

ENC 2002 Conference Invited Paper

Title:

Operating cost reduction by optimization of I&C backfitting strategy

Author: Heinz-Ulrich Kraft, Framatome ANP (Germany)

Abstract

The safe and economic operation of a nuclear power plant requires a large scope of automation systems to act properly in combination. The associated maintenance costs, necessary to test these systems periodically and to repair or to replace them partly or completely, are one important factor in the overall operating costs of a nuclear power plant. Reducing these costs by reducing the maintenance effort could decrease the availability of the power plant and by this way increase the operating costs significantly. The minimization of the overall operating costs requires a well-balanced maintenance strategy taking into account all these opposite influences. The replacement of an existing I&C system by a new one reduces the maintenance cost in the long term and increases the plant availability. However, it requires some investments in the short term. On the other hand the repair of an I&C system avoids investments, but it doesn't solve the aging problems. That means maintenance costs will increase in the long term and the plant availability could be decreased. An optimized maintenance strategy can be elaborated on a plant specific base taking into account the residual lifetime of the plant, the properties of the installed I&C systems as well as their influence on the plant availability. As a general result of such an optimization performed by FANP it has been found as a rule that the replacement of I&C systems becomes the most economic way the longer the expected lifetime is and the stronger the I&C system influences, the availability of the plant.