Industry 4.0 Hand-held Digital Lean Analyser

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Industrie 4.0 (The 4th Industrial Revolution)

1st: Mechanisation, water power, steam power
2nd: Mass production, assembly line, electricity
3rd: Computer and automation
4th: Cyber Physical Systems
「i3.0」 VS 「i4.0」

Reasonable Automation

Decisions based on real-time data
Equipment IoT Real Time

- Digitalisation, Connectivity, Visualisation

Through sensor applications and digital application tools
Real time Equipment Management – Status Visualisation
Labour Intensive Assembly Line

- Common Problems for Assembly Line
- Real Time Data Capturing
- Lean Tools Solution

<table>
<thead>
<tr>
<th>Std vs Act time gap /Bottleneck / WIP</th>
<th>Quality</th>
<th>Andon Response</th>
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<tbody>
<tr>
<td>Processing time/idle time/ Output rate</td>
<td>Defect rate / Defect Type</td>
<td>Andon rate/ response time/fix up time</td>
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<tr>
<td>Line Balancing/ECRS/ Ergonomics</td>
<td>Poke Yoke / Quality at source / Quality Analysis</td>
<td>TPM / SMED/ Quality Analysis</td>
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A suitcase for facilitating the on-site service support

Devices with standalone appliance and gateway (wireless network that cover 200 meter end-to-end)
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- Assembly Work bench with labour workstations
- Digital Dashboard for real time visualisation
- Digital Analyser interfaced with infrared photo sensors for real time capturing of processing time and idle time
Digital LEAN Analyser System
Standalone Wireless Network

Customer’s Ethernet Network

Gateway

Appliance (Firewall)

3rd Party Access API

Server

Edge Device

Cloud Service

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- Optimise labor intensive operation for manufacturing industry

- Interfaced with infrared photo sensors for real time capturing of processing time and idle time for the labour assembly operation

- Real time monitoring the variations of processing time and WIP in assembly line

- Act as real time data-driven tool for assembly process analysis and optimisation
Commercialization Plan (Yr 20/21)

RTTP Digital Lean Certification Program Series
- Certified Digital Lean Practitioner (3 Days In-Company Training)

### Day 1 (Training)
- i4.0 & Digital Lean Concept
- IoT Methodology
- Sensor Application

### Day 2 (On-site Practical)
- Digital Lean Analysers Setup
  - Hardware/Software installation
  - Trial run (2 Lines Max)
- Real time data acquisition

### Day 3 (On-site Practical)
- Data Analytics
- Review KPI
- Data Driven Improvement

**Industry Sector Specific**
- Target: Home Appliance / Toys / Electronic PCBA / Textile and Clothing
- With Labour intensive operation