

OXYGEN GENERATORS
O₂



idealMakinA[®]
Industrial Solution Supplier...

OXYGEN



GENERATORS



idealmakina.com

Industrial solution supplier Ideal Makina has started its journey in 2004.

We design and manufacture nitrogen generators, oxygen generators, gas mixers and special purifiers for gas generators at our 5000 m2 factory located in Istanbul Turkey.

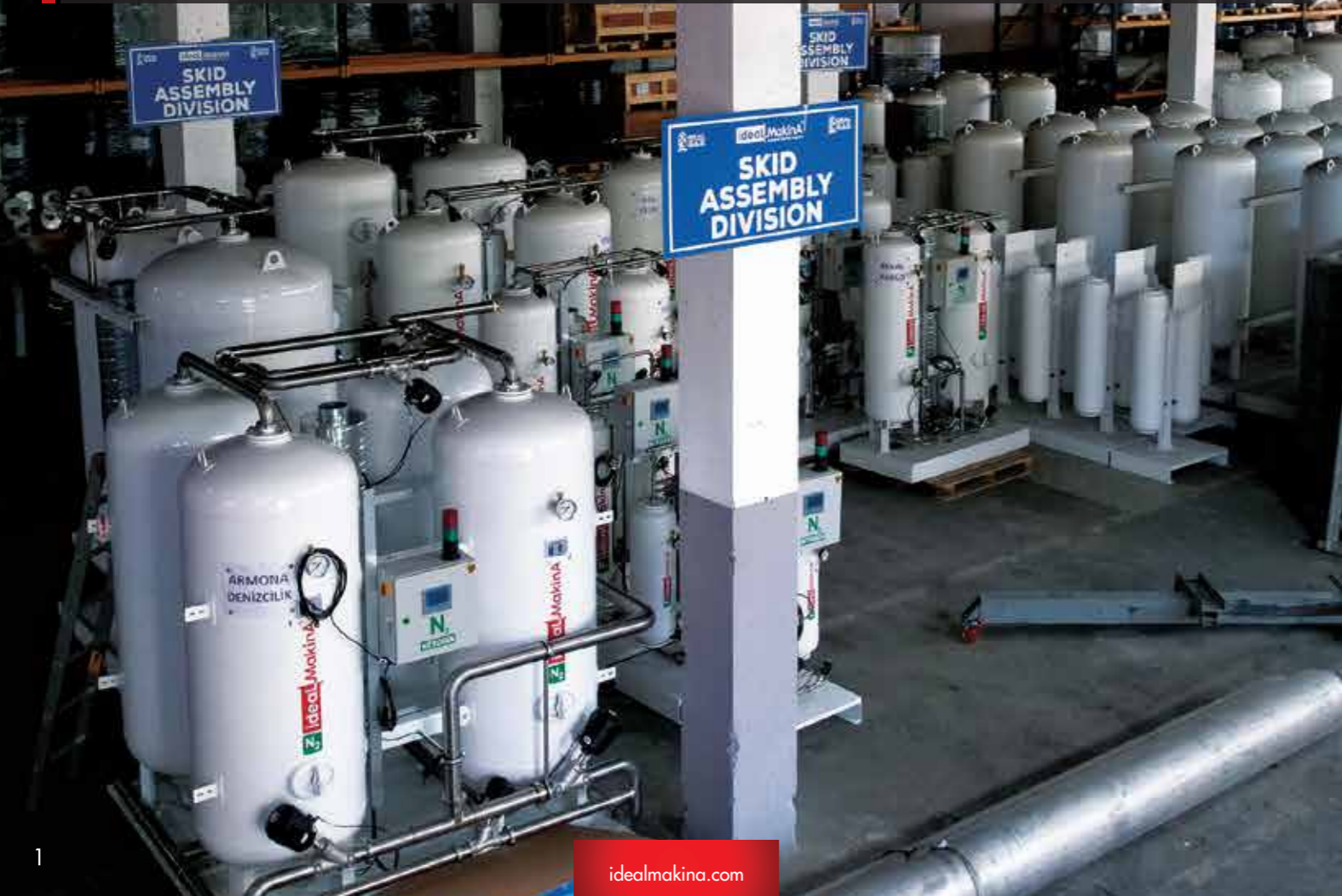
Ideal Makina serves high quality tailor made solutions to its customers with PSA Gas Generators for industrial and medical applications.

Ideal Makina provides after sales service to gas generators operating in more than 50 countries with its 15 people technical service team and local service partners.

As Ideal Makina, we are specialized in PSA Generator Technology with our innovative, energy efficient technical solutions and cost-effective products.

Ideal Makina designs of high efficiency Oxygen Generator Systems, provides services at all stages from production to installation and commissioning of the systems for the customers who want to produce oxygen gas in their own facility.

On the other hand, Ideal Makina provides technical services and periodical maintenance on site.



Before production, Ideal Makina Gas Generators are designed and developed in CAD program by our R&D Engineers. In addition the Software of the PLC Control Systems are designed by our Electrical Engineers.

All pipe welding, mechanical connection and electrical wiring works of Ideal Makina Oxygen Generators are completed in our factory by our Production Team of 30 people.





Each manufactured Ideal Makina Oxygen Generator is tested in our Factory Test Area to confirm the parameters (capacity/performance, purity, pressure, dew point, temperature) of the final product. Based on the results, the relevant test report is prepared.

In case of request, we organise FAT (Factory acceptance test) and SAT (Site acceptance test), then provide their reports.



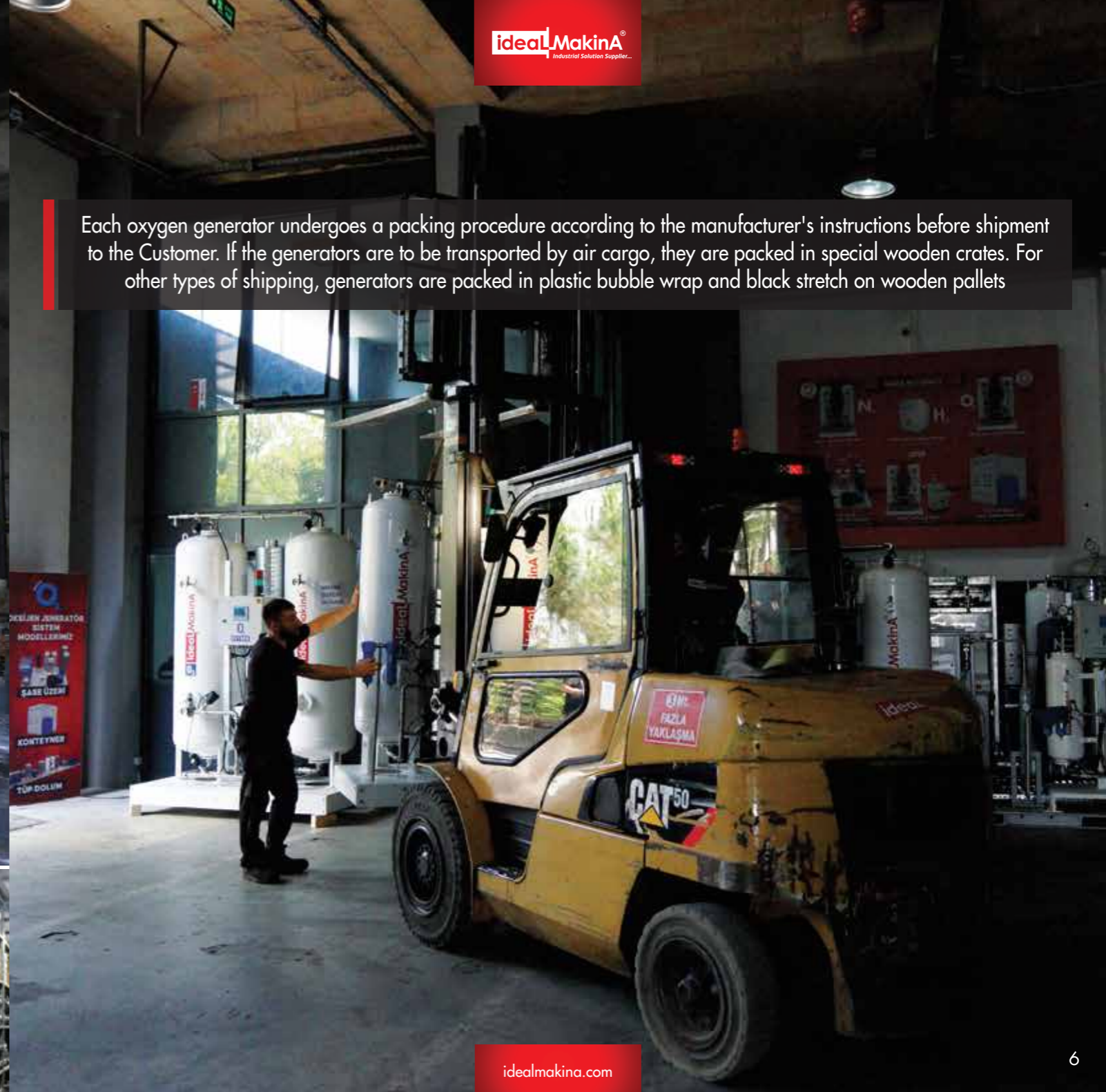


We supply any spare parts of our oxygen generator systems from our warehouse which has a wide range of parts and raw materials (Sensors, valves, filters, filter elements, PLC, silencers, ZEOLITE adsorbors and compressor spare parts etc.).

Thanks to our large stock volume, we can manufacture oxygen generators in a short time. Thus we offer to our customers quick delivery times for ordered new Oxygen Generators and spare parts.



Each oxygen generator undergoes a packing procedure according to the manufacturer's instructions before shipment to the Customer. If the generators are to be transported by air cargo, they are packed in special wooden crates. For other types of shipping, generators are packed in plastic bubble wrap and black stretch on wooden pallets





PRODUCE YOUR OWN OXYGEN GAS
WITH IDEAL MAKINA OXYGEN
GENERATORS, **FORGET** ABOUT THE
PURCHASE COST OF CYLINDER OR LIQUID
OXYGEN!
IN ADDITION TO THESE;

- The amount that you require exactly,
- The level of purity that your production process requires,
- The level of pressure that should be,

All under your own control...

%95 PURITY

Production of Oxygen gas up to 95% purity with PSA technology

Thanks to the PSA technology utilized by **IDEAL MAKINA OXYGEN GENERATORS**, you can produce Oxygen gas with up to **95%** purity within the capacity range of **0.5-2000 Nm³/h**.

UNINTERRUPTABLE  PRODUCTION

These generators produce Oxygen from the compressed air available. The air is cleaned by pre-filtration which eliminates impurities, such as humidity, oil vapours, particles and hydrocarbons.

The filtrated compressed air stream is canalized into zeolite filled two columns. While the air is passing through the columns, the Nitrogen and Carbon Dioxide molecules are removed and the pressure dew point is lowered. The generated Oxygen gas is clean, dry and high purity so that it can be used for a wide variety of applications.

The parameters such as compressed air temperature, pressure, oxygen purity and oxygen pressure are all monitored continuously. IDEAL MAKINA OXYGEN GENERATORS guarantee sustainable and high efficiency production.

OXYGEN GENERATOR MODELS

Models	Oxygen Purity (%)	Capacity (Nm ³ /h)		
		90,0	93,0	95,0
IM-GO 10		0,8	0,7	0,6
IM-GO 20		1,4	1,2	1,0
IM-GO 30		2,6	2,4	2,1
IM-GO 40		3,8	3,5	3,2
IM-GO 60		5,6	5,1	4,5
IM-GO 100		9,8	8,5	8,0
IM-GO 120		12,5	11,5	10,0
IM-GO 150		15,0	13,5	12,3
IM-GO 200		20,0	17,0	16,0
IM-GO 300		30,0	26,9	25,0
IM-GO 400		42,0	38,0	35,0
IM-GO 600		60,0	55,0	50,0
IM-GO 800		80,0	73,5	67,0
IM-GO 1000		105,0	95,0	90,0
IM-GO 1400		140,0	125,0	110,0
IM-GO 1500		155,0	140,0	128,0
IM-GO 2000		195,0	176,0	160,0
IM-GO 2500		245,0	225,0	205,0
IM-GO 3000		295,0	265,0	245,0
IM-GO 4000		390,0	355,0	325,0

* All values were measured under 7 bars compressor pressure and +25°C air/ambient temperature.

* Please contact our engineers for different capacity and purity values.

COMPRESSED AIR REQUIREMENTS

Temperature Range +10°C - +50°C
Air Quality ISO 8573.1 Class 1.4.1
Dew Point +3°C

AMBIENT CONDITIONS

Temperature Range +5°C - +40°C
Option -50°C ... +60°C

TECHNICAL FEATURES

Max. Working Pressure 10 bar
Power Connection 230V, 50Hz/60Hz
Noise Level from 55 to max 85 dB(A)
Energy Consumption 150 W
Protection Class IP54

ALTERNATIVE FEATURES OF OUR NITROGEN GENERATOR MODELS

O ₂	IDEAL MAKINA NITROGEN GENERATOR Features	MODELS		
		basic	comfort	pro
1	Siemens S7 1200 PLC	✓	✓	✓
2	Siemens touch control panel	4"	7"	7"
3	Trend graphics	-	optional	✓
4	Stainless steel pipes and process valves	✓	✓	✓
5	Zirconia oxygen sensor	✓	✓	✓
6	Outlet pressure sensor	✓	✓	✓
7	Visual & Audio alarm for low purity	✓	✓	✓
8	Visual & Audio alarm for low pressure	✓	✓	✓
9	Visual alarm for periodical maintenance	✓	✓	✓
10	Automatic start/stop	✓	✓	✓
11	Outlet oxygen regulator	✓	✓	✓
12	Outlet oxygen needle valve	✓	✓	✓
13	Advanced energy saving kit	✓	✓	✓
14	Auto purity control	-	✓	✓
15	Auto commissioning valve set	-	✓	✓
16	Inlet dewpoint sensor	-	optional	✓
17	Inlet temperature sensor	-	optional	✓
18	Inlet pressure sensor	-	optional	✓
19	Inlet moisture protection system	-	-	✓
20	Purity dependent energy saving system	-	optional	✓
21	Remote monitoring & control unit	-	optional	✓
22	Inlet filter 0.01 micron	optional	✓	✓
23	Inlet filter activated carbon	optional	✓	✓
24	Outlet filter 3 micron	optional	✓	✓
25	Thermal mass gas flowmeter	optional	optional	✓
26	CO & CO ₂ sensors	optional	optional	✓



