

EMAK Fourth Workshop Summary

Themes covered at the workshop included the Current electricity crisis in Japan, how some factories and buildings reduced peak electricity demand and how service companies and agencies can assist in saving energy.

Opening Session*

Ms. **Yukari Yamashita**, (IEEJ), briefly explained EMAC's platform where Policy makers and Industry practitioners can exchange, share and learn about energy management. The workshop's objectives are to enhance networking, learn about best practices and finally to discuss the design of an effective and useful concept for EMAC

Mr. **Hidemasa Nishiyama**, (METI), first began by explaining that for the coming years Japan's efforts will remain on increasing its reliance on renewable energy, further enhancing energy efficiency as well as restarting the nuclear plants. A desirable long-term energy mix for Japan is under consideration and should be established within the next 10 years.

He then reviewed of the historical development of the Energy Conservation Law since 1979. The Law combined with tax incentives, subsidies, financial support as well as voluntary actions, contributed to a 43% improvement in energy intensity over-time. The Top Runner program (since 1998) greatly improved the efficiency of many products, particularly automobiles and appliances. With regard to International Cooperation, Japan remains very active in sharing its expertise in designing policies and measures on energy conservation and renewable energies and promotes its technologies.

With regard to the current energy crisis in Japan, he explained the nation-wide Power Saving Campaign in place to avoid the use of rolling Blackouts since the summer of 2011. As a result, many companies changed their working hours, modified their holiday schedules and some even move the work elsewhere in Japan. Japan avoided a major crisis through voluntary actions but, unfortunately, it brought lower productivity for industry and a loss of quality of life for employees. Such approach may be useful to avoid a major crisis in the future and one of the lesson learned was that a better distribution system must be considered.

Session 1

Energy and Electricity Demand Management Practice in Factories/Buildings and the role of the Supporting Agencies/Services: Case of Japan

Moderator: Mr. Akira Ishihara, (ECCJ)

The objective of this session was two-fold: to present electricity saving actions undertaken by factories and buildings and to introduce supporting agencies for the promotion of energy savings in **Japan**.

Part1. With regard to actions done in buildings, **Mr. Hideki Mikami, (Maruhan Corporation)** presented their “5-Year Energy-Saving Initiative at 278 Pachinko Chain Parlors”. For actions undertaken by factories **Mr. Toshiharu Ota and Ms. Naomi Ikdeda, (Denso Corporation)** presented “Activation of Energy-Saving Initiatives through Establishment of Energy-Effective Organization & Development of New Technologies”

Maruhan Corporation is in the entertainment business with 278 parlors that must provide comfortable hall space to its customers. It developed a 5-step approach beginning with the Vision, Awareness, Sharing best practices, Investing and Keeping a spirit of challenge.

In 2008, it created a Conservation Committee that analyzed consumption in 12 parlors. The review provided awareness by identifying waste and inconsistencies in electricity usage. Capital Investments were made for lighting, water, A/C, etc. The new Eco-model parlors saved 33% in electricity consumption. A nation-wide management standard manual to share the Best practices is now in place. The combination of employee awareness, the proper capital investment and a Spirit of Challenge provides tangible results.

Denso Corporation is a major manufacturer of parts related to emissions control, ABS, airbags, A/C, security or navigation systems. It operates many different plants that require large amounts of energy, particularly for air supply. In 2010, it introduced its Environment Policy with a vision to reduce CO2 emissions as well as emissions per unit. It designed its Management System with an Environment Committee and Action Organization, so that *all work as One*. After review with the relevant departments, their analysis identified that the unit air consumption must be improved. The company decided to develop a new and low-cost air blow technology that improves quality, productivity and saves energy. By engaging their engineers on the project, the company designed and now produces a Pulse Blow device. The final result was that electricity consumption was reduced and the CO2 emissions

target achieved.

Both presentations share similarities as both companies' management decided to introduce changes. They empowered their employees and made them part of the change.

