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Adaptive neuro-fuzzy control of wet scrubbing process (Conference Paper)

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Abstract   ⌄ View references (24)

Thenon-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 have 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 20g/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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(2015) 2015 10th Asian Control Conference: Emerging Control Techniques for a Sustainable World, ASCC 2015

Wet electrostatic scrubbers for the abatement of submicronic particulate
Carotenuto, C. , Di Natale, F. , Lancia, A.
(2010) Chemical Engineering Journal

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1   Yetilmezsoy, K., Saral, A.

Stochastic modeling approaches based on neural network and linear-nonlinear regression techniques for the determination of single droplet collection efficiency of countercurrent spray towers

(2007) *Environmental Modeling and Assessment*, 12 (1), pp. 13-26. Cited 46 times.
doi: 10.1007/s10666-006-9048-4

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2   Kim, H.T., Jung, C.H., Oh, S.N., Lee, K.W.

Particle removal efficiency of gravitational wet scrubber considering diffusion, interception, and impaction

(2001) *Environmental Engineering Science*, 18 (2), pp. 125-136. Cited 54 times.

View at Publisher

3   Schnelle, K.B., Brown, C.A.
(2001) *Air Pollution Control Technology Handbook*. Cited 107 times.
CRC press

4   Byeon, S.H., Lee, B.K., Raj Mohan, B.
Removal of ammonia and particulate matter using a modified turbulent wet scrubbing system
Separation and Purification Technology. Cited 2 times.
20112

5   Bozorgi, Y., Keshavarz, P., Taheri, M., Fathikaljahi, J.

Simulation of a spray scrubber performance with Eulerian/Lagrangian approach in the aerosol removing process

(2006) *Journal of Hazardous Materials*, 137 (1), pp. 509-517. Cited 16 times.
doi: 10.1016/j.jhazmat.2006.02.037

View at Publisher

6   Garba, M.N.
(2005) *Gas Particle Separations Using Wet Scrubber Method*
(MEng), Bayero University Kano, Nigeria

7   Zhao, B.
Modeling of particle separation in bends of rectangular cross-section
(2005) *American Journal of Applied Sciences*, 2 (1), p. 394. Cited 2 times.

8   Mohebbi, A., Taheri, M., Fathikaljahi, J., Talaie, M.R.

Simulation of an orifice scrubber performance based on Eulerian/Lagrangian method

(2003) *Journal of Hazardous Materials*, 100 (1-3), pp. 13-25. Cited 17 times.
doi: 10.1016/S0304-3894(03)00066-9

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9 Pieloth, D., Kohnen, B., Schaldach, G., Walzel, P.

CFD simulation of wet scrubbers part 1. Principles and implementation into commercial CFD software

(2012) *Chemie-Ingenieur-Technik*, 84 (1-2), pp. 127-137. Cited 4 times.
doi: 10.1002/cite.201100157

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10 Krishnaraj, R., Sakthivel, M., Devadassan, S., Dinesh, M., Navaneethasanthakumar, S.
Investigation of sand filtration techniques to reduce secondary pollution in wet scrubber
(2012) *European Journal of Scientific Research*, 89 (3), pp. 384-393. Cited 3 times.

11 Goniva, C., Tukovi, Z., Feilmayer, C., Burgler, T., Pirker, S.
Simulation of offgas scrubbing by a combined eulerian-lagrangian model
(2009) *Paper Presented at the Seventh International Conference on CFD in the Minerals and Process Industries CSIRO*
Melbourne, Australia, December

12 Areed, F.G., Haikal, A.Y., Mohammed, R.H.

Adaptive neuro-fuzzy control of an induction motor

(2010) *Ain Shams Engineering Journal*, 1 (1), pp. 71-78. Cited 32 times.
doi: 10.1016/j.asej.2010.09.008

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13 Lei, K.S., Wan, F.
Applying ensemble learning techniques to ANFIS for air pollution index prediction in Macau
(2012) *Advances in Neural Networks-ISNN*, 2012, pp. 509-516. Cited 2 times.
Springer

14 Pande, P.R., Paikrao, P.L., Chaudhari, D.S.
(2013) *Digital ANFIS Model Design*

15 Savic, M., Mihajlovic, I., Zivkovic, Z.
An ANFIS-based air quality model for prediction of so2 concentration in urban area
(2013) *Serbian Journal of Management*, 8 (1), pp. 25-38. Cited 8 times.

16 Noori, R., Hoshyaripour, G., Ashrafi, K., Araabi, B.N.

Uncertainty analysis of developed ANN and ANFIS models in prediction of carbon monoxide daily concentration

(2010) *Atmospheric Environment*, 44 (4), pp. 476-482. Cited 60 times.
doi: 10.1016/j.atmosenv.2009.11.005

View at Publisher

17 Hussain, M.A., Kittisupakorn, P., Daosud, W.
Implementation of neural-network-based inverse-model control strategies on an exothermic reactor
(2001) *Journal of the Science Society of Thailand*, 27 (1), p. 41. Cited 10 times.

18   2006 air quality guidelines for particulate matter
      (2005) *Ozone, Nitrogen Dioxide and Sulfur Dioxide*
      World Health Organisation-WHO,Global Update

19   Negnevitsky, M.
      Artificial intelligence: A guide to intelligent systems
      (2005) *Pearson Education*. Cited 6 times.

20   Güner, E.
      Adaptive neuro fuzzy inference system applications in chemical processes
      (2003) *Middle East Technical University*

21   (2012) *MATLAB-SIMULINK, MathsWorks Incorporated*

22   Siddique, N.
      Computational intelligence: Synergies of fuzzy logic
      (2013) *Neural Networks, and Evolutionary Computing*. Cited 14 times.
      John Wiley & Sons

23   Sivakumar, R., Balu, K.
      ANFIS based distillation column control
      (2010) *IJCA Special Issue on Evolutionary Computation for Optimization Techniques*, pp. 67-73. Cited 32
      times.

24   Karpagachelvi, S., Arthanari, M., Sivakumar, M.

      Classification of electrocardiogram signals with support vector machines and extreme
      learning machine

      (2012) *Neural Computing and Applications*, 21 (6), pp. 1331-1339. Cited 15 times.
      doi: 10.1007/s00521-011-0572-z

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