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Review

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## **A Review on Hydrothermal Pre-treatment Technologies and Environmental Profiles of Algal Biomass Processing**

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### **Abstract**

The need for efficient and clean biomass conversion technologies has propelled Hydrothermal (HT) processing as a promising treatment option for biofuel production. This manuscript discussed its application for pre-treatment of microalgae biomass to solid (biochar), liquid (biocrude and biodiesel) and gaseous (hydrogen and methane) products via Hydrothermal Carbonisation (HTC), Hydrothermal Liquefaction (HTL) and Supercritical Water Gasification (SCWG) as well as the utility of HT water as an extraction medium and HT Hydrotreatment (HDT) of algal biocrude. In addition, the Solar Energy Retained in Fuel (SERF) using HT technologies is calculated and compared with benchmark biofuel. Lastly, the Life Cycle Assessment discusses the limitation of the current state of art as well as introduction to new potential input categories to obtain a detailed environmental profile.

**Keywords:** Environmental Impact, LCA, Hydrothermal Technology, Microalgae, Biofuels

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