

Accepted Manuscript

Novel type-2 fuzzy logic approach for inference of corrosion failure likelihood of oil and gas pipeline industry

Dipak Kumar Jana, Barnali Bej, Mohd Helmy Abd Wahab, Anupam Mukherjee

PII: S1350-6307(16)31248-1
DOI: doi: [10.1016/j.engfailanal.2017.06.046](https://doi.org/10.1016/j.engfailanal.2017.06.046)
Reference: EFA 3211

To appear in:

Received date: 28 December 2016
Revised date: 20 June 2017
Accepted date: 21 June 2017

Please cite this article as: Jana Dipak Kumar, Bej Barnali, Wahab Mohd Helmy Abd, Mukherjee Anupam, Novel type-2 fuzzy logic approach for inference of corrosion failure likelihood of oil and gas pipeline industry, (2017), doi: [10.1016/j.engfailanal.2017.06.046](https://doi.org/10.1016/j.engfailanal.2017.06.046)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Novel type-2 fuzzy logic approach for inference of corrosion failure likelihood of oil and gas pipeline industry

Dipak Kumar Jana^{a*}, Barnali Bej^b, Mohd Helmy Abd Wahab^c, Anupam Mukherjee^b

^a*Department of Applied Science, Haldia Institute of Technology, Haldia
Purba Midnapur-721657, West Bengal, India*

^b*Department of Chemical Engineering, Haldia Institute of Technology,
W.B, India, Email: barnalibej@gmail.com, anupammukherjee1994@yahoo.in*

^c*Dept. of Computer Engineering, Faculty of Electrical and Electronic Engineering,
University Tun Hussein Onn Malaysia, Malaysia, Email: helmy@uthm.edu.my*

Abstract: Among the various means of transportation of products from oil and gas industry, pipelines are considered to be the safest way. Still pipelines are to failure due to corrosion resulting (that causes) leakage and rupture. Although corrosion has the nature of uncertainty, the estimation of corrosion failure likelihood (CFL) is very difficult. To mitigate this difficulty, an analytic model for estimating CFL of oil and gas pipelines was developed by means of type-2 fuzzy logic controller system (T2FLCS) approach. The corrosion failure modes considered two types of events such as corrosion thinning and corrosion cracking. The major controlling factors of CFL of pipelines were Corrosion thinning factor, corrosion cracking factor, inspection effectiveness, and inspection times. The influence of controlling factors on type-2 fuzzy rules between the factors and CFL was determined. The assessment results derived from the model can be used as valuable reference for working out pipeline inspection and maintenance plans to a natural gas pipeline to assess the CFL.

Keywords: Type-2 fuzzy logic; Fuzzy inference systems; Failure likelihood; Pipeline; Corrosion thinning; Corrosion cracking.

*Corresponding author Email: dipakjana@gmail.com, Tel. +91 9474056163, Fax: +913224 252800

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات