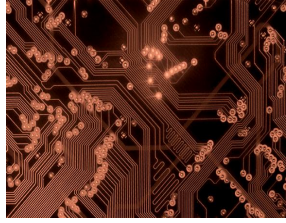


International Copper Association Update on EE&C programs

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International Copper Association (ICA)



COPPER

International Copper Association, Ltd.

- 🌐 Leading organization for promoting copper worldwide
- 🌐 39 member companies comprising:
 - producers representing majority of world output
 - 10 of the world's largest copper and copper alloy fabricators
- 🌐 Operating budget (including co-funding)
 - \$80 M – 2010
- 🌐 HQ in New-York; 31 offices in 24 countries, including China, Singapore, Australia, Japan, Brazil, Mexico, Chile
- 🌐 Objective: promote the use of copper at end-use level

Presentation of some concept notes for future APEC projects

1. Distribution transformers

Title	APEC Distribution Transformers Survey: Estimate of Energy Savings Potential from Increase in MEPS
Rationale	<ul style="list-style-type: none">• T&D losses in electricity networks in the APEC member economies varies from a low of 2.8% to a high of 15.6 % of final consumption• 1/3 of T&D losses occur in Distribution Transformers (DTs)• DTs can be easily regulated through Energy Efficiency Standards & Labels (EESL) – working with utilities• In countries where such programs exist, the market share of high efficiency DTs increases regularly (EESL programs are successful)
Example of savings (LBNL study)	<ul style="list-style-type: none">• Liquid immersed 25 kVA DT has 59% market share in USA; annual losses calculated at 1,407 kWh• Losses could be reduced by 42% to 817 kWh by using an alternative design at a net negative cost• An appropriate policy framework for DTs in the USA could result in annual savings of up to 33.3 TWh in energy losses and reduction of 19.4 MtCO₂ emissions by 2020 and at the same time save \$34.9 billion in lifecycle costs for utilities and consumers.

1. Distribution transformers

Title	APEC Distribution Transformers Survey: Estimate of Energy Savings Potential from Increase in MEPS
Objective	Increase awareness among APEC economies on the energy savings and GHG emission reduction potential from an increased share of higher efficient DTs, as well as to provide APEC economies with recommendations on how to increase the market share of higher efficient DTs.
Main output	APEC study + workshop to provide APEC economies with an assessment of the energy savings and GHG emission reduction potential from an increased share of higher efficient DTs at a net negative cost to consumers, using existing technologies. The study will provide economy-specific data and analysis, and include an analysis of best practices. Finally, the study will include recommendations to APEC economies on how to develop national roadmaps for the increase of MEPS and the design/implementation of efficient EESL programs.

1. Distribution transformers

Title	APEC Distribution Transformers Survey: Estimate of Energy Savings Potential from Increase in MEPS
Outputs	<ol style="list-style-type: none">1: Establish a baseline data set for use in analysis of potential energy savings from increasing energy efficiency of the transformers being sold in APEC economies. This must include assessments of currently installed stocks, rates of replacement and new transformer installations all by size and efficiency and by sector;2: Provide a quantitative framework of energy savings and GHG emission reduction potential related to the technologically feasible and economically justifiable increase in energy performance of DTs in APEC economies with the starting baseline position and assumptions clearly identified and a range of possible improvement options and their effects presented.3: Share experiences among APEC economies about successful and less successful EES&L programs for DTs4: Provide APEC economies with suggested roadmaps for the increase of MEPS and development of effective EES&L programs for DTs.5: Assess the interest and potential for harmonization of testing methods for DTs among APEC economies.6: Update of 2005 PROPHET report with focus on APEC economies

1. Distribution transformers



Title	APEC Distribution Transformers Survey: Estimate of Energy Savings Potential from Increase in MEPS
Time and budget	1 year Budget: 202,000 USD, including 100,000 USD co-funding from ICA
Sponsor	China
Co-sponsors	Australia, New-Zealand, USA

