

Numerical Evaluation of the Flow Behavior inside the Scrubber Unit with Engine Exhaust Pipe

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Abstract : A wet scrubber is an air pollution control device that removes particulate matter and acid gases from waste gas streams found in marine engine exhaust. If the flue gases in the exhaust is employed for CFD simulation, it makes the problem complicate due to the involvement of emissions. Owing to the fact, the scrubber system in this paper is handled with appropriate approach by designing with the flow properties of hot air and water droplet injections to evaluate the flow behavior inside the system. Since the wet scrubber has the capability of operating over wide range of mixture compositions, the current scrubber model with the designing approach doesn't deviate from the actual behavior of the system. The scrubber design is constructed with engine exhaust pipe with the purpose of measuring the flow properties inside the scrubber by the influence of exhaust pipe characteristics. The flow properties are computed by the thermodynamic variables such as temperature and pressure with the flow velocity. In this work, numerical analyses have been conducted for the flow of fluid in the scrubber system through CFD technique.

Keywords : wet scrubber, water droplet injections, thermodynamic variables, CFD technique

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