

ENERFLEX



**ESS – ACCP PROJECT
Helium Compressor Station Technical Proposal**

Air Liquide Project No.: C1298

Enerflex Ltd

Proposal No. Q3140111- COMMERCIAL / Rev.02

ENERFLEX

November 26, 2014

Air Liquide Advanced Technologies
2 Rue De Clémencière
38360 Sassenage
France

Reference: AIR LIQUIDE PROJECT No: C1298
ESS ACCP SYSTEM
Enerflex Proposal No. Q3140111 / Rev.02

Attn.: Anne-Sophie Dutrop *Category Manager*
Jean-Marc Bernhardt *Technical*
Rawia Ali Said *Technical*
Pierre Roux *Projects*

Dear Ms. Dutrop & Gentlemen,

Please find herein our revised firm bid quotation for the project as referenced above. This proposal covers our Commercial offerings in accordance with your correspondence of 26 November 2014 by Mr. Vincent Vonin.

This revised proposal takes into account the use of 400V motors in lieu of 6.6kV motors which adds to a substantial savings. *Please refer to our pricing sheet where we offer the 6.6kV motors as an option.*

The Technical adjustments to this revised proposal shall follow to reflect this commercial offering no later than end of business on 27 November 2014.

This offering is valid only upon the execution of our contemplated Memorandum of Understanding (MOU).

Thank you for your patience and consideration.

Very best regards,
Enerflex (UK) Ltd



James Manis
Director of Business Development
Europe / CIS

ENERFLEX (UK) Limited
Maybrook House, Godstone Road, Caterham, Surrey, United Kingdom, CR3 6RE (Tel:+44 (0)1883 343782) www.enerflex.com

TABLE OF CONTENTS

1.0	Introduction	System Design Mission Statement
2.0	Design Information.....	2.1 Utility Requirements
3.0	Commercial.....	Proposal Pricing Data 3.1 Base Price 3.2 Shipment 3.3 Terms of Payment
4.0	Options.....	Available Features and Services
5.0	Unit Description.....	Scope of Supply 5.1 Compressor 5.2 Electrical Motors 5.3 Pumps 5.3 Heat Exchangers 5.4 Vessels 5.5 Control Panel Instrumentation 5.6 Gas Management Panel 5.7 Manual Valves 5.8 Check Valves 5.9 Safety Relief Valves 5.10 Skid Interface 5.11 Instruments and Controls 5.12 Structural Steel Base 5.13 Pipe and Fittings 5.14 Electrical Wiring Materials 5.15 Assembly 5.16 Inspection and Testing 5.17 Painting 5.18 Shipping Preparation 5.19 Special Tools 5.20 Items Not Included
6.0	Comments and Exceptions	
7.0	Product Support	
8.0	Drawings	

INTRODUCTION

System Design

Each proposed system has been custom designed to match your specific process requirements. This proposal is based upon systems operating a standard stage compression cycles with a selection focus based on optimization with respect to compression efficiency and power consumption.

LP Helium Compression System

The LP system consists of one skid furnished with two (2) 50% Low Pressure (LP) Howden 321-193 compressors with matching 369kW rated electric motors controlled by individual VFDs from 60-30Hz. A common oil system consists of two (2) 100% full flow oil pumps, a brazed plate oil cooler and dual oil filters.

HP Helium Compression System

The HP system consists of one skid furnished with two (2) 50% High Pressure (HP) Howden 321-132 compressors with matching 988kW electric motors. The oil system consists of two (2) 100% oil pumps, a brazed plate oil cooler and dual oil filters.

Oil Removal System

After the HP compression skid, the gas will feed into an oil removal skid to reduce the oil carry over to 10ppbw. There will be three stages of oil coalescing, a carbon bed absorber and a 10 micron dust after-filter downstream of the absorber vessel.

Exchanger / Valve Skid

This skid will incorporate the LP & HP helium aftercoolers as well as all the piping and valves as detailed in the gas management panel section of this proposal.

Component Selections and Code Compliance

In developing the unit design, we have chosen to include several features which we feel will contribute to the efficient and reliable long term operation of the system. In addition, we have also included some conservative component sizing procedures based on our interpretation of your specifications. Some of these significant features are highlighted in the following paragraphs.

As a North American manufacturer and supplier to the European market we are familiar with the harmonised standards and note that not all EN norms meet the harmonised standards as defined by the official EU citing journal. In an average year EFX supplies several systems conforming with the PED, ATEX and European requirements.

NoBo

For Pressure Requirements (PED) we conform by doing a PMA for pressure parts. That is we carry out a (Particular Material Appraisal) PMA for all pressure parts, however we will use ASTM materials and have a NoBo (Notified Body) review & appraise to PED including all the back up Mill certs (3.1b material certs) and QC data dossiers. The design code chosen will be ASME VIII but in compliance with module G of the PED or the particular module as defined by the PMA.

Stainless steel will not be impact tested, as impact tested stainless steel cannot be purchased from normal stockists either in Europe or North America, however this will also be discussed/agreed with the NoBo.

