PraxeidosLunardon Srl

AT GLANCE

Technical, Administration & Commercial Location

PRAXEIDOS LUNARDON Srl

Via Marigone, 43

13897 OCCHIEPPO INFERIORE (BI)

Italia

PraxeidosLunardon Srl

AT GLANCE

- Experience
  - 25 year in a Italian Gas Company
- Industrial Fields
  - Oil and petrol market
  - Chemical market
  - Pharmaceuticals market
  - Food market
- Presence
  - Europe
  - Middle East
  - People's Republic of China
  - United States of America
  - Canada

PraxeidosLunardon Srl

PRODUCTS

1. **VOC RECOVERY UNITS**
   - 2.1 Solvent Recovery Units
   - 2.2 Recovery of Petrol Vapor
   - 2.3 Ship Gas recovery
2. DEOXO – NITROGEN PURIFICATION UNIT
3. SUPERINSULATED PIPELINES
4. SPECIAL UNITS SKID MOUNTED

PRAXEIDOS LUNARDON S.r.l. Sede Legale Via MARIGONE 43 - 13897 OCCHIEPPO INFERIORE (BI),
Tel. Uff. +39 015 2592630 - email – info@praxeidos.com Partita IVA 02788290027- REA N.BI-313287 - WEB - http://www.praxeidos.com/

Solvent Recovery Unit

The Need

PraxEidos has developed the technology to reduce pollution from a number of industrial activities using cryogenic condensation.
New laws and attitudes to environmental protection are driving down the permissible level of emission of volatile organic compounds (VOCs).
The aim is to reduce the damage that VOCs cause to human health and environment. Many of these substances are carcinogenic and cause photochemical smog.
The neatest and cleanest way to remove VOCs from exhaust gas stream is condensation with liquid nitrogen.
The technology from PraxEidos removes VOCs to meet emission level lower than 20 mg/Nm^3, as well as overcoming the limitations of traditional control methods.

The Benefit

The Cryogenic recovery system, designed and supplied by PraxEidos, combines the refrigeration power of liquid nitrogen with the inerting properties of gas nitrogen, resulting in a skid mounted VOCs control system that is simple to install, economical and effective.
Running costs are reduced to a minimum by the ability to reuse the nitrogen to purge and blanket pipe work and tanks.
Recovered VOCs can often be reused directly – something that is more difficult with carbon bed technology and impossible with incinerators and catalytic oxidisers.

The Technology Provided

A responsible approach towards protecting the environment means limiting the emissions of volatile components.
One method is the condensation of these components by cooling the exhaust stream with liquid nitrogen. As the vapours are getting cooled, the volatile components condense and than freeze. These solid particles can be trapped, leaving a clean stream of gas to be vented to the atmosphere.
The understanding of the heat transfer mechanism has promoted special heat exchanger geometries which are best suited to the properties of boiling nitrogen and condensation of gases within incondensable vapours.
The temperature required to meet acceptable emission standards (in the order of tens parts per million (ppm)) are typically -100 °C and lower.

The obvious choice of cooling medium is liquid nitrogen, which can provide the cooling down to -180 °C.
The design of the heat exchangers poses a special challenge which is beyond the typical heat exchanger design packages.
Not only there are temperatures outside the normal parameters, but the heat transfer relationships have to consider the nitrogen boiling and heating, and the condensation and freezing of multiple volatile components in an incondensable stream.
PraxEidos has developed computer design tools to model these heat transfer mechanism and generate valid heat exchanger designs.

PraxeidosLunardon Srl

SOLVENT RECOVERY UNIT

Endura
Ravenna-Italy

General Electric
Firenze - Italy

General Electric
Massa - Italy

Nitrolchimica
Milano - Italy

Aker Biomarine
Texas - USA

TRED CARPI
(MO) - Italy

STENA RECYCLING-
CAVENAGO (MI) Italy

Recovery of Petrol vapor

The Need

Filling roads and ship tankers for petrol transport implies a dramatic emission of petrol vapor into the environment. In addition, valuable product is vented. It can be recovered and resold.

