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Overview on corrosion in supercritical fluids

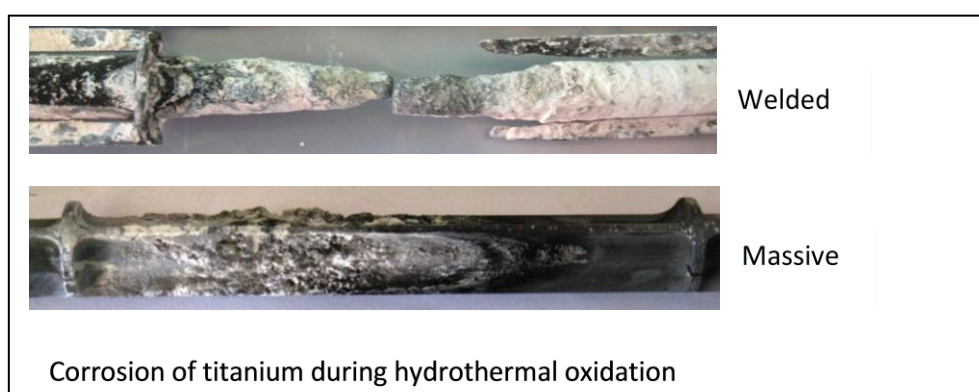
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Graphical abstract



Highlights

- Corrosion performance of structural materials in supercritical fluids are reviewed
- In supercritical water, density, temperature and pollutants are key factor for corrosion issues
- At low temperatures, pure supercritical fluids are more often no corrosive.
- Water content and pollutants are major factors for corrosion in supercritical fluids

Abstract

Whatever the supercritical fluid is, the performance of structural materials is a key issue for industrial applications. An overview is carried out on the corrosion behavior of metallic metals and alloys under pressure and temperature conditions appropriate for supercritical fluids. Steels, including stainless steels, and nickel base alloys are the main alloys investigated in supercritical environments. In supercritical water (SCW), the review highlights how SCW density changes the corrosion mechanisms. Beside the density, temperature and impurities (especially chlorine) play key roles. SCW

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