

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/304367793>

# The Effect Rust and Over-Protection Voltage of Impressed Current Cathodic Protection towards LR Grade a Steel Disbondment

Article in Applied Mechanics and Materials · June 2016

DOI: 10.4028/www.scientific.net/AMM.842.92

CITATIONS

0

READS

215

11 authors, including:



Anistasia Milandia

UNTIRTA

5 PUBLICATIONS 2 CITATIONS

[SEE PROFILE](#)



Soesaptri Oediyani

UNTIRTA

32 PUBLICATIONS 32 CITATIONS

[SEE PROFILE](#)



Tri Partuti

UNTIRTA

18 PUBLICATIONS 12 CITATIONS

[SEE PROFILE](#)



Abdul Aziz

Tokyo Metropolitan University

10 PUBLICATIONS 8 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Synthesis of ZnO Nano Structures via leaching/coagulation and spray pyrolysis [View project](#)



Synthesis and characterization of thin film of graphene/graphene oxide for functional materials [View project](#)

# The Effect Rust and Over-protection Voltage of Impressed Current Cathodic Protection toward LR Grade A Steel Disbondment.

**Source:** Applied Mechanics & Materials . 2016, Vol. 842, p92-98. 7p.

**Author(s):** Fitrullah, Muhammad; Mawaddah, Siti Mutia; Wahyudin; Tarigan, P.; O., Soesaptri; Suryana; Dwiyantri, Yanyan; Partuti, Tri; Juniarsih, A.; Aziz, Abdul; Trenggono, A.

## Abstract:

Corrosion at the bilge due to direct contact with the seawater is an issue which is necessary to be taken into account. The problem can be solved by giving combined protection such as coating and cathodic protection impressed current cathodic protection (ICCP). For broader range, there is occasionally a possibility of over-protection at certain area especially that is close to anodes. It can trigger cathodic disbondment to occur. Cathodic disbondment is a situation when the coating loses its adhesion to the steel due to the voltage originated from cathodic protection. This trial was conducted by using several samples of LR Grade A plate coated by primer coat epoxy and top coat polyurethane. The plate was then given artificial defect with the size of R2, R3 and R4 according to ISO 4628-3 or is equal to 0,5% ; 1% and 8% of the plate surface width. Furthermore, impressed current cathodic protection was conducted with the steel anode, Ag/AgCl reference electrode and over-protection voltage were -1,5 ; -2,0 ; -2,5 ; -3,0 ; -3,5 and -4,0 volt. Electrolyte media employed was seawater. Furthermore, the disbondment taken place was measured after 6 hours and analyzed the corrosion product produced. In the research, it could be seen that the broader the defect was, the smaller the disbondment area was. The width of disbondment area was depending on current density. The smaller the voltage (volt) was, the broader the disbondment in accordance with the increase of disbondment width taking place on the plate surface. The corrosion product produced was Fe<sub>3</sub>O<sub>4</sub> (Magnetite).

Copyright of Applied Mechanics & Materials is the property of Trans Tech Publications, Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use. This abstract may be abridged. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material for the full abstract.



For access to this entire article and additional high quality information, please check with your college/university library, local public library, or affiliated institution.

**Important User Information:** Remote access to EBSCO's databases is permitted to patrons of subscribing institutions accessing from remote locations for personal, non-commercial use. However, remote access to EBSCO's databases from non-subscribing institutions is not allowed if the purpose of the use is for commercial gain through cost reduction or avoidance for a non-subscribing institution.

[Privacy Policy](#) | [Terms of Use](#) | [Copyright](#)

© 2016 EBSCO Industries, Inc. All rights reserved.