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Destruction of removal efficiency measuring methodology of POU scrubber for semiconductor and electronics industries

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One objective of this paper is to develop the more reliable measuring method of the fluorinated greenhouse gas (F-GHG) abatement system. F-GHG from etching and CVD process of semiconductor or electronic industries can be decomposed by point-of-use (POU) scrubber such as heat-wet, burn-wet, catalyst-wet, plasma-wet type scrubber and so on. The reduction amount of F-GHG can be calculated exactly by the continuous on-line monitoring systems at inlet and outlet of the abatement facility. However, the direct measuring methods of gas flow rate and F-GHG concentration require an expensive monitoring system and high operation cost. It is possible to calculate the reduction amount of F-GHG more accurately based on Tier 2 if we measure the reliable destruction efficiency of F-GHG with high accuracy. The current guidelines as a practical and reliable method for measuring DREs of the abatement systems of PFC gases during the manufacturing of electronic products are based on steady state condition. The steady state cannot be attained actually in most electronic manufacturing process because of the cyclic operation of F-GHG emitting lines such as etching or CVD process. The typical pattern of gas flow rate and F-GHG concentration from semiconductor industry is studied. It is advisable to determine the destruction efficiency of the abatement system based on total inlet and outlet amount of F-GHG during repeated representative cyclic operation.

Biography

Woo Chan Lee has completed his PhD in Environmental Engineering from University of Seoul. Currently, he is carrying out the performance evaluation of the air pollution control process and waste management system at Korea Testing Laboratory. He has published more than 5 papers in reputed journals.

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