NON-STOP PRODUCTION GUARANTEED WITH STAINLESS STEEL VALVE SYSTEM!

Pneumatic valves that ensure regular flow of air and oxygen during the process are manufactured from AISI 316L noncorrosive material. Owing to its long operation life, it provides problem free production for long years. Moreover, 316L stainless steel no need for maintenance.

10 YEARS OF GUARANTEE

Zeolite material which is one of the most important parts of Oxygen Generator is capable of absorbing nitrogen molecules inside compressed air thanks to the semi-permeable molecular structure. Oxygen molecules that are free inside the compressed air are stored within the oxygen buffer tank.

Zeolite material which is manufactured in Germany is guaranteed for 60,000 operational hours or for a period of 10 years.

TECHNOLOGICAL, INNOVATIVE REMOTE MANAGEMENT SOLUTIONS



You can check your Oxygen Generator using the internet from any point across the world.



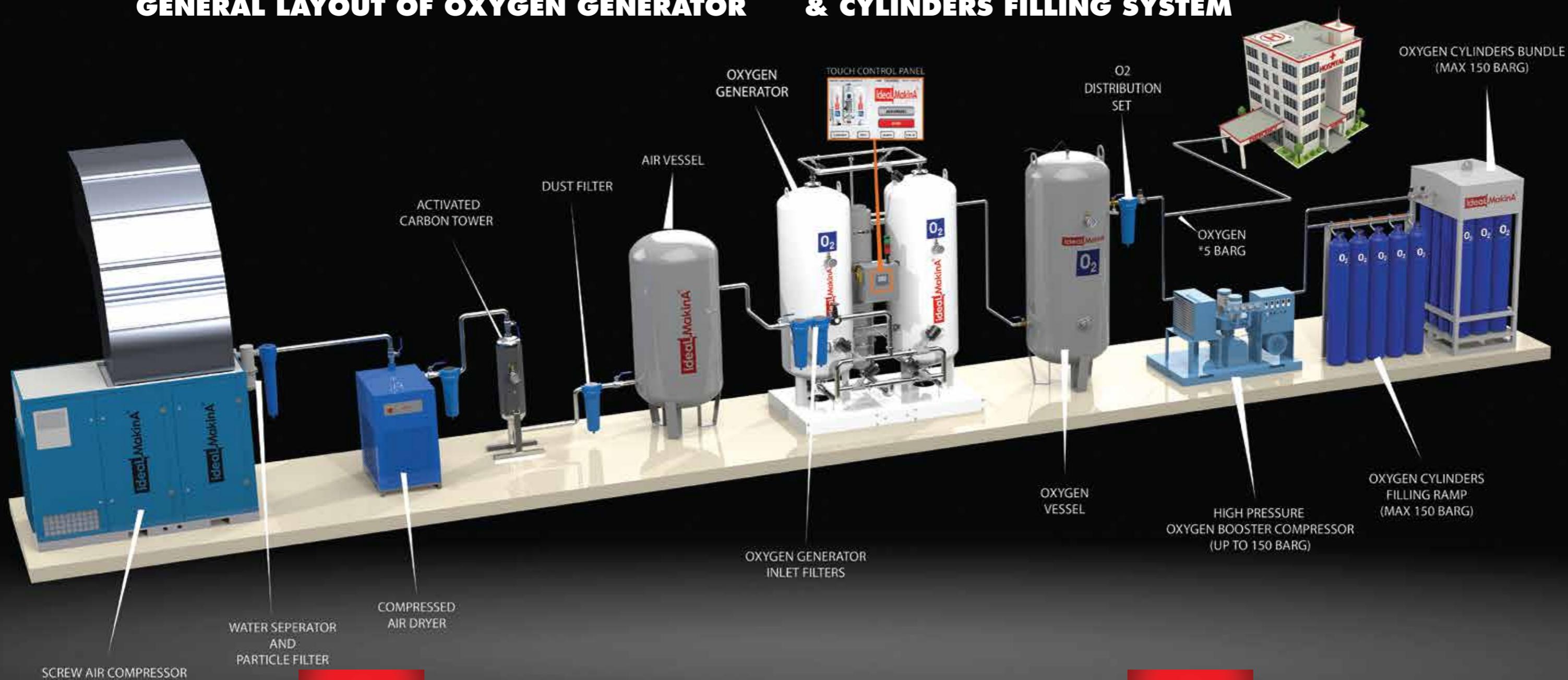
SIMPLE AND EASY MANAGEMENT

With IDEAL MAKINA OXYGEN GENERATOR SYSTEMS

"Touchscreen Control Panel" enables the generator to operate as fully automated. User-friendly design and ergonomic touchscreen panel ensures that sensitive measurements for all parameters can be displayed instantaneously and you can store these data.

The alarm that will appear on the screen through the sensors which sense deviations apart from the requested parameters warns the user by audio & visual buzzer.

GENERAL LAYOUT OF OXYGEN GENERATOR & CYLINDERS FILLING SYSTEM





PLUG & PLAY



SKID MOUNTED OXYGEN GENERATOR SYSTEMS

**MINIMUM
SPACE,
MAXIMUM
EFFICIENCY**

**COMPACT
DESIGN,
ALL IN ONE
SKID**

**NO
INSTALLATION
ON SITE,
READY TO
USE**

**SINGLE
TOUCH
CONTROL
PANEL**

ALL IN ONE, READY TO USE!

It is possible to produce your own oxygen gas at indoor area in your plant with special designed Plug &Play, Skid Mounted Ideal Makina Oxygen Generator Systems!

It is ready to use! All components of the system, including compressed air set, Oxygen Generator, vessels and high pressure booster are installed onto the skid, mechanical and electrical connections are completed. The function and capacity tests of the systems are performed at Ideal Makina Factory. Operators can easily control the system from the main control panel.





PLUG & PLAY



**CONTAINERIZED
OXYGEN GENERATOR SYSTEMS**

NO NEED FOR INDOOR AREA

