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**MAINTAINING NUCLEAR COMPETENCE AND EXPERTISE IN JAPAN**

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The fundamental law of atomic energy, which strictly restricts the application of atomic energy to the peaceful use, was established in 1955 in Japan. Since then, during the past five decades, great efforts were made to develop atomic energy. So far 52 units of light water reactors, 29 BWRs and 23 PWRs, have been built and in operation, 5 units are under construction and 6 units are planned to be built. Total capacity of presently operated NPPs amounts to 45.7 Gwe and the nuclear energy shares 30 % of the total electricity generation in Japan. During the past 10 years, several accidents occur in the nuclear facilities of electric power companies, and JNC ( previously PNC ). In spite of these accidents, including the accident of Kansai Electric Power Co. this year, the important role of nuclear energy to sustain the lives of people in Japan is intact.

In the nuclear energy projection, the construction of NPPs continues till 2010. Thereafter reconstructions of NPPs are foreseen in the decade 2030's for the replacement of present NPPs in operation after 60 years services. Attention has been directed to the technology preservation: how competence and expertise of nuclear engineering can be maintained till the next period of replacement construction, in particular, the period between years 2010 and 2030.

The present paper reviews the status of nuclear engineering programs in universities in Japan. The nuclear education programs started in graduate schools in 1957 and expanded to undergraduate schools of major national universities. Presently nine universities are providing systematic nuclear education programs in their graduate schools, although the corresponding department have been changed their names from "nuclear" to more broaden terms of "quantum", "energy" and "system" in several universities. Under the conditions of shrinking nuclear industries, how to maintain the present education system is seriously concerned matter in the universities.

The present paper introduces the example of the traditional technology transfer across generation by generation. Japanese Shinto Shrine, Ise Jingu, traditionally moves and rebuilds its wooden sanctuaries every 20 years. This tradition has continued over 1000 years with a short interruption of 150 years in the wartime of the mediaeval ages. Ise Jingu explained that the period of 20 years was not chosen for the reason of the technical tradition, but comes from their philosophy of the holy place. This system of rebuilding every 20 years, however, has proved that technology, even if sophisticated, can be transferred across generation by generation over 1000 years by the faith in the human beings.