Standard 35MMscfd Dew Point Plant

Short Process Description

Exterran's standard 35MMscfd design is capable of handling ambient temperature conditions from 0° to 100° F. The inlet gas is cooled and chilled with a gas/gas exchanger a gas chiller in a series arrangement where ethylene glycol is injected on both exchanger services to inhibit gas hydrates from forming while the gas is chilled. The condensed hydrocarbon liquid, glycol, and water are separated from the chilled gas in the cold separator. The cold separator includes a mist eliminator to minimize entrainment. The cold gas returns to gas/gas exchanger to exchange heat with the inlet gas. An outlet pressure control valve regulates the residue gas before flowing to the battery limits, maintaining cold separator pressure. The condensed hydrocarbon liquid and "wet glycol" gravity is separated within the cold separator with an internal liquid-liquid plate pack to assist in separating the fairly viscous glycol from the liquid hydrocarbon.

Liquid hydrocarbon overflows an internal weir to a surge section. The glycol exits out through a glycol boot. The liquid hydrocarbon cross exchanges with stabilizer bottoms and then throttles to stabilizer tower pressure, normally at 390 PSIG. The stabilizer is a packed fractionation tower with the reboiler using hot oil as heat medium. The liquid product is cooled upon exiting the stabilizer bottoms exchanger. A stabilizer overhead vapor compressor recompresses the gas to inlet gas pressure and then cools it to 120°F with air in a discharge cooler. The cooled, compressed gas flows back to the inlet of the gas/gas exchanger to recombine with the inlet gas.

Short Equipment Module Description

Refrigeration Processing Modules

- Chiller Skid (Lower)
  - E-223 Chiller, E-222 Stabilizer Feed/ Bottoms Exchanger, V-428 Refrigeration Reclaimer, V-422 Cold Separator, P-621 & 622 Glycol Pumps.
  - Over all package assembly is 40'-0" L x 12'-6" W x 11'-0" T
  - Estimated Shipping Weight – 75,000 lbs
  - Estimated Operating Weight – 85,000 lbs
- Gas/Gas Exchanger Skid (Upper)
  - E-221A/B Gas/Gas Exchanger, V-427 Refrigerant Suction Scrubber, F-430 Glycol Filter, F-431 Glycol Charcoal Filter, E-226 Glycol Exchanger, V-429 Glycol Flash Tank, E-225 Glycol Reboiler, T-522 Glycol Still.
  - Over all package assembly is 40'-6" L x 12'-6" W x 13'-0" T
  - Estimated Shipping Weight – 60,000 lbs
  - Estimated Operating Weight – 70,000 lbs
- Reboiler Skid (Lower)
  - V-425 Refrigerant Accumulator, E-224 Stabilizer Reboiler, T-521 HP Stabilizer.
  - Over all package assembly is 40'-0" L x 12'-0" W x 11'-0" T
  - Estimated Shipping Weight – 40,000 lbs
  - Estimated Operating Weight – 45,000 lbs
- Condenser Skid (Upper)
  - A-321 Refrigerant Condenser
  - Over all package assembly is 42'-0" L x 12'-6" W x 14'-0" T
  - Estimated Shipping Weight – 43,000 lbs
  - Estimated Operating Weight – 45,000 lbs

- V-426 Refrigerant Economizer – Off-skid

Refrigeration Compressor Modules

- Refrigeration Compressor Package – (3) Mycom 400 hp @ 3,550 rpm Refrigeration Compressors w/ (2) 700W lube oil heaters.
- Refrigeration Compressor Lube Oil Cooler Package – (3) Horizontal Air-Cooler, Heat Exchanged, BTU/Hr 389,004, with (1) electric 5 hp @ 1800 rpm motor

Heat Medium Heater Module

- H-741 - 1.9MMbtu Heater w/ V-441 Expansion Tank, P-441 & 442 Hot Oil Pumps (75 gpm)
- Over all package assembly is 40'-0 L x 10'-0 W x 14'-0 T
- Estimated Shipping Weight – 35,000 lbs
- Estimated Operating Weight – 64,000 lbs

