

ABSTRACT

SUPERCRITICAL WATER UPGRADING PROCESS TO PRODUCE HIGH GRADE COKE

Embodiments of a process for producing high grade coke from crude oil residue include at least partially separating, in a solvent extraction unit, the crude oil residue into a deasphalted oil (DAO)-containing stream and an asphaltene containing-stream, producing a pressurized, heated DAO-containing stream, where the pressurized, heated DAO-containing stream, mixing a supercritical water stream with the pressurized, heated DAO-containing stream to create a combined feed stream, introducing the combined feed stream to an upgrading reactor system operating at supercritical temperature and pressure to yield one or more upgrading reactor output streams comprising upgraded product and a slurry mixture, where the slurry mixture comprises sulfur and one or more additional metals. The process also may include calcining the slurry mixture at a temperature of from 700°C to 1900°C to produce a product stream comprising the high grade coke.

FIG. 1