

Complete LNGo Modular Plant with 6000/GPD
Made by : Siemens ,Dresser Rand
"Amine" Gas Treatment Plant with 25-30 GPM
Made by: Kinder Morgan U.S.A



SCOPE OF SUPPLY - Equipment

Dresser-Rand's LNGo™ standard scope of supply for equipment includes:

Power Module SFGRD560 (Rich Burn Option)

The Power Module is partitioned into three sections: the Motor Control Center (MCC), the engine-generator skid and the generator controller. The engine's ambient air cooler, catalyst, silencer and tailpipe are all mounted on top of the enclosure. The power module includes the following equipment and features:

D-R model SFGRD 560 natural gas engine genset
 Engine configured to handle natural gas within a LHV range of 800 to 1150 BTU/SCF
 SFGRD 560: 16-cylinder, 4 cycle, turbocharged and after cooled rich-burn engine
 Rated emissions of:

- NOx 0.1 g/bHPH
- CO <0.2 g/bHPH
- NMHC < 0.2 g/bHPH

Genset package is rated for 829 kW at 1800 rpm (COS 0.8)
 Fan-driven ambient air cooler to cool engine jacket and lube oil circuits
 Contains Engine and Process Controls

Gas Conditioning Module (Molecular Sieve)

The gas conditioning module consists of a molecular sieve using Pressure Swing Adsorption (PSA) to remove CO₂ and H₂O from the natural gas stream in order to prevent the formation of hydrates during the LNGo™ liquefaction process. The operation of the PSA is based on the principle that an adsorbent media will load a higher amount of target molecules (CO₂ or H₂O) at higher pressures and release the molecules at lower pressures. This principle also filters heavier hydrocarbons (C₃+) but to a lesser extent than the intended CO₂ and H₂O.

- Natural gas from the molecular sieve is discharged into two separate gas streams: a 'Purge' stream and a 'Product' stream
 - The Purge stream is a waste stream that contains H₂O, CO₂ and heavier hydrocarbons that are not desirable for making LNG. that stream is blended with make-up natural gas and used to fuel the D-R engine genset, avoiding additional gas cleanup or disposal
 - The Product stream, now free of H₂O and CO₂, is fed to the compressor and process modules for the liquefaction process

The standard molecular sieve used with pipeline quality gas is equipped with the following equipment and features:

- Flow meters to measure the gas flow from Purge and Product streams

- One (1) 75 HP electric motor driven vacuum compressor to pull the tail gas stream from the regenerating vessel
- Three (3) PSA vessels that contain the adsorbent media for the molecular sieve
- Depressurization and re-pressurization tanks to smooth out pressure fluctuation between cycles
- A series of pneumatic actuated control valves for directing gas flow from regenerating vessel to storage tank.

Compressor Module

The Compressor Module consists of a D-R Medium Oilfield Separable (MOS™) compressor driven by an induction motor with a variable frequency drive (VFD) for speed control. The MOS™ reciprocating compressor satisfies all four (4) stages of gas compression required by the LNGo™ liquefaction system. The compressor bore of each stage of the compressor been sized to meet the pressure ratio and flow requirements of the process.

- D-R Model 7MOS4 reciprocating compressor driven by electric motor
- Non-lubricated cylinders to avoid process contamination and reduce lube oil consumption
- Water-glycol coolant used to cool compressor cylinders and rod packings
- Crankshaft and rod bearings lube oil fed by a mechanically driven oil pump during normal operation and electric motor-pump during startup
- Lube oil and water/glycol coolant console with electric motors / pumps to supply oil to the bearings and coolant to the cylinders , during startup, operation and shut down
- Cylinders use D-R Magnum™ XF series valves for proven combination of efficiency and durability in high pressure ratio applications
- Twelve (12) pole induction motor rated for 550 HP at 480V, 60 Hz, 3 phase power
- Variable Frequency Drive (VFD) with harmonic filter to adjust compressor speed

Process Module

The Process Module contains the liquefaction equipment, process piping and heat exchangers required to cool the product gas from a gaseous state to liquid LNG. The major equipment includes the Turbo-Expander and Mechanical Chiller with each supplying the different cryogenic heat exchangers with either natural gas refrigeration or ammonia chilling respectively.

Turbo-Expander is used to rapidly expand and cool high pressure natural gas .

- Compressor and expander wheels connected by common shaft inside a horizontally split casing
 - Expander wheel uses inlet guide vanes to control inlet gas flow and maximize efficiency
 - Operates with a dedicated lube oil system under normal operation to feed bearings with filtered, pressurize lube oil, and returns oil/seal gas mixture to reservoir
 - Under trip/shutdown conditions a bladder-type accumulator bladder maintains oil pressure to bearings
 - Seal gas system delivers buffer natural gas to seal the bearing housing against process pressures and temperatures
 - Anti-surge control system protects the compressor against low flow conditions by recycling gas from the compressor discharge
 - Mechanical chilling system using an ammonia refrigeration loop cooled by evaporative cooler
 - One (1) 250 HP screw compressor driven by electric motor to force ammonia through system
 - One (1) Evaporative condenser with electric fan drive and water basin to supply 4 GPM water evaporation rate
 - Four (4) thermo-syphon, de-superheating heat exchangers for cooling gas flow after each compressor stage
- Stainless steel brazed plate cryogenic heat exchangers for gas to gas cooling.

Safety Systems

Dresser-Rand (D-R) recognizes the challenges of operating equipment in hazardous environments and has designed the LNGo™ system in accordance with the safety standards set forth by relevant industry standards, including NFPA 59A, 49 CFR Part 193, and API RP 500.

Hazard and Operability Assessment (HAZOP)

As part of the design process, a thorough Hazard and Operability assessment (HAZOP) was performed to identify risks present within the system and study the potential causes and effects. Each component of every module was considered for potential failure modes and given a Risk Priority Number based on the probability, severity and ability of the system to detect the failure. The LNGo™ system was then evaluated for the automatic process controls implemented by the PLC and also what additional operator controls could be employed to mitigate the risk in each event.

Hazard Detection System

The LNGo™ system is a closed loop system that contains gasses and liquids that present potential hazards if spilled or leaked. D-R has analyzed potential hazard scenarios and implemented detection systems to alert operations and if necessary, safely shut down and vent the system. The hazard assessment of the LNGo™ system focused on potential gas leak sources, physical properties of flammable/combustible gasses present, factors affecting the rate and direction of gas diffusion, and the operating environment of detection systems installed.

The hazard detection system:

- Detects LNG spills, flammable gas releases, and fire conditions,
- Provides notification to operators and plant personnel of hazardous conditions, and
- Initiates mitigating actions and/or systems to minimize the hazard consequences.

The central control of this system is located in the main control room of the Power Module. Hazard detection system will monitor all modules, and signal the main alarm panel through a local controls network that serves the detection system. Automatic activation of hazard detection and mitigation systems will be accomplished from the main PLC, through which all detection systems are monitored.

As a secondary measure, operators and technicians in the main control room can respond to alarms by activating other systems, shutting down process equipment or systems, dispatching local EMS, or calling out to the local designated fire department. The hazard detection system is designed to minimize the effects of equipment and circuit failures through monitoring of circuits, and self-diagnosis of components and/or systems to maintain high availability.

The hazard detectors included in the system are:

- Low temperature detectors to detect LNG spills,
- Combustible gas detectors to detect accumulation of natural gas vapours that could result in flammable or explosive conditions,
- Fire detectors, consisting of smoke, high temperature and UV/IR flame detectors to detect fire conditions.

To minimize nuisance trips, at least two detectors will be used for automatic action. A single detector will provide an alarm, giving technicians an opportunity to assess conditions prior to automatic or manual system trip. Sufficient detectors will be prudently positioned throughout the system to minimize system response time.

Any deviation from these standard specifications that may be required by the BUYER or local authorities shall be addressed on a case-by-case basis

SCOPE OF SUPPLY – Commissioning, Project Management, Engineering Support and Training

Support for Equipment receipt, setting, and alignment

The D-R Service Representative and Trafalgar Consulting Reps/ Engineers will be present at the site at the time of arrival of each LNGo™ module provided by D-R And Standard Amin Plant of 25~30 GMP by Kinder Morgan . The D-R representative and Trafalgar Reps will support the receipt, offloading and setting of the equipment:

- Verify that all system components arrive in satisfactory condition.
- Ensure D-R recommended rigging and lifting procedures are followed when the equipment is offloaded from trucks and set on foundations.
- Perform compressor alignment verification .

System start-up, commissioning, and functional verification

Upon verification of completion of installation activities, commissioning activities may commence. At this time, the BUYER'S staff responsible for normal operation of the equipment should be identified and available to participate in start-up activities. The D-R field service representative will oversee the start-up and commissioning process, which will generally consist of the following activities:

- System specialist to be present to lead the system start-up activity
- Verify readiness of instrument and control systems
- Perform initial fills of engine coolant, compressor oil, chiller refrigerant, and chiller water (fluids to be provided by BUYER)
- Perform initial start-up of engine generator set
- Confirm function of auxiliary motors, including PSA vacuum pump, air compressor unit, engine cooler fans, chiller fans, cooling water pump, chiller compressor
- Perform system purge and dry-out activities (Nitrogen (N₂) provided by BUYER)
- Verify that LNG storage system is ready to accept product (Storage provided by BUYER)
- Perform initial start-up of compressor system
- Perform initial start-up of process system, commencing cool-down, and subsequently LNG production
- Perform one shut-down of the system and cold re-start to confirm that the system is fully functional and ready for normal operation

Along with the base LNGo™ systems and service detailed in above sections, additional support is made available to support installation of the systems and training of the owner's representative in operations of the system.

Project Management / Installation Support **Installation planning**

Trafalgar International Consulting & D-R will define the technical interface points to the D-R equipment via the contract technical document submittals. A minimum of one (1) installation planning meetings should be conducted between D-R and **Trafalgar International Consulting Inc**, personnel and the party responsible for the site design work and construction to ensure that the site is properly designed and prepared to accept the equipment. D-R will assign appropriate representatives to attend these meetings as part of the SCOPE OF SUPPLY - Commissioning, Project Management, Engineering Support and Training.

Site Readiness Review Meeting

Prior to shipment of equipment, a site readiness review meeting should be held at the site involving D-R service personnel as well as representatives from the client and/or client's appointed contractor to confirm that the site has been prepared in accordance with the installation plans and is ready for equipment receipt. The site readiness review should include a review of site-specific safety procedures.

Turn-over to operations meeting

Once LNG production and other system functionality is confirmed, an operations turn-over meeting shall be convened between Trafalgar International Consulting inc personals & D-R field service team, the normal operations staff, and the asset owner's representative. During this meeting any final questions or concerns regarding procedures for ongoing operation of the unit will be addressed, any open warranty concerns will be discussed, and points of contact for ongoing field support of the equipment will be confirmed. Upon completion of this meeting the D-R participation in the installation and commissioning effort will be concluded.

Engineering Support

Support from the D-R engineering team, up to 40 hours, to assist BUYER with integration of systems outside of scope of supply. This Service will also apply to the Gas-Treatment Plant of "Amine" From Trafalgar International Technical Support Division.

Training

D-R, Siemens will provide up to five (5) days of onsite operator and engineer training for up to three (3) people covering all equipment provided in the D-R scope of supply. Training will be conducted by D-R personnel. The scope of training is generally outlined below:

- Process system design overview and system operating procedures, including start-up, shut-down and basic troubleshooting procedures
- Mechanical systems operations and maintenance for the compressor system, molecular sieve system, gas engine, chiller system, and expander system
- Control system overview and operating procedures
- Electrical systems overview and operating procedures

Additional comments on services scope of work

Numerous factors that are beyond the reasonable control of D-R may influence the quantity (and therefore cost), of required field support. D-R will retain the right to receive fair compensation for additional costs that may be incurred due to factors that are beyond the reasonable control of D-R or its suppliers. A partial / exemplary list of such factors is provided below:

- Untimely, incomplete, and/or unsatisfactory work performed by BUYER or representative to make the site ready for receipt of the units.
- Lack of readiness to provide feed gas or water make-up or receive LNG product when the unit is ready to begin commissioning activities
Unavailability of appropriate and required rigging and lifting equipment to offload and set the equipment.

SCOPE OF SUPPLY – Installation Services – Line Item in Proposal

*Dresser-Rand's LNGo™ scope of supply for Services includes the following and is shown as **Line Item 2** in this proposal:*

Installation Field Services

Dresser-Rand's (D-R) Installation service is based on support of a defined quantity and duration to perform the installation of components as described/or will be described in SCOPE OF SUPPLY of this proposal. The proposed quantity and duration of field support is premised on installation of the equipment at a site that is suitably prepared and readily accessible, at a location that is onshore in North America. D-R's proposed field service scope includes site management and skilled labor. Management and technical service will be provided by D-R. and Trafalgar International Consulting Inc, will hire local skilled laborers to support basic activities necessary to complete the installation

These site-specific activities require the support of a civil engineer and a general contractor. These activities are the responsibility of the BUYER or his appointed contractor. If desired, Trafalgar International Consulting Inc & D-R can offer the additional service of hiring these entities as subcontractors and coordinating these site-specific activities. If performed by D-R,/ Trafalgar Internatioanl Consulting inc, this service would be provided on a Time & Material (T&M basis).