Motor Control Module

- Main Control Panel – Hoffman Enclosure w/ Allan Bradley Control Logic
- ESD Panel – Hoffman Enclosure w/ Allan Bradley Terminals, Relay's, etc.
- Motor Control Center includes – Soft Starts for Mycom Refrigeration Compressors, Full voltage starters for remaining motors, 208/120V Distribution Panel, 480V Lighting Panel, 240/120V UPS Distribution Panel.
- 4.3 KVA Powerware UPS, Friedrich AC/ Heater Unit, Dell work station for Control Panel Interface
- Over all package assembly is 40'-0" L x 10'-0" W x 12'-0" T
- Estimated Weight – 20,000 lbs

Chesapeake Plant

Processing Module

Refrigeration Compression Module

Heat Medium Module

Standard MC Module

SALES PROSPECTUS

35MMSCFD Dewpoint Plant Unit

CLIENT: **JOB/QUOTE NO.** Stock **DATE:**

BY:

SUBJECT: STDDP-A35 **CHECKED:**

DESIGN BASIS:

I.	**Site Conditions:**	
	Location	TBD
	Elevation, Feet	1000
	Ambient Temperature, °F (Minimun/Maximum)	-20° / 105°
	Barometric Pressure, PSIA	14.7
	Maximum Wind Speed, MPH	100 (ASCE 7-05)
	Seismic Zone	(ASCE 7-05)
II.	**Inlet Gas**	
	Supply Source	High Pressure Wellhead Gas Pipeline
	Operating Pressure, PSIG	800 / 900
	Operating Temperature, °F (Minimum/Maximum-Summer)	60° / 80°
	Amine Unit Gas Rate, MMSCFD	TBD
	Gas Composition:	Mol %
	Nitrogen	TBD
	Carbon Dioxide	
	Hydrogen Sulfide	
	Methane	
	Ethane	
	Propane	
	i-Butane	
	n-Butane	
	i-Pentane	
	n-Pentane	
	Hexane-plus	
	Total	0
	Water Content	Saturated at Inlet Pressure & Temperature
	Other Particulates & Liquids Present in Inlet Gas:	Corrosion Inhibitor, Compressor Lube Oil
III.	**Treated Gas**	
	Maximum CO_2 from Amine Unit, Mol%	TBD
	Maximum Blended CO_2 Content for Pipeline Delivery, Mol%	TBD
	Maximum Water Content, Lbs. H_2O / MMSCFD	TBD
	Maximum Plant Pressure Drop, PSI	50
	Maximum Temperature, °F	120°
IV.	**Amine Solution**	
	Type	TBD
	Concentration, Wt.%	TBD
	Lean CO_2 Loading, Mol CO_2/Mol Amine	TBD
	Maximum Rich Amine Loading at Design Conditions, Mol CO_2/Mol Amine	TBD
	Make-up Water	Deionized
	Regeneration Heat Source	Indirect Heat w/Hot Oil
V.	**Glycol Solution**	
	Type	Triethylene Glycol
	Lean Concentration, Wt.%	TBD
	Stripping Gas	TBD
	Regeneration Heat Source	TBD
VI.	**Heat Medium**	
	Type	Monsanto's Therminol 55
	Temperature In/Out, °F	
	Amine Unit Reboiler System	350° / 300°
	Glycol Unit Reboiler System	500° / 450°
	(Also Fuel Gas Heater & Tank Heaters)	
	Supply Pressure at Reboilers, PSIG	25
	Expandsion Tank, PSIG	10