COMPACT DESIGN, ALL IN ONE CONTAINER

HEAVY DUTY, MOBILE CONTAINER

SINGLE TOUCH CONTROL PANEL

ALL IN ONE CONTAINER, READY TO USE!

Ideal Makina mobile, heavy duty, sound and heat insulated, ISO locked Containerized Oxygen Generator Systems provide oxygen production in any place you need.

It is ready to use! All components of the system, including compressed air set, Oxygen Generator, vessels and high pressure booster are installed into the 10 ft, 20 ft, 30 ft, 40 ft or tailor-made designed containers, mechanical and electrical connections are completed. The function and capacity tests of the systems are performed at Ideal Makina Factory. Operators can easily control the system from the main control panel.

Thanks to our strong structural design, our systems can be easily transported to anywhere in the world by sea, road or air. Air conditioner, heater and rockwool insulation features enable the Oxygen Generator System to operate in harsh climatic conditions.





OXYGEN CYLINDERS FILLING STATION

- ▶ IDEAL MAKINA has designed and standardized Oxygen Cylinders Filling Stations within the range of 1-150 m³/h capacity. Depending on your oxygen consumption, you can prefer one of our wide range of standard solutions in the table below, or you can ask us to design a tailor-made solution for you according to your needs.
- ▶ Ideal Makina Oxygen Filling Systems allows hospitals to reach a full autonomy by filling on-site their own high pressure oxygen cylinders. The oxygen produces by the oxygen generator can be pressurized up to 150 barg for back-up storage or to fill mobile oxygen cylinders.
- ▶ We can supply our Oxygen Filling Stations in skid mounted, containerized or standalone versions.

Model	OFS03	OFS10	OFS15	OFS30	OFS50	OFS100	OFS150
Capacity @93% Purity	3 Nm ³ /h	10 Nm ³ /h	15 Nm ³ /h	30 Nm ³ /h	50 Nm ³ /h	100 Nm ³ /h	150 Nm ³ /h
40L Cylinders Pressure	150 barg	150 barg	150 barg	150 barg	150 barg	150 barg	150 barg
40L Cylinder Filling Per Day	12 pcs	40 pcs	60 pcs	120 pcs	200 pcs	400 pcs	600 pcs
Total Electricity Consumption	10 kW	21 kW	28 kW	56 kW	95 kW	190 kW	240 kW

*OFS: Oxygen Filling Station



SECTORS

Oxygen gas has several practical uses in the medical applications. Besides, oxygen gas is also used in many industrial applications such as enriching with oxygen, increasing combustion efficiency, disinfection etc.



