

## Repetitive Control of Propane Dehydrogenation(CATOFIN) Process

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The CATOFIN process is a propane dehydrogenation process that employs an adiabatic fixed bed reactor operated in dehydrogenation- regeneration cycles. ABB Lummus Global Inc. has exclusive worldwide licensing rights to the technology. Catofin process has attracted much attention recently due to its advantages over the FCC (Fluid Catalytic Cracking) process in terms of investment, yield and energy efficiency, etc. However, the optimal operation of the CATOFIN is a tricky issue because of its complex dynamics caused by periodic switching and inherent nonlinearity. In this research, a repetitive control technique has been proposed for the CATOFIN process. The controller was designed on the basis of a fundamental nonlinear model to regulate bed temperature measured at three positions during the regeneration cycle using the flow rate and inlet temperature of air as the manipulated variables. Through the application to a numerical CATOFIN process, it was shown that the proposed controller can perform nicely against model error and set point changes.