

N17. Cobalt Reduction Guidelines

An EPRI organized committee of utility specialists, valve and nuclear steam supply system vendors and consultants have developed guidelines for selecting alternative hardfacing alloys for nuclear power plant valves. The recommended process sorts valves by type and load (> or < 15 ksi).

For flow control valves, which are safety related, no hardfacing is considered necessary. Martensitic stainless steels (types 440C and 410) and precipitation hardened steels (17-4 PH) have performed satisfactorily in operating plants. Check valve seats can also use these cobalt-free alloys, but their bushings, and lightly loaded (< 15 ksi) gate and globe valves, need an abrasive-wear resistant material such as nickel-base Deloro 40 and 50 or Colmonoy 4 and 5 alloys. For highly loaded (15 ksi) gate, globe and other valves, stellite or an equivalent alloy should continue to be used.

For more, see Howard Ocken, Nuclear Plant J., May-June 1990, pp. 57-59; J.A. Gorman, M.J. Partridge, and A.P.L. Turner, "Cobalt Reduction Guidelines," EPRI NP-6737-D, March 1990.