

**6 th OECD/NEA - EGATFL Meeting
September 15 – 16, 2016, Boise, ID, USA**

Country update on ATF related activities in Czech Republic

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ATF related activities in Czech Republic

- Detailed capabilities and plans presented during Sept. 2015 meeting
- New updated State Energy Policy and Nuclear Development Action Plan approved in June 2015;
 - Firm commitment to further develop the nuclear energy generation with LTO of existing (4 100 MWe) and build of new nuclear power plants (~ 2 – 3 000 MWe)
- ATF oriented on at present exclusively used VVER technology;
 - Focus on System and Fuel performance modeling;
 - Cladding enhancement development and testing;
- Participating organizations:
 - ALTA/ALVEL
 - UJV Řež/CV Řež (subsidiary of ČEZ)
 - UJP Praha;
 - Academy of Science
 - Technical Universities – Prague (CTU) and Brno (TUB)

ATF related activities in Czech Republic

- **Cladding enhancement research projects (Public/Industry funded)**
- **Focused on E110 and E635 Zr based alloys;**
- **Some work is to be performed with Bochvar Institute VNIINm (Russia)**
- **Various coatings and techniques of their application tested;**
 - coating materials as CrN deposited by different fabrication techniques (PVD, cold spray, evaporating) available at the CTU in Prague or Academy of Sciences, Czech Republic
 - high-temperature tests performed with temperature levels above current fuel licensing criteria simulating severe (or BDBA) accidents.
 - Corrosion, hardness or thermal conductivity measurements to confirm that new concept performs better than current Zr alloys.
 - Next stage testing will be performed at the VR-1/LVR15 or commercial reactor including irradiation and temperature effects determination;
 - Poly Critaline Diamond (PCD) coating on Zr alloys – (see proceedings of TOPFUEL 2016)

Fuel performance and system analysis methods (4/4)

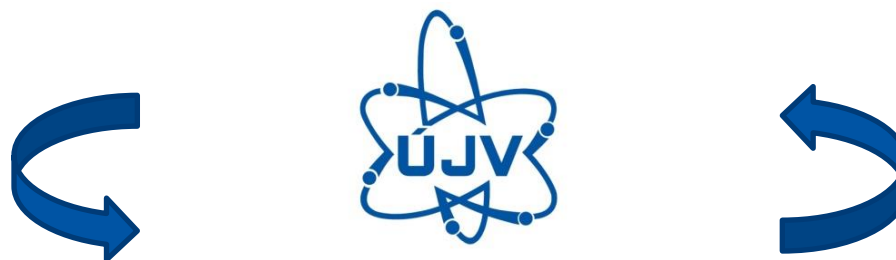
- **Design Basis Accident Analysis**
 - RELAP, ATHLET, DYN-3D,...
 - Coupling of codes for specific scenarios (ATHLET + DYN-3D for reactivity initiated accidents....)
 - Fuel rod performance by TRANSURANUS or FRAPTRAN
- **Severe Accident Analysis**
 - MELCOR, ASTEC
 - Models for fuel in reactor / fuel in SFP during shutdown scenarios
 - Currently involved in the VVER in-vessel retention project



ÚJV Group

60
1955 - 2015
ÚJV ŘEŽ

Shareholders:



Subsidiaries = synergy

Operating performance 8,8 mil EUR



Research Centre Rez



Institute of Applied
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Plzen

Thank you for your attention