

## EQUIPMENT

The Montebello Unit is equipped with a synthesis gas generator having an internal volume of about 2 cu. ft. which is fed with natural gas and oxygen which have been preheated to about 900 and 600 F. respectively. An internal, tip-mixing burner is used and the generator is an open, ceramic lined chamber. Product gas from the generator is quenched with a water jet at the outlet of the generator and the mixture of gas and water separated in an accumulator.

The synthesis reactor consists of a length of 10 inch extra heavy pipe 30 ft. long which is fitted with three 2 inch extra heavy cooling tubes which extend the full length of the reactor. They are connected at the top to a steam drum and at the bottom to a mud drum, thermosyphon circulation in the boiler system being maintained by means of an external water leg. This steam system provides the only cooling for the reactor, the

external shell being insulated with 4 inches of block insulation. The product stream from the reactor passes through two 12 inch cyclone separators which are arranged in series between the reactor and the condenser. Catalyst recovered in the primary cyclone is returned continuously to the reactor by means of a standpipe, slide valve and transfer line. Catalyst is conveyed through the transfer line by means of a stream of recycle gas sufficient to maintain a velocity of about 50 ft. per sec. A second stream of recycle gas is injected at the base of the standpipe to maintain fluidization (about 0.5 ft. per sec.) and the remaining recycle stream is mixed with the fresh feed and fed to the base of the reactor. All recycle and the fresh feed stream are preheated to approximately reactor temperature. Catalyst recovered in the secondary cyclone is weighed, and provision is made to recharge catalyst to the reactor.