

This article addresses the design and real-time implementation of a fuzzy model-based fault detection and diagnosis (FDD) system for a pilot co-current heat exchanger. The design method is based on a three-step procedure which involves the identification of data-driven fuzzy rule-based models, the design of a fuzzy residual generator and the evaluation of the residuals for fault diagnosis using statistical tests. The fuzzy FDD mechanism has been implemented and validated on the real co-current heat exchanger, and has been proven to be efficient in detecting and isolating process, sensor and actuator faults