2. Air Conditioners

Title	Study on the potential for energy savings and GHG emission reductions from higher efficient air conditioners in the APEC economies
Rationale	<ul style="list-style-type: none">• Room air conditioners (RACs) consume a significant share of the electricity in the residential and commercial sectors. In tropical countries such as Thailand, Singapore, Philippines, RACs represent about 50% of total households electricity consumption, or 5% of the country's total electricity (for Thailand).• Higher efficiency have net negative cost to consumers (TOC)• Some economies have very successful S&L programs resulting in higher share of higher efficiency RACs
Example of savings (UNEP/ICA study in ASEAN)	Increasing the energy efficiency of RACs in ASEAN economies to EER 3.2 (China' new MEPS) would save 5,373 GWh of electricity annually, corresponding to annual GHG emission reductions of about 30,000 MtCO ₂ .

2. Air Conditioners

Title	Study on the potential for energy savings and GHG emission reductions from higher efficient air conditioners in the APEC economies
Objective	Increase awareness among APEC economies on the energy savings and GHG emission reduction potential from an increased share of higher efficient RACs, as well as to provide APEC economies with recommendations on how to increase the market share of higher efficient RACs.
Main output	APEC study + workshop to provide APEC economies with an assessment of the energy savings and GHG emission reduction potential from an increased share of higher efficient RACs at a net negative cost to consumers, using existing technologies. The study will provide economy-specific data and analysis, and include an analysis of best practices. Finally, the study will include recommendations to APEC economies on how to develop national roadmaps for the increase of MEPS and the design/implementation of efficient EESL programs.

2. Air Conditioners

Title	Study on the potential for energy savings and GHG emission reductions from higher efficient air conditioners in the APEC economies
Outputs	<ol style="list-style-type: none">1. Provide a quantitative framework of energy savings and GHG emission reduction potential corresponding to the technologically feasible and economically justifiable increase in energy performance of RACs in APEC economies2. Share experiences among APEC economies about successful and less successful EES&L programs for RACs3. Provide APEC economies with suggested roadmaps for the increase of MEPS and development of effective EES&L programs for RACs4. Assess the interest and potential for harmonization of testing methods for RACs among APEC economies.5. Produce study report, organize workshop

2. Air Conditioners

Title	Study on the potential for energy savings and GHG emission reductions from higher efficient air conditioners in the APEC economies
Time and budget	1 year 142,000 USD including 60,000 USD co-funding from ICA
Sponsor	
Co-sponsors	

3. Harmonization ASEAN



Title	Harmonization of EE standards for Air Conditioners in ASEAN
Rationale	<p>The ASEAN is a regional economic forum with the aim of achieving economic integration. The ASEAN has also established inter-governmental for a to coordinate regional policies, including energy efficiency. ASEAN economies have recognized the importance of harmonizing EE standards for household appliances, including ACs, as a means to 1) materialize energy savings potential and reduce GHG emissions; and 2) contribute to a greater economic integration through the removal of technical barriers to trade.</p> <p><i>The roadmap for the harmonization of EE standards in ASEAN for ACs has already been endorsed by ASEAN Ministries of Energy (SOME).</i></p>
Example of savings (UNEP/ICA study in ASEAN)	<p>Increasing the energy efficiency of RACs in ASEAN economies to EER 3.2 (China' new MEPS) would save 5,373 GWh of electricity annually, corresponding to annual GHG emission reductions of about 30,000 MtCO₂.</p>

3. Harmonization ASEAN



Title	Harmonization of EE standards for Air Conditioners in ASEAN
Objective	Increase the market share of higher efficiency ACs in ASEAN
Expected results	<ul style="list-style-type: none">• Standards for testing methods are harmonized in ASEAN• ASEAN economies have agreed on a regional benchmark for EE standards for ACs• ASEAN economies have developed and adopted national roadmaps for the progressive increase of MEPS and the adoption of HEPS
Major activities	<ol style="list-style-type: none">1. Harmonize standards for testing methods2. Develop regional benchmark for harmonization of EE standards for ACs3. Develop national roadmaps for MEPS and HEPS4. Capacity building for testing laboratories and AC manufacturers5. Consumer awareness programs (design of national and/or regional programs – excludes implementation)

