
Research on corrosion monitoring technology under the insulation of important pipelines in nuclear power plants

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Abstract:

In nuclear power plants there are a large number of pipelines with insulation. In service, as a result of the external environment into the water or condensation of water, the pipeline occurred corrosion under insulation(CUI), which will give the safe operation of nuclear power units pose a major security risk, especially the CUI of important pipeline greatly affects the safe and stable operation of the unit. This paper focuses on the corrosion mechanism and influencing factors of CUI, and systematically analyzes and summarizes the existing corrosion monitoring technology methods. It takes the insulated pipe of the chilled water system of the nuclear power plant as the research object, and obtains the corrosion behavior law of the pipeline and the aging law of the coating through the on-site corrosion hanging test and on-site coating evaluation, so as to provide input conditions for the development of corrosion monitoring equipments of CUI. The developed equipment can monitor the main factors that cause CUI, through the temperature and humidity, corrosion current, coating impedance and other parameters of real-time monitoring for pipeline repair program and overhaul plan to provide a key reference basis.

Key words: nuclear power plant; corrosion under insulation; corrosion monitoring