



Workshop on Refrigerator/Freezer Energy Efficiency Improvement in APEC Region: Review of Experience and Best Practices (EWG 07 2017A)

Introduction to the EWG 07 2017A Project and its Implementation Status.



**Asia-Pacific
Economic Cooperation**

Technical Working Group Member

Sep. 12, 2018

Basic Information

- Proposing economy: Chinese Taipei
- Co-sponsors: China, Korea
- Project overseer: Mr. Shiao-Jiun Bor
- Duration : July 1st, 2017 to Dec. 31st, 2018
- Budget: APEC funding \$80,000 + Self-funding \$40,000
- Time Frame:



Outputs

- ◆ Project **Work Plan and Structure** of the Work Group.
- ◆ **Energy Saving Technology Seminar** for Refrigerator/Freezer Energy Efficiency Improvement in APEC Region (Self-funding, Nov. 16, 2017 at Taipei City, Chinese Taipei) + Technical Expert Group Meeting (Nov. 17)
- ◆ **Investigation report** for the case studies of domestic refrigerators/freezers design and implementation under energy efficiency regulation.

Outputs

- ◆ **Workshop I** — invite experts from different economies to share experiences of refrigerator EE improvement (during the **51st APEC EGEE&C** meeting)
- ◆ **Workshop II** — seek manufacturers to share the best practice implementation to fit the energy efficiency regulation (during the **52nd APEC EGEE&C** meeting)
- ◆ **Final report** — “Refrigerator/Freezer Energy Efficiency Improvement in APEC Region: Review of Experience and Best Practices” at targeted electric appliance stakeholders among the APEC members.

Implementation

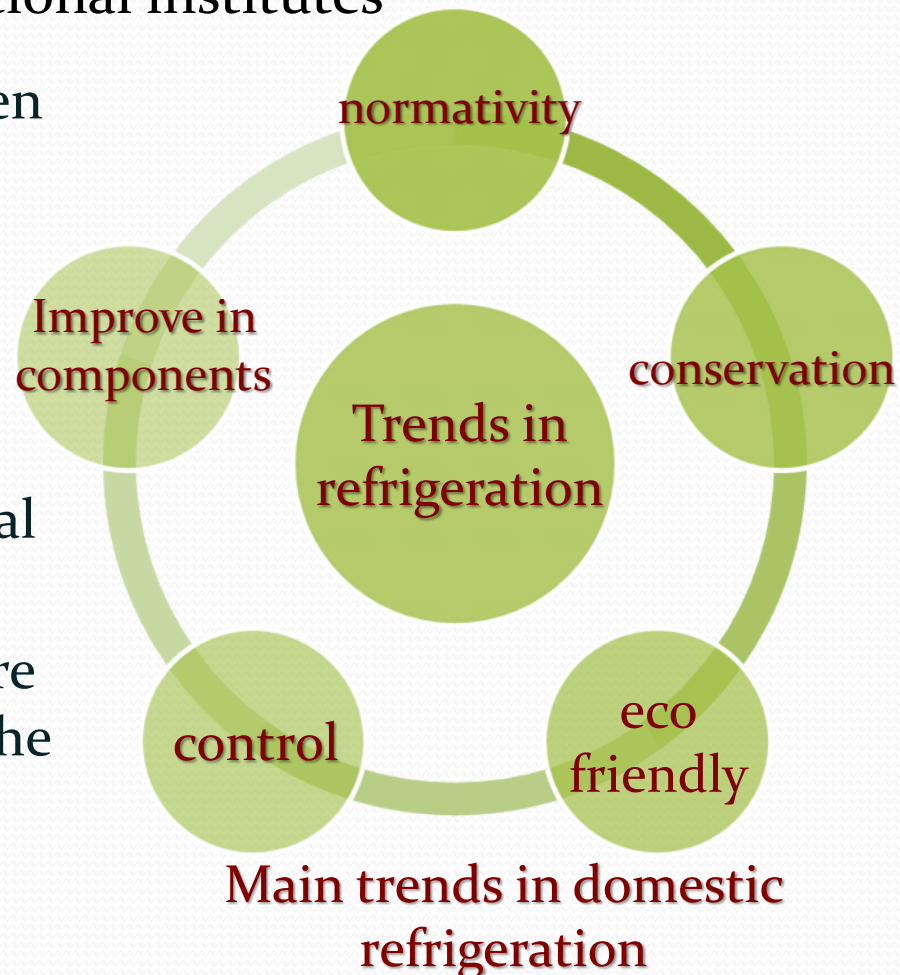
During Oct. 2017- Jan. 2018, the working group finished the following two work items:

- ◆ **Review** and apply the results of previous relevant APEC work, including 'Harmonisation of Energy Efficiency Test Methods of Refrigerators' (EWG 04 2014A).
- ◆ Conduct **research** of APEC economies about refrigerator/freezer EE management through a detailed **questionnaire**.