HEALTHCARE INDUSTRY



MINING INDUSTRY



METAL INDUSTRY



FISH FARMING INDUSTRY



WASTE WATER TREATMENT INDUSTRY



GLASS MANUFACTURING INDUSTRY



OZONE INDUSTRY

HEALTHCARE INDUSTRY

With the IDEAL MAKINA PSA oxygen generator, you get a secure and constant source of pure oxygen. Produced directly at the hospital, the oxygen is available where and when you need it.

Installation of on-site medical oxygen generation systems in healthcare facilities is growing all around the world as a safe alternative to oxygen from gas suppliers.

Our unique medical oxygen generators are available as Class IIB certified medical devices according to the European Medical Device Directive 93/42/CE and are allowed for any healthcare application, especially after the introduction of the Oxygen 93% Monograph as outlined in the European Pharmacopoeia Supplement 7.1, which has become effective starting from July 2011.

The IDEAL MAKINA Oxygen generators are also certified according to the ISO 13485:2003 for the manufacturing of medical devices.

With the IDEAL MAKINA Oxygen Generators, finally you have access to a fully safe and reliable oxygen source, which can be installed in your healthcare facility as per ISO 10083:2006 and HTM 2022.

We can provide a tailor-made solution that fits your exact needs; i.e. skid mounting, GSM modem, remote operating and monitoring. Other parameters can be measured on request, such as hydrocarbons, CO, CO₂, flow and dew point. The Ideal Makina medical sales team is ready to consult each project with you to assure successful installation of the system. And our service department will make sure that your system is always in top condition.

► **Our Medical Oxygen Production, Inspection & Stocking System Concepts are as follow;**

- Stand-alone system
- Skid mounted unit
- Containerized Unit



► **Safety first – always**

IDEAL MAKINA can design and install a medical oxygen generating system with all its proper capabilities, monitoring and alarm system to reflect your local safety requirements. The unit is equipped with touch controller for easy access and automatically calls alarms and switch to back up supply when malfunctioning occurs.

► **Nonstop operation**

Our oxygen generating systems are designed for 24 hour, 365 days per year operation. Cylinder filling back up provides safe delivery of Oxygen to hospital pipeline system. And you are no longer dependent on unstable deliveries and fluctuating gas prices.

► **Guaranteed lower operating cost**

Investing in an oxygen system is quickly earned in savings. The average oxygen production cost is 1.2 kWh per cubic meter of oxygen produced and pay off from most models is earned within the first months of operating.



MINING INDUSTRY

► The IDEAL MAKINA O₂ gas generator is often used in gold mining and is an excellent oxygen solution in the gold extraction process.

Furthermore, copper or nickel smelters consume large quantities of oxygen.

BENEFITS OF USING OXYGEN APPLICATION IN LEACHING PROCESS

► **Increased Gold Recovery**

Higher dissolved oxygen level in leaching process enhances the gold cyanidation thus increase gold extraction rate significantly up to 98%.

► **Decreased retention time by leaching**

Conventional leaching time of 96/72 hrs can be reduced up to 50%.

► **Increased Ore throughput**

► **Increased Silver Recovery**

Silver is being dissolved in the leaching process in the same process reaction as gold.

► **Decreased Cyanide Costs**

The Cyanidation kinetic depends on the gold, cyanide, water and oxygen in the leaching tanks. The sufficient level of oxygen reduces the amount of cyanide required.

► **Decreased Waste Treatment Costs**

The reduction in the amount of cyanide in the leaching process also decreases the amount of cyanide that must eventually be removed from the waste stream. The oxygen generated can be used as a fee gas to an ozone generator and injected directly into the waste stream as an environmentally friendly oxidizing agent.

Our PSA oxygen generation system will be specially prepared for the harsh ambient and operating conditions at the mine site. Due to the location the conventional supply of oxygen by means of truck transported liquid oxygen and local cryogenic storage tanks would not be possible so that the required oxygen has to be produced on-site through an air separation process. That's why IDEAL MAKINA Oxygen Generator Systems are the best solution for Gold and Silver Mines.