Inter-module piping and wiring hook-up

To the extent practical, interconnecting piping and wiring systems connecting the different D-R equipment modules will be pre-fabricated at Dresser-Rand factory and shipped loose to the site. The D-R field service team will perform the following activities in for the inter-module hook-up:

- Verify that all pre-fabricated interconnection components have arrived in satisfactory condition.
- Set and level D-R supplied equipment
- Assemble major components that are shipped loose from the modules, including the engine cooler and exhaust systems, the chiller unit, and the volume tanks associated with the molecular sieve system
- Perform connection work, including the inter-module connections as well as connections at the

boundaries of the D-R equipment scope.

- Inspect and verify all connections have been made correctly upon completion of the work

Typical installation of the equipment should be completed after the site is ready and within 30 days of the arrival of the first shipment, based on a working schedule of five-eight-hour days per week. The staffing anticipated over this period is typically:

- Instrument and Electrical technician
- Pipe Fitters and Millwrights and helpers supporting piping interconnection activity
- Electricians and helpers supporting the main electrical interconnection activity
- D-R will also provide specialty tools and consumables to support the installation
- D-R will provide and arrange Crane, Rigging and lifting equipment Unless Arranged by Buyer. D-R's Installation Service proposal **does not currently include the following items** needed to make the site ready for installation and set equipment:
 - Site preparation
 - Electrical Grounding
 - Civil Works & Civil Engineering
 - Equipment Foundations, Pipe and Cable Tray Support Foundations
 - Other site work that may be needed to connect the system to feed gas, water supply, black start electrical provisions, product storage and other site-specific systems that are outside the boundaries of D-R's equipment scope of supply

Customer Responsibilities will be advised in the contract when Ready to Place the Order.

COMMENTS

The following comments are also pertinent to the proposed scope of supply.

General Comments

- Technical details provided in Trafalgar International Consulting Inc and D-R proposal documents should be considered as preliminary, representative, and/or subject to change until such time as detailed system engineering is completed and final or certified documentation is provided in the course of project execution.
- In cases where vendor-specific information is included in D-R proposal documents, such information should be considered as representative only. D-R reserves the right to select alternate suppliers for any part of its scope of supply, so long as the selected supplier is offering scope of comparable or superior technical function, the supplier selection does not delay or compromise any D-R guaranteed schedule milestones, and the supplier is qualified in accordance to normal D-R practice. Alternate supplier selections may result in minor variations in interface details from what is proposed. As noted above, technical details should be considered as preliminary until explicitly denoted as certified or final.
- Where general vendor technical literature is included in the proposal, this literature may depict options, configurations, or other content that is different than what is proposed for this project. This information is provided only for illustrative purpose. Only project-specific documents such as datasheets or the like should be considered to reflect the proposed scope of supply.

- The standard LNGo™ system's quoted performance is based on the feed gas pressure, temperature and composition specification shown in the data sheet in Appendix as will follow in Contract.
- The LNGo™ system has been designed in accordance with LNG industry standards including NFPA 59A and 49 CFR – Part 193. Any local regulations or site specific requirements exceeding the D-R design will need to be reviewed by D-R may impact the scope of supply, price and delivery of the unit.
- Ambient Dry Bulb Temperature Limits: -20F to 100F
- Ambient Wet Bulb Temperature Limit: 76F

Efficiency Calculation "Approx"

Actual numbers may be different depending on the gas composition.

6000 LNGo™ Production (gal/day) (9.5 ton/d)
 800 Power Requirements (kW)
 660,800 Total Gas Consumed (cu ft/day) inclusive of power generation
 25% Gas Used for Power (%)
 165,200 Gas Consumed for Power (cu ft/day) – If client chooses to provide their own power this is not required
 495,600 Gas Consumed for LNG (cu ft/day)

Amine Gas Treatment Plant :

Standard Amine Plant with 25~30/GPM Major Components (Installed)

Sour gas inlet and gas train Pressure 700#-1300#
 Temp 60F – 130F

If source gas is delivered at higher or lower temperature, an inlet gas cooler may be indicated
 (Optional) block mounted gas train components

1. Inlet Gas Scrubber or inlet separator Separates gas and water or other liquids
 Instrumentation and controls for liquid level and automatic purge (optional)
 It may be located at the bottom of contactor

2. Inlet Gas coalescing filter separator (optional) –Separates gas and water or other liquids
 Instrumentation and controls for liquid level and automatic purge (optional)

3. Gas – Gas exchanger (optional) –Establishes the gas temperature for optimal performance inside the amine contactor

4. Amine Contactor

The item where the chemical reaction of amine and acid components (CO₂, H₂S) takes place
 Sized for the actual gas flow

O.D. diameter 24" up to 84", typical height 60'

