

## **A Spatial FEM Model of Thermal and Mechanical Action in RCC dam**

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### **Summary**

Specific features of the thermal stress fields in roller compacted concrete (RCC) dam are always their spatial character and completely dependent on the maturity functions such as deformations properties (elastic, creep). The thermal changes in the material affect the elastic, creep properties of the material, and in turn, the stress fields within the structure. Therefore, the effects of temperature on the properties of RCC materials( elastic, creep) has to be taken into account in order to determine the risk of the thermally induced cracking in these dams. In this study, a viscoelastic model, including ageing effects and thermal dependent properties is presented. The different isothermal temperature influence on creep and elastic modulus is taken into account using the maturity concept and the influence of the change of temperature on creep is studied by introducing a transient thermal creep term. The result of analysis on an RCC dam has shown that, the increase of the elastic modulus has been accelerated duo to the high temperature of hydration at the initial stage, and consequently stresses are increased. The maximum principle stresses increased by 42% in the initial stage.

