IMPROVED DESIGN OF AN ETHYLENE OLIGOMERIZATION/TRIMERIZATION/TETRAMERIZATION REACTOR

ABSTRACT

A process includes periodically or continuously introducing an olefin monomer and periodically or continuously introducing a catalyst system or catalyst system components into a reaction mixture within a reaction system, oligomerizing the olefin monomer within the reaction mixture to form an oligomer product, and periodically or continuously discharging a reaction system effluent comprising the oligomer product from the reaction system. The reaction system includes a total reaction mixture volume and a heat exchanged portion of the reaction system comprising a heat exchanged reaction mixture volume and a total heat exchanged surface area providing indirect contact between the reaction mixture and a heat exchange medium. A ratio of the total heat exchanged surface area to the total reaction mixture volume within the reaction system is in a range from 0.75 in^{-1} to 5 in^{-1}, and an oligomer product discharge rate from the reaction system is between 1.0 $(lb)(hr^{-1})(gal^{-1})$ to 6.0 $(lb)(hr^{-1})(gal^{-1})$.

[Fig. 1]