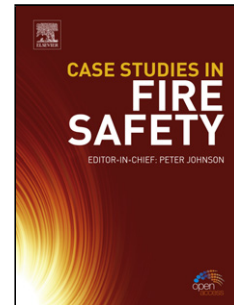


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Author: Sergio Lorenzi Tommaso Pastore Tiziano Bellezze
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Cathodic protection modelling of a propeller shaft

Sergio Lorenzi^a, Tommaso Pastore^a, Tiziano Bellezze^{b,*}, Romeo Fratesi^b

^a University of Bergamo, Department of Engineering and Applied Sciences
Viale Marconi 5, 24044 Dalmine (BG) - ITALY

^bUniversità Politecnica delle Marche, Department of Materials, Environmental Sciences and Urban
Planning
Via Breccie Bianche, 60131 Ancona - ITALY

^aSergio Lorenzi: Tel. +39 035 2052052, Fax +39 035 2052043, e-mail sergio.lorenzi@unibg.it

^aTommaso Pastore: Tel. +39 035 2052316, Fax +39 035 2052043, e-mail tommaso.pastore@unibg.it

^{b,*}Tiziano Bellezze: corresponding author, Tel. +39 071 2204413, Fax +39 071 2810327,
t.bellezze@univpm.it

^bRomeo Fratesi: Tel. +39 071 2204741, Fax +39 071 2810327, e-mail r.fratesi@univpm.it

Highlights

- Finite element model of a cathodic protection system and a validation are proposed
- Design criteria and feasibility are discussed for operating conditions of the apparatus
- Cathodic protection levels of stainless steels in seawater are discussed

Abstract

Current and potential distributions on a stainless steel propeller shaft protected by galvanic anodes were investigated by means of Finite Element Method (FEM) modelling. The effect of seawater flow and shaft rotation was evaluated. The results of simulations are compared with experimental measurements performed on steady shaft in natural seawater. Modest polarization can be noticed in all operating conditions, not sufficient for preventing biofilm action on localized corrosion initiation. Only in stagnant conditions, without any water renewal, the consumption of oxygen leads

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