

100 years in business



When everyone else should be so much concerned about Ozone and O₂

**we think
and dream
and make**

CO₂ N₂ O₂ H₂ & N₂

Plants

fci Gaslabs
A S I A

Practical Asian solutions for CO₂

NITROUS OXIDE GAS PLANT

BEST MATERIAL USED AFTER RIGOURS TESTING

+
SPACIOUS FLOOR PLAN TO INCORPORATES
ALL SAFETY MEASURES

+
ASIAN CONCEPT OF DESIGN WHERE REPAIRABILITY AND
PRODUCTION COST ARE PRIME FACTORS

result into
CHEAPEST YET ONE OF THE BEST N₂O
PLANTS INDUSTRY CAN ENJOY



OUR SKID MOUNTED MODULAR N₂O PLANT

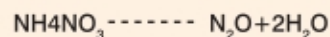
NITROUS OXIDE at room temperature and atmospheric pressure is a colorless gas with a barely perceptible sweet odor and taste. It is non-flammable but will support combustion. At higher temperature nitrous oxide decomposes into nitrogen and oxygen. Nitrous oxide is moderately soluble in water, alcohol and oils N₂O, also known as laughing gas finds its use as anesthetic agent. So far this has as anesthetic agent. So far this has become a standard anesthetic agent world over and medical operations are performed with the help of this gas.

There are other uses of nitrous oxide which have been developed in food, cosmetics it has become a good whipped cream propellant. This has become a propellant for high quality perfumes and cosmetics. It is used for Cryosurgery. Nitrous oxide as an oxide gas for atomic absorption in spectrophotometry and as fuel oxidant for racing vehicles. The slight oxidizing property of N₂O is used for etching microchips. This application is now consuming upto 30% of all the nitrous oxide produced in Korea and Japan. With the increase in standard of living of third world countries nitrous oxide consumption is bound to increase.



25 KG PER HOUR CAPACITY N₂O PLANT BEING ERECTED FOR A TEST - RUN AT OUR SITE

THE PROCESS OF MANUFACTURE: Ammonium nitrate (suitable technical grade) is melted in a melter. The molten ammonium nitrate is heated into a combustion pot where ammonium nitrate is decomposed according to the reaction:



The reaction is ticklish and has to be controlled properly. If temperature of ammonium nitrate is allowed to go beyond a certain point then we do not get yield.

In our plant we get yield of reaction equal to 95% or even more. In practice, however, with N₂O some other impurities are also obtained as products of combustion. There is some undecomposed ammonium nitrate, with its fumes. These are recovered in the primary scrubber.

The steam in the hot gas condensed in the primary scrubber and the hot gas is condensed in the primary scrubber and the entrained moisture and traces of ammonium nitrate get separated in the mist separator. The residual traces of ammonium in the caustic scrubber.

The gas containing some nitrogen is then stored in the gas balloon. The gas is compressed with a compressor, dried in a drier and then high pressure storage vessels. The liquid N₂O is drawn from the weight. In a low pressure plant the gas after refrigeration is stored in a storage analysed in the laboratory to ensure quality of the product and proper record is maintained.

SOME CLEAR ADVANTAGES OF SSFCI N₂O PLANT

1. We use water-lubricated compressor

which is also water-cooled and is better and more lasting when compared to air or oil cooled units supplied by others.

2. The use of Gas Balloon in place of gas holders gives multiple advantages like: A. it does not occupy floor space. B. Gas remains dry since it does not come in contact with water which is present in case of gas holders. C. A gas balloon can hold a larger volume which gives more flexibility in subsequent operations.
3. Automatic control keeps the decomposition operation smooth and lets out the gas to the outer atmosphere in case of need.
4. Minimum water and power consumption
5. Simplicity of operation are added benefits of the design created by our team.
6. Double drying system.

Asian Concept in Plan Design gives multiple benefits to our users

Gas labs Asia takes into account prevailing as/an preconditions while designing its gas plants. Industrial conditions are a lot different in as/a than European and American subcontinent. Considerations of floor area, labour cost (skilled and unskilled) are never the same for as/a can afford maintenance, repair and a little more space for installation in place of deploying a fully atomized, disposable version of gas plant, which may not give them the best cost-benefit ratio. Gaslabs Asia offer the designs which are modular, making the maintenance easy, and affordable. And automation too is chosen with care as to what and how much might suit to particular industrial consumer and give him maximum production mileage.

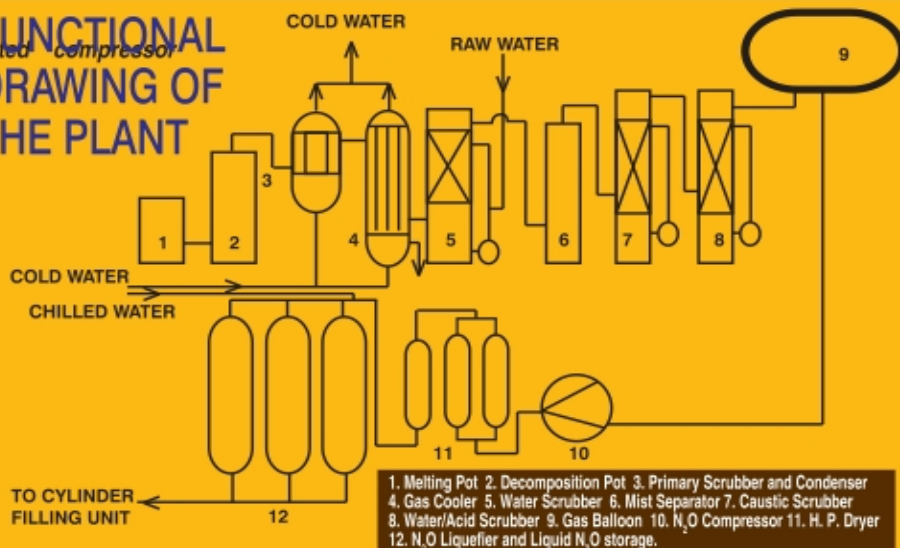
Extra care to Safety in plant layout

We leave ample room in plant layout floor plan. The extra space gives enough room to the workers and helps them into moving around freely during plant operation-a must with a gas like N₂O.

Gaslabs Asia makes a wide variety of plants from Semi-automatic to full PLC controlled

Gasiabs Asia ensures in every gas plant design that its production capacity is used to its maximum while keeping inputs at minimum without compromising on gas purity, which is always at par with the world standards.

FUNCTIONAL DRAWING OF THE PLANT



NITROUS OXIDE: PHYSICAL CONSTANTS

Chemical formula : N₂O
Molecular weight : 44.0128
Specific volume
At 150C and 1 atm : 0.533m³/kg
Specific gravity (air=1) : 1.5297
Density
At 150C and atm : 1.877 kg/m³
Specific heat
At 150C and 1 at,
Cp 0.866kJ /Kg) (0C)

CONSUMPTION FIGURES & COSTS

FOR 25 Kg and 50 Kg/hr plant
NH₄NO₃ 2.1kg/kg of N₂O produced
Electrical power 0.5kw/hr of N₂O produced
+ 1% DEPENDING ON LOCAL CONDITIONS & EQUIPMENT

WATER 0.4M³/KG OF N₂O PRODUCED

Labour 2 operators per shift
Space for Plant 16kg-25kg/hr. 50kg/hr.
L 4 meter 15 meter
W 4 meter 5 meter
H 4 meter 4 meter

PURITY

Purity is minimum 99.9% and it very well meets the European and American Pharmaceutical Standards.

RECYCLING WATER MAKES CONSUMPTION MUCH LESS

The provision of water effluent treatment plant (optional) makes the customer utilize the acidic water effluent coming from the plant. The acidic

water is neutralized, filtered and used back. The water consumption becomes much less. If effluent treatment is not installed then effluent has to be thrown out and water consumption is almost 300 liter per hour. The electrical consumption is very little in the plant the installed load is mainly due to compressor motor, refrigeration compressor and heaters of driers.

CYLINDER TESTING STATION

A cylinder testing station (optional) can be provided to test cylinders. Similarly, a vacuum pump can be also provided to evacuate the cylinders received from customers which might be containing some left over impure nitrous oxide.

BATCH TESTING LAB IS A MUST

A small laboratory is a must to maintain complete analysis of batch produced in the plant. The plant is automatic and requires only 2 persons to operate per shift besides a chemist.

VARIOUS PLANT CAPACITIES AVAILABLE

Nitrous oxide plants supplied are having capacities from 15kg/hr, 25kg/hr, 50kg/hr and 100kg/hr. plants are skid mounted to minimize erection time at site.

COMPLETE BACK UP AND SUPPORT

Not only we install the plant but also we train your people to become good operators to run the plant independently. We prove the quality (after getting the gas tested by user) quantity and fill the cylinders, and then only leave the site.

FULLY EQUIPED RESEARCH AND TEST LAB

Our in-house research and test laboratory contributes to the continuous improvement and routine batch testing of our own manufacturings and ensures best quality.

If anything ever You need about Gases

Gaslabs

Owned by S.S.Gas Lab Asia Pvt. Ltd.

S.S. Gas Lab Asia Pvt. Ltd.

A-6/3, Jhilmil Industrial Area,
G.T. Road, Delhi-110095
Ph.: 22583963, 22583247, 22134816,
Fax:91-11-22592770, 22134814
e-mail : info@ssgaslabs.com



Broad applications of CO_2

Carbondioxide is used in soft drinks which gives sparkles and sizzling effect to these drinks. Besides it aids digestion.

CO_2 finds extensive use in MIG welding and in foundaries for faster curing of moulds and casts using Sodium Silicate as binder.

Used effectively in controlling fire hazards by filling CO_2 in cartridges and fire extringurishers.

CO_2 in its solid form is known as dry ice. It finds multiple uses for food preservation and transportation without putrifaction, cleaning / preparation of surfaces before painting / polishing. The latter being environment friendly is finding its use in an increased manner.

CO_2 is also used as a fumigant for grain storage and as a herbicide in tea plantations. This is more akin to natural preservation as compared to the use of synthetic/chemical pesticides & thus environment friendly.

Dry ice is also used for achieving low temps in refrigeration and Chemical Industries besides low temp cryogenic grinding and tempering for shaving blades.

It gives increased shelf life to soft drinks beverages & food items.

CO_2 is used for shrink fitting in automobile and other industries. It finds uses in Engg. Industries as a substitute to cutting oil, as it gives lesser pollution.

Green houses are greener with CO_2 due to increased rate of photo synthesis.

For transporting and storing of explosives use of CO_2 considerably reduces the risk.

Where partial desalination is required use of CO_2 is very effective for regeneration of ion exchangers.





The Philosophy

Strange though it may seem but during technical consultations and negotiations we prefer to sit on the same side of the table as our client and find solutions to his benefit. Gaslabs Asia never works for a client without devoting its heart and soul. Technologists we are, and we prefer to remain. Profits alone will never drive us. Having a firm belief in this philosophy and living it through out has not been an easy job but we have lived and really enjoyed it! And we make every effort to carry it forward for the future.

SSFCI/Gas Lab Asia is manufacturing production plants which use solid, liquid or gaseous fuels as basic raw materials. Besides there are recovery plants which recover CO₂ coming as a bye product from chemical reactions, Breweries, Alcohol distilleries, boiler and furnace gas flues, grain frementers, Gas wells, lime stone kilns, steel mills and geo thermal units. In addition following plants/equipments are supplied by us:

1. CO₂ gas plants (production & recovery)
2. Anesthatic gas plants and administering machines
3. Hydrogen plants based on electrolysis of water and NH₃ catalytic oxidation
4. PSA Nitrogen plants
5. Refrigeration Units
6. Cooling Towers
7. Cylinder Testing pumps and installations
8. Welding Aids
9. Fire Extinguishers
10. Soft drink plants/machinery
11. Dry ice Plants and boxes
12. Vaporizers
13. Storage Tanks and Tankers
14. CO₂ cylinder filling and transfer pumps
15. Fire Fighting Systems
16. Welding Aids
17. Soft Drink Plants, machineries, spare parts and services.

The Leader

Dr. S. S. Aggarwal is a chemical technologist having done his M. Tech. from IIT, Bombay and specialization from USSR. As a Technologist he has been responsible for giving birth to many new industries in India. IIT, Bombay, upon recognizing his researches and creative contribution to the field of chemical engineering has awarded to him the DISTINGUISHED ALUMNUS AWARD.

Dr. Aggarwal has written numerous research papers and has travelled widely. He designed his first CO₂ plant at Ranchi in Bihar in 1980 which used wood charcoal. The plant was modified to diesel burning after 3 years and subsequently was switched over to fertilizer bye-product to run CO₂ plant. In 1990 he joined hands with BUSE ANLAGENBAU, Germany and brought world-level technologies to India.



the wholly owned subsidiary of
S. S. FOUNDRY CHEMICAL INDUSTRIES PVT. LTD.

presents

Co₂ Storage Tanks



A CO₂ Tanker just Completed under inspection

- STRONG & INSULATED
- LONGEST STORAGE
- WITH MINIMUM LOSS
- LOGICALLY CONTROLLED
- REFRIGERATION
- CDE CERTIFIED
- INTERNATIONALLY
- APPROVED
- TANKS, TANKERS AND
- PORTABLE SOLUTIONS



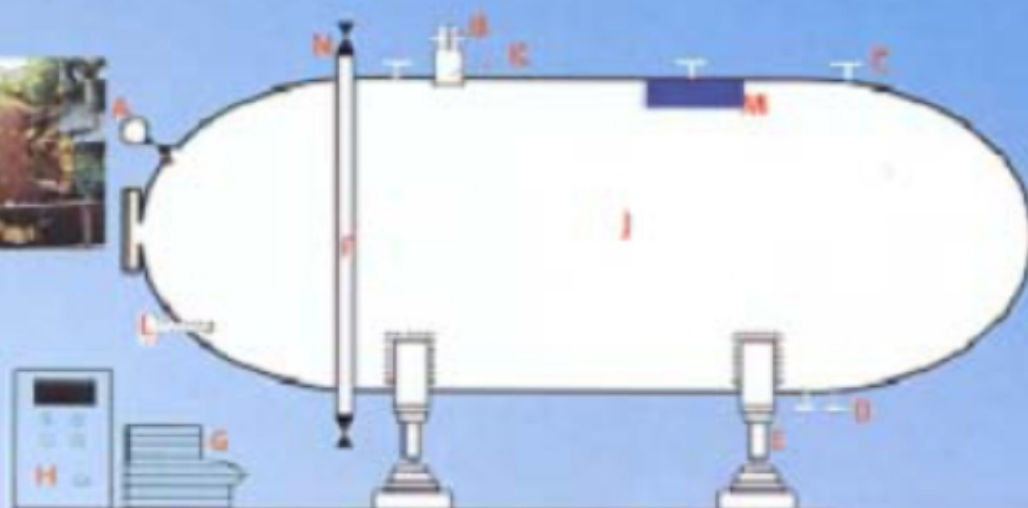
Long Distance Transportable Tanker



Lorry mounted tanker under fabrication



Lorry mounted tanker ready for dispatch



LEGEND

- A- PRESSURE GAUGE
- B- SAFETY VALVES
- C- GAS DISCHARGE
- D- LIQUID DISCHARGE
- E- LOAD CELL
- F- LIQUID LEVEL INDICATOR
- G- REFRIGERATION UNIT
- H- CONTROL PANEL
- J- PRESSURE VALVE
- K- DOUBLE VALVE
- L- TEMP. METER
- M- INSULATION
- N- LIQUID CHARGE

Designed to cater the industries which do not own CO₂ plants or their gas requirements vary with their speed of production.

1. CO₂ TANKS

Totally safe for bulk CO₂ storage. Designed with most modern safety devices refrigerants and insulents which prevent even the smallest loss of gas by evaporation and liquid CO₂ remains liquid for maximum period of time.

Best kind of Low Temperature Steel is selected for construction and the tank is fabricated under internationally approved inspection agencies. Valves & fittings are approved by Controller of Explosives. Polyurethane insulation and aluminium cladding is provided along with magnetic level indicator. Refrigeration system is logic controlled and maintains the temperature inside the tank to the set standard.

3. LONG DISTANCE TRANSPORTABLE CO₂ TANKERS

Transportable tank is a storage tank which is ISO housed in a frame and can be put into a container. All such containers are made to BS-5500. Tanks are suitable for transportation by road, ship or rail. These are vacuum insulated rigid tanks.

2. LORRY MOUNTED CO₂ TANKERS

Generally Tankers are placed on lorry chassis and we have designed and supplied lorry tankers of various capacities suitable for the existing chassis available. Since generally (unless asked for) there is no refrigeration system in the mobile tankers therefore the PU insulation is of higher thickness as given. The material of construction is carefully selected low temperature steel which is stress relieved. After insulation is done there comes the Aluminium cladding. The tanker is provided with suitable piping arrangement on which safety valves, inlet-outlet pressure gauges and other safety of standard and approved make fittings are mounted. To suit local stipulation of Explosives Directorate required chassis modifications are also done. We provide (a) height tanker (b) barrier around the tank (c) modification in the position of battery and rear red light and providing rear bumper are a few of the modification undertaken by us on the chassis. Fabrications and drawings are approved and supervised by international inspection agencies.

TECHNICAL DATA

OPERATING PRESSURE	22kg/cm ²
TEST PRESSURE	up to 30 kg/cm ²
MATERIAL	Low temp. steel
TEMPERATURE RANGE	+20 to -50°C
CAPACITY RANGE	1 to 500 tons



Gaslabs
ASIA

the wholly owned subsidiary of
S.S. FOUNDRY CHEMICAL INDUSTRIES PVT. LTD.
A-6/3, Jhilmil Industrial Area, G.T. Road, Shahdara, Delhi-110095.
Phones: 91-11- 22563563, 22583347
Fax: 91-11-22592770, 22134814
e-mail: fcpi@nda.vsnl.net.in website: www.sstci.com

100
years
in business



- About 100 years old tradition in the CO₂ business.

- CO₂ Plant Design and Construction, Installation on site.

- Full-service Asian Technology company.

- Innovative Biomass CO₂ Plant- first of its kind in the world.



- Quick and free guidance on all CO₂ related problems.
- Perfect service, spares and manpower backup for installed plants. Revamping of old plants.

- All types of CO₂ delivery systems for various industrial requirement.

- Guaranteed Gas Quality.

- Insulated boxes for Solid CO₂ (dry ice) and other gadgets.

- Pollution-free CO₂ recovery plants sans direct fuelling.

- Custom built drying systems, refrigeration systems and filling manifolds readily available.

If anything ever you need about CO₂



Gaslabs Asia is a wholly owned subsidiary of S. S. Foundry Chemical Industries Pvt. Ltd.
A-6/3, Jhilmil Industrial Area, G.T. Road, Shahdara, Delhi-110095.
Phones: 91-11- 22583963, 22583247
Fax: 91-11-22592770, 22134814
e-mail: fcipi@nde.vsnl.net.in
website: www.ssfc.com