عنوان مقاله:

An ILMI Approach to Robust Fault Detection Filter for a Drum Boiler System through a Time-Domain H-Index Norm Method

نویسندگان:

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خلاصه مقاله:

Robust fault detection filter (RFDF) is mainly designed to detect faults in linear time-invariant (LTI) systems inherently exposed to external disturbances. H-index norm technique is oneof the RFDF designing methods. The main idea of our study is to apply a continuous H-index method to a real boiler model whichis made proper by adding an auxiliary direct channel. A high pass filter is augmented to raise the high frequency response. The Hindexnorm is maximized to distinguish between external disturbance and fault. The designed RFDF is continuous and can directly be implemented to the time-domain original continuousmodel. Furthermore, discretizing the continuous model may cause losing some information. Finally, the designed method istheoretically applied in a simulated model of a drum boiler operating in Synvendska Kraft AB Plant in Malmo, Sweden as amultivariable and strongly coupled system. It is illustrated that both sensor and actuator faults can robustly be detected as quickly as possible. To the best of authors' knowledge, this is the first time that the continuous H-index norm procedure is employed to detect actuator and sensor faults in a boiler model

کلمات کلیدی:

boiler, continuous H-index norm filter, fault detection, linear matrix inequality, robustness

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