

Agenda item 3(b)

Paragraph ### of the annotated agenda

NM0330: Substitution of PFC gases for cleaning Chemical Vapor Deposition (CVD) reactors in the semiconductor industry

CDM EB 62

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NM0330. Substitution of PFC gases for cleaning Chemical Vapor Deposition (CVD) reactors in the semiconductor industry

BACKGROUND

- In the semiconductor industry, PFC gases are used to clean the Chemical Vapor Deposition (CVD) reactors in which dielectric or metallic thin films are deposited on silicon wafers
- CVD chamber cleaning is required to remove the deposition residues that accumulate on the reactor's walls and that would otherwise contaminate the integrated circuits.
- During the process, cleaning gases are only partially dissociated, resulting in atmospheric emissions of un-reacted PFC gases, which have large global warming potentials (GWPs).

APPLICABILITY

- Reduction of PFC emissions through replacement of C₂F₆ with c-C₄F₈ (octa-fluoro-cyclo-butane) as a gas for in-situ cleaning of CVD reactors in the semiconductor industry.



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BASELINE EMISSIONS

- Baseline emissions factors are determined in an ex-ante measurement campaign
- Measurements are conducted separately for each type of cleaning process
- The baseline emissions of C_2F_6 will be capped based on the historical consumption.
- The baseline emissions will be adjusted for the cases when production is falling by introduction of the cap.

PROJECT EMISSIONS

- Project emission factors are determined as well through an ex-ante measurement campaign
- Project emissions are calculated based on the mass of substitute gas consumed during each CVD cleaning process and the ex-ante emission factors

LEAKAGE

- No significant leakage is expected from this methodology.

EMISSION REDUCTIONS

- The methodology is limited to one crediting period