Based on the previous research results, the Contractor ITRI finished the report for 'Technical Review and Survey for Refrigerator EE Promotion in APEC Region through a Detailed Questionnaire' by Jan. 30, 2018.

Technical Review and Promotion Survey:

- ◆ Energy saving technology review work--focus on the international research and development trend surveying from open literature and technical reports by relevant international institutes
- Over 40 technical publications in open literature surveyed in this period
- Major topics for EE promotion of refrigerator: cabinets improvement, refrigeration system improvement, inverter control, not-in-kind technologies (not suitable for practical implementation for product)
- Detail system design information were disseminated by Mr. Tony Chang in the Seminar on Nov. 16, 2017.



Technical Review and Promotion Survey:

- ◆ Seek the manufacturers who can share the practical experience for efficiency enhancement of refrigerators
 - Invite economic experts to share experience of refrigerator EE management at **the 1st workshop** during the **51th EGEEC** meeting, including experts from USA, New Zealand, Japan, and Chinese Taipei
 - Planning to invite refrigerator manufacturers or institutes to share practical implementation experience of EE promotion at the **2nd workshop** during the **52nd EGEEC** meeting in Chiang Mai, Thailand.

Implementation

To gather international experts in EE refrigerator/freezer to discuss the latest technology developments of refrigerator /freezer in energy saving, the working group completed hosting a **self-funding refrigerator seminar** ‘Energy Saving Technology Seminar for Refrigerator/Freezer Energy Efficiency Improvement in APEC Region’ on **Nov. 16, 2017** at the Howard Plaza Hotel Taipei, **Chinese Taipei**.





Energy Saving Technology Seminar for Refrigerator/Freezer Energy Efficiency Improvement in APEC Region (EWG 07 2017A)

DATE: November 16, 2017

VENUE: B2 Conference room, section III, the Howard Plaza Hotel Taipei, Taipei City, Chinese Taipei (No. 160, Ren Ai Rd. Sec. 3, Taipei City, Taiwan. Tel:+886-2-2700-2323)

Topic 1: **Integration of Appliance for Smart Home**, ITRI (Dr. Morris Pei-Fang Liang)

Topic 2: Technical Reference on **Harmonization** of Energy Efficiency **Test Methods** of Refrigerators towards the NEW IEC 62552 among APEC Region, Vkan Certification & Testing Co., Ltd (CVC), China (Mr. Andy Li Tie)

Topic 3: Next Possible **Refrigerant for Environmental Consideration**, Honeywell International (China) Co. Ltd (Dr. Yongming Niu)

Topic 4: State-of-the-art Refrigerator **Compressor Design**, Cubigel Compressors, Huayi Bcelona, Electrolux Group (Mr. Alejandro Vázquez Escámez)

Topic 5: **System Design** for Energy Efficiency Improvement of Household Refrigerators/Freezers, ITRI (Mr. Tony Wen-Ruey Chang)

Technical Expert Group Meeting

EWG 07 2017A – Refrigerator/Freezer Energy Efficiency Improvement in APEC

Region: Review of Experience and Best Practices (EWG 07 2017A)

DATE: November 17, 2017

VENUE: 4F Room 405, the Howard Plaza Hotel Taipei, Taipei City, Chinese Taipei (No. 160, Ren Ai Rd. Sec. 3, Taipei City, Taiwan. Tel:+886-2-2700-2323)

The EWG 07 2017A project workplan & implementation status

- ◆ Outcome for Survey of EE management for refrigerators in APEC region by questionnaire
- ◆ Economies experience sharing on refrigerator energy efficiency promotion
 - **Indonesia** (Mr. Hermanu, PT TUV Nord Indonesia)
 - **Malaysia** (Mr. ChokSer Gan, Malaysian Air-Conditioning & Refrigeration Association (MACRA))
 - **Thailand** (Mr. Pawatt Suwannakut, Electrical and Electronics Institute (EEI))
 - **Vietnam** (Ms Doan Thi Thanh Van, Vietnam Standards and Quality Institute (VSQI))

Technical Expert Group Meeting

EWG 07 2017A – Refrigerator/Freezer Energy Efficiency Improvement in APEC Region: Review of Experience and Best Practices (EWG 07 2017A) on Nov. 17, 2017 at Taipei City.



