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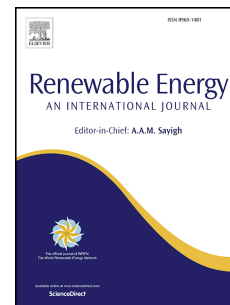
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Biogas to Liquefied Biomethane via Cryogenic Upgrading Technologies

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Abstract

Liquid biomethane (LBM), also referred to as liquid biogas (LBG), is a promising biofuel for transport that can be obtained from upgrading and liquefaction of biogas. With respect to fossil fuels, LBM is a renewable resource, it can be produced almost everywhere, and it is a carbon neutral fuel. LBM is 3 times more energy dense than compressed biomethane (CBM) and it allows longer vehicle autonomy. LBM has also a higher energy density than other transport biofuels, it is produced from wastes and recycled material without being in competition with food production, and it assures a high final energy/primary energy ratio. The low temperatures at which LBM is obtained strongly suggest the use of cryogenic/low-temperature technologies also for biogas upgrading. In this respect, since biogas can be considered as a “particular” natural gas with a high CO₂ content, the results available in the literature on natural gas purification can be taken into account, which prove that cryogenic/low-temperature technologies and, in particular, low-temperature distillation are less energy consuming when compared with traditional technologies, such as amine washing, for CO₂ removal from natural gas streams at high CO₂ content. Low-temperature purification processes allow the direct production of a biomethane stream at high purity

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