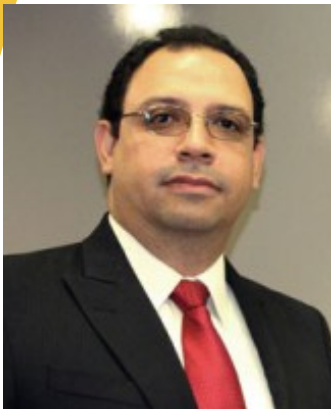




College of Engineering
Department of
Mechanical & Industrial Engineering

The Sidney E. Fuchs Seminar Series

3:30-4:30pm, Friday, November 16, 2012
Frank H. Walk Design Presentation Room



Fault Detection in Pipeline Networks

by **Marco E. Sanjuán, Ph.D.***

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Operation, supervision, and control of pipeline networks is a highly complex activity, due to the existence of a large number of output nodes with varying demand, and a commonly wide geographical area where different types of risk factors may affect the performance or integrity of the pipeline. Monitoring of unwanted operating conditions is commonly performed as point-based or variable-based deviation analysis, leading to large detection times of events such as leaks, valve shutdown, metering units malfunctioning.

In recent years two different types of approaches have been studied, implemented: first-principle model-based fault detection and statistical model-based fault detection. The seminar will present a discussion of the key differences between these approaches, the research that has been conducted in statistical model-based approach, a very recent implementation case in a natural gas pipeline network in Colombia, and challenges to be addressed in future research in fault detection and diagnostics for pipeline systems.

* Prof. Marco Sanjuan is a full professor in the Mechanical Engineering department at Universidad del Norte, Colombia. He holds a Master of Science and a Doctoral degree majoring in Process Control from the University of South Florida. He is the author of the book "Fuzzy Supervision of PID Controllers' Tuning", holder of US Patent #7,809,668, and he has 3 patent applications. Professor Sanjuan is member of the Executive Committee of ASME's Advanced Energy Systems Division and the Colombian National Research Council in Energy and Mining. He has taught over 40 short-courses to industry in Colombia, Venezuela, Ecuador, Guatemala, and the US in Control Systems. His research interests are energy systems control and hybridization, fault detection and diagnosis in process industry, and adaptation of predictive controllers in non-linear applications.