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MODELLING OF PRIMARY OVERPRESSURE PROTECTION SYSTEM USING APROSV5.01 SYSTEM CODE

Abstract

The reconstruction of primary overpressure protection system at Paks NPP was carried out within the scope of safety improvement measures. This modified primary overpressure protection system contains a new relief valve, safety valves and I&C system. The new relief valve is suitable to prevent the opening of safety valve. The primary bleed function and cold overpressure protection of reactor vessel are also possible in the new system.

The thermal hydraulic calculations are carried out among others with APROS system code. The purpose was developing the model of primary overpressure protection system using APROSV5.01 system code, which contains the thermal hydraulic model of the new relief valve, the new safety valves, the pipelines and the pressurizer relief tank. The I&C model of primary overpressure protection system consists of the relief and safety valve control system, the primary bleed and cold overpressure protection control system.

The model of primary overpressure protection system is adequate detailed and it is not too complicated so there is no significant increasing in processing time. For this reason the developed model was integrated in the general APROS model of VVER-440/213 unit. The new general model was tested for LOCA and bleed&feed scenarios.