عنوان مقاله:

OPTIMUM DESIGN OF A MINIMUM ORDER OBSERVER TO CONTROL BOILER SYSTEM PERFORMANCE

محل انتشار:

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نویسندگان:

Golriz Kermani - *Graduate Student, Amir Kabir University of Technology Tehran, Iran*

Hamed Moradi - *Graduate Student,Sharif University of Technology Tehran, Iran*

Firooz Bakhtiarinejad - *Professor, Amir Kabir University of Technology Tehran, Iran*

خلاصه مقاله:

To achieve a good performance of a utility boiler system, dynamic variables such as steam pressure, steam temperature and water level of drum must be controlled. In this paper a LTI model of the boiler system is considered in which the input variables are feed-water flow rate, fuel flow rate and attemperator spray flow rate. However, the state of system is usually not available. So, a minimum- order observer is designed based upon Luenberger's model to gain an estimate state of the true state x . Considering the observer on the closed- loop system, a regulator system is designed. Then, the desired observer poles are chosen such that a suitable time response specifications of the boiler system are achieved and the gain margin and phase margin of the system are adjusted in an acceptable range. Finally, using a MATLAB program, the robustness of the system to the model uncertainties is guaranteed. If any variation occurs in the model, the optimum values of observer poles are chosen by this program automatically.

کلمات کلیدی:

Minimum order Observer، State Estimation، Utility Boiler، Luenberger's Model- Regulator Design