HDS -1 UNIT PROCESS DESCRIPTION

The unit process specifications are reported in table 1. The unit consists of the following modules:

Reactor module: The unit includes of two reactors operating in series. Both reactors are provided with a radiation split-type furnace. For each reactor the catalyst volume (meddle part reactor) can be widely varied by adding more or less inerts. Both reactors can be used in series for up and down flow. An extra "swing pipe" can be installed to by-pass the second reactor.

Gas delivery modules: This part of the system contains three (3) independent gas feed modules with all necessary equipment. For this system hydrogen, nitrogen, of a mix of hydrogen/H2S can be used as feed gas.

Liquid delivery module: Oil is contained in a nitrogen-blanketed vessel, which is situated on a weigh scale. This feed vessel is provided with electrical heating that is under automatic temperature control by the computer. The presulfhiding liquid is contained in a nitrogen-blanketed vessel.



Sampling module: A sample of the product at the separator outlet can be taken via a pneumatic actuated three-way valve.

Gas outlet module: Initial part of this module is the pressure control section, which maintains the required reactor pressure. A by-pass is installed for atmospheric operation of the installation. In this case the outlet lines, incl. Pressure control section, are heat traced and insulated. The outlet vent is connected to a wet test meter to measure the outlet flow of the system.

Separation and liquid outlet module: A pipe in pipe cooler cools the reactor outlet product. The separator has a narrow electrically heated liquid-part and wide water cooled gas-part. Product is collected in a heated vessel, which is located on a weigh scale. Normally the vessel is vented to the gas module.

Number of reactor in series	2
Reactor Volume, CC	265
Reactor Diameter, inches	2
Reactor Length, inches	75 1/2
Catalyst bed length, inches	18
Operating pressure, barg	280
Operating temperature, max ° C	550
Liquid Feed Rate, ml/h	30-600 ml/h
Gas Rate, NI/h	100-1000

Table 1 HDS-1 - Process Specifications