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## Seminarium Zakładu Energetyki Jądrowej i Analiz Środowiska (UZ3) Departament Badań Układów Złożonych (DUZ)

Wtorek: **28.04.2020**  
**11:30**

**Mina Torabi**

### **Failure Mode and Reliability Analysis of the HTTR Electrical Facility**

#### **Abstract:**

The first-of-a-kind commercial electricity and hydrogen cogeneration system are being designed by the Japan Atomic Energy Agency (JAEA) to establish the industrial application of high-temperature gas-cooled reactors (HTGR). The High Temperature Engineering Test Reactor (HTTR) is expected to be coupled with a test cogeneration plant in order to prove safety features and justify further HTGR technology development. The National Centre for Nuclear Research (NCBJ) initiated activities on reliability analysis of such a combined nuclear/non-nuclear facility. The main aim of this study was to assess the expected frequency of the unplanned reactor outages caused by electrical system failures in the first and last year of operation. A gradual screening of failures of the HTTR Electrical Facility has been performed based on the Failure Mode and Effect Analysis (FMEA) followed by the system reliability calculation. Several improvements of the design were proposed then, aiming at the reliability enhancement. Finally, two configurations of the system design were compared in the terms of expected failure frequency: the standard JAEA configuration and the modified one. Significant improvement of the system failure rate has been achieved by the design modifications proposed under this work.

Serdecznie zapraszamy,  
M. Dąbrowski, T. Kwiatkowski

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