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

Wtorek: **26.01.2021**

**Exceptionally 16:00**

**dr inż. Stefan Doerffer**

KSD Professionals Inc.

### **Adventure with CANDU Reactor Technology**

#### **Abstract:**

The seminar will begin with a short introduction of the origin and evolution of the Canadian nuclear power reactor technology – the “CANDU” reactor. This is a unique power reactor in the world that uses a natural uranium fuel with association of heavy water as a moderator. All major components of the CANDU reactor will be described with the focus on their role in operational safety. These components will refer to reactor assembly and its core, fuel channel assemblies, reactivity control devices, heat transport system, moderator system and safety systems. Then the on-power refuelling will be described that allows maintaining all the time a minimum positive reactivity in the core so that optimum burnout of the fuel can be achieved. A unique versatility and flexibility of the CANDU reactor to use a variety of fuels will be emphasized. Design features of this nuclear power technology with its defence-in-depth philosophy with an independent power control system from two independent (from each other) safety systems makes this reactor very safe. Moreover, modular fuel channels placed in a large “calandria” vessel efficiently slow down progress of hypothetical severe accidents in comparison with other nuclear reactor technologies cooled by water. To better distinct differences between the CANDU and PWR technologies comparison remarks will be made along the talk.

Serdecznie zapraszamy,  
M. Dąbrowski, T. Kwiatkowski

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