

Title (en)  
PROCESS FOR THE RESTORATION OF STEAM GENERATOR TUBES

Publication  
**EP 0167513 B1 19880727 (FR)**

Application  
**EP 85870067 A 19850510**

Priority  
BE 212910 A 19840511

Abstract (en)  
[origin: EP0167513A1] 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  $\text{NiCO}_2 + 2 \text{NH}_2\text{SO}_3\text{H} = \text{Ni}(\text{H}_2\text{NSO}_3)_2 + \text{H}_2\text{O} + \text{CO}_2$  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.

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**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)  
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Cited by  
BE1002822A4; FR2652191A1; EP0240957A3; EP0291373A1; FR2615207A1; CN103950905A; WO8901536A1

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