PROCESS SYSTEMS ENGINEERING NL

Symposium

PSE-NL Winter Symposium

Unleashing the Power of Self-Learning Models in Process Engineering

Friday December 1st 2023
from 12:15 to 17:00

at **Institute for Sustainable Process Technology**

These are PSE-NL's industrial members:

Corbion ROYAL COSUN FLUOR Unilever

Ketjen DANONE ONE PLANET. ONE HEALTH

Process Systems Engineering NL is a knowledge network that aims to offer a platform for sharing the best practices and scientific advancements in the PSE area. The systems approach has a strong track record of usage in industry to improve the decision making, to optimize plant configurations, chemical process conditions, molecular synthesis routes, and to control biological synthesis. The role of PSE is even more relevant now in the context of transition to bio-based raw materials and renewable energy. PSE-NL can help bolster the interests and careers of members, as well as initiating and carrying out industrial projects, making contributions to technology development and application projects with industry, while fostering academic research.

Venue: [Institute for Sustainable Process Technology](#)
Visiting address: *Groen van Prinstererlaan 37, 3818 JN Amersfoort*

Program:

12:15 – 13:00	**Lunch**
13:00 – 13:10	**Word of welcome** (PSE-NL Chair)
13:10 – 13:40	**Key levers to implement AI at scale in the manufacturing industry** *by Philippe Mack, founder of PEPITe S.A.*
	10 min time slot for questions, remarks, and short discussions
13:50 – 14:20	**AI in plants & process domain, but what about data and the quality of data & the organization behind it?** *by Ir. Martijn Kramer, Yokogawa*
	10 min time slot for questions, remarks, and short discussions
14:30 – 15:00	**Coffee break**
15:00 – 15:25	**Generative artificial intelligence transforming process development** *by Asst. Prof. Dr. Ir. Artur Schweidtmann, TU Delft*
	5 min time slot for questions, remarks, and short discussions
15:30 – 15:55	**Prediction methodologies and tools for engineering risk assessment** *by Prof. Dr. Mariëlle Stoelinga, University Twente*
	5 min time slot for questions, remarks, and short discussions
16:00 – 17:00	**Closure and social event** *(drinks and networking)*

Please register your attendance by email at pse-nl@outlook.com before **Friday 24th November 14:00**. The participation fee is **25 EUR** for non-PSE-NL members

Abstracts

Key levers to implement AI at scale in the manufacturing industry *by Philippe Mack, founder of PEPITe S.A.*
I will address the roadblocks (mindset, capability, and technology) that are slowing down, if not preventing the deployment of advanced analytics and AI to industry. How to move from proof of concept to implementation at scale. I will show the technical barriers for the new AI technologies, like generative AI and self-learning models with real case examples.

Prediction Methodologies and Tools for Engineering Risk Assessment *by Prof. Dr. Mariëlle Stoelinga, University Twente*
Abstract is missing.

AI in plants & process domain, but what about data and the quality of data & the organization behind it? *by Martijn Kramer, Yokogawa*
The talks start with setting the scene: how technology has changed the way we run plants and what are the current technological drivers (e.g. cloud, big data, AI, etc.). The interesting part is that there is a big technological push to using AI for autonomous plants. However, on the work floor a very different reality takes place: retirement wave, lack of resources, skimming on human resources, etc. This influences data quality, data availability and use of data. Some practical examples are provided how Yokogawa supports plants in improving data quality and the use of it in an efficient way.

Generative artificial intelligence transforming process development *by Asst. Prof. Dr. Ir. Artur Schweidtmann, TU Delft*
Artificial intelligence led to tremendous success in automated decision-making in various domains such as computer vision or games, even surpassing human performance. We propose a new software tool for the digitization of existing flowsheets, i.e., Process Flow Diagrams (PFDs) and Piping and Instrumentation Diagrams (P&IDs). Based on the resulting digital representation of flowsheets, we develop several novel AI tools to support process engineering. This includes tools for autocompletion of P&IDs, automatic translation from PFDs to P&IDs, and automatic correction of P&IDs.

Speakers

Philippe Mack graduated as an Electromechanical Engineer from the University of Liège in 1997 and started his career at his alma mater university in the Montefiore Electrical Engineering laboratory. He worked as a research engineer using artificial intelligence to solve complex problems in energy and in the manufacturing and process industry. In 2002, he founded the company PEPITe SA, with the objective to develop AI and advanced analytics technologies adapted to the manufacturing sector.

Mariëlle Stoelinga is a professor of risk management for high-tech systems, both at the Radboud University Nijmegen, and the University of Twente, in the Netherlands. She leads the PI of PrimaVera, the largest research project on Predictive Maintenance in the Netherlands (6 academic, 11 industry partners). She also received a prestigious ERC consolidator grant and is the scientific programme leader of Risk Management Master – a part-time MSc programme for professionals. She is a member of Safety Delta Nederland, a public-private organization that focuses on safety in the process industry. Stoelinga holds an MSc in Mathematics & Computer Science and a PhD degree from Radboud University Nijmegen and has spent several years as a post-doc at the University of California at Santa Cruz, USA.

Martijn Kramer graduated in 2001 from TU Delft, mechanical engineering faculty in the specialization of Thermal Power Engineering. After a few years working with a company trading in natural gas he moved to Yokogawa - an automation company mainly active in oil, gas, and chemical industry. Currently Martijn works as senior consultant for Yokogawa in the area of supervisory control systems, IIoT, data & data integration, edge & cloud technologies.

Artur M. Schweidtmann is a tenure-track assistant professor for chemical engineering at Delft University of Technology and director of the Process Intelligence Research lab (www.pi-research.org). His research focuses on the combination of artificial intelligence and chemical engineering. He received his Master of Science from RWTH Aachen University in 2017 and defended his Ph.D. from RWTH in 2021, both in Chemical Engineering. During his studies, he spent the academic year 2013/2014 at Carnegie Mellon University as a visiting student via the DAAD ISAP program. He performed his Master thesis at the University of Cambridge.