SunAro Inc

25+ years of specialization in on-site generation of gas plants

Introduction:

We, **Su**nAro Inc were established in the year **2002** and started manufacturing, exporting and service provider a wide range of **Nitrogen Gas Plants, Hydrogen Gas Plants, Oxygen Gas Plants, Industrial Gas Piping Solutions, Medical Oxygen Gas Plans** and many more. These equipment have been designed to provide accurate performance, so that our customers could have an enriching experience on account of the usage these machines. These plants are used on a wider level for the purpose of producing specified gases for medical and industrial usage.

For providing the promised specifications for our offerings, we are backed by our vast infrastructure and team of effulgent professionals. The whole fabrication procedure is carried out by following industry requisites and thereby, we ensure our offerings to have flawless features. We initiated our journey with a firm belief to provide total satisfaction to our clientele and in context of these working policies, stringent approach has been maintained by our effulgent team of professionals. Owing credit to these attributes, we have been able to gain a huge client base and broaden our horizon. Use of advanced technology and innovative ideas has led us to become a global name and offer our customers total business solutions. From our end, we also render services related to gas piping solutions for our esteemed clients at cost-effective prices. These services are executed on time by our trained workers, providing absolute and feasible solutions. Being a quality & client-centric organization, we have always focused on making our offerings impeccable and distinguished. Our exporting countries are **Middle East, Morocco, Bangladesh, Serbia, Hungary, China, Japan and USA.**

Mr. Surendra A Jagtap, our mentor and guide, has helped us in becoming a brand name across India and overseas. He along with his impeccable ideas and leadership qualities, established our organizational structure and has enabled our employees to add glory to our name.

Our Mission: is to ensure that all our business operations are carried out in an efficient and streamlined manner, we have developed a widespread infrastructure.

Quality Assurance: Backed by extensive industrial experience, we ensure our customers products of optimum quality. In the process of manufacturing, we follow industry requisites so that the outcome is flawless and efficient. We procure raw materials from certified names and perform several quality check measures to ensure our products' optimum characteristics. Engaged in offering gas plants and air dryers, we focus on maintaining accuracy and safety in the operation of these products. Working with the perception to make our customers satisfied, our products are manufactured as per the global quality standards.

Quality Standards: Capitalizing on our outstanding facilities & approach we do our utmost to provide immense satisfaction to our clients. Having understood of customer's needs we propose & install nearly operator-free & maintenance free equipment. Our comprehensive approach towards pro-active client service has assisted us in acquiring a huge base of clients, worldwide. Owing to our high-quality standards, our clients have continuously appreciated our products by placing repeated orders with us. We emphasize on our values of quality and efficient services, to improve our business relationships with our existing clients. We consider our clients as the best promoters of our products. Hence, we provide them with the quality assured products and deliver the consignments in the stipulated time. Our growth and success can be attributed to our company wide approach to business, understand customer's needs and expectations, and then use superior technology to meet them. Industrial Needs has developed a new and innovative design to build superior equipment to provide customers with a safe, economical, and reliable long-term solutions with respect to their requirements. Business and Technical Innovation continue to be the engine by which we provide value and competitive advantage to our customers. Based on such discussions we offer our equipment which shall provide you a complete solution to the requirements, with our involvement being not only with the related equipment but also with the results you achieve with them.

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Equipped with a continuous purity monitoring system, our plant ensures that the medical oxygen's purity and concentration of oxygen is within acceptable limits. In case of any abnormality, plant can be switched to back- up system.

SunAro Medical Oxygen Plant gives you convenience of switching on an off the oxygen supply by pressing only a button and provides independence from handling scores of oxygen cylinders or Liquid stations.

The plant is designed to run (24 x 7) 365 days a year as the plant is made with mandatory standby arrangements for all the moving & critical components.

SunAro Medical Oxygen Plant works on a low pressure of 4.5 Kg/cm2g, however a Booster is provided to fill 'B' or 'D' type Oxygen Cylinders for emergency use in Ambulance or during shifting of patients.

Reliable, Durable, Dependable & Available

SunAro Medical Oxygen Plants provides you enormous relief as no hassles of oxygen bottles handling, no dependency on external suppliers, no department to maintain inventory & accounting, in fact by just pressing one button Oxygen is available when required.

