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Mitigating CO2 Impact of Industrial Steam Methane Reformers by AG2STM Technology

A. Bassani[1], D. Previtali[1], C. Pirola[2], G. Bozzano[1], S. Colombo[1], F. Manenti*[1]

[1]Politecnico di Milano, Italy; [2]Università degli Studi di Milano, Italy (*flavio.manenti@polimi.it)

Abstract

The aim of this work is to evaluate the potential application of a new sustainable technology, called AG2S™ (Acid Gas to Syngas), on steam reforming process in order to reduce the CO_2 emissions. Indeed, steam reforming has high emissions of CO_2, at almost 7 ton/h of CO_2 per 1 ton/h of H_2 produced. The key idea of the new technology is to convert CO_2 and H_2S coming from natural gas desulfurization into additional syngas. Coupling different software, i.e. Aspen HYSYS and MATLAB®, a complete plant model, able to manage the recycle of unconverted acid gases, has been developed. The importance of introduced innovations is highlighted and a comparison between the old process and the new one with AG2S technology is built up. The main conclusion is that the new plant definitely leads to improvements from environmental and technical point of view reducing CO_2 emission of about 0.3%