

REFRIGERATION



HEAT EXCHANGERS

AIR CONDITIONING

MANUFACTURING CORPORATION

2217 SOUTH FIRST STREET
MILWAUKEE, WISCONSIN 53207
PHONE: 744-0111 (Area Code 414)

REPLY TO:
NEW ORLEANS OFFICE
614 N. RAMPART, OFFICE #9
NEW ORLEANS, LA. 70112
PHONE: 504/581-6131

March 29, 1974

Mr. Bill Stutesman
Conoco Chemicals
VCM Plant
P. O. Box 605
Westlake, Louisiana 70669

Subject: Rail Car Vent Recovery System

Dear Mr. Stutesman:

I would like to thank you for this opportunity and privilege to submit a quotation on the VCM refrigeration unit. We have designed the unit in accordance with our many discussions and your specific requirements. The unit includes a flooded R502 U-tube, Tema R, VCM condenser and a flooded flash type inter-cooler between refrigeration stages. Pneumatic level controllers are provided on the flooded exchangers and a PIC (pressure indicating controller) is used for capacity reduction control.

The price, net, F.O.B. factory Milwaukee is \$54,378.00 for the unit, with an approximate shipping weight of 28,000 #. Delivery on the unit is 45 weeks after drawing approval. Drawings can be provided in approximately 12 weeks. As I brought out before, there are several ways of handling drawing approval so that delivery is not delayed while waiting on drawings and approval.

Enclosed is a detail schedule describing the complete unit, operating conditions and vessel sizes. The unit is designed for 30 tons of refrigeration and the VCM flow rate was prorated for design of the condenser. The VCM condenser is adequately designed for either winter or summer conditions, as outlined on your exchanger sheets 1 & 2 of 3/5/74. Please note that we have provided standard steel materials as required for TEMA R and the ASME code on the VCM condenser.

Also enclosed is Flow Diagram #3 showing the complete refrigeration system proposed. Since you already know the system pretty well, I won't go over all the details, however, note that we will be providing an oil pot with a heater on the

CWH 000012720

TERMS AND CONDITIONS SHOWN ON REVERSE SIDE

Page 2.

VCM condenser oil bleed system and sight glasses on the oil lines. The purpose of the pot is to heat the oil to enable it to flow to the oil recovery system where the refrigerant is actually boiled completely from the oil by the large heater. The solenoid valves on the oil bleed lines will close when the refrigeration unit is not in operation to stop refrigerant and oil flow.

We have also provided high level float switches on the intercooler and VCM condenser that will shut down the system in case of high liquid level. This eliminates the possibility of liquid refrigerant returning to the compressor in event of a control valve malfunction. A minimum of 4' of surge space at a maximum velocity of 35 FPM is provided in the intercooler to assure no liquid R502 carry over. The surge drum mounted on the VCM condenser is designed for 50 FPM maximum velocity to assure no liquid carry over also.

Please note the items not included with the unit as shown on the detail schedule. Enclosed is Bulletin No. 120 illustrating the compressor used on the low stage and bulletins Nos. 247 & 269 showing the high stage compressor. Also enclosed are bulletins #N0, 507X, 727 and 372 showing our ability to manufacture heat exchangers and packages.

I previously mentioned giving you an alternate on a direct expansion VCM condenser refrigeration system. This system with surge drums included before both compressors would be about \$50,000.00. This would be similar to Flow Dia. #1 previously sent.

If there is any thing else you would like to include or change, please let me know. As the unit now stands, it is a deluxe unit and includes alot of features that will assure you of completely automatic start-up and pull down after prolonged shut down, as well as completely automatic capacity reduction to 0% full load.

As part of our quotations it has become necessary to include price escalation. Due to continued rapid increases in the cost of materials, it has become necessary for the Vilter Manufacturing Corporation to activate a pricing policy on long delivery items as follows:

CWH 000012721

ALL AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENTS, DELAYS OF CARRIERS AND OTHER DELAYS UNAVOIDABLE OR BEYOND OUR CONTROL. ALL QUOTATIONS ARE BASED ON PRESENT MARKET PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Page 3.

"Due to the extended shipment schedule of the above equipment, this price is subject to adjustment to reflect increases on purchased items on which firm prices have not been obtained and to reflect any increase in the published prices on Vilter products between date of quotation and date of scheduled shipment. Any price adjustment will be in accord with government guidelines."

"Price on motors shall be that in effect at time of shipment."

If you have any questions on the above, let me know and we can discuss them. I don't feel the above should be a great problem and I might add that the price quoted includes our latest price increase effective April 1, 1974.

Again, thank you for this opportunity to quote this equipment and I look forward to meeting with you and discussing the unit in more detail.

Very truly yours,

VILTER MFG. CORP.

Charles Klockner

Charles Klockner
District Manager

CK/dsq
Encls.

CWH 000012722

ALL AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENTS, DELAYS OF CARRIERS AND OTHER DELAYS UNAVOIDABLE OR BEYOND OUR CONTROL. ALL QUOTATIONS ARE BASED ON PRESENT MARKET PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE

CONTINENTAL OIL CO.

DETAIL SCHEDULEVCM VAPOR RECOVERY SYSTEM, RAIL CAR VENT RECOVERY.

The following equipment to be Factory Assembled on a structural steel base including all interconnecting refrigerant piping.

