

**SME Development Fund/
Dedicated Fund on Branding, Upgrading and Domestic Sales
(Organisation Support Programme)**

Final Report of Approved Project

Project ref. no. : D09 001 022

Project title : To enhance the competitiveness of Hong Kong's
Printed Circuit Board (PCB) manufacturers through
establishment of Local High Reliability PCB
Qualification Support Services

Period covered : From 01/04/10 to 31/03/14
(dd/mm/yy) (dd/mm/yy)

1. Project Details

(Please mark with "*" if any of the following project details is different from that in the project proposal appended to the project agreement.)

Project Reference and Title

To enhance the competitiveness of Hong Kong's Printed Circuit Board (PCB) manufacturers through establishment of Local High Reliability PCB Qualification Support Services

Project Summary (in not more than 150 words)

The Reliability Testing Centre of the Hong Kong Productivity Council (HKPC) enhance its capability by developing reflow simulation technique and acquiring a high repeatability reflow soldering system so that local SMEs in the PCB industry can acquire the qualification service in a short turnaround time and more cost effective means.

Project Objective(s) (in not more than 80 words)

The objectives of this project are:

- to enhance the existing testing service in HKPC through the development of simulation technique and acquisition of a highly stable and reliable reflow soldering system; and
- to enhance the competitiveness of Hong Kong's Printed Circuit Board (PCB) manufacturers and suppliers through the establishment of local high reliability PCB qualification support service.

Grantee /Collaborating/Implementation Organisation Agent

Grantee : Hong Kong Productivity Council

Collaborating Organisation(s) : Not Applicable

Implementation Agent(s) : Not Applicable

Key Personnel

| | Name | Company/Organisation | Tel No. & Fax No. |
|--------------------------------|------------------------|--------------------------------|------------------------|
| Project Co-ordinator | Ping Yiu, Raymond CHIU | Hong Kong Productivity Council | 2788 5921 2788 5405 |
| Deputy Project Co-ordinator | Yuen Yee, Angel WONG | Hong Kong Productivity Council | 2788 5783 2788 5405 |

Project Period

| | Commencement Date (day/month/year) | Completion Date (day/month/year) | Project Duration (No. of months) |
|--------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|
| As stated in project agreement | 01/04/2010 | 31/03/2014 | 48 |
| Revised (if applicable) | Not Applicable | | |

Methodology Employed

Thermal simulation technique was developed after acquired a high reliability reflow soldering system.

Offered free of charge high reliability PCB qualification services to the PCB industry after developed the thermal simulation technique. Developed technique was disseminated through three seminars.

2. Summary of Project Results

Project Deliverables

(Please list out the targeted project deliverables as stated in the project proposal appended to the project agreement and provide details of actual result achieved, including beneficiaries, for each of them.)

Deliverable 1 : Local testing service for high reliability PCB qualification, with a target customer base over 200 SMEs of PCB manufacturers and suppliers.

Project Benefits: Raise the competitiveness of local SMEs in the PCB industry by overcoming the barrier of entering the high reliability electronics product market.

Actual result achieved:

- (i) The purchase and installation of the Reflow Soldering System were completed as scheduled. The project engineer and technician were recruited and reported to duty in October 2010 and January 2011 respectively. After the commissioning of the system test run, the team has acquired the necessary training and developed the simulation technique. The first version of promotional flyer was prepared and has been dispatched to PCB manufacturers and suppliers in April 2011. The second version of promotional flyer was prepared and has been dispatched to PCB manufacturers and suppliers in June 2013. The accumulated number of beneficiaries includes all dissemination activities were more than 77,000 in which 23,000 were SMEs. The reflow simulation service was commenced in April 2011. From April 2011 to March 2014, more than 130 cases of reflow simulation service have been offered.

Deliverable 2 : Three technical seminars/workshops to demonstrate high reliability PCB qualification requirements and disseminate project results.

Project Benefits: Avail local industry and manufacturers which cannot afford the capital and manpower to acquire the necessary equipment availability and technology during the financial crisis in the short term. In the longer term they will re-establish themselves possibly with the help from HKPC through different technology transfer efforts.

