 9k papers

all TMMIN
1500 eqp/year
= 22.5k papers



Save 9K paper



Save 117 kg CO2



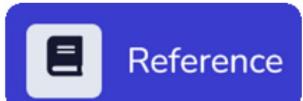
Save 3.249L Liquid Waste



Save 45 kg solid waste

Sumber : government of Canada
Purdue Research Foundation and US Environmental Protection Agency, 1999
Orondaga Resource Recovery Center
International Institute for Environment and Development, 1971

Safety



Reference on Dashboard



Lower Safety Risk

HR



Level Up Skill
for utilize Technology in smart factory 4.0

Cost



Payback period
1.7
tahun

Background

Plan

Do

Check

Action



User Guide

Manual Book



Website Minimum Requirement

Frontend (User Interface)



Backend (Programming)



Action Taken

Handover to Safety Team



Commitment Letter

SURAT KESEPAKATAN BERSAMA

Yang bertanda tangan dibawah ini, kami :

1. Kepala Departemen Body and Frame PE
2. Kepala Departemen Safety and Health PE
3. Kepala Departemen Painting PE
4. Kepala Departemen Assembly PE
5. Kepala Departemen Utility and Building PE

Menyatakan bahwa :

Dengan diluncurkannya website TMMIN Kanban Machine Installation System, kami sepakat untuk mengaplikasikannya pada seluruh shop di PT. Toyota Motor Manufacturing Indonesia dalam melakukan instalasi baru dan/atau modifikasi equipment.

Menyatakan,


Novriangga
BFPE Dept. Head


Anya Yudijianto
SHE Dept. Head


Gatot Widodo
PPE Dept. Head


Rianto
APE Dept. Head


Noto Bunawan
UBE Dept. Head

Mengajahni,

Hendri Herdiyanto
Div. Head Prod. Eng

Background

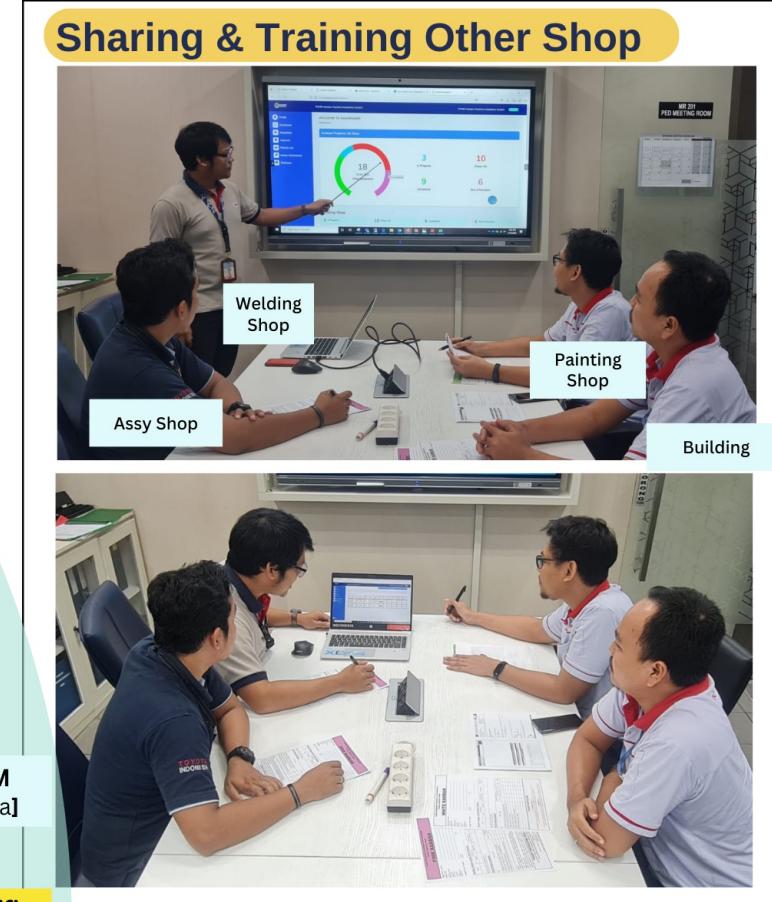
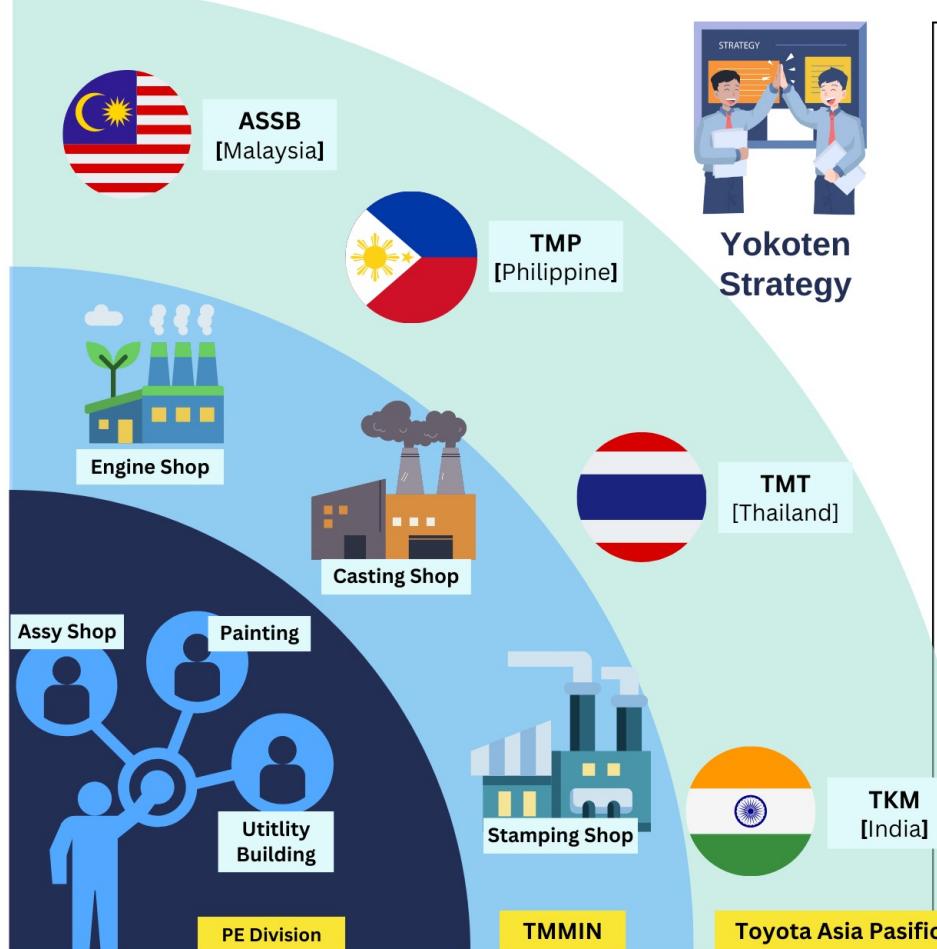
Plan

Do

Check

Action

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Next project
IR 4.0



Digitalization of 'Izin Melakukan Pekerjaan Berbahaya' sheets

Welcome to the future of Kanban!

Unleashing productivity, streamlining workflows, and transforming your business in the digital era