Part 2. The following two presentations were to introduce supporting services and agencies that promote energy savings. **Mr. Motohide Ikeda, (ENERES Co.,Ltd)** explained the concept of a "Demand Response Aggregator" while **Mr. Keisuke Hiraoka, (METI-Kanto)** presented "METI-Kanto's Efforts to Promote Energy Conservation"

ENERES is a service company that provides short-term (one day) forecasting of electricity demand and supply using real-time data on weather conditions and operations. The monitoring of production and usage is 24 hours a day. ENERES works closely with small Power Producers as well as Energy users. Their system (called Falcon) forecasts and notifies its clients of potential supply shortfall, so operations (demand) can be adjusted in order to avoid high prices, and supply can be increased by the producers. It provides users a constant monitoring of their operations' power usage and allows them to make modifications. The system can remotely control appliances (such as A/C) and save electricity during shortages.

In effect, such system helps balance the overall supply and demand. Small producers can add to the supply while users can reduce demand. Reducing demand (Nega-Watt) is one way to balance the market while trading the saved energy.

This is **State of the Art** Technology!

METI-Kanto promotes energy conservation, raises awareness and provides a better understanding of policies via the Voluntary Association of Designated factories (principally those consuming between 1500 and 3000 KI/year). SMEs are now considered as providing a better scope for energy reduction than larger industries. While large users (above 3000 KI) must report and comply with an objective target of 1% saving per year, SMEs are subject to much lesser mandatory actions and they can also be eligible for a free audit of operations.

Events such as Association meetings, Seminars and Fairs, do provide information on possible actions and show-case actions of others. Distinguished achievers as well as excellent business operators in energy management are identified each year to receive Energy Conservation Commendations (the next ceremony will be held in Saitama City on February 26).

Session II

Energy and Electricity Management and Energy Efficiency Practice in Factories/Buildings and the role of the Supporting Agencies: Case of other countries

Moderator: Ms. Vida Rozite, (IEA)

Similar to Session 1, the objective of this session was also to present examples of electricity saving actions done by factories and buildings and to introduce supporting agencies for the promotion of energy savings in **Australia and Germany**.

Part 1- Australia. **Ms. Kristy McCoy, (Gov't Australia)** presented an outline and the lessons learned from "Australia's Energy Efficiency Opportunities (EEO) program". With regard to managing energy efficiently, **Mr. Peter Dobney, (Amcor's operations)** presented "Demand Side Management – An Australian Manufacturer's experience"

Among a series of programs aimed at managing energy use, the Australian government introduced the **EEO program** to further encourage energy-using businesses to improve their energy efficiency. As a substantial amount of opportunities for cost efficient saving measures remains untapped, the program is addressing the information failure required to build the capacity to implement actions and reduce the energy waste. It is aiming at triggering a systemic behavioural change towards energy management while improving productivity.

It is a unique program where participation and the provision of assessments are mandatory. The assessments include a rigorous monitoring of energy use and the identification of opportunities for saving. The implementation, however, is not subject to targets compliance. So far, energy savings of 10% (1.5% of Australia's GHG) have been identified and more than 50% of those savings have already been implemented. There remain many barriers to be removed and sharing information can play a crucial role towards awareness.

Amcor is one of the leading companies for enhancing efficiency by doing demand side management (DSM). It produces a variety of products at many different locations across Australia and New-Zealand. It releases 1000 Kt of CO₂ through energy use, uses large quantities of water and disposes of large volumes of waste. Efficiency targets for 2011-2016 were set at 10% for energy and water and at 50% for waste.

Working with an Aggregator (Enernoc), Amcor is active in Demand Side Response through close monitoring of the electricity situation and the ability to dispatch (remotely) into the pool when necessary and receive spot prices. It owns 3 diesel standby generators at its glass plant in South Australia and they are used to generate benefits.

Amcor is also pro-active in energy management making good use of Benchmarking. It was important to understand the circumstances behind available benchmark as they could be affected by climatic conditions, different energy prices etc... A thorough analysis of their operations identified a series of improvements that justified investments reaching half million\$ (Burners, insulation, lighting, air leak controls, etc...); the expected annual savings from those improvements can reach \$220,000 and reduce emissions by 3 KtCO₂/y.

In conclusion, benchmarking allowed Amcor to compare performance, to identify poor performers, to quantify potential savings and to benefit from competition. It was stressed that such analysis needs to be resourced with enthusiastic and qualified people.

