

## DESIGN OF A PRESSURE CONTROL SYSTEM IN A FURNACE OF A THERMAL POWER PLANT BOILER USING SELF-TUNING I-P AND FEED-FORWARD COMPENSATOR

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*ABSTRACT.* This paper proposes a new design method of a pressure control system in a furnace of a thermal power plant boiler. To improve the control performance of the pressure control system in a furnace controlled by using self-tuning I-P controllers, a feed-forward compensator is introduced. Simulation results are illustrated to show the effectiveness of our proposed method.

**Keywords:** Pressure control system, Furnace, Thermal power plant, Boiler, I-P control, Feed-forward compensator, Self-tuning, Generalized predictive control

**1. Introduction.** This paper proposes a new design method of a pressure control system in a furnace of a thermal power plant boiler. The control objective of the pressure control system in the furnace is to keep the pressure in a thermal power plant boiler slightly lower than atmosphere pressure and to make combustion in the furnace stabilize. Since the inlet gas flow changes depending on the quantity of fuel supplied to combustion control, the deviation in the pressure in the furnace caused by change of the supplied fuel has to be controlled. In the thermal power plant boiler the pressure control in the furnace, automatic combustion control, feed water control, and steam temperature