- ❑ Six APEC economies participated this event including China, Indonesia, Malaysia, Chinese Taipei, Thailand, and Vietnam.
- ❑ Forty attendees from domestic manufactures and laboratories participated in this seminar.
- ❑ There was no gender restriction for the participants of this event. It was about 15% female of the attendees, and 11% female of all the speakers and APEC participants.



Workshop I

ONE-DAY WORKSHOP: April 9, 2018

VENUE: Embassy suites, Hilton Hotel, **Washington DC, USA**

- Experience sharing on EE promotion of refrigerator /freezer under energy efficiency regulation by 5 Expert Speakers
 - **USA**– by Ms. Stephanie Johnson, Department of Energy
 - **Chinese Taipei**– by Mr. Tony Wen-Ruey Chang, Industrial Technology and Research Institute (ITRI)
 - **Japan**– by Mr. Hiroki Yoshida, Ministry of Economy, Trade and Industry
 - **New Zealand**– by Mr. Eddie Thompson, Energy Efficiency & Conservation Authority
- Five active participants of travel-eligible APEC member economies from Indonesia, Malaysia, Mexico, Thailand, and Vietnam also attended this event.

ONE-DAY WORKSHOP: April 9, 2018

VENUE: Embassy suites, Hilton Hotel, Washington DC, USA

Five expert speakers and 18 attendants from 10 economies participated in this workshop



Group photo for the 1st Workshop on April 09, 2018 in Washington DC

WORKSHOP ON REFRIGERATOR/FREEZER ENERGY EFFICIENCY IMPROVEMENT IN APEC REGION: REVIEW OF EXPERIENCE AND BEST PRACTICES (EWG 07 2017A)

September 11, 2018, Chiang Mai, Thailand.

Objectives for the Workshop

- Conduct a study of **successful EE management programs** and identify **the best practices** to approach energy efficiency improvement
- Invite refrigerator **manufacturers** to share practical cases of domestic refrigerator under EE regulation
- Case studies include the energy-saving technology development, energy efficiency management and other incentives to explore the mechanism of improving the efficiency of marketing refrigerators.
- The Workshop will expand the learning capacity for EE management and energy conservation application in APEC region.



Workshop II

WORKSHOP ON REFRIGERATOR/FREEZER ENERGY EFFICIENCY IMPROVEMENT IN APEC REGION: REVIEW OF EXPERIENCE AND BEST PRACTICES (EWG 07 2017A)

September 11, 2018, Chiang Mai, Thailand.

Objectives for the Workshop

- Integrate the opinions of experts, including the field of energy-saving technology research topics, product testing standards and test facilities, EE management affairs, etc., through co-working and outcomes dissemination in the APEC events.
- This project combined the efforts of the technology expert group to build a knowledge network, which will assist the APEC economies with relevant technologies or knowledge consulting to rapidly improve their refrigerator energy efficiency for trade liberalization and regional economic prosperity.

ONE-DAY WORKSHOP: Sep. 11, 2018

VENUE: Le Méridien Chiang Mai Hotel, Chiang Mai, Thailand

Seven expert speakers and 45 attendants from 12 economies participated in this workshop



Group photo for the 2nd Workshop on Sep. 11, 2018 in Chiang Mai, Thailand.

September 11, 2018, Chiang Mai, Thailand.

Outcomes by Panel Discussion :

- Request knowledge dissemination or training workshop for structural procedures of EE management, including pre-mark registration, testing and certification, marketing surveillance following some practical systems, i.e. USA Energy Star.
- Need some studies for the best practice on adaptation for policy change of energy efficiency regulation
- Practical testing harmonization of IEC 62552 by using laboratories' around robin test procedure among APEC region



THANK YOU



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