

# **FUEL ELEMENT CLADDING STATE CHANGE MATHEMATICAL MODEL FOR A WWER-1000 PLANT OPERATED IN THE MODE OF VARYING LOADING**

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Main features of a fuel element cladding state change mathematical model for a WWER-1000 reactor plant operated in the mode of varying loading are listed. The integrated model is based on the energy creep theory, uses the finite element method for simultaneous solution of the fuel element heat conduction and mechanical deformation equations. Proposed mathematical model allows us to determine the influence of the WWER-1000 regime parameters and fuel assembly design characteristics on the change of cladding properties under different loading conditions of normal operation, as well as the cladding limiting state at variable loading depending on the length, depth and number of cycles.

*Keywords:* WWER, varying loading mode, cladding durability, cladding failure parameter, energy variant of creep theory.