

Linde: Living healthcare

What Matters most in Medical Gas System

Presented by

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Making our world more productive



About Linde

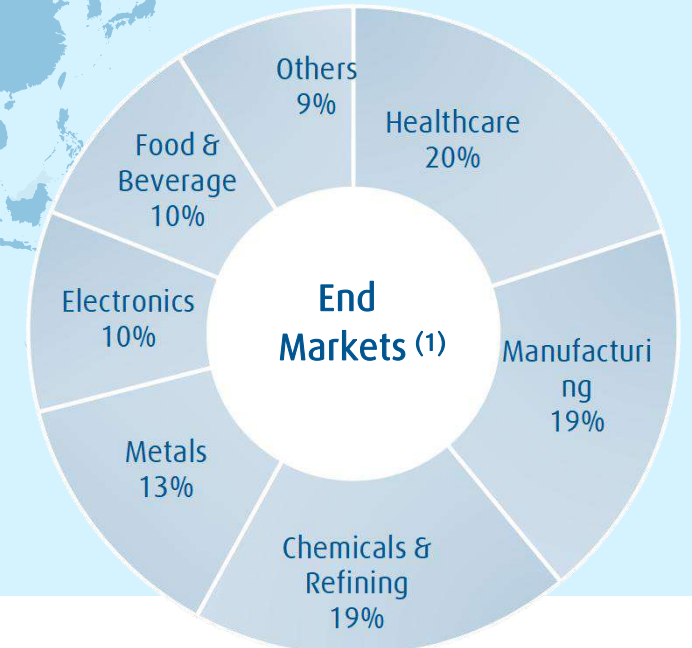


Linde is the world's leading Industrial, Medical gas and Engineering co.

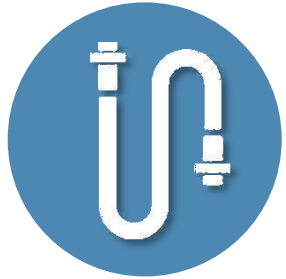
Linde Healthcare has been a leading supplier of medical gases across the world for more than 130 years.

We live our mission of **making our world more productive** every day by providing high-quality solutions, technologies and services which are making our customers more successful and helping to sustain and protect our planet.

- 2021 sales USD 31 billion
- Operating in >100 countries
- Established presence where customers are and where their operations are growing
- Proven critical project execution capability globally



Dedicated to the Service of India's Healthcare for last 85 years



Liquid Medical Oxygen

>400 major hospitals served



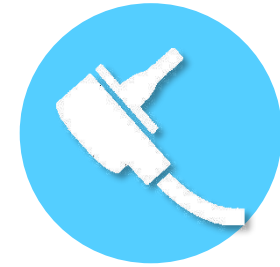
Compressed Medical Oxygen

>850 major hospitals served



Nitrous Oxide

>700 major hospitals served



ENTONOX®

(50% Oxygen & 50% Nitrous)

It is used in Normal Birth in Gynecology segment

Serving more than 1300 Hospitals in India with our various offerings



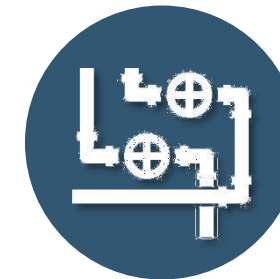
NOxBOXi

Inhaled Nitric Oxide Delivery System



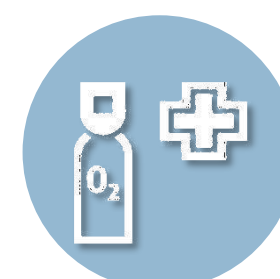
Onsite Oxygen Generation Plant(PSA)

Providing solutions to hospitals



Medical Engineering Service

Engineering services & Medical Gas Pipeline System in major hospitals



LIV™

New generation lightweight mobile oxygen aluminum cylinders with the Linde Integrated Valve

What Matters Most in Medical Gas System



Medical Gas Supply System (MGPS)

- Execution as per global standards (HTM/NFPA)
- Separate color code for specific adaptors in outlet assembly
- Automatic alarm system in case of emergency
- Copper pipes, certified by third-party – EN 1254, HTM 02-01
- Gas Outlets conform to NFPA 99:2005, HTM-02-01
- Area Valve Service Unit (AVSU) – Conform to HTM 02-01, BS EN 7396
- Area Alarm Unit microprocessor BMS compatible
 - monitor the pressure of MOX
- Medical Pendants, Bed Head Unit, Medical Air Plant
 - HTM 02-01, BS EN 7396
- Medical Gas Manifolds with Control Panel (semi / fully automatic)
 - HTM 02-01, BS EN 7396
- AGSS Plant – a centralized source for safe removal of exhaled anaesthetic gases
- Medical Vacuum Plant – HTM 02-01, BS EN 7396
 - Incorporates reciprocating or rotary vane pump, bacterial filtration, electronic controls, alarms, and BMS contacts
 - Bacteria filter required for removal of bacteria down to 0.0001% penetration

What Matters Most in Medical Gas System



Bulk Installations for Liquid Medical Oxygen

Tank Sizing:

- Operational Stock
- Risk assessed stock
- Usable stock

Alarms:

- Low Liquid level alarm – primary
- Low-Pressure alarm – primary
- Low-Pressure alarm Supply Line

Dual Regulators & Safety Valves

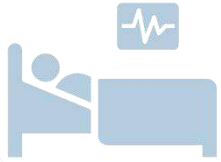
Battery limit Termination tags
Telemetry / RTU



Hospitals – O2 Supply Selection



Nursing Home
Max 50 Beds



Consumption: 3 K M3/mth
Peak Flow rate: 6 sm3/hr

Mid Size
Upto 100 Beds



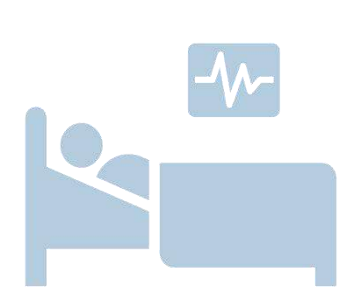
Consumption: 6 K M3/mth
Peak Flow rate: 10 sm3/hr

Secondary
Upto 300 Beds



Consumption: 8 K M3/mth
Peak Flow rate: 30 sm3/hr

Tertiary
More Than 300 Beds



Consumption: 12 K M3/mth
Peak Flow rate: 50 sm3/hr

Current Products
CMO/PCC / PSA / MCP /990L



Linde PSA (Pressure Swing Adsorption)



- Linde PSA offerings – **Hire and O & M model** with Zero Capex from Hospitals – 10 to 15 years contract
- **Total Gas Management by Linde** – primary & secondary
- Automatic **backup triggering system**
 - **Gas sensor and PLC** (Programmable Logic Controller) **based warning system** (for purity and pressure check)
- **Remote monitoring** | Realtime pressure and purity data check (minimize workforce)

Thank you

