

Abstract

The present invention relates to the field of petroleum refining. Disclosed are a combined hydrogenation process and system for producing chemical raw materials. The process comprises the following steps: (1) performing a hydrogenation pretreatment reaction on a wax oil raw material and hydrogen-containing gas, mixing the hydrogenated wax oil obtained by means of the reaction and a light diesel oil fraction, and performing a first hydrocracking reaction to obtain a first hydrocracking material flow; (2) separating and fractionating the first hydrocracking material flow to obtain a diesel oil fraction; and (3) performing a second hydrocracking reaction on the diesel oil fraction obtained in step (2) to obtain a second hydrocracking material flow, and separating and fractionating the second hydrocracking material flow. The process provided in the present invention can transform all the high aromatics inferior diesel oil raw materials and wax oil raw materials into light naphtha, heavy naphtha, tail oil and other high value-added products, in a real sense, a diesel and gasoline ratio is reduced to zero, the yield of a tail oil product which can be used as an ethylene cracking raw material can be increased, and a device gas product yield is decreased.