3. Harmonization ASEAN



Title	Harmonization of EE standards for Air Conditioners in ASEAN	
Roles defined so far	<ul style="list-style-type: none"> • ASEAN Ministries of Energy and ASEAN Secretariat: Steering Committee • Pool of experts to be established to support technical work • National experts to be provided by ASEAN Ministries of Energy • Coordination by ICA and UNEP 	
Timing	4-year program	
Estimated budget	1. Harmonize standards for testing methods	285,000 USD
	2. Develop regional benchmark for harmonization of EE standards for ACs	95,000 USD
	3. Develop national roadmaps for MEPS and HEPS	364,000 USD
	4. Capacity building for testing laboratories and AC manufacturers	127,500 USD
	5. Consumer awareness programs (design of national and/or regional programs – excludes implementation)	92,000 USD

Note: potential other sources of funding: JAIF (Japan); ICA to provide co-funding

4. Electric motors in industry

Title	Evaluation of Energy Savings Potential in Installed Electric Motors through Enhanced Motor Repair Practices in APEC
Rationale	<p>When electrical motors fail, repair is mostly preferred over replacement with higher efficiency motors (87% in China). Repair (rewinding, changing of stator lamination) is widely practiced and usually results in reduction in energy efficiency. However, proven and affordable technical solutions exist that ensure maintaining and even improvement of energy efficiency during motor repair, and could even be applied as preventive actions to avoid motor failure. In addition, the replacement of the rotor with super efficient rotors can also be done during repair, further increasing the efficiency. The potential to improve the energy efficiency in installed electrical motors through enhanced motor repair practices is enormous. However, there is currently no standard to help materialize these savings potential.</p>
Needs	<p>There are needs to develop standards for motor repair practices, to build the capacity of motor repair engineers and technicians, as well as to create awareness on the economic benefits of improving energy efficiency of motors during repair.</p>

4. Electric motors in industry

Title	Evaluation of Energy Savings Potential in Installed Electric Motors through Enhanced Motor Repair Practices in APEC
Objective	This project proposes to document and analyze current practices in motor repair and to evaluate the energy efficiency (and therefore energy savings) improvement potential related to available technical solutions through enforcement of standards. The project will compile a technical guideline on enhanced motor repair practices, as well as propose recommendations to APEC economies related to the development and adoption of national standards for motor repair.
Phase 1	<i>Analysis of current practices in electrical motor repair.</i> Review existing practices in motor repair after failure (rewinding, changing of stator lamination) and evaluate impacts on efficiency (efficiency usually drops after repair). This will be done through one-on-one interviews with service providers and industry experts in China, Malaysia and Korea.

4. Electric motors in industry

Title	Evaluation of Energy Savings Potential in Installed Electric Motors through Enhanced Motor Repair Practices in APEC
Phase 2	<p><i>Evaluate potential for energy efficiency improvement during repair and refurbishing related to available technical solutions (rotor replacement, rewinding, change of stator lamination), with reference to industry best practices.</i> This will be based on literature review, interviews with industry experts, and conduct of prototype testing for rotor replacement (to be funded directly by ICA). Modeling and simulation will be carried out to extrapolate the results of phase 1 to estimate nation-wide impacts on energy savings given current installed motor data. This analysis will include technical and financial evaluation of the proposed technical solutions (cost vs. savings).</p>
Phase 3	<p><i>Dissemination.</i> The outcomes of the project and the final report will be disseminated widely throughout APEC economies and beyond through targeted mailing and dissemination during an international forum.</p>

4. Electric motors in industry



Title	Evaluation of Energy Savings Potential in Installed Electric Motors through Enhanced Motor Repair Practices in APEC
Benefits	The project will create awareness among policy makers and standard making bodies regarding the potential for energy savings related to installed motors through better repair practices as well as preventive measures. It will also provide recommendations to the development of related standards, which should be the next phase for this project. The enforcement of such standards will result in enormous amounts of energy savings through improvement of efficiency in installed electrical motors.
Time and budget	1 year 150,000 USD, including 50,000 USD from ICA
Sponsor	
Co-sponsors	

Thank you



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