

N21. Implementing Cobalt-Free Alloys In Nuclear Plant Valves

Researchers are making substantial progress in developing and qualifying high-performance, cobalt-free hardfacing alloys and foreign utilities are using them more and more in nuclear valves. EPRI organized a committee to develop guidelines for reducing the use of cobalt in nuclear plant valves.

The guidelines were issued as EPRI Report NP-6737. The guidelines identify procedures for replacing valves or valve trim having high cobalt content with similar items having no hardfacing or cobalt-free hardfacing.

The approach provides utilities with a roadmap for making rational and cost effective decisions in selecting hardfacings for valves. The guideline recommendations for selecting alternative hardfacing alloys are based on (1) a review of the valve design and the duty to which the valve is subjected during operation, (2) a review of hardfacing attributes and deposition methods, (3) an assessment of the capabilities of alternative hardfacing alloys based on a review of available laboratory evaluations, and (4) a review of field experience with such alloys when used in valves at U.S. and foreign nuclear units.

This approach shows that the use of the guidelines can result in a substantial decrease in the cobalt inventory, because the use of cobalt-base hardfacing alloys is clearly unwarranted in many applications.

The status of ongoing studies to qualify cobalt-free hardfacing alloys with properties equivalent to those of long-used cobalt-base standard alloys is also summarized.

For more, see Radiation Control News, No. 6, June 1990 (EPRI, 3412 Hillview Avenue, Palo Alto, CA 94303).