

International Conference on Fast Reactors and Related Fuel Cycles: Next Generation Nuclear Systems for Sustainable Development (FR17)



Contribution ID: 542

Type: POSTER

Corrosion behavior of tube steel for BREST-OD-300 steam generator

Tuesday, June 27, 2017 5:30 PM (1h 30m)

Abstract

Once-through type steam generator (SG) is designed for BREST-OD-300 reactor unit. There is the steam overheating zone in the upper part of long-length heat exchange tubes. Consequently, under service conditions SG tubes to be exposed to three corrosion media –liquid lead (primary coolant), pressurized water, and superheated steel at temperatures in the range 350-505 °C, pressure of 17 MPa.

To confirm appropriate corrosion resistance SG tubes material in NIKIET, CRIFM, CRISM Prometey research work has been conducting. Required corrosion properties of SG tube material are obtained due to usage of specially alloyed austenitic stainless steel (SS).

This paper presents the results of corrosion and corrosion-mechanical behavior studies, and material investigation results. Type 321 SS is used for comparison.

Use of modified SS as the material of SG tubes allows obtaining required corrosion properties for established SG service-life.

Keywords: austenitic stainless steel, corrosion, corrosion-mechanical properties, liquid lead, water coolant.

Country/Int. Organization

N.A. Dollezhal Research and Development Institute of Power Engineering
Moscow, Russia

Primary author: Mr SHUTKO, Kirill (N.A. Dollezhal Research and Development Institute of Power Engineering)

Co-authors: Mr KASHTANOV, Alexandr (State Research Center of the Russian Federation Federal State Unitary Enterprise "Academician I.V. Gorynin Central Research Institute of Structural Materials "PROMETEY"); Mr MARCHENKOV, Dmitry (N.A. Dollezhal Research and Development Institute of Power Engineering); Mr ARKHIPOV, Oleg (N.A. Dollezhal Research and Development Institute of Power Engineering); Ms NOVICHKOVA, Olga (Federal State Unitary Enterprise (FSUE) I.P. Bardin Central Research Institute for Ferrous Metallurgy); Mr YURMANOV, Victor (N.A. Dollezhal Research and Development Institute of Power Engineering)

Presenter: Mr SHUTKO, Kirill (N.A. Dollezhal Research and Development Institute of Power Engineering)

Session Classification: Poster Session 1

Track Classification: Track 5. Fast Reactor Materials (Fuels and Structures) and Technology