

1,300 TPD Methanol Synthesis Loop for Sale

Capacity: 1,300 TPD

Raw Materials: Synthesis Gas, Hydrogen,
Carbon Monoxide, Carbon Dioxide

End Products: Methanol

Technology: Lurgi

Process Information

Phoenix Equipment has for sale a 1,300 metric TPD Methanol Synthesis Gas Loop. The methanol loop processes raw synthesis gas and recycle gas in the presence of a zinc / copper catalyst. The partially reformed gas stream from the primary reformer is sent to the secondary reformer where it is reacted with oxygen and most of the remaining methane converted to synthesis gas. The synthesis gas leaving the secondary reformer is cooled, compressed and sent to the converter loop where carbon monoxide, carbon dioxide and hydrogen are reacted to produce crude methanol, a mixture mainly of methanol and water.

Major Equipment

(2) 62,000 Sq Ft Converters - Shell Rated 920 PSIG @ 520F

Tubes Rated 777 PSIG @ 515F

(1) High Pressure Methanol Separator

(1) Low Pressure Methanol Separator

(1) Converter Steam Drum

(1) Converter Inter Changer

(1) Crude Condenser

(1) Recycle Compressor

also Distillation Columns, Compressors and Heat Exchangers



BRIEF PLANT DESCRIPTION

Synthesis gas from the discharge of the MUG compressor is combined with synthesis gas from the high pressure separator at the suction of the recycle compressor. The discharge pressure of the recycle compressor is controlled at 845 psig. The synthesis gas flows through the tubes of the converters, which are filled with a pellet-shaped catalyst. The product is a gas stream containing methanol and synthesis gas, which was not converted due to catalyst efficiency. Heat is transferred to boiler feed water on the shell side of the converters coming from the steam drum located above the converters. The temperature of the water in the reactor shell is controlled by varying the steam pressure in the steam drum with the pressure controller. The product from the converters is passed through the interchanger on the tube side where is cooled by synthesis gas on the shell side. The converter product is further cooled by a final crude methanol condenser. The flow then moves to the high pressure separator where the liquid methanol is dropped out and resulting synthesis gas is taken overhead. Some synthesis gas from the overhead stream is removed or purged from the loop to provide pressure control of the converter loop. The volume of the purge gas removed is controlled with a valve based on the discharge pressure of the recycle compressor. The liquid from the high pressure separator goes to the low pressure separator. The overhead of low pressure separator moves on the boiler-house as low pressure gas for firing the boilers. The base of low pressure separator crude methanol goes to two different heat exchangers for sales grade methanol and MO grade methanol

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