Part 2- Germany With regard to demand side measures **Mr. Mirko Krück (Energy Baden-Württemberg inc.)** presented “Energy and electricity saving action: Demand side measures in Germany” and **Dr. Dirk Köwener (LEEN ltd)** presented the benefits of networking with the “Introduction of learning energy efficiency networks (LEEN)”

Energy Baden-Württemberg inc. is not only the third largest utility in Germany but is also involved in energy and environmental services as well as natural gas downstream operations. As an electricity producer it is facing the stringent targets under consideration for Germany, with renewable energy expected to reach 35% by 2020 and 85% by 2050.

Since the change in its energy policy to phase out nuclear power plant, peak demand became an important factor to be addressed in order to avoid issues of shortage of electricity supply. There remains many technical saving potential that would more than comply with current political targets, but information and funding needs to be improved. *“It has to be a joint effort of politics, economy and society to raise the awareness for saving energy”.*

As we eliminate constraints and open-up potentials, there remain many market opportunities even for utilities!

Dr. Dirk Köwener presented a 25 year old concept of networking that has been proven to deliver results for sharing information and taking actions on energy efficiency. The networks of 10 to 15 engaged participating companies are typically led by a moderator and a certified consultant engineer. At Phase 0, the participants commit to the concept and agree to participate (letter of intent or contract). At Phase 1, “profitable” savings (IRR 12%) are identified and target agreements (energy/CO₂) are established. During Phase 2, which may last 3-4 years, network meetings continue while measures are implemented.

So far, over 3000 measures have been identified with an average IRR exceeding 35%, reducing energy by over 6% and emissions by 8.5%. Overall, 5000 measures have been

identified, not all profitable, but the average IRR exceeds 20%, the energy savings exceeds 7% and emissions could be cut by almost 10%.

It is up to the participants to pick and choose what to implement. This is an impressive approach that brings together interested parties and motivates them to pursue a common goal. Such approach/concept is easily adaptable “We can bring the LEEN-idea to you!”

Session III-

Round Table Discussion: What is the efficient way to share best practices? What kind of system or scheme is necessary? What kind of information will be useful for energy managers? What can EMAK do for above actions?

Moderator: Ms. Yukari Yamashita, (IEEJ)

Participants: Mr. Akira Ishihara, (ECCJ)

Mr. Motoaki Ikeda, (ENERES)

Ms. Vida Rozite, (IEA)

Mr. Mirko Krueck, (EnBW inc.)

Mr. Toshiaki Nagata, (METI)

The panel discussion began with a brief presentation by each participant and was followed by a sharing of ideas on how EMAK would best serve its purpose.

With regard to information, the common themes were “quality matters more than quantity”, “the kind of incentives”, “motivating the people”, “self-esteem”, “ benchmarking recognizing national circumstances”, “best practices”, “audits and measurements”, “free of charge”, “awards motivates” and “attention to SMEs”. Information should cover not only EM tools but also background information including energy supply structure, EM schemes such as recognition schemes and energy management standards.

With regard to EMAK’s role, an effective platform for sharing is necessary. It must attract the proper management level to share their “common vision” and make decisions on “objectives”, “commitments”, “effective teamwork”. Networking and collaboration among participants is crucial and the form of dissemination matters. One participant mentioned that very large groups are not necessarily efficient for network development. As an international platform, it was encouraged by a panellist that sharing the effectiveness of the energy audit in identifying opportunities and gaps is important and background information on national circumstances and available schemes may help. It was also pointed out that adjusting the coverage in accordance with change of interest (trend) was essential. That means maintenance is important as a part of the quality control. As information is abundant, it is more challenging to find good quality information.

Therefore, EMAK should seek to become a navigator which can guide visitors through the structured information such as tips, tools and good examples of EM, one panellist pointed out. It was also pointed out that developing regional and national networks and bridging these networks will be something EMAK can offer. Mr. Nagata of METI pointed out that cooperation between governments and industries is important to support the efforts in energy management. Government should supply effective policy scheme while industries should promote their activities utilizing their creativity. International cooperation is also important as it will speed up the dissemination of EM through sharing good practices and information. Approaches may differ depending on national circumstances but we can learn from each other through international cooperation such as EMAK.