Actual result achieved:

- (i) The first technology dissemination seminar was held on 4 July 2011 at 1/F., HKPC Building. A total of 87 participants have attended the seminar.
- (ii) The second technology dissemination seminar was held on 21 November 2011 at 1/F., HKPC Building. A total of 89 participants have attended the seminar.
- (iii) The third technology dissemination seminar was held on 13 November 2012 at 4/F., HKPC Building. A total of 74 participants have attended the seminar.

Actual Benefits to SMEs/Enterprises

(Please indicate in clear, specific, tangible and quantifiable terms the benefits of the project and its contribution to enhancing the competitiveness of Hong Kong's SMEs / enterprises in general or SMEs / enterprises in specific sectors / assist Hong Kong enterprises in general or in specific sectors in developing brands, upgrading and restructuring business operations, and promoting domestic sales in the Mainland, in not more than 400 words.)

The project aims to enable PCB manufacturers and suppliers to complete high reliability PCB qualification tests locally through the establishment of high reliability PCB reflow simulation service in HKPC Reliability Testing Centre. This objective has been achieved. Through the established high reliability PCB reflow simulation service that offer relatively shorter lead time than overseas laboratories, PCB manufacturers and suppliers have upgraded their capability level and entered into higher profit margin business. During the project period, more than 80% of the test cases that handled by the Centre were new PCB qualification request, and most of these boards have more layer count than the PCB which we have handled before the project commencement. This phenomenon indicates that the local PCB industry has improved their capability in recent years.

Reflow simulation and assembly process optimization know-how were also shared with local PCB practitioners by local and overseas experts through the three dissemination seminars. There were 250 personnel from local PCB industry being benefit. In the longer term, the beneficiary companies could re-establish themselves possibly with the help from HKPC through different technology transfer efforts to uplift their competitiveness.

Milestones (in chronological order)

(# Please indicate if the milestone is completed (C), deferred (D) or not achieved (N). If it is deferred, please indicate the revised completion date. For those milestones which are deferred or not achieved, please also provide the reasons under item 2.4.)

| <u>Milestone</u> (as set out in the approved project proposal appended to the project agreement) | <u>Original target completion date</u> | <u>Revised target completion date</u> (if applicable) | <u>Status</u> (C/D/N) # |
|---|--|--|----------------------------|
| (a) Selection of equipment and prepare tender specification. | 01/04/2010 to 31/05/2010 | | C |
| (b) Tender and issue purchase order. | 01/06/2010 to 31/07/2010 | | C |
| (c) Infrastructure arrangement (Installation Preparation) | 01/08/2010 to 30/09/2010 | | C |
| (d) Installation of equipment | 01/10/2010 to 30/11/2010 | | C |
| (e) Training and development of simulation technique | 01/12/2010 to 31/03/2011 | | C |
| (f) Commencement of high reliability PCB qualification services | 01/04/2011 to 31/03/2014 | | C |
| (g) Organize the first technology dissemination seminar/workshop | 01/04/2011 to 31/08/2011 | | C |
| (h) Organize the second technology dissemination seminar/workshop | 01/09/2011 to 31/01/2012 | | C |
| (i) Organize the third technology dissemination seminar/workshop | 01/02/2012 to 30/06/2012 | 01/07/2012 to 30/11/2012 | C |

Marketing/Dissemination Activities (in chronological order)

(Please provide details of all completed and on-going promotional and/or dissemination activities for each of the project deliverables. Such activities may include advertisements, seminars, workshops, etc.)

