Boosting SMT Line OEE by 50% with a Lean-rooted IoT Solution

The Client

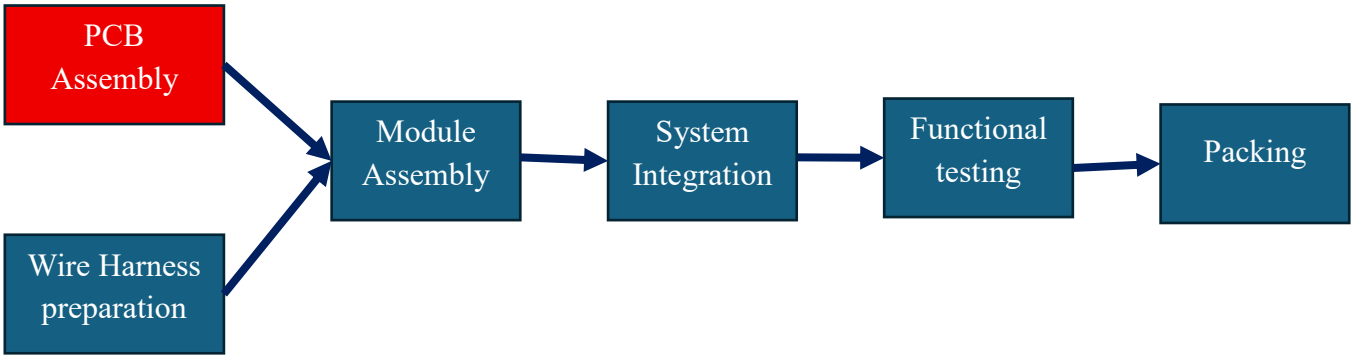
A leading engineering company supplying custom electronic systems to the railway and defense sectors

The Challenge

The client had won a major tender for an integrated electronic product and needed to ramp up output by 4X within just six months.

Current State Assessment

The manufacturing process flow is shown below:



The client had already implemented Lean manufacturing across the value stream during the ramp-up from pilot to commercial production. They operated the assembly-to-packing processes as manual single-piece-flow lines, which could be scaled quickly by adding more lines.

The team identified PCB assembly as the bottleneck, especially the SMT lines, adding which would require significant investment and take months to procure and commission. The line delivered 250 PCBAs per day, falling short of the 300-unit daily target. OEE Data analysis of the SMT lines showed that

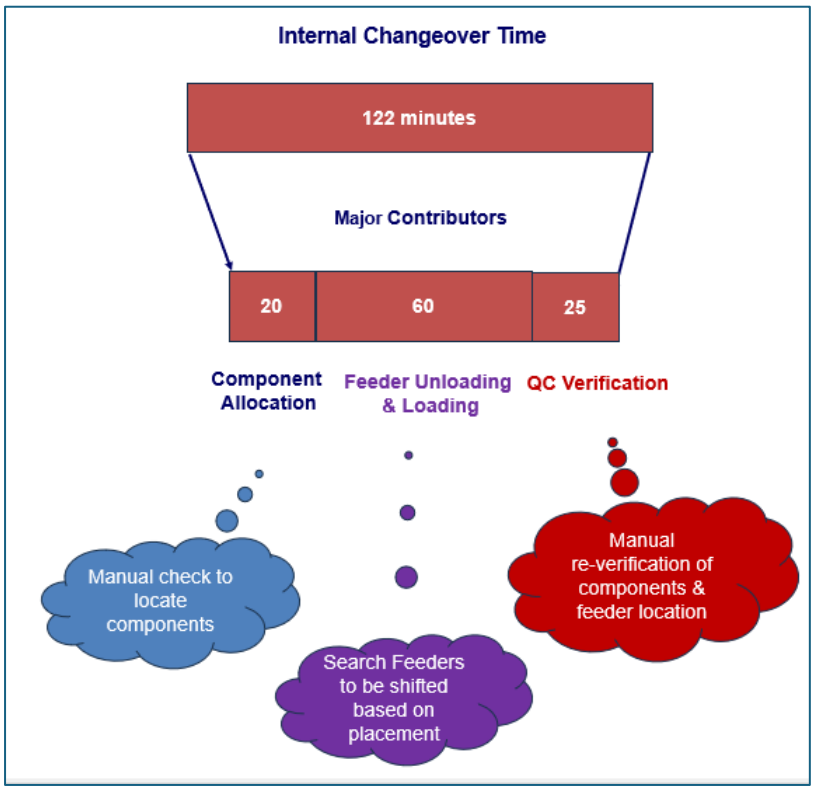
- The SMT lines operated at less than 50% OEE, driven by high mix and long changeovers.
- 10 PCBA types being manufactured required 20 changeovers a month, and each changeover took more than two hours.
- Loss due to changeover was about 25%

The Goal

Increase the Overall Operations Effectiveness (OOE) of the Surface Mount Technology (SMT) line from 46% to 75% through reducing internal changeover time by 50%

The KIAP Approach

We set up a cross-functional team(CFT) from manufacturing, quality, and production. The team was briefed on SMED concept and began with observation of the complete changeover The top three time taking activities were then broken down for a detailed analysis.



The Solution

Following the analysis, the CFT team brainstormed and came out with solutions that were then taken up for implementation.

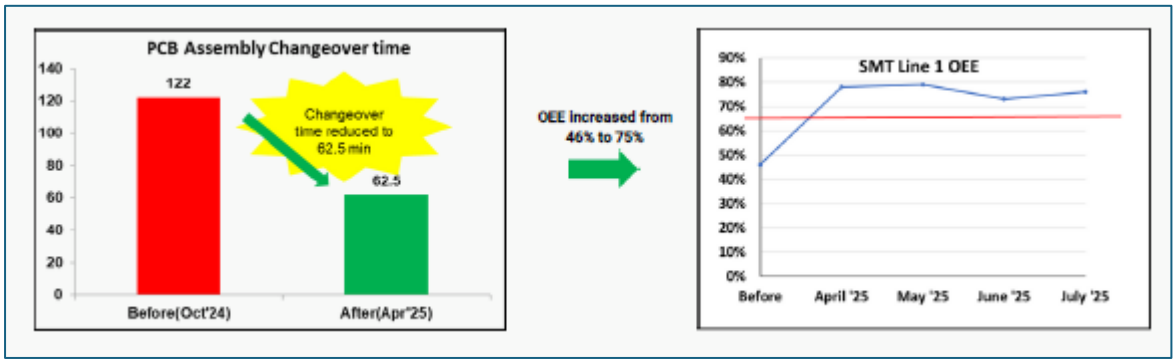
- Identified ways to convert internal activities into external preparation and eliminate MUDA**,** such as QC verification.
- Collaborated with a leading technology provider to develop an IoT application incorporating these requirements.
- Provided the physical infrastructure needed to support external activities, including feeders and mobile feeder trolleys.
- Implemented 5S to enable search-free storage of component reels, with each rack slot assigned a unique address.

The Business Benefits

Small, focused Kaizens drive big results. The synergy of Lean thinking and digital enablement helped the client:

- Meet the production target of 300 PCBAs per day consistently

- Sustain the improvements through daily OEE monitoring in the application
- Strengthen performance through regular loss-report analysis



Ready to boost performance with IoT-driven Lean improvements? Get in touch with us to explore state-of-the-art, industry-specific integrated Lean IoT solutions.