

## Accepted Manuscript

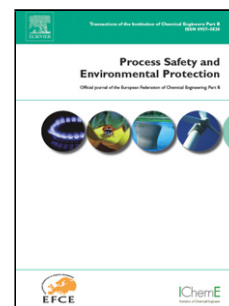
Title: An Integrated Approach for Dynamic Economic Risk Assessment of Process Systems

Authors: Sunday A. Adedigba, Faisal Khan, Ming Yang

PII: S0957-5820(18)30016-8  
DOI: <https://doi.org/10.1016/j.psep.2018.01.013>  
Reference: PSEP 1278

To appear in: *Process Safety and Environment Protection*

Received date: 14-5-2017  
Revised date: 18-1-2018  
Accepted date: 24-1-2018



Please cite this article as: Adedigba, Sunday A., Khan, Faisal, Yang, Ming, An Integrated Approach for Dynamic Economic Risk Assessment of Process Systems. *Process Safety and Environment Protection* <https://doi.org/10.1016/j.psep.2018.01.013>

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.

# An Integrated Approach for Dynamic Economic Risk Assessment of Process Systems

Sunday A. Adedigba<sup>a</sup>, Faisal Khan<sup>a,\*</sup>, Ming Yang<sup>a,b</sup>

<sup>a</sup> Centre for Risk, Integrity and Safety Engineering (C-RISE), Faculty of Engineering and Applied Science, Memorial University of Newfoundland, St. John's NL, Canada A1B 3X5

<sup>b</sup> Department of Chemical Engineering, School of Engineering, Nazarbayev University, Astana, Kazakhstan 010000

\*Corresponding author. Tel: +1 709 864 8939; fikhan@mun.ca

## highlights

- A novel methodology to do process economic risk analysis
- A Bayesian network based process risk model considering probabilistic loss functions
- Application of the proposed methodology and model to real life case study

## Abstract

This paper proposes a dynamic economic risk analysis methodology for process systems. The Bayesian Tree Augmented Naïve Bayes (TAN) algorithm is applied to model the precise and concise probabilistic dependencies that exist among key operational process variables to detect faults and predict the time dependent probability of system deviation. The modified inverted normal loss function is used to define system economic losses as a function of process deviation. The time dependent probability of system deviation owing to an abnormal event is constantly updated based on the present state of the relevant process variables. The integration of real time probability of system deviation with potential losses provides the risk profile of the system at any instant. This risk profile can be used as the basis for operational decision making and also to

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

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