

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

Final Report of Approved Project

Project ref. no. : D11 002 005
Project title : To develop a Hong Kong Energy Efficiency Labeling
Scheme for plastic processing and auxiliary
machinery to promote brand image and enhance
marketability of the local plastic machinery industry
Period covered : From 1 February 2012 to 31 July 2013
(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 develop a Hong Kong Energy Efficiency Labeling Scheme for plastic processing and auxiliary machinery to promote brand image and enhance marketability of the local plastic machinery industry

Project Summary (in not more than 150 words)

In order to promote the brand image and enhance the marketability of Hong Kong made plastic processing and auxiliary machinery, we propose to develop a Hong Kong plastic machinery industrial energy efficiency labeling scheme.

The scheme to be developed will consist of a set of guidelines with detailed information on the requirement, assessment, testing methods, procedures and label certification for various plastic processing and auxiliary machinery, including plastic injection moulding machine, hopper dryer and temperature controller. Based on the developed guideline, we will perform a series of energy consumption measurement on various ranks of plastic machinery (e.g. 3 categories in around 50 – 450 tons) and auxiliary machinery (e.g. 3 categories that suitable for around 50 – 450 tons plastic machinery) made by Hong Kong, overseas and Mainland China for comparison and benchmarking. An industrial task force of plastic machinery experts and industrialists will be formed to discuss and reach a common consensus on how to classify the energy efficiency performance into different grading (e.g. 3 level of grading) for each type and category of plastic processing and auxiliary machinery.

After setting up the testing guidelines and establishing an energy efficiency labeling scheme, Hong Kong Productivity Council (HKPC) will offer energy consumption measurement services to plastic machinery or product manufacturers, maintain and build up the database of machinery energy consumption measurement. Hong Kong Plastic Machinery Association Ltd. (HKPMA) will be the agency to run the scheme and issue certified energy efficiency labels based on the measuring results conducted by HKPC upon requested by plastic machinery manufacturers. HKPMA will maintain records of certified energy efficiency labels of plastic processing and auxiliary machinery.

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

1. To develop testing and certification services on energy efficiency of plastic processing and auxiliary machinery and establish a Hong Kong industrial energy efficiency labeling scheme.
2. To promote the importance in adopting energy efficiency labeling scheme for enhancing the competitiveness of local made plastic processing and auxiliary machinery in global markets.
3. To promote the brand image of Hong Kong made plastic processing and auxiliary machinery on the energy performance by adopting the Hong Kong industrial energy efficiency labeling scheme.

Grantee /Collaborating/Implementation Organisation Agent

Grantee	: <u>Hong Kong Plastic Machinery Association Ltd. (HKPMA)</u> <ol style="list-style-type: none">1. Hong Kong Plastics Manufacturers Association Ltd2. Hong Kong Electrical Appliances Manufacturers Association3. Society of Plastics Engineers - Hong Kong Section4. Federation of Hong Kong Industries – Hong Kong Plastics Industry Council5. Hong Kong Plastic Bags Manufacturers' Association6. Hong Kong Auto Parts Industry Association
Collaborating Organisation(s)	: <u>7. Hong Kong Mould and Product Technology Association</u>
Implementation Agent(s)	: <u>Hong Kong Productivity Council (HKPC)</u>

Key Personnel

	<u>Name</u>	<u>Company/Organisation</u>	<u>Tel No. & Fax No.</u>
Project Co-ordinator	: Ms. WU Mi Tak, Justina	Chairman of Hong Kong Plastic Machinery Association Ltd.	2788 6251/ 2788 6169
Deputy Project Co-ordinator	: Mr. Kwok Keung LEE	Hong Kong Productivity Council	2788 5551/ 2788 5543

Project Period

	<u>Commencement Date</u> (day/month/year)	<u>Completion Date</u> (day/month/year)	<u>Project Duration</u> (No. of months)
As stated in project agreement	1 February 2012	31 July 2013	18 months
Revised (if applicable)			

Methodology Employed

In the programme development, we identified the requirement, criteria, assessment, testing methods and procedures, and label certification of energy efficiency labeling scheme for various plastic processing and auxiliary machinery including plastic injection moulding machine, hopper dryer and mould temperature controller.

For plastic injection moulding machine, we defined 5 categories of plastic injection moulding machines ranging from 50 – 450 tons. These categories were classified by referring to the corresponding injection volume of machines ranging from 85 – 2719 cm³. We also designed 3 testing moulds for producing plastic products of different shapes, sizes and volumes for representing different injection conditions and to be used for machine energy consumption testing in different categories. During the testing, we made use of the mould to fabricate plastic products and measure the corresponding energy consumption involved by the machine.

For hopper dryer, we defined 3 categories of hopper dryer by corresponding to the material storage capacity ranging from 25 – 100kg. During the testing, we dried up plastic resin in the hopper dryer and measure the corresponding energy consumption involved by the machine.

For mould temperature controller, we defined 3 categories of mould temperature controller with heater power ranging from 6 – 12kW. We designed a testing mould with water running system and mould temperature measurement system. During the testing, we heated up the mould by hot water from mould temperature controller and measure the corresponding energy consumption involved by the machine.

In the programme preparation, we had developed a set of guidelines of energy efficiency labeling scheme for various plastic processing and auxiliary machinery including plastic injection moulding machine, hopper dryer and temperature controller. The guidelines stated a set of processing parameters and requirement to be used during the energy consumption measurement.

In programme implementation, we conducted energy consumption measurement on 46 plastic machineries in various ranks made by Hong Kong, China, Taiwan, Japan and Korea for benchmarking and comparison.

We lined up with 6 local machinery suppliers of plastic injection moulding machines, hopper dryer and temperature controller for forming an industrial task force of plastic machinery experts and industrialists to discuss the content of the defined guidelines. After collecting results of energy consumption measurement of various machines, the industrial task force had discussion for reaching a common consensus on the classification criteria of different energy efficiency grading.

We had organized 3 seminars, compiled and distributed a set of promotional materials for introducing energy saving techniques for plastic processing and auxiliary machinery, promoting the energy efficiency labeling scheme, sharing the results of energy consumption measurement and label certification.

We also placed an article in “Yellow Pages Plastic and Chemicals 2012” for increasing the public awareness of energy efficiency label for plastic and auxiliary machinery and further enhancing publicity of the project.

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.)

A set of guidelines of energy efficiency labeling scheme for various plastic processing and auxiliary machinery including plastic injection moulding machine, hopper dryer and temperature controller, will be developed. The guidelines cover:

- Requirement, criteria
- Assessment, testing methods and procedures
- Label certification

Energy consumption measurement on various ranks of plastic machinery made by Hong Kong, overseas and China will be conducted for benchmarking and comparison.

An industrial task force of plastic machinery experts and industrialists will be formed to discuss and reach a common consensus on the classification criteria of different grading (e.g. 3 level of grading) for each type and category of plastic processing and auxiliary machinery.

Three seminars will be organized to introduce energy saving techniques for plastic processing and auxiliary machinery, promote the energy efficiency labeling scheme and share the results of energy consumption measurement and label certification.

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.)

In the project, we had developed a set of guidelines of energy efficiency labeling scheme for various plastic processing and auxiliary machinery including plastic injection moulding machines ranging from 50 – 450 tons, hopper dryer with material storage capacity ranging from 25 – 100kg, and mould temperature controller with heater power ranging from 6 – 12 kW.

The guidelines clearly specified the requirement, criteria and appropriate consideration in measuring energy consumption of selected categories of plastic machinery. Local plastic machinery manufacturers were benefited by having the same platform and fair comparison on energy consumption of various machineries.

We also defined assessment, testing methods, procedures and label certification of energy consumption measurement. Local plastic machinery manufacturers could easily follow the same methods to conduct energy consumption measurement of plastic machinery. They could directly compare energy saving performance of machinery with different energy saving features.

We conducted energy consumption measurement on 46 plastic machineries in various ranks made by Hong Kong, China, Taiwan, Japan and Korea for benchmarking and comparison. Based on the results, Hong Kong made plastic injection moulding machines with servo motor drive achieved better energy saving performance when comparing with other machines with traditional fixed displacement pump drive. Hong Kong made hopper dryer with hot air recycler and double layer heat preserving container, mould temperature controller with energy saving heater controlling system also achieved better energy saving performance. The energy efficiency labeling scheme benefited local plastic machinery manufacturers by recognizing the effort of implementing energy saving features in machinery production.

An industrial task force of plastic machinery experts and industrialists from 6 local plastic machinery manufactures was formed to discuss, make comments for fine tuning the content of the defined guidelines. Classification criteria of different energy efficiency grading were also discussed among the industrial task force for reaching a common consensus. The labeling scheme not only benefited local plastic machinery manufactures in promoting how energy saving of their machinery to buyers, but also benefited local plastic product manufactures in comparing and selecting suitable machinery based on their production needs.

We placed an article in "Yellow Pages Plastic and Chemicals 2012" for increasing the public awareness of energy efficiency label for plastic and auxiliary machinery and further enhancing publicity of the project. We had compiled and distributed a set of promotional materials, including leaflets and booklets for introducing the energy efficiency labeling scheme. The booklets summarized the assessment, testing methods, procedures and label certification of plastic machinery energy consumption measurement. We had organized 3 seminars for introducing energy saving techniques for plastic processing and auxiliary machinery, promoting the energy efficiency labeling scheme, sharing the results of energy consumption measurement and label certification. Participants were benefited by enriching the knowledge related to energy saving on plastic processing and auxiliary machinery. These promotional channels helped in further promoting the scheme effectively.

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) To identify the requirement, criteria, assessment, testing methods and procedures, and label certification of energy efficiency labeling scheme for various plastic processing and auxiliary machinery including plastic injection moulding machine, hopper dryer and temperature controller	31 July 2012		C
(b) To develop a set of guidelines of energy efficiency labeling scheme for various plastic processing and auxiliary machinery including plastic injection moulding machine, hopper dryer and temperature controller	31 Oct 2012		C
(c) To conduct energy consumption measurement on various ranks of plastic machinery made by Hong Kong, overseas and China for benchmarking and comparison	31 July 2013		C
(d) To form an industrial task force of plastic machinery experts and industrialists to discuss and reach a common consensus on the classification criteria of different grading (e.g. 3 level of grading) for each type and category of plastic processing and auxiliary machinery	31 July 2013		C
(e) To organize three seminars to introduce energy saving techniques for plastic processing and auxiliary machinery, promote the energy efficiency labeling scheme and share the results of energy consumption measurement and label certification	31 July 2013		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
Sep 2012	Article in "Yellow Pages Plastic and Chemicals 2012"	8,000
Dec 2012 – July 2013	Promotional pamphlets of seminars were sent by e-mail to local plastic machinery manufacturers and plastic product manufactures	1,500
11 Jan 2013	Seminar on energy saving techniques for plastic processing and auxiliary machinery	56
21 May 2013	Seminar on energy saving techniques and energy consumption measurement methods for plastic processing and auxiliary machinery and	55
26 July 2013	Seminar on energy consumption measurement methods for plastic processing and auxiliary machinery and	25
July 2013	Distribution of promotional leaflet (3,000 copies) and booklets (1,000 copies) to local plastic machinery manufacturers and plastic product manufactures	4,000
Total no. of beneficiaries :		13,636

Future Plan for Promoting the Project Deliverables

N/A