Chemeca 2025 and Hazards Australasia
28 – 30 September, Adelaide, South Australia

Artificial Intelligence and Human Abnormal Situation Management – How compatible are they?

Daryl Wheatley

Director of MWS Risk

Daryl.Wheatley@mwsrisk.com

ABSTRACT

The march of Artificial Intelligence (AI) into the process control ecosystem is inevitable. The opportunities for optimisation and efficiency that AI can unlock will make it irresistible to process plants under constant pressure to improve performance. Once AI is embedded into multiple facets of the operating plant and its process control system it will be ever more complicated for the supervising humans to determine what the underlying process changes are and what changes are the result of the AI seeking to intervene in real time. While AI does not and will not in the foreseeable future, preclude human intervention, it will without doubt impact and alter how abnormal situation management will be presented and be perceived by the human observer.

It is unlikely that, in the immediate future, the regulatory environment will change to remove human control as a layer of protection in the prevention of catastrophic loss of control scenarios that would lead to asset damage or harm to people. It will remain humans who will be asked to make the final decision on intervention in operations where events may be spiralling towards the unwanted hazardous event and potential catastrophe. In the domain of safety critical controls, what will be the impact of AI, given that AI is constantly evolving, how will humans keep pace with this changing environment and remain situationally aware? At present there are guidelines as to the use of AI but no strict regulations that are customary for safety critical equipment or infrastructure. Before the first intersection between AI and a major hazard event occurs, industry must think about this question and start laying down a well thought out basis for the application of AI. AI is a powerful tool and we must ensure that it is used so that it moves us towards safer operating environments, not further away from them.

KEY WORDS

AI, Artificial Intelligence, Abnormal Situation Management

BIOGRAPHY

Daryl is an electrical engineer whose career has been focused on Instrumentation, Control Systems and in particular Safety Related Control Systems. During his 35+ year career, Daryl has been involved

in project delivery and technical roles that have spanned conceptual work through to execution, commissioning, ramp-up and operational support.

Daryl's experience has been in metallurgical extraction, refining, wastewater treatment, coal, transportation, product handling and mineral processing. His areas of special expertise include burner management, functional safety and safety system cyber security. He has a special interest in human factors and how they affect safety outcomes.

CONFERENCE PROGRAM

Please indicate which conference program your abstract relates to:

☒ Hazards Australasia

☐ Chemeca