

Removing Omissions and Inconsistencies from the ISA 5.1 Narratives of Industrial Processes

Abstract

This work is concerned with the modelling of industrial processes, described by Pipe and Instrumentation Diagrams (P&ID) and narratives as specified in the norm ISA 5.1, by Interpreted Petri Nets (IPN). In a previous work, a modeling methodology was introduced in order to translate a P&ID representation into an IPN. Now, herein the proposed methodology is enriched with the inclusion of errors detection and recovery stages that allow to remove errors involuntarily introduced by engineers in the P&ID and the process and operation narratives. In particular, the detection stage searches for omitted or inconsistent information involuntarily introduced in the narratives. Every omitted or inconsistent information is referred as an error. The errors are detected by evaluating logical predicates given in a list of predicates, which can be extended to include new type of errors. The recovery stage is then implemented by the execution of functions that focus on removing the detected errors. These functions fix the information in some tables, this information is then propagated to the narratives and the derived IPN models, in order to make consistent the information in the model.