N11. Designing For Maintainability

A prerequisite for the high availability of a nuclear power plant is good design, not only with respect to systems performance and component reliability, but also maintenance operations. When maintenance is easy to perform, the outage time for refueling and maintenance is reduced and the quality of maintenance work is improved, with better prospects for a subsequent undisturbed period of power production. Designing for ease of maintenance also implies designing for low occupational doses. The operating utility has a very strong influence on plant availability. Utility management exercises this influence in directing the maintenance work and operating procedures. A suitable plant design covers many different aspects -- the design of the various systems, the choice of materials and components, their installation, radiation shielding, accessibility to components, transport routes, proper routing of ventilation air, component redundancy, general building arrangement, etc.

In ASEA-ATOM's current BWR design, development has focused on providing a plant which gives the owner a basis for good operating economy with low radiation exposures to the crew and maintenance personnel, as well as low releases to the environment. It complies with the most stringent safety requirement and at the same time avoids the tendency of some of these requirements to have a negative influence on plant availability. The overall plant design is based on the experience gained from the design, construction, and operation of earlier ASEA-ATOM plants. The measures taken to facilitate easy and proper maintenance are discussed in the reference.

For more, see Leine, L., "Design for Maintainability," IAEA-SM-274/22, pp. 141-55, 1989.