The Technology Provided

The easiest way to recover petrol vapor is condensation.
The air – petrol mixture is collected from the filling points and transported in a dedicated pipe to the condensation unit.
An extraction blower allows the flow control in the range 0 – 100% of the condensation unit capacity.

Benefits

- Residual concentration of petrol vapor to environment < 20 mg/Nm^3
- Specific electric energy consumption 0,12 kWh/Kg recovered petrol

PraxeidosLunardon Srl

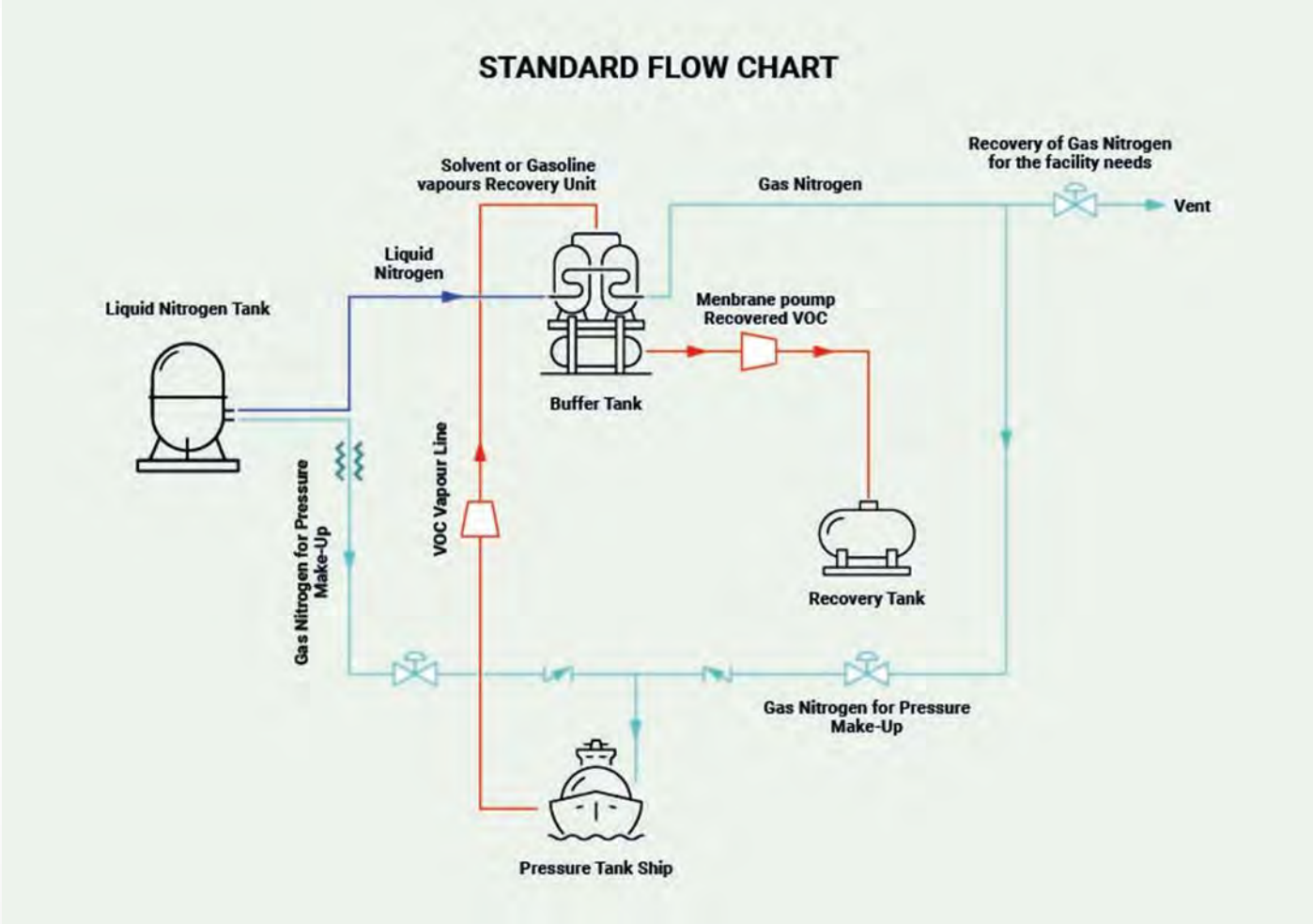
GAS RECOVERY UNITS

Recovery of Petrol vapor

NIOC Iran

NIOC Iran

Ship Gas Recovery Unit



PraxeidosLunardon Srl

DEOXO UNITS

In a **Deoxo** reactor, the oxygen content in nitrogen combines with hydrogen to form water. The reaction leads to an increase of temperature which depends on the starting oxygen content.
To remove the moisture generated, the gas is passed through the drying section consisting of two adsorbent beds filled with activated alumina.
The beds work in alternative to allow for the regeneration.
Final dew point of -70 ° C can be easily obtained.

Deoxo Data Sheet

AMBIENT TEMPERATURE	+5 °C / +40 °C	
DESIGN		
Construction material	Stainless Steel	
Design Code	PED	
Desing Pressure	13 bar	
DIMENSIONS		
Depending on design flow rate		
NITROGEN		
Design Flow rate :	up to 2.000	Nmc /h
Pressure drops:	< 0,2	bar
Inlet Purity:	99,9	%
Outlet Purity:	99,9999	%
final O_2 content:	< 1	ppm
final H_2 content:	< 1	ppm
Required Intlet Dew Point :	< +3	° C
Dew Point increase:	+10	° C
Temperature increase max.:	+10	° C
HYDROGEN		
Pressure:	2 bar higher than N_2 pressure	
H_2 consumption:	2 Nliter H_2 / Nm^3 N_2	
Purity:	> 99,5 %	

Super Insulated Vacuum Line

The super-insulated vacuum tubes are the optimal solution for the safe, reliable and cost-effective transfer of cryogenic liquids-liquid nitrogen-oxygen-argon-helium-hydrogen and natural gas from storage tanks to the end point of use

To optimize the cryogenic fluid transfer process, PraxeidosLunardon offers customized super-insulated, rigid and/or flexible vacuum lines for liquid nitrogen, liquid oxygen, liquid argon, liquid CO2 and other cryogenic fluids.

- Excellent thermal performance that reduces conduction, convection and radiation while offering low cryogenic fluid consumption;
- Rapid transfer of cryogenic fluid to the point of use with minimal gas losses;
