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## Fwd: Corcon 2021

1 message

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Tue, 23 Nov, 2021 at 10:54 am

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From: **RISHIKESH** <[rishikesh@naceindia.org](mailto:rishikesh@naceindia.org)>  
Date: Tue, 23 Nov 2021, 08:19  
Subject: Corcon 2021  
To: <[gurralaarun206@gmail.com](mailto:gurralaarun206@gmail.com)>

Dear Author,

Hearty Congratulations !!!

On behalf of NACE International Gateway India Section, I am pleased to inform you that, your paper has been adjudged as one of the best paper in **Corrosion Monitoring and Testing**

Effect of shielding environment on microstructure and corrosion behaviour of 2205 duplex stainless-steel weldments

Arun Kumar Gurralaa, Atmaramudu Tirumallaa, Surjan Sheika and Raffi Mohammeda\*  
National Institute of Technology Andhra Pradesh

during CORCON 2021 International Conference & Expo on corrosion from 18 - 20 Nov 2021 at Mumbai.

Please confirm the complete name of Presenting Author for the certificate.

Please acknowledge the receipt of this email and confirm your postal address for dispatching the certification through courier.

We hope and believe that we shall continue to receive you / your organisation support for the development of NACE International Gateway India Section.

Regards,

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## Effect of shielding environment on microstructure and corrosion behaviour of 2205 duplex stainless steel weldments

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### ABSTRACT:

The current study is aimed at determining the influence of the shielding environment of gas tungsten arc welding of 2205 Duplex stainless-steel on phase balance, microstructural changes and protective properties of passive oxide films formed at the open circuit potential or during the anodic polarisation. Using an image analyzer connected to an optical microscope, metallography is used to monitor the microstructural changes in welds. The basic GillAC electro-chemical system has been used to conduct potentiodynamic polarisation experiments in a 1M NaCl solution to observe the general and pitting corrosion behaviour. When compared to the standard GTAW process, the results of this study revealed that A-GTAW with the use of SiO<sub>2</sub> flux increased depth of penetration and reduced weld width in a single pass. The microstructure of the weld zone for both the weldments is observed to have a combination of austenite and delta ferrite. Secondary austenite is formed in the interior of the ferrite, whereas at the ferrite and primary austenite interfaces, different forms of primary austenites are found in the weld zone and heat affected zone of the A-GTAW process. From the corrosion studies, it is found that weldments made with the A-GTAW process using 95% Ar+5% N<sub>2</sub> show higher corrosion resistance compared to GTAW and A-GTAW joints using 100% Ar shielding gas. It may be due to the presence of nitrogen, which favours the formation of austenite in the ferrite matrix.

**Keywords:** 2205 Duplex stainless steel (DSS); Gas tungsten arc welding (GTAW); Activated gas tungsten arc welding (A- GTAW); Shielding Gas, Corrosion Resistance

## Selection methodology for integrated internal corrosion monitoring techniques – A user perspective

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### ABSTRACT:

Oil and Gas industries are prone to the corrosion that significantly impact the vulnerability of both the infrastructure and people. Effective corrosion monitoring can help in detecting early signs of corrosion prior to the failure such that appropriate mitigation and maintenance strategies can be implemented. However, the question is the identification of appropriate method that can help in making decisions by the operators.

In this paper, I discuss the benefits of using intrusive technique with high sensitivity ER probe and non-intrusive technique with ultrasonic based monitors. Later I also discuss the benefits of integrating the two techniques. I map these benefits to distinguish between cause and effect of the corrosion. For the purpose, I have employed qualitative method for the analysis. The paper therefore contributes towards better understanding of the benefits by employing the integrated approach over the two techniques if one of them is employed.