

## عنوان مقاله:

Hydrocracking Lumped Kinetic Model with Catalyst Deactivation in Arak Refinery Hydrocracker Unit

## محل انتشار:

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## خلاصه مقاله:

A kinetic model of a fixed bed tubular reactor incorporating catalyst deactivation was developed for the ISOMAX unit of Arak refinery. The kinetic parameters for the hydrocracking reactions over the commercial catalyst were determined using initial activity plant data i.e. when the catalyst is fresh. Catalyst deactivation was then taken into account by means of deactivation function based on plant data. The catalyst deactivation function is defined in terms of normalized time (BPP) of operation. Effect of catalyst deactivation on the product yield has been investigated. Steady state material and energy balances were then developed for an extended four lumped kinetic network. To determine the effect of reaction types on the rate, we calculate frequency factor for each individual bed with constant activation energy and heat of reaction. Furthermore, we calculate the frequency factor for individual beds, for the first one to estimate the rate of reactions in the different beds. The results show that the reactions in the first and second bed are faster than those in the 3<sup>rd</sup> and 4<sup>th</sup> beds. The comparison between model conversion and experimental conversion of the unit indicates that the model is capable of predicting product yield with an error of less than 5%.

## کلمات کلیدی:

Lumped Kinetic Model, Catalyst Deactivation Function, Normalized Time, Production Yield, Frequency Factor

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1858599>