	HMO Heater Type	Gas-fired, Vertical-cylinder
VII.	**Fuel Gas**	
	Source	Treated Gas
	Supply Pressure, PSIG	70
	Supply Temperature, °F	80°
	LHV, BTU/SCF	TBD
	Molecular Weight	TBD
	Gas Composition:	Mol %
	Nitrogen	
	Carbon Dioxide	
	Methane	
	Ethane	
	Propane	
	Water	
	Total	
VIII.	**Instrument & Utility Air**	
	Source	Instrument Air Compressors (2 x 100%) & Dryer w/Wet & Dry Air Receivers
	Supply Pressure	
	Minimum/Maximum, PSIG	90 / 125
	Maximum Supply Temperature, °F	120°
	Maximum Moisture Dew Point, °F	-40°
IX.	**Electrical Power**	
	Motors, Volts / Phase / Hz	
	500 HP and Greater	4160
	1 to 450 HP	460 / 3 / 60
	Less than 1 HP	120 / 1 / 60 or 240 / 1 / 60
	All motors shall be TEFC.	
	Power Generation	TBD
	Substation Transformers	4160 V to 480 V
	UPS System	110 Vac
	Emergency Generator	
	Capacity, KW	100
	Driver Type	Gas-fired Engine
X.	**Burner Emissions (Not to Exceed)**	
	HMO Heater: NOx (Lbs./MMBTU)	0.130
	CO (Lbs./MMBTU)	0.050
XI.	**Sound and Noise**	No Limit
XII.	**Electrical Classification**	Class I, Division 2, Groups C & D
XIII.	**Electrical Code & Standards**	NEC, API RP 500
XIV.	**Make-up Water Rate**	TBD
	Composition Required	
XV.	**Amine Make-up Rate**	TBD

XVI. Equipment

Gas/Gas Exchanger (2)	2313 MBTU/HR, 24-312 BEM
Stabilizer Feed/Bottoms Exchanger	1844 MBTU/HR, 8-96 BEU
Chiller	2207 MBTU/HR, 19/31-240 BKU
Stabilizer Reboiler	1427 MBTU/HR, 12/23-144 BKU
Glycol Reboiler	309 MBTU/HR, 10/23-96 BKU
Glycol/Glycol Exchanger	359 MBTU/HR, Plate Frame, 150 PSI @ -20º/300ºF
Lube Oil Cooler (3)	389 MBTU/HR, 645 PSI @ 300ºF, (1) 7.5 HP Motor
Refrigerant Condenser	3466 MBTU/HR, 310 PSI @ 250ºF, (2) 30 HP Motors
Cold Separator	42" OD x 26'-0" SS, 1320 PSI @ -20º/150ºF
Refrigerant Accumulator	24" OD x 30'-0" SS, 300 PSI @ -20º/150ºF
Refrigerant Economizer	30" ID x 10'-0" SS, 250 PSI @ -20º/150ºF
Refrigerant Suction Scrubber	36" ID x 12'-0" SS, 250 PSI @ -20º/150ºF
Refrigerant Reclaimer	10.75" OD x 2'-6" SS, FV/250 PSI @ -20º/150ºF
Glycol Flash Tank	24" OD x 8'-0" SS, 150 PSI @ -20º/250ºF
Hot Oil Surge Tank	30" OD x 8'-0" OAL, 14.9 PSI @ -20º/500ºF
Glycol Filter	6.625" OD x 45" OAL, FV/150 PSI @ 250ºF
Glycol Charcoal Filter	18" OD x 8'-0" SS, 150 PSI @ -20º/200ºF

Stabilizer	24" OD x 29'-0" SS, 600 PSI @ -20º/300ºF, 316 SS Packing
Glycol Still	12.75" OD x 8'-0" FOF, 150 PSI @ -20º/500ºF, 316 SS Packing
Glycol Pump (2)	5.4 GPM, 5 HP Motor, 1115 PSI
Hot Oil Pump (2)	75 GPM @ 118 FT TDH, 8.3 HP Motor
Refrigerant Compressor	2815 MMSCFD, 400 HP Motor, 5 HP LO Pump
Hot Oil Heater	1922 MBTU/HR, 14.9 PSI @ 500ºF. 1.5 HP Blower
Plant Control System	Allen Bradley PLC
MCC	Allen Bradley