

VRSH

REFINING TECHNOLOGY



Process System & Controls, based in Houston, was created in 2018 in order to purchase and market the Vacuum Residue Slurry Hydrocracking (VRSH) process system.

Chevron developed this VRSH technology and announced in 2008 that they planned to install the first plant in Pascagoula, Mississippi



BACKGROUND

Chevron had been developing VRSH technology since 2003. This equipment was going to be used in their first ever VRSH plant. However, in 2009, Chevron decided to delay the project due to the dropping price of crude oil, and the equipment was never installed.



VRSH PROCESS

Catalyst Slurry: The catalyst is prepared by first mixing an oxide of a Group VIB metal such as tungsten or molybdenum with aqueous ammonia. This is sulfided with hydrogen sulfide gas (H₂S) to form a slurry, which is then combined with a Group VIII metal compound such as nickel or cobalt.





REFINING TECHNOLOGY THAT CONVERTS ULTRA-HEAVY OIL INTO CLEAN-BURNING FUEL

- This process advanced Chevron's heavy-oil upgrading capability and was an important innovation for the company
- VRSH technology increased the yields of gasoline, diesel, and jet fuel from heavy and ultraheavy crude oil and upgraded production of heavy oil resources.
- Chevron's research showed the technology achieved up to 100 per cent conversion of the heaviest feedstock, while the best commercial refining technology at that time (2008) achieved less than 80 per cent conversion.





Developing Proprietary Technologies

Vacuum Resid Slurry Hydrocracking (VRSH) Pascagoula Pre-Commercial Plant



Ultra-Heavy Resid



Liquid Product Yield



VRSH

Pascagoula Refinery Process Flow From Crude Oil to Products





WHAT IS IMO 2020?

- The International Maritime Organization (IMO) will enforce a new 0.5% global Sulphur cap on fuel content starting January 1st, 2020, lowering from the present 3.5% limit. The global Sulphur fuel cap is part of the IMO's response to heightening environmental concerns, contributed in part by harmful emissions from ships.
- Installing this VRSH unit on a refinery process unit will produce marine bunker fuel that meets these new Sulphur regulations.









QTY (3) NEW SURPLUS -CIRCULATING SLURRY REACTORS











SURPLUS INTERSTAGE FLASH DRUM



SURPLUS LEAN OIL CONTACTOR



SURPLUS FLOWSERVE CATALYST RECYCLE PUMP

- Size: 3240psi discharge, 228psi Head, 138gpm, 281 BHP, 369 HP Motor
- Material: Solid 347SS forged, cast modified impeller/diffuser 316LSS with Tungsten carbide hard facing





SURPLUS WARM HIGH-PRESSURE SEPARATOR





SURPLUS PRODUCT STRIPPER







QTY (1) NEW SURPLUS PRODUCT STRIPPER

36" ID X 59'6" OAL X 273PSI @ 500F



SURPLUS AMINE SCRUBBER



QTY (1) NEW SURPLUS HIGH PRESSURE AMINE SCRUBBER

36" ID X 65'6" OAL X 2815 @ 500F



For Additional Info



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