SAFETY DESIGN OF A POCR WITH HOT LINER AND ELEVATED WALL TEMPERATURE

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SUMMARY

The Austrian concept of POCR with hot liner and elevated wall temperature is focussed on safety. The new features of the high temperature of the liner and of the structural concrete are kept in a balanced relation to each other, assuring a homogeneous distribution of safety. Low cycle fatigue design of the liner is dealt with as well as longtime concrete behaviour under sustained load and temperature. By an effective temperature control system of the vessel only elastic compression occurs in the liner, even under accident conditions.

Periodic inspection of the vessel is insured and leaks in the liner can be repaired. Beginning leaks can be detected.

The stabilization of the vessel by heat treatment before service is described, taking into account the high-temperature inelastic behaviour of the structural materials. The fulfillment of the safety requirements laid down in existing POCR Standards by the Austrian concept is discussed.