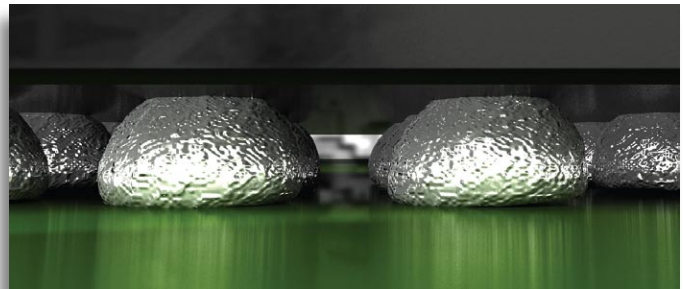
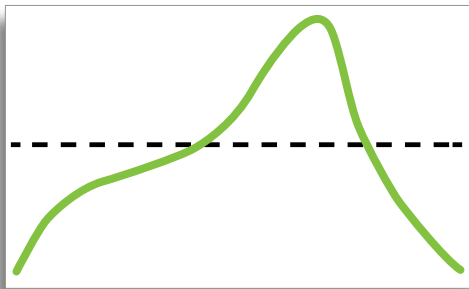


# RPI — Reflow Process Index

## Production Details

Product Name	:pcb assembly-1
Production LotID	:KIC 002 XYZ
Board Count	:7
Oven Name	:Line B
Process Window	:Lead free paste 2
Production Start Date	:14/10/2011 16:24
Production End Date	:In Progress

- ◆ Process traceability for each PCB
- ◆ Management data for reflow quality and throughput
- ◆ Reduced production cost
- ◆ Measuring process quality — independent of equipment, personnel and location
- ◆ Automated continuous profiling



## Managing the Ultimate Reflow Oven Output

A reflow oven is a very busy machine striving to control multiple variables while heating and cooling PCBs. The purpose of the oven, however, is very simple.

- To create a specific PCB profile
- To maintain required throughput.

The KIC RPI optimizes both of these outputs while sharing the data on a continuous basis with the authorized personnel.

## Features

- The RPI utilizes embedded sensors for heat and conveyor speed to automatically measure and display the following information:
  - PCB profile
  - Profile's "fit" to the process window
  - Continuously displayed production details
    - ◆ #PCBs produced
    - ◆ Product name and lot ID
    - ◆ Production date and time stamp
    - ◆ Oven name
  - PCB process traceability
  - SPC & Cpk charts
  - Statistics of defects and process yields
  - Pareto chart on out of spec occurrences

The RPI features include:

- Profile optimization software
- Barcode reading software
- Remote Process Monitoring software
- Alarm Relay
- Light Bar

## Fail-Safe Operation

- There are numerous opportunities for mistakes and defects to occur in the reflow process. Human errors include loading the wrong oven program or loading the wrong PCBs. The RPI's bar code capability prevents such mismatch.
- Another common defect occurs when the process drifts out of spec or out of control. The RPI will immediately alert the responsible personnel of such occurrences and can shut down the infeed conveyor if desirable.
- SPC charts will alert the engineer of upcoming trouble, typically when the reflow oven is still operating within spec.

## Bottom Line

The RPI indexes the single most important output of a reflow oven, namely how well the profile conforms to the required spec. This index is independent of type of oven, PCB type, personnel, and even geographical location. The profile index along with yield and production data is shared with the responsible personnel in such a way that the production ovens can maintain an efficient operation. The RPI is designed to improve production quality by ensuring that each and every PCB is processed in spec. The RPI will reduce cost through improved uptime, reduced scrap and rework, and minimize labor input.

KIC<sup>®</sup>  
RPI<sup>™</sup>

Reflow  
Inspection  
System



*Innovation That Works™*

## CALCULATING FORMULAS

### Calculating Opportunities, DPMO and Yield

#### Total Opportunities

Number of Boards × Number of TC Points × Number of Profile Specs = Total Opportunities  
 (2 × 5 × 5 = 50)

#### DPMO

Number of Total Errors ÷ Total Opportunities × 1,000,000  
 (4 ÷ 50 × 1,000,000 = 80,000)

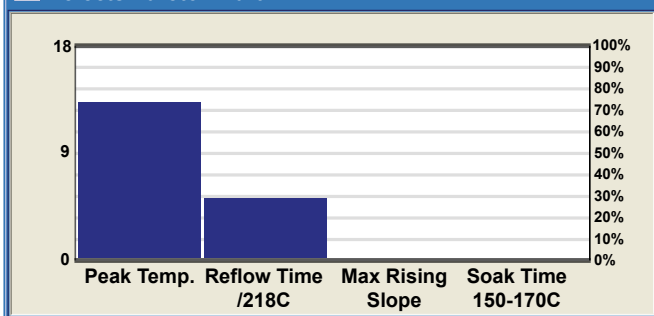
#### Yield

100 ÷ Number of Boards × Number of Boards with Errors = % of Error. 100% - % of Error = Yield

#### Index Results

**Reflow DPMO = 10714**  
**Reflow Yield = 95.71%**  
**Reflow Cpk = -0.11**

#### Defects Pareto Chart



#### Index Details

**Number Of Boards Processed = 70**  
**Number Of TC Used = 6**  
**Number Of Profile Specification = 4**  
**Total Error Of Opportunity = 1680**  
**Number Of Statistic Error = 18**  
**Number Of Boards With Error = 3**

## RISK-FREE GUARANTEE

All KIC products are designed to give maximum value and fast payback by streamlining your thermal process. Investment in a KIC product is a step toward total process control and quality management. All KIC products come with a no questions asked, 30-day money back guarantee.

## RPI SYSTEM

### System Components

- 30 ea. Thermocouple sensors embedded in the reflow oven
- 1 ea. Speed encoder
- 1 ea. e-TPU data acquisition box with cabling
- 1 ea. Alarm relay
- 1 ea. Light Tower
- 1 KIC RPI software

#### PWI & Cpk Chart



## COMPUTER CONFIGURATION

### Minimum System Requirements

- Dual Core / 1 GHz Processor PC with 2 GB RAM
- 2 GB available storage
- Video 1024 x 768 resolution / 16-bit
- 1 available USB port (for data download)
- 1 available USB port (for software key)
- 1 available Ethernet port or 1 available USB port with Ethernet to USB
- Microsoft Windows XP, Vista or 7 (32-bit or 64-bit)

\*\*Note: 2 additional powered USB ports may be needed for optional accessories

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