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ADVANCES IN WELDING IRON-BASE NOREM HARDFACING ALLOYS

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Objectives: To develop appropriate consumables and welding parameters for in-situ application of NOREM alloys. To investigate the welding attributes of the alloys. To examine properties such as galling and slide wear, and corrosion resistance and compare these properties with those of the more traditional hardfacing materials.

Comments: Iron-based wear-resistant alloys, under the designation NOREM alloys, have been developed by EPRI to address radiation exposure concerns to maintenance personnel in nuclear power plants. Often used cobalt-base alloys have been shown to be major contributors to radiation field build-up as a result of Co-59 wear particles becoming activated while passing through the reactor vessel.

Remarks: Valves hardfaced with NOREM were evaluated in the laboratory in conditions which closely simulated commercial reactor environments. The results confirmed that the NOREM alloys matched or exceeded the cobalt-based alloys. To facilitate the use of NOREM on existing valves currently in place, welding consumables and welding parameters were needed to readily and successfully apply the hardfacing material in-situ.

References: Ocken, H., and M.K. Phillips, "Recent Advances in Welding Iron-Base NOREM Hardfacing Alloys," Proceedings, EPRI Radiation Field Control and Chemical Decontamination Seminar, Tampa, Florida, November 1995, EPRI Distribution Center, P.O. Box 23205, Pleasant Hill, CA 94523.

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