Abstract

The problem of automatic fault diagnosis and tolerant control for dynamic systems has become essential research topic during the last years as part of the industry's monitoring and supervision of complex systems. This fact has motivated diverse research groups who are developing fault diagnosis technologies in Mexican academic institutions. Thereby, the fault diagnosis community considered it relevant to share our experience by showing the benefits of the novel diagnostic techniques implemented by software with some applications tested in our country.

Thus, this monograph, written by several experts, has been prepared by selecting the main topics discussed during the seminar on Fault Diagnosis and Tolerant Control organized face-to-face and virtual by the authors over the last four years. The Topics features include: (a) The design of a robust computer numerical control CNC of new generation; (b) The faults isolation problem in sensors and actuators of a helicopter prototype; (c) Failure diagnosis in the boiler system of a distillation column; (d) The remaining functional live analysis of an aerospace propulsion system; and (e) Three issues associated with leaks in pipelines. One relates to a water distribution network; the second shows an algorithm to isolate sequential leaks in the main conduit, and the last links with the estimation of the head loss of the line in real-time.

Keywords: Model-based fault diagnosis, Data-driven fault detection, Degradation model, Inteligent Control System.

This page intentionally left blank