Trays sized for optimal performance and high turndown ratio (standard 4:1, optional up to 10:1)

5. Amine Scrubber

Designed to remove amine particles left after still column and reflux condenser
 May be located at the bottom of the still column

6. Outlet gas cooler

Establishes the gas delivery temperature downstream the amine plant

- **Amine Regenerator** Part of the plant where the release of acid components from solution takes place, and the amine is regenerated for reuse

7. Amine Heater, Reboiler and heat medium skid

Direct fired heaters (included) or hot oil system

All heaters with integral NFPA burner management panel

For hot oil systems: ■Heat medium skid with pumps and expansion tank ■Shell and tube reboiler with level and pressure transmitters, safety relief valves, temperature and level controls

8. Amine Flash Tank

Designed to operate after amine contactor

It settles the process parameters at lower pressure, after the pressure control valve

9. Amine Cooler / Reflux Condenser

Cooler cools the lean amine after regeneration, before being re-injected in the contactor

Condenser designed to condensate the amine from the overhead gas out of still column

10. Still/reflux accumulator

Two in one construction, with still column to separate and recover the lean amine from rich solution

11. Carbon filter

Designed to remove and absorb traces of hydrocarbons from the amine solution

12. Lean/rich amine solids filters

Designed to remove the solid particles from the amine solution, in order to prevent clogging of the plate and frame lean/rich exchanger

13. Lean/rich exchanger

Designed to cool the lean amine before being reused, and to heat the rich amine before the still column

14. Amine Booster pumps

Designed to ensure the minimum NPSH for the main solution pumps

15. Reflux pumps

Designed to remove the amine solution that condensed in condenser

16. Main solution pumps

Designed to ensure the high pressure necessary to inject the amine solution inside the amine

Electrical and controls**17. PLC panel**

Designed to host the PLC and auxiliary equipment, and to ensure communication and link with the skid junction box.

18. Instrumentation

Designed to remove amine particles left after still column and reflux condenser

May be located at the bottom of the still column

□**Documentation** –Drawings and P&ID's

Process simulation

–Cause and effect diagram, PLC program and operator interface

–Weight and dimension list

–Instrument list and calibration values

–All coded required documents for pressure vessels: U1A forms, hydro charts, engineering calculations available

–Curves for pumps, rating sheets for heat exchangers

–Control valves and PSV sizing and calculations

–Manuals for pumps and instruments

□**Startup assistance** –As supported by Trafalgar International Consulting Inc and Kinder Morgan Company

□**Warranty** –12 months from commissioning or 18 months from delivery.

Estimated Price : USD 11,000,000 (Eleven Million US Dollars)

Payment Base Terms:

- **Milestone 1** - Ninety percent (**90%**) **payment** of the order value invoiced upon placement of purchase order in the account of **Trafalgar International Consulting Inc USA bank**.
- Payment for Milestone 1 is due 15 day after presentation of invoice from Trafalgar International Consulting Inc U.S.A.
- **Milestone 2** - Ten percent (**10%**) of the total order value upon notification of readiness to ship .
- Payment for Milestone 1 is due 30 days after presentation of invoice
Late payments will be subject to an interest charge of the lesser of 10% per month or the maximum amount allowed by law. Payment received later than its scheduled date may cause a corresponding delay in the scheduled equipment delivery date. If payments are not made in accordance with the schedule, **Trafalgar International Consulting Inc** may, at its option, terminate this Agreement.

Terms and Conditions of Sale

Terms and conditions of sale will be per the attached 'Dresser-Rand and Trafalgar International Consulting Inc Terms and Conditions of Sale for Equipment, Parts, Field Services and Repairs as it will be indicated in sales and purchase Contract .

LNGo™ system field advisory service that is above and beyond the scope included in Section indicated above will be billed at extra cost per 'Dresser-Rand Technical Service Rate and Trafalgar International Consulting Inc Schedule', and General Terms of Sales - Technical Services', (form DR 110), will be attached in Sales and Purchase agreement for you to review upon signing .

Cancellation

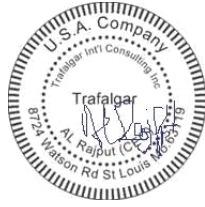
Buyer is responsible for all invoiced payments upon presentation of invoice. In the event of Buyer cancellation, Seller's sole and exclusive remedy and damages for such termination will be to retain all invoiced amounts. In addition, any cancellation post shipment Buyer will be responsible for any return shipment and restocking fees.



Fully Installed Lngo Plant



Fully Installed "Amine" Gas Treatment Plant



AL Rajput (CEO)

End of Document

CONFIDENTIAL