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LCE > Vol.3 No.3A, November 2012

OPEN ACCESS

Analysis of Life-Cycle Energy Use and GHG Emissions of the Biomass-to-Ethanol Pathway of the Coskata Process under Chinese Conditions

PDF (Size: 910KB) PP. 106-110 DOI : 10.4236/lce.2012.323014

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ABSTRACT

Life-cycle analyses of energy use and greenhouse gas (GHG) emissions were carried out for three scenarios of the Coskata biomass-to-ethanol (EtOH) process under Chinese conditions using the original Tsinghua China Automotive Energy LCA Model in conjunction with a module developed particularly for the Coskata process. The results show that 1) the Coskata pathway has good performance in terms of life-cycle fossil energy use and GHG emissions; 2) the electricity used in the biomass-to-EtOH process has the most significant effect on life-cycle fossil-energy use, natural gas as boiler fuel has the second-greatest effect, while fuel used in feedstock transportation has the third; and 3) different energy resources for boilers in the biomass-to-EtOH factory provide different life-cycle results: coal is the least favorable while biomass is the most favorable. We conclude that 1) the Coskata pathway has the dual merits of fossil energy-savings and lower GHG emissions compared with all other bio-EtOH pathways and conventional gasoline in China; and 2) shifting from coal as the fuel for factory boilers to biomass will strengthen the advantages.

KEYWORDS

Life-Cycle Analysis; Biomass-to-Ethanol; Coskata Process

Cite this paper

X. He, X. Ou, S. Chang, X. Zhang, Q. Zhang and X. Zhang, "Analysis of Life-Cycle Energy Use and GHG Emissions of the Biomass-to-Ethanol Pathway of the Coskata Process under Chinese Conditions," *Low Carbon Economy*, Vol. 3 No. 3A, 2012, pp. 106-110. doi: 10.4236/lce.2012.323014.

References

- [1] Coskata Inc., "About Coskata," 2012. <http://www.coskata.com>
- [2] CAERC, "China Automotive Energy Outlook 2012," Scientific Press, Beijing, 2012.
- [3] Q. Chai, "Biofuel Industry Development in China," Tsinghua University, Beijing, 2008.
- [4] Coskata Inc., "Coskopata Process Overview," 2012. <http://www.coskata.com/process/index.asp?source=7E352957-657F-44D4-8CEC-3FCA8BBB2D7C>
- [5] X. Ou, X. Zhang, S. Chang and Q. Fang, "Energy Consumption and GHG Emissions of Six Biofuel Pathways by LCA in (the) People's Republic of China," *Applied Energy*, Vol. 86, No. Supplement 1, 2009, pp. s197-s208. doi:10.1016/j.apenergy.2009.04.045
- [6] X. Ou, S. Chang and X. Zhang, "Alternative Fuel Buses Currently in Use in China: Life-cycle Fossil

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