Fault handling in PLC-based Industry 4.0 automated production systems as a basis for restart and self-configuration and its evaluation

Industry 4.0 and Cyber Physical Production Systems (CPPS) are often discussed and partially already sold. One important feature of CPPS is fault tolerance and as a consequence self-configuration and restart to increase Overall Equipment Effectiveness. To understand this challenge at first the state of the art of fault handling in industrial automated production systems (aPS) is discussed as a result of a case study analysis in eight companies developing aPS. In the next step metrics to evaluate the concept of self-configuration and restart for aPS focusing on real-time capabilities, fault coverage and effort to increase fault coverage are proposed. Finally, two different lab size case studies prove the applicability of the concepts of self-configuration, restart and the proposed metrics.