

Marine flue gas desulfurization processes: recent developments, challenges, and perspectives

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The International Marine Organization (IMO) established regulations on SO₂ emissions in the MARPOL Annex VI. Since 1st January 2015 equivalent Sulphur emissions have to be lower (0.1% in weight) in some coastal regions named “Sulphur Emission Control Areas”, SECAs while from 1st January 2020, sulphur emissions for oceangoing vessels must be equivalent to a sulphur content in fuel lower than 0.5% in weight worldwide. Recently, seawater (SW) and fresh water with addition of sodium hydroxide have been considered as viable absorbents for open-loop and closed-loop FGD processes, respectively, in marine applications. However, due to the typical constraints of marine applications, process design should be optimized to improve mass transfer rates and reduce seawater requirements while keeping a suitable scrubber size. This paper presents an overview of new developments of marine FGD process using process modification, process integration and process intensification. This research was supported by X-mind Corps program of National Research Foundation of Korea(NRF) funded by the Ministry of Science, ICT (2019H1D8A110563011).