One (1) R502, VMC 4412 B, Belt Driven, 12 cylinder, Vilter Standard, heavy duty, open type, reciprocating compressor with capacity of 30.9 tons refrigeration at 1200 RPM using 68 Bhp at -50°F. suction temperature and 55 psig discharge pressure, with:

- Suction and discharge stop valves
- Discharge check valve
- Removable suction strainer
- Built in safety relief valve
- Drive coupling or V-belt drive
- Float valve
- Crankcase oil charge
- Tri-micro oil filter
- Automatic return oil separator with float valve
- Capacity reduction of 66% and 33% of full load
- Crankcase heaters
- Other features include:

- Spring loaded safety heads
- Connecting rod inserts
- Removable cylinder liners
- Rifle drilled connecting rods
- Bellows type crankshaft seal
- Maximum piston speed 765 F. P. M.

One (1) 75 HP motor, 1800 RPM, Louis Allis, A.C., U.S. or equal, TEFC Chemical plant type, 3-6-460V, 1.15 s.f.

One (1) 30" dia. x 7' 6" high vertical intercooler, flash type, with:
(designed for a maximum R502 velocity of 35 F. P. M.)

- Set oil bleed valves, manifold and solenoid
- High level float switch
- Dual releif valve
- Insulation (Polyurethane with sheet steel jacket)
- Pneumatic level controller and valves

CWH 000012723

ALL AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENTS, DELAYS OF CARRIERS AND OTHER DELAYS UNAVOIDABLE OR BEYOND OUR CONTROL. ALL QUOTATIONS ARE BASED ON PRESENT MARKET PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Page 2.

One (1) R502 VMC LI7K346 direct driven, 6 cylinder, Vilter Standard, heavy duty, open type, reciprocating compressor with capacity of 42.9 tons using 75 Bhp at 1750 RPM at +23°F. suction temperature and 115°F. condensing temperature with:

All features same as previous compressor.

(Note: Capacity reduction on compressors proportional to maintain stable intermediate pressure.)

One (1) 100 HP motor, 1800 RPM, Louis Allis, A.C., U.S. or equal, TEFC Chemical plant type, 3-60-460V, 1.0 s.f.

One (1) Model 400 "B" Vilter Standard air cooled condenser with copper tube and aluminum fin coils, designed for 95°F entering air, 115°F. condensing temperature, with:

Spark proof fans and TEFC motors.

Winter control valves including two back pressure valves and one check valve.

One (1) 24" dia. x 14' long Vilter Standard refrigerant receiver with storage capacity of 2700#, designed for 400 psi at 400°F., ASME constructed with:

Dual relief valve

Purge, charging and outlet valves

Liquid inlet and outlet valves

Liquid level indicators

COND
One (1) 20" dia. x 20' long Vilter VCM Condenser; 8 pass, U-tube, TEMA R and ASME coded, containing 44 - 3/4" O.D. 16ga. A214 steel tubes with an approximate outside tube surface of 345 sq.ft. Designed for 250 psig shell and tube side at -20°F., shell material A53 Gr. B steel, tube sheets A515 Gr. 70, double stamped for operation below -20°F. Also, mounted as an integral part is a 16" x 16' suction accumulator (knock out drum) designed for a maximum R502 velocity of 50 F.P.M. Accessories included are:

10" oil pot with 700 watt heater, bleed valves and solenoid shut off valve.

High level float switch

Dual relief valve

Insulation (polyurethane with sheet steel jacket)

Pneumatic level controller and valves

CWH 000012724

ALL AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENTS, DELAYS OF CARRIERS AND OTHER DELAYS UNAVOIDABLE OR BEYOND OUR CONTROL. ALL QUOTATIONS ARE BASED ON PRESENT MARKET PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Page 3.

One (1) Vilter standard oil recovery and crankcase equilization system including:

- Oil pump
- Regulating and stop valves
- Oil receiver with heater
- Control panel

One (1) Set of refrigeration accessories including:

- Liquid line sight glass - moisture indicator, solenoid and shut off valves
- Dehydrator with isolation valves
- Pneumatic hot gas by-pass regulator and isolation valves

One (1) Vilter Standard Nema 7 control panel for outdoor duty with:

- 4-1/2" dial guages for suction, oil and discharge pressures
- Oil failure switch
- High-low pressure failure switch
- Hand-off-auto switch
- Pilot lights
- PIC (Pressure Indicating Controller)

Unit also includes:

- Control wiring for Class 1, Group D, Division II electrical.
- Outdoor duty paint for corrosive duty including sand blasting major components prior to painting with yellow oxide primer.
- Insulation for outdoor duty on suction lines.
- Three sets of operating, maintenance and instruction manuals.

General Unit features:

Unit and components are designed and constructed in accordance with the ASME Code and the latest National Electrical Code and the ASHRAE Code for Refrigeration and piping.

Unit will be constructed of standard components, all major components of Vilter manufacture.

CWH 000012725

ALL AGREEMENTS ARE CONTINGENT UPON STRIKES, ACCIDENTS, DELAYS OF CARRIERS AND OTHER DELAYS UNAVOIDABLE OR BEYOND OUR CONTROL. ALL QUOTATIONS ARE BASED ON PRESENT MARKET PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE

Page 4.

Unit will start automatically and includes necessary protective features for intermittent operation and capacity reduction to 0% of full load.

Refrigerant levels maintained at constant level by pneumatic level controllers to assure oil return from flooded vessels.

Capacity reduction accomplished by a PIC unloading the compressor cylinders to 1/3 full capacity and at that point modulating a pneumatic hot gas by-pass valve to 0% full load.

Not included with Unit are:

Starters

Power wiring

Refrigerant operating charge (unit leak tested dehydrated and shipped with holding charge of R502)

Freight

Taxes

Erection

VCM lines, pumps, controls or valves

Pneumatic valve air source

CWH 000012726