| <u>Date/ Period</u> | <u>Description</u> | <u>No. of beneficiaries (SMEs/Enterprises*)</u> *please delete as appropriate |
|-------------------------|---|--|
| 4 Apr 2011 | Ran a feature of Reflow Simulation Services on HKPC weekly newsletter (News Flash). ^{Note 1} | 60,000 (20,000 SME) |
| 6 Apr 2011 | Disseminated Reflow Simulation Services promotional flyer via contact database of Hong Kong Printed Circuit Association. ^{Note 1} | 1,600 (130 SMEs) |
| 27 May 2011 | Introduction of the Reflow Simulation Services and disseminated the Reflow Simulation Services promotional flyers at the monthly networking dinner of Hong Kong Electronics & Technologies Association. ^{Note 1} | 15 (8 SMEs) |
| 31 May 2011 | Disseminated Reflow Simulation Services promotional flyer via contact database of Hong Kong Electronics & Technologies Association. ^{Note 1} | 800 (700 SMEs) |
| 13 Jun 2011 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyer at Far Infra-red Technology Dissemination Seminar. ^{Note 1} | 123 (73 SMEs) |
| 4 Jul 2011 | Organized the First Technology Seminar – Thermal Impacts on Printed Circuit Board (PCB) in 2 nd Level Assembly at 1/F HKPC Building. | 87 (29 SMEs) |
| 11 Jul 2011 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyers at the Open House of Hong Kong Productivity Council Reliability Testing Centre. ^{Note 1} | 44 (23 SMEs) |
| 6 Nov 2011 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyer at Electromagnetic Compatibility and Accelerated Life Test seminar of Institute of Electrical and Electronics Engineers. ^{Note 1} | 36 (18 SMEs) |
| 21 Nov 2011 | Organized the Second Technology Seminar – Reflow Induced Defect in PCB Assembly at 1/F HKPC Building. | 89 (30 SMEs) |
| 21 Nov 2011 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyer at “Overcoming Radio Frequency Design and Testing Challenges” Seminar. ^{Note 1} | 126 (40 SMEs) |
| 17 Feb 2012 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyers at the Open House of Hong Kong Productivity Council Reliability Testing Centre. ^{Note 1} | 37 (10 SMEs) |
| 10 May 2012 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyers at the Open House of Hong Kong Productivity Council Reliability Testing Centre. ^{Note 1} | 27 (10 SMEs) |

| | | |
|------------------------------|---|-------------------|
| 21 Sept 2012 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyers at the Open House of Hong Kong Productivity Council Reliability Testing Centre. ^{Note 1} | 21 (11 SMEs) |
| 13 Nov 2012 | Organized the Third Technology Seminar – Understanding Reflow Impact on Reliability of Electronic Card Assembly and Printed Circuit Board at 4/F HKPC Building. | 74 (24 SMEs) |
| 11 Jan 2013 | Introduction of the Reflow Simulation Services and disseminated Reflow Simulation Services promotional flyers at the Open House of Hong Kong Productivity Council Reliability Testing Centre. ^{Note 1} | 13 (6 SMEs) |
| 16 Aug 2013 | 1 st HALT Dissemination seminar. ^{Note 1} | 33 (17 SMEs) |
| 29 Aug 2013 | “香港優質 LED”廣州國際照明展團經驗分享會. ^{Note 1} | 38 (25 SMEs) |
| 9 Sept 2013 | Seminar on Reliability Impact on Financial Performance. ^{Note 1} | 21 (12 SMEs) |
| 17 Sept 2013 | Disseminated Reflow Simulation Services promotional flyer via contact database of Hong Kong Productivity Council. ^{Note 1} | 13999 (2070 SMEs) |
| 20 Jan 2014 | 品味 LED X 品味 LED Seminar & Exhibition. ^{Note 1} | 77 (45 SMEs) |
| 4 Mar 2014 | 「提升電子產品可靠性」計劃 – 高加速壽命測試技術專題培訓班(一). ^{Note 1} | 33 (6 SMEs) |
| Total no. of beneficiaries : | | 77,293 |

*Note 1: This non-project funded activities provides opportunity to promote the Reflow Simulation Services.

Future Plan for Promoting the Project Deliverables

The project team will make use of the following channels to further disseminate and promote the deliverables to the user groups:

1. Include the reflow simulation services information in HKPC Reliability Testing Services Flyer and HKPC Automotive and Electronics Division service flyer as a regular service to the industry.
2. Promote the reflow simulation services through HKPC website and through speaking in public seminars and workshops.
3. Regular associations networking events.