- Ensuring the safety of workers and property.

Super-insulated rigid line

Vacuum super-insulated tubing is available in a range of standard diameters from ½‘ (18 mm) to 3’ (85 mm) to suit all requirements, but smaller or larger sizes can also be produced to order.

Flexible Line

Super-insulated vacuum hoses are the most efficient way to deliver fluids at very low temperatures in situations where rigid hoses cannot be used.

- equipment must temporarily move;
- there are vibrating elements or coupled systems between the end of a tank and the point of use where these cannot be determined with sufficient precision before the construction and installation of the super-insulated rigid pipe;
- We can make pipes of any length (with fittings) and with almost any type of end fitting required.

SPECIAL UNITS SKID MOUNTED

SCRUBBER

A special attention is referred to the problems concerning the atmospheric emission and to the uptake of pollutants in order to air purification; also in this field we are able to propose the study, the planning and the implementation of the optimal process for the removing of the emission either of particles (filtering with cloths; eco filters and so on) or gaseous matters (assimilation in liquid with reactors; assimilation on activated carbons and so on).
The smokes removing involves the use of a liquid, water or fluid solution which may contain additive, for wet separation of dust, gas and steams from air.
The principle is based on convey the polluted air in a chamber within which contact is made between the contaminated air and a certain quantity of water, in this way occours a transfer of the pollutants from air to water.
Air is conveying through a vertical pipe, crossing body sprayed by waters jets, powered by a pump connected to the tank.
At the top of the columns is placed a droplet separator to eliminate the condensate dragged by the air flow, giving back the atmosphere the filtered air.
The fumes to be treated enter the scrubber from a nozzle at the float of the device.
The liquid is conveyed from the tank to the purification system through a hydraulic circuit.
At the end of the treatment, there is a drop separator between the washing section and the outside atmosphere.

REVERSE OSMOSIS

PraxeidosLunardon Srl

THANK YOU FOR YOUR ATTENTION