air mass fraction from 65 to 70. Mass fraction of air 65 % (a). It leads to the formation of non-magnetic iron oxide Fe_2O_3 (c). Based on the results obtained, the following optimal conditions for the air plasma (b).

Decomposition process of RW-SNF can be recommended.

Temperature (1500 ± 100) K; Composition of WONC-1 (65 % RW SNF: 35 % Etone); Phase-mass-ratio (65 air: 35 WONC-1) %.

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NEUTRON DISTRIBUTION DURING THE OPERATION OF VVER REACTOR 1000-MW

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Water-water Power reactor design (VVERs) are Reactor safety standards such as peak power factor during life of the reactor. Coupling of neutron calculations, Thermal-hydraulic calculations and other nuclear reactors requires multi-physics software to model phenomena Solve different reactor equations and solve them simultaneously No need to use separate computer code [1].

COMSOL Multi-physics Can Solve Multi-group Neutrons Diffusion equation using the finite element method. Of Further use of current distribution from output Thermal hydraulic calculation [1].

The core consists of 3 types of fuel Element and control rods. 3D model represents one eighth of the reactor, four control rods completed or partially inserted throughout the core [2].

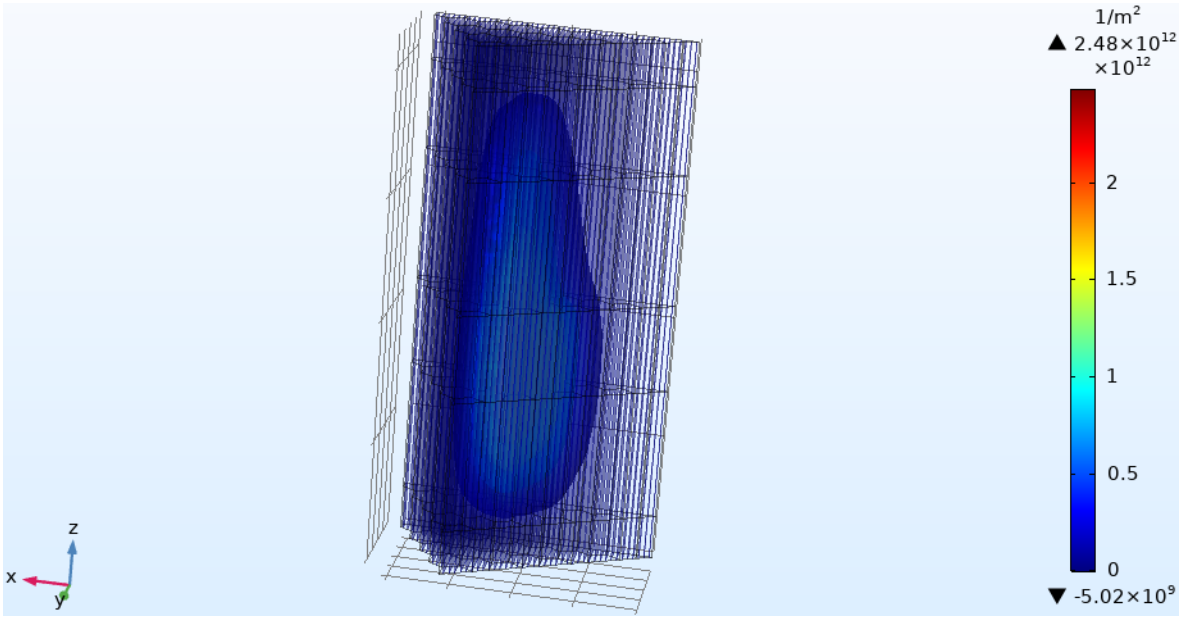

Fig. 1. *Thermal Neutron Flux distribution through the volumetric section of VVER reactor pressure vessel using COMSOL simulation*

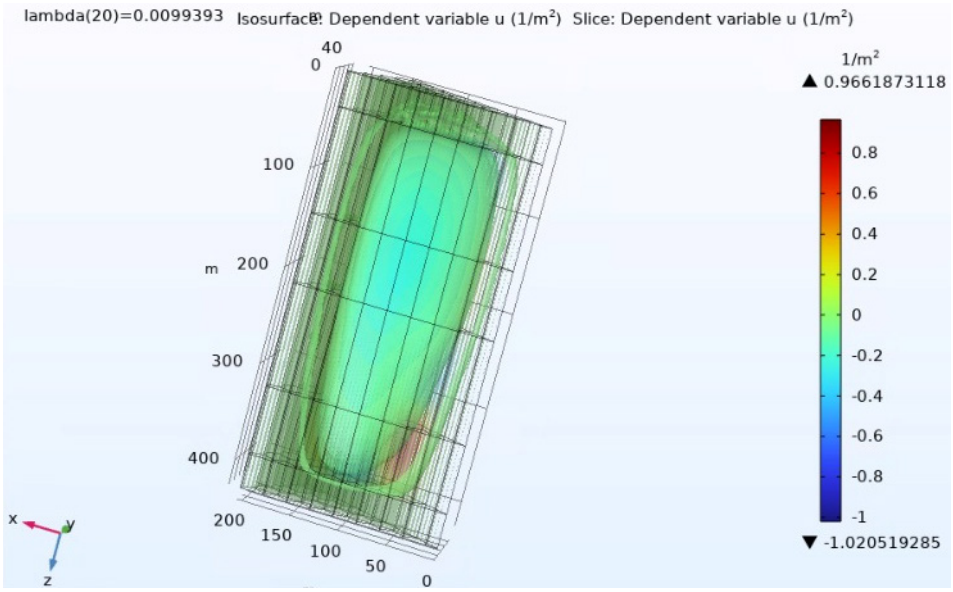

Fig. 2. *Fast Neutron Flux distribution through the volumetric section of VVER reactor pressure vessel using COMSOL simulation for iso-surface and slice plots*

The design life of the reactor pressure vessel is 60 years and the maximum neutron flux is $4.29 \cdot 10^{19}$ neutrons/cm^2 (> 0.5 MeV) at the level of the lifetime monitor pattern and $1.26 \cdot 10^{19}$ neutrons/cm^2 at the level above the core. Increasing the vessel diameter reduces the neutron flux on the vessel wall [2].

An active safety system that responds to design basis accidents. Optimal combination of active and passive systems to respond to severe incidents.

References

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