Local Authorities

PED is about free movement of goods within the EU but not putting into service as this is a customer/end user obligation. Nevertheless on our European projects we would normally meet with the local authorities, where the equipment is to be used, prior to manufacture of any pressure retaining parts, with the end user to discuss and agree the information needed to ensure the local authority is also on board

CE marks

For other CE considerations we will issue either a declaration of incorporation or if necessary a declaration of conformity, depending upon the definition of scope.

This is what we do for all our European work

Compressor - The compressor selection was made after due consideration of the inquiry specifications and the system operating characteristics. Normal pressure piping losses have been factored into the compressor selection process. As a result, the compressor is rated at conditions sufficient to insure the performance required.

Vessels - These items are sized using conservative retention times and velocities for the design flow, plus any storage volume requirements of the system as applicable. All vessels are designed, constructed, and tested per ASME PED module G code requirements.

Exchangers - The shell and tube heat exchangers of this system are designed and constructed according to PED to module G ASME code and TEMA C standards. The materials of design are consistent with the duty performance required and the inquiry specifications.

Other Key Features

Enerflex Standards of Quality

Each unit has many inherent features and components which are not as prominent as key components but nevertheless contribute to the reliability of the package and to the maintenance access of the equipment. Some of these are listed as follows;

- Compressor drive train mounted directly on structural steel base members
- Rexnord spacer coupling
- Refrigeration type hand and check valves or (API type optional)
- Isolation valves for all instruments, root plus block and bleed valves
- Piping per ANSI B31.3 Refinery Piping Code
- Stainless steel Lube oil piping downstream of filters
- Compressor suction & discharge piping is carbon steel
- Stainless steel impulse tubing (304) with stainless steel fittings
- Temperature indicators are 127mm dial, multi-angle with flanged stainless thermowells
- Separate oil charging connection with shutoff valve, check valve, and strainer
- Vertical oil separator with multiple coalescing elements constructed in accordance to PED.
- Reflex lens type armored gauge glass assemblies for all vessels
- Single relief valves sized for blocked discharge or fire case
- PED/EN relief valves on vessels
- Extra rigid steel base for equipment mounting
- Equipment spacing arranged for maintenance access

OUR VISION

*THE LEADER AT DELIVERING INNOVATIVE NATURAL GAS COMPRESSION,
PROCESSING AND POWER GENERATION SOLUTIONS THROUGHOUT THE WORLD.*

**OUR VALUES AND
GUIDING PRINCIPLES****Integrity... Do the right thing**

- Be ethical
- Be trustworthy
- Be respectful
- Be socially responsible

Commitment... Deliver on our promises

- Be a health and safety leader
- Anticipate and meet customer needs
- Establish common goals and deliver results
- Attract, develop and retain the best people

Creativity... Lead with innovation

- Be collaborative
- Value creative thinking
- Embrace change

Success... Achieve sector leading results

- Create and sustain customer loyalty
- Optimize growth and business performance
- Listen and communicate effectively
- Recognize and celebrate achievement

COMMERCIAL

2.1 Pricing

PRICE FOR Four (4) SKIDS	US\$4,481,708
Spare Parts (As per Specification)	US\$409,151
Oil flush for all skids	US\$95,795
<i>(Pricing for flush is budgetary and subject to change.)</i>	
Extended Warranty	INCLUDED

(Vacuum Compressor Skid.....EXCLUDED

TOTAL PRICE FOR Four (4) SKIDS INC OPTIONS US\$4,986,654

(Ex-Works Houston TX, Incoterms 2010)

2.2 Shipment

The equipment we have offered can be shipped in 40-46 weeks from date of order or drawing approval, if required. We can work with you to attempt to improve this schedule by beginning major procurement while drawings are being prepared.

Approval drawings can be submitted within 4-6 weeks of receipt of a purchase order.

2.3 Terms Of Payment

Our pricing is based on the following payment schedule. Payment is to be made net 30 days, guaranteed by an irrevocable letter of credit:

- 15% - upon issue of order acknowledgment letter or purchase order confirming the order acknowledgment letter
- 25% - upon submittal of Engineering Approval Drawings
- 25% - upon receipt of compressor for Unit
- 25% - upon receipt of driver for Unit
- 10% - upon notification to Purchaser that the unit is complete

Payment terms can be discussed; however this pricing is based on the use milestone payments to maintain a neutral cash flow during the execution of the project.

Warranty

Enerflex extended warranty is 24 months from commissioning or 36 months from shipping, whichever is soonest.

OPTIONS

3.0 Options

Adder for 6.6kV Motors & VFDs..... US\$ 390,000

Seaworthy Packing - Hoodboxing..... EXCLUDED

Transport (Incoterms DDP) EXCLUDED

Transport price budgetary and subject to change. Inc Import Duty. Ex Insurance & VAT.

Installation & Commissioning Supervision EXCLUDED

Training for Personnel..... US\$ Per Diem Service Rates