

A Study of Cleaning of Fouling Materials on Energy Transfer Surface in Thermal Power Engineering System

Kyu-il Han, Sung-wikoh and Duck-ho HA

¹Department of Mechanical System Engineering, Pukyong National University, South Korea

²Department of Information and Communications Engineering, Pukyong National University, South Korea

The efficiencies of thermal power system using fossil fuel depend on heat exchangers which extract energy from the exhaust gas before it is expelled to the atmosphere. To increase heat transfer efficiency it is very important to maintain the surface of heat exchanger as clean condition. The accepted skill of cleaning of fouled surface of heat exchanger is soot blowing. A high pressure jet of air is forced through the flat surface of plate to remove the deposit of fouling. There is, however, little knowledge of the fundamental principles of how the jet behave on the surface and how the jet actually removes the deposit. Therefore, the study focuses on the measuring of cleaning area and cleaning dwell time after accumulating the simulated deposit on the flat surface. The deposit test rig was built for the study and simulated deposit material is used after measuring the physical property of the each material by shearing stress test. Much data was obtained for the analysis by the parameters change such as the different jet speed, different inner pressure and variable distance of the jet from the test rig surface. The experimental data was compared with the theoretical equation and most of the data matches well except some extreme cases.

Biography:

Dr. Kyuil Han received his B.S. Degree in Mechanical Engineering in 1977 from Seoul National University. He received his M.S. Degree in Mechanical Engineering in 1984 from Ohio State University and received a Ph.D. Degree in Mechanical Engineering in 1989 from Colorado State University. Present Kyuil Han is a Professor of Mechanical System Engineering in Pukyong National University in Busan, KOREA. His research Interest field is an efficiency increment of energy transfer for heat exchanging device and thermal power engineering.