

Advanced Cleaning Devices for Production of Green Syngas

Project Acronym: GreenSyngas

Project status: Execution

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Description

Objective:

The transport sector represents a growing share of the total fossil fuel usage in the world. In order to fulfil the commitment to the Kyoto Protocol, the world usage of fossil oil in transport sectors must be reduced. One important approach to achieving this goal is to increase the share of renewable sources as feedstock in conversion routes. These biomass conversion routes involve a number of difficulties that should be attended to first by a suitable process configuration to avoid catalyst poisoning in the production of syngas. Second, a major problem in the production of syngas derived fuel from renewable sources is the presence of contaminants in the product gas from a biomass gasifier. These impurities that cause catalytic poisoning should be completely removed prior to entry into catalytic systems utilised in the upgrading steps. With the evolution of these advanced uses of biomass derived syngas, it becomes necessary to progressively develop more stringent gas cleaning systems. *Thus, the project's key goal is the development of a novel gas cleanup and upgrading in order to reduce impurities from gasifier product gas to the limits required for upgrading the produced gas using as feedstock in the production of vehicle fuels.* To accomplish this target – that biomass conversion should preserve high energy efficiency in the subsequent synthesis steps and prevent catalytic poisoning – an alternative product route and more

efficient gas cleaning systems are required. Biomass conversion processes offer many economical and environmental benefits, but it is clear that conversion technology should be able to compete with other conversion routes, for example via methane. Therefore, this RTD programme combines European expertise in the field of gasification, different proficiencies in cleaning technologies, high ranking catalyst expertise, a catalyst company, and a research company with R&D activities in the field to expedite the development and commercialisation of research outcomes.

Achievements:

This project will develop and demonstrate advanced synthesis gas cleaning and gas upgrading technologies based on both physical separation and chemical conversion of product gas derived from biomass gasification. The purified syngas cleaned by these processes will be suitable for a number of downstream applications including conversion into synthetic biofuels for the transport sector, hydrogen, or electricity generation with CCS.

General information:

Project Details:

Start date: 2008-01-01

Duration: 38 months

Project cost: 4 089 167 Euro

Programme Acronym: GreenSyngas

Programme Area: FP7-ENERGY-2007-1-RTD, Area Energy.3.2: Second Generation Fuel from Biomass

End date: 2011-02-29

Project no: 213628

Project Funding by EC: 2 718 461 Euro

Subprogramme Area: Topic Energy. 2007.3.2.3: High purity syngas cleaning technologies for biofuel programme

Contract type: Collaborative project (small or medium scale focused project)

URL:

<http://www.eat.lth.se/greensyngas/>

Key words: Biofuels, Transport sector, Energy conservation, Energy efficiency system, Biomass gasification, Steam reforming, Auto reformer, Partial oxidation, Non-reforming configuration, Hot gas filter, Gas purification, Syngas, High and low-temperature shift reaction

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