World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:9, No:02, 2015

Design and Control of an Integrated Plant for Simultaneous Production of γ-Butyrolactone and 2-Methyl Furan

Authors : Ahtesham Javaid, Costin S. Bildea

Abstract : The design and plantwide control of an integrated plant where the endothermic 1,4-butanediol dehydrogenation and the exothermic furfural hydrogenation is simultaneously performed in a single reactor is studied. The reactions can be carried out in an adiabatic reactor using small hydrogen excess and with reduced parameter sensitivity. The plant is robust and flexible enough to allow different production rates of γ-butyrolactone and 2-methyl furan, keeping high product purities. Rigorous steady state and dynamic simulations performed in AspenPlus and AspenDynamics to support the conclusions.

Keywords : dehydrogenation and hydrogenation, reaction coupling, design and control, process integration
Conference Title : ICACCBE 2015 : International Conference on Applied Chemistry, Chemical and Biomolecular Engineering
Conference Location : Barcelona, Spain
Conference Dates : February 26-27, 2015