Title (en)

Process for the restoration of steam generator tubes.

Title (de)

Verfahren zum Reparieren der Rohre eines Dampferzeugers.

Title (fr)

Procédé pour réparer les tubes d'un générateur de vapeur.

Publication

EP 0167513 A1 19860108 (FR)

Application

EP 85870067 A 19850510

Priority

BE 212910 A 19840511

Abstract (en)

A process for renovating pipes in a steam generator comprises depositing a water-tight metal lining over the damaged areas of the pipe by localised deposition of the metal on the internal surface of the pipe by the wet process. Pref. the lining is formed by electrolytic deposition of nickel from chlorine-free nickel sulphamate soln. Pref. the cell is formed within the pipe to be treated by sealing off a 20-80 cm length of the pipe with two plastic stoppers through which hollow nickel or nickel alloy anode is passed. The empty space between the stoppers is then filled with the nickel sulphamate soln. A capillary opening is situated in the top of the cell to allow gases evolved during the process to escape. The nickel sulphamate soln. is made by mixing sulphamic acid in crystalline form and nickel carbonate in the presence of a hydrolysis inhibitor to give a conc. soln. of 48 deg. Baume contg. 550-650 g/l nickel sulphamate, having a purity of more than 99%. The reaction taking place is NiCO2 + 2 NH2SO3H = Ni(H2NSO3)2 + H2O + CO2 The electrolytic bath may also contain ca 25 g/l of an inhibitor such as boric acid to prevent decomposition of the nickel sulphamate; a colloid to improve the gloss of the deposited nickel layer; and 0.15-0.30 g/l of an alkylsulphate wetting agent such as lauryl sulphate to prevent hydrogen pitting of the nickel layer.

Abstract (fr)

Pour réparer les tubes (2') d'un générateur de vapeur (1), on forme le long de la zone défectueuse (26) de la paroi interne d'un tube (2'), un manchon métallique étanche, par un traitement à voie humide. Le traitement de surface est réalisé sur place dans le tube (2') à l'aide d'une solution de nickel exempte de chlore, de préférence une solution de sulfamate de nickel exempte de chlore.

IPC 1-7

C25D 7/04

IPC 8 full level

C25D 3/12 (2006.01); **C25D 7/04** (2006.01); **F22B 37/00** (2006.01)

CPC (source: EP US)

C25D 3/12 (2013.01 - EP US); **C25D 7/04** (2013.01 - EP US); **F22B 37/003** (2013.01 - EP US); Y10T 29/49352 (2015.01 - EP US); Y10T 29/49746 (2015.01 - EP US)

Citation (search report)

- [A] GB 299298 A 19290722 - JOHN QUINCY MACDONALD, et al
- [A] FR 2421359 A1 19791026 - FIVES CAIL BABCOCK [FR]
- [X] CHEMICAL ABSTRACTS, vol. 88, 1978, page 452, résumé no. 80955v, Columbus, Ohio, US; A.I. KOVBASYUK et al.: "Restoration of water distribution gate valves by chromium plating in a cold self-regulating electrolyte"; & TR. KISHINEV. S-KH. INST. 1974, 123, 99-102
- [X] CHEMICAL ABSTRACTS, vol. 88, 1978, page 452, résumé no. 80956w, Columbus, Ohio, US; M.P. STRATULAT et al: "Restoration of tractor engine sleeves by wear-resistance chromium coatings"; & TR. KISHINEV. S-KH. INST. 1974, 123, 102-7

Cited by

EP0240957A3; FR2652191A1; BE1002822A4; CN103950905A; EP0291373A1; FR2615207A1; WO8901536A1

Designated contracting state (EPC)

BE CH DE FR LI NL SE

DOCDB simple family (publication)

EP 0167513 A1 19860108; **EP 0167513 B1 19880727**; BE 899632 A 19841112; DE 3563988 D1 19880901; ES 543044 A0 19861116; ES 8701371 A1 19861116; US 4696723 A 19870929

DOCDB simple family (application)

EP 85870067 A 19850510; BE 212910 A 19840511; DE 3563988 T 19850510; ES 543044 A 19850510; US 73203085 A 19850508