Life cycle assessment of platinum recycling from aged PEMFC membrane electrode assembly

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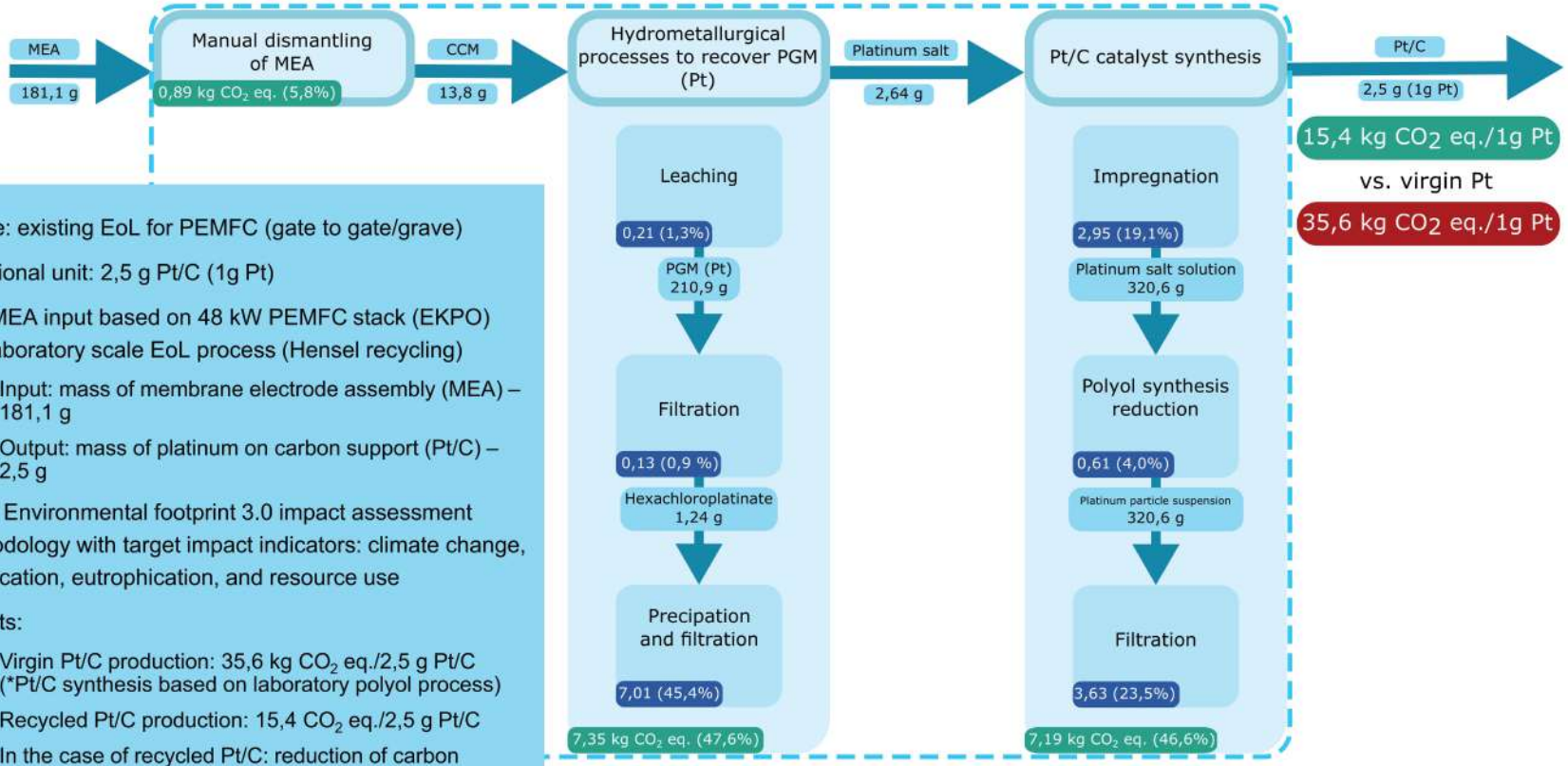

- Scope: existing EoL for PEMFC (gate to gate/grave)
- Functional unit: 2,5 g Pt/C (1g Pt)
- LCI: MEA input based on 48 kW PEMFC stack (EKPO) and laboratory scale EoL process (Hensel recycling)
  - Input: mass of membrane electrode assembly (MEA) – 181,1 g
  - Output: mass of platinum on carbon support (Pt/C) – 2,5 g
- LCIA: Environmental footprint 3.0 impact assessment methodology with target impact indicators: climate change, acidification, eutrophication, and resource use
- Results:
  - Virgin Pt/C production: 35,6 kg CO_2 eq./2,5 g Pt/C (*Pt/C synthesis based on laboratory polyol process)
  - Recycled Pt/C production: 15,4 CO_2 eq./2,5 g Pt/C
  - In the case of recycled Pt/C: reduction of carbon footprint is 57 %

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