METAL INDUSTRY

- ▶ For cutting and brazing, pure oxygen is used instead of air to increase the flame temperature and allow localized melting of the work piece metal.
- ▶ **Blast Furnaces**
Blast furnaces account for up to 40 percent of the total amount of oxygen used in a typical integrated steel mill. Oxygen is injected into these furnaces through spargers devices used to spray gas into a system to enrich the air. This process increases the productivity of the furnace. It also serves to lower coke consumption by facilitating the addition of powdered coal and natural gas to the furnace. Using oxygen in a blast furnace lowers the overall cost of production.
- ▶ **Basic Oxygen Furnaces**
In basic oxygen furnaces, oxygen is used for decarburization the process of decreasing the level of carbon in metals and the conversion of hot metal formed in a blast furnace to liquid steel. This process typically accounts for about half the amount of oxygen used in an integrated steel mill. When oxygen reacts with silicon and carbon, it produces a large amount of heat. This heat is enough to melt scrap metal in large quantities.
- ▶ **Electric Arc Furnaces**
Electric arc furnaces have three primary uses for oxygen. Oxygen is used to run oxy-fuel burners used for heating and melting scrap metal. Oxygen is used in high-velocity lancing. High-velocity lancing is used in localized scrap melting processes, decarburization of steel and slag foaming. Oxygen is used in sub-sonic injection processes used for post combustion of carbon dioxide.
- ▶ **Rotary Furnaces**
Rotary furnaces used to depend on sulfur oxide and nitrogen oxides to heat metal. They have since switched to pure oxygen. Using pure oxygen allows for the avoidance of heat loss, thereby reducing the amount of time the furnace needs to complete tasks as well as its overall costs.
- ▶ **Steel Reheating, Cutting and Burning**
Oxygen is used in steel reheating furnaces. In particular, oxygen is used for enrichment or two run oxy-burners, as blast furnaces and rotary furnaces, respectively. Using oxy-fuel burners in this process contributes to reduced fuel consumption when compared to other gases. High-purity oxygen is used in cutting and burning processes to run automatic cutoff torches, as well as in the cutting of crops and other forms of mill scrap.



FISH FARMING INDUSTRY

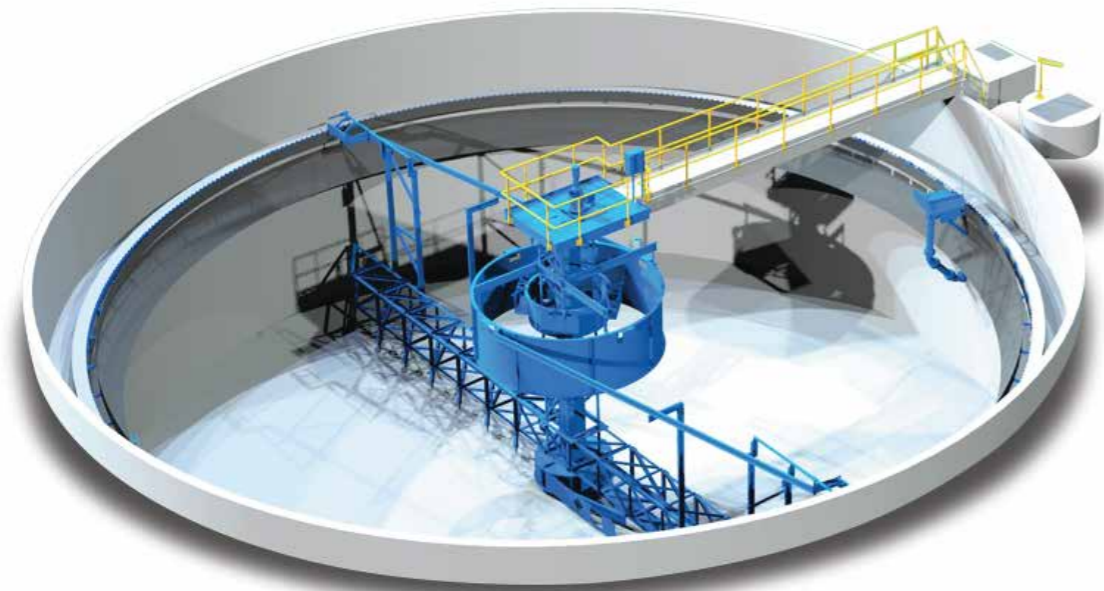
- ▶ It's well known in the aquaculture industry that oxygen generation is extremely beneficial for fish farms and hatcheries. Since the quality of the water determines the quality of the fish, it's paramount that a steady oxygen supply is always available. Oxygenizing the water leads to healthier fish with better appetites, which means bigger fish to sell when the time comes.
- ▶ **Key factors about aquaculture and oxygen:**
 - Feeding fish consume up to 3x more than inactive fish, it is therefore important to have versatile and efficient supply of oxygen
 - Much higher stocking densities are possible $\geq 100 \text{ kg/m}^3$ is possible (depending on species) = higher output on same area and volume of water. Much more efficient than systems based on atmospheric air.
 - Better use of feed = better economy.
 - Higher growth rate of the fish = better economy.
 - Oxygen cones are easy to operate and transfer of oxygen to the water is easy to adjust.
 - Save money by operating your fish tanks at all time sufficient levels of oxygen to meet fish demands, at least 70 % saturation must be maintained at the outlet of the fish tank.
 - Feed gas can be provided to an existing Ozone generator for disinfection.
 - In many countries there are by regulation demand on minimum oxygen concentration at the outlet from the fish farm. By using pure oxygen, these levels can easily be maintained.



WASTE WATER TREATMENT INDUSTRY

- ▶ Injecting oxygen into your waste water treatment basin dramatically increases bacteriological survival and regeneration. Your aerobics are well protected by using supplemental O₂ to keep your PPM level up — regardless of the conditions, even in hot climates or summer months when O₂ levels are at their lowest, and consumption highest.

The consistent, level demand of injected oxygen makes a PSA oxygen generator ideal to keep your plant operating and capital costs down. A simple, reliable IDEAL MAKINA oxygen generation system will provide years of O₂ production, without the ongoing expense and hassle of delivered cryogenically produced oxygen.



GLASS MANUFACTURING INDUSTRY

- Oxygen supply for glass, neon and porcelain manufacturing applications and in particular:
- Glass blowing
- Flat glass manufacturing factories
- Forming of neon light tubes into the required shapes
- Flame polishing of porcelain articles

▶ Special Know-How & Services from IDEAL MAKINA

We at IDEAL MAKINA always do a detailed simulation and analysis of the oxygen consumption profile, including peak consumptions, to guarantee a correct dimensioning of the PSA oxygen generator which will bring the economical benefits you expect.

As each customer has different operating and manufacturing conditions, we will also provide consultancy regarding the most efficient and cost-effective oxygen distribution under consideration of all relevant parameters.



OZONE (O₃) INDUSTRY

▶ Oxygen supply for ozone generation. Still most ozone generators produce this gas out of compressed air. By using oxygen as feed gas instead of air, the ozone generator's efficiency will significantly increase and the risk of HNO₃ formation will be reduced.

▶ Special Know-How & Services from IDEAL MAKINA

We at IDEAL MAKINA are aware about the importance of a correct and stable dew point of the produced oxygen in order to avoid damages to the electrodes inside the ozone generator. Our PSA oxygen generators which be able to supply you the oxygen quality you need for a trouble-free operation of you ozone generators, even under harsh ambient and operation conditions.



Our PSA oxygen generators also offer you unique solutions for a turn-key ozone generation system solutions inside ISO freight containers.



SOME OF OUR OXYGEN GENERATOR REFERENCES

 AZERBAIJAN	 TURKEY	 IRAQ	 TURKEY	 SYRIA	 TURKEY	 LIBYA
 ALGERIA	 SYRIA	 TURKEY	 LIBERIA	 TURKEY	 IRAQ	 TURKEY
 SEYCHELLES	 TURKEY	 TURKEY	 ENGLAND	 TURKEY	 LIBYA	 TURKEY
 TURKMENISTAN	 ALGERIA	 ALGERIA	 LIVERIA	 TURKEY	 SYRIA	 TURKEY
 SYRIA	 TURKEY	 ALGERIA	 INDIA	 SYRIA	 TURKEY	 SYRIA

SOME OF OUR OXYGEN GENERATOR REFERENCES

 TURKEY	GÜMRÜKCÜLER HOSPITAL AZERBAIJAN	 TURKEY	 AZERBAIJAN	 AZERBAIJAN	MOHAMMAD BAKKAR HOSPITAL SYRIA	 TURKEY
 KENYA	GULAN GENERAL HOSPITAL IRAQ	 TURKEY	 TURKMENISTAN	 TURKEY	CLINIC GORMEDI HOSPITAL GEORGIA	 TURKEY
 TURKEY	 MOLDOVIA	 TURKEY	 TURKEY	 UKRAINE	FISH & FRY MALTA	 TURKEY
 UKRAINE	 AZERBAIJAN	 SPAIN	 IRAQ	 TURKEY	 TURKEY	 TURKEY
ALASH MEDICAL LLP KAZAKHISTAN	O2 BURKINA S/C BURKINA FASO	ADRIATIC FARMING CROATIA	OXYELION FOR FILLING OXYGEN AND GASES LIBYA			

SOME OF OUR REFERENCE PROJECTS



SEIYUN INDUSTRIAL GASES FACTORY

YEMEN

SOME OF OUR REFERENCE PROJECTS



TÜPRAG

TURKEY



Akdağ
MINERAL TAS YUNU

ELAZIĞ



DEARSAN
SHIPYARD

TURKMENISTAN



بلدية الخمس
AL-KHUMS MUNICIPALITY

LIBYA

SOME OF OUR REFERENCE PROJECTS

SOME OF OUR REFERENCE PROJECTS

 **BOSCH**

INDIA



CHU NEDİR
MUHAMMED TZI

ALGERIA



SOME OF OUR REFERENCE PROJECTS





TURKEY





LIBYA

SOME OF OUR REFERENCE PROJECTS

GULAN GENERAL HOSPITAL
IRAQ



SOME OF OUR REFERENCE PROJECTS



MILITARY HOSPITAL