SunAro PSA Oxygen is safe & not only meeting United States Pharmacopeia (USP) XXI Oxygen 93% Monograph but SunAro Inc guarantees **95-97%** pure Oxygen using unique design in PSA technology.

SunAro Medical Oxygen Plants are fabricated in accordance with all relevant codes (ASME, ANSI, NEMA), and can be configured to meet CRN and CSA standards.

Each system can be operated without extensive technical knowledge or training. Easy to follow manuals and on-site training will teach your staff how to properly calibrate and maintain the system.

Routine maintenance is as simple as normal air compressor upkeep and filters change.

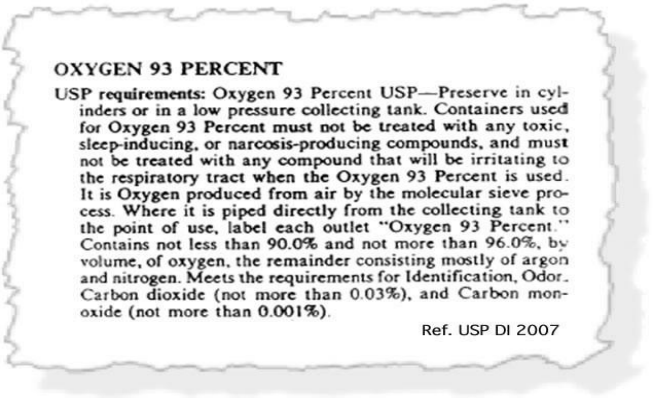
Every plant is PLC controlled, the PSA Adsorbers are filled with Zeolites, factory sealed and rarely needs replacement.

Since SunAro Medical Oxygen Plant requires only Power and Atmospheric air, it can be installed in any remote area or on any altitude where neither Oxygen Bottles nor Liquid Oxygen can reach in appropriate time.

SunAro Medical Oxygen Plant are fitted with Fine Bacteria Filters on the oxygen line to the hospital hence ensures impurity levels of 0.01 microns in the oxygen line.

The Technology

PSA technology is employed to manufacture Oxygen Gas Plants as the compressed air is passed through an air filtration & drying system & the air is conditioned well before the dual bed system contains special grade of Zeolite Molecular Sieves as desiccant which has a preferential properties for adsorption of moisture first and then Nitrogen and other gases present in air.



OXYGEN 93 PERCENT

USP requirements: Oxygen 93 Percent USP—Preserve in cylinders or in a low pressure collecting tank. Containers used for Oxygen 93 Percent must not be treated with any toxic, sleep-inducing, or narcosis-producing compounds, and must not be treated with any compound that will be irritating to the respiratory tract when the Oxygen 93 Percent is used. It is Oxygen produced from air by the molecular sieve process. Where it is piped directly from the collecting tank to the point of use, label each outlet "Oxygen 93 Percent." Contains not less than 90.0% and not more than 96.0%, by volume, of oxygen, the remainder consisting mostly of argon and nitrogen. Meets the requirements for Identification, Odor, Carbon dioxide (not more than 0.03%), and Carbon monoxide (not more than 0.001%).

Ref. USP DI 2007

The adsorbers are being operated at an interval of one minute, one after the other and in re-cyclic mode so that the Oxygen is produced on continuous basis. Both the Adsorbers are interconnected with valves scheme which operates automatically with the help of sequencer. The Oxygen produced is collected in a reservoir called Surge Tank.

A low-pressure Reservoir is also provided which supplies the Oxygen to entire hospital through a pipeline. A gas booster with desired cylinder is also provided on demand if cylinders are required to be filled.

The comparison between various sources of oxygen supply such as Cylinders, Liquid Oxygen & having own Oxygen Gas Generator:

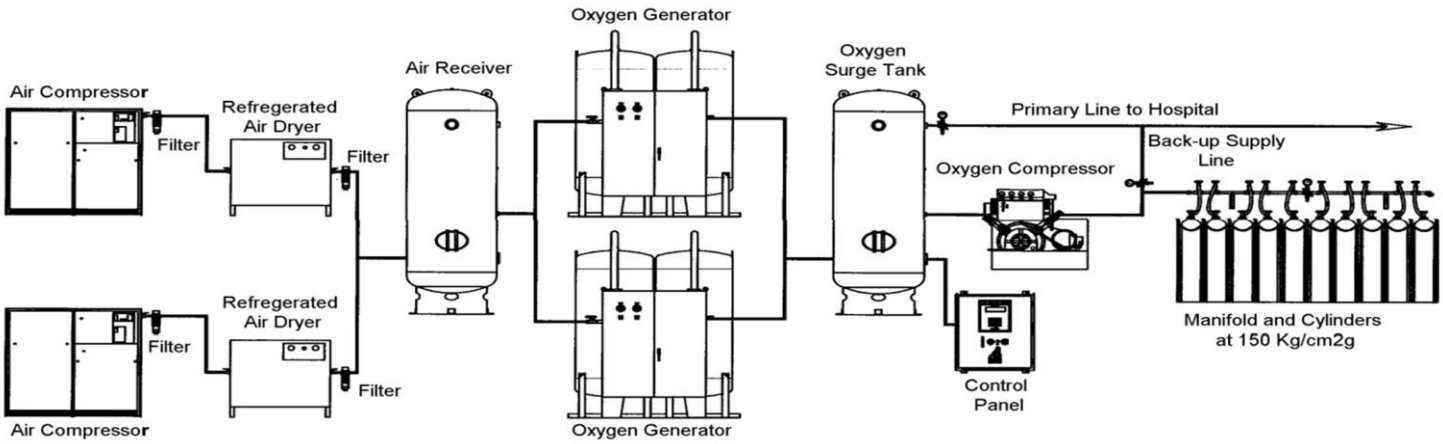
S.N.	Type of Comparison	Cylinders	Liquid	Own Gas Plant
1	Reliability	No On-line Analysis, relying only on supplier's certification	Generally O K , but no on-line analysis, relying only on supplier's certification	Continuous basis as On-line analyzer has been provide with the plant
2	Dependability	Always on cylinder suppliers, sometimes at far distance	Always on liquid supplier and generally they are situated at very far distances	No dependability on anyone else as it is continuous generating plant
3	Availability	Always depending upon supplier	Always depending upon supplier	(24 x 7) 365 days performing
4	Remote area availability	Transportation are by road only & sometimes difficult to reach on time so large stocks are required to be maintained	Transportation are by road only & sometimes difficult to reach on time so large stocks are required to be maintained	Always available
5	Accidental & Safety hazard	Very high risk due to very high pressure (150 Bar) Constant failures of Pigtails and Pressure Regulating Valves	Very high risk due to extremely low temperatures (-) 170 Deg. C can cause liquid burns. The pressure is also high as 20Kg/cm2	Negligible risk as the system operates on low pressure (5 Kg/cm2) and ambient temperatures.
6	Storage area	Very safe area is mandatory.	Very safe area is mandatory.	No risks, however basic safeties to be maintained.
7	Government's approvals	Mandatory to have PESO / CCOE approvals and renewal every year	Mandatory to have PESO / CCOE approvals and renewal every year	No such approvals are required.
8	Operation	Critical & hectic as cylinders shall be replaced immediately when the cylinder bank is empty.	Critical as the gas quantity & pressure monitoring is always required.	Very simple and automatic operation and the plant is designed for 24 hrs. 365 days operation.
9	Wastage	Residual gas left always in every cylinder, as below 5 kg/cm2 pressure is not usable. Also deliberate low pressure filling by suppliers means less gas volume but billing for full volume.	If the gas is not used, then due to continuous evaporation the gas has to be vented. Also, during refilling of Tanks spillage is always there. There are always metering errors as the gas is supplied in liquid but billed in volume	No wastage at all.
10	Accidental risk	Always there	Always there	No risk at all except the gas boosting if opted for.
11	Possibility to re-fill cylinder	Not possible	Not possible	Possible to fill 'B' & 'D' type cylinders by using Gas Boosters
12	Life span	5-6 years	10 years	25 years minimum
13	Manpower requirement	Skilled worker is required to change Cylinder banks. Also, a department is required to monitor inventory & billings	Highly skilled worker is required to handle liquid Oxygen. Also, a department is required to monitor inventory & billings.	Though skilled person is required to operate the plant in all shifts but no tension of procurement, metering & billing etc.

SunAro helps in Sizing your Medical Oxygen Plant:

Though the consumption depends upon several factors, however the tentative & basic calculations

(Total number of beds x 0.75 LPM) + (Number of OTs x 8 LPM) + (No. of Beds in ICU x 6 LPM) = Total Liters per minute (LPM)

Typical Process & instrument Drawing of Medical Oxygen Gas Plant:



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