

Abstract

The present invention relates to a method for treating hydrocarbon oil, comprising step (1): contacting the hydrocarbon oil, preferably hydrocarbon oil in gaseous state, in the absence of hydrogen in a desulfurization reactor, with a desulfurization adsorbent comprising a metal active component M to perform a selective desulfurization reaction and generate a metal active component sulfide referred to as a metal sulfide, obtaining an at least partially desulfurized hydrocarbon oil and a spent desulfurization adsorbent containing the metal sulfide; wherein at least a portion, preferably all, of the sulfides in the hydrocarbon oil are non-thiophene type sulfides, and the metal active component M is one or more selected from cobalt, nickel, iron, manganese, copper, molybdenum, tungsten, silver, tin, and vanadium; preferably step (1) is conducted in a continuous manner. The present invention also relates to a system for implementing this method.

Fig. 1