Adaptive neuro-fuzzy control of wet scrubbing process

Salami, M.-J.E., Danzomo, B.A., Khan, M.R.
Mechatronics Engineering Department, Faculty of Engineering, International Islamic University, P.O. Box 10, Kuala Lumpur, Malaysia

Abstract

The non-linear characteristics of wet scrubbing process have led to the application of intelligent control technique to adequately deal with these complexities by manipulating the liquid droplet size for the effective control of particulate matter (PM) contaminants. This includes the use of adaptive neuro-fuzzy inference system (ANFIS) to design an intelligent controller based on direct inverse model control strategy using default input and output membership functions (gaussmf and linear) and different number of input membership functions. This is followed by training of the fuzzy inference system to obtain inverse model which was tested as the intelligent controller. The controller developed using two-input membership functions has successfully achieved the main target of setting the PM concentration (process output) below the set point which is the allowable World health organization (WHO) emission level for $20\, \text{g/μm}^3$ within a short settling time of 2s. © 2015 IEEE.

Author keywords

Adaptive neuro-fuzzy control, wet scrubber system, wet scrubbing process

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