A Message from Nagoya

I am with Nagoya University. As the name indicates, it is in the city of Nagoya. The area around Nagoya has been known as a center for manufacturing industry. Some of you may remember the 7th ICPADM banquet attraction in which they showed wooden mechanical marionettes created some 230 years ago. The traditions have been carried on and developed by many Nagoya based manufacturing companies as symbolized by Toyota, NGK and so on.

During the last decade, Japanese economy has suffered recession. The economical situation here, however, has been less bad. This is because the regional economy has been powered by the sound manufacturing companies. Furthermore, we had two big projects in this area, i.e. the construction of Central Japan International Airport (Centrair) and 2005 World Exposition, Aichi, Japan. Centrair was constructed on an artificial island and was opened in February, 2005. Centrair places emphasis on cargo flights for manufacturing companies in the area and has made a good start. 2005 World Exposition, Aichi, started on March 25, 2005 and ended on September 25. More than 120 countries including 28 from Asia participated in the exposition and it attracted more than 22,000,000 people, which is far beyond prior expectation.

The main theme of the exposition was “Nature’s Wisdom”. This, of course, is not directly related to electrical insulation but an important experiment on electric power supply was carried out by NEDO (New Energy and Industrial Technology Development Organization). In order to contribute to the wider implementation of new types of environmentally benign energy sources such as photovoltaic, wind and fuel cell and other distributed generators, it is important to compensate fluctuating outputs and minimize the impact on the external grid line by forming a local micro grid. At the expo site, three types of solar cells (total 330 kW), three types of fuel cells (PAFC, MCFC, SOFC, total 1,340 kW) and NaS battery (500 kW) were installed to form a micro grid. Fuel gases made from garbage, wood chips and plastic wastes collected in the expo site were supplied to the MCFC. On demand projection, temporal change in PV output and demand fluctuation, the outputs of the fuel cells and NaS battery were controlled to meet the electricity and cooling demands of Japan Pavilion and NEDO Pavilion without making detrimental impact on the external grid line. The new energy micro grid experiment at the expo site was successfully over as the exposition came to an end on September 25. The system will be moved to the Centrair area and the experiment will be continued by supplying energy to a neighboring city hall and so on. I believe the project is important and interesting from the viewpoints of future energy supply system as well as town planning. Furthermore, I hope this kind of experiment may in future bring up new aspects of electrical insulation, diagnosis, asset management and so on.

Now the two big projects are over and some people fear a decline of the activity in Nagoya area. Some economists foresee that this area will not remain only as a center of manufacturing but will become an international center of information exchange and dissemination in the field of economy and manufacturing. They say gradual change is going on and Nagoya is attracting some corporate headquarters, as sophisticated manufacturing requires close contact and cooperation between a corporate headquarter and a manufacturing site. As a member of Nagoya University, I hope the information exchange among Asian colleagues and partners become active also in the academic and engineering field. We believe EINA magazine plays an important role in establishing close communication in the field of electrical insulation technology. I feel great respect for those who have started and supported EINA magazines.

Lastly, I introduce our research field and activities on which we would like to exchange information. We have extended research field from the traditional electrical insulation field to environmentally benign energy systems. Our present research subjects are as follows.
(1) Assessment and development of efficient and environmentally benign energy systems
   (i) New distribution system for large scale introduction of distributed generators
   (ii) New urban energy system for sustainable society
   (iii) Effective use of distributed renewable energy (PV, biomass, etc.)
   (iv) Effective use of electricity and heat for home cogeneration system

(2) Improvement of performance and reliability of electric power apparatuses and systems
   (i) Mechanisms of electrical and water treeing degradation
   (ii) Space charge characteristics of insulating materials
   (iii) Degradation diagnosis and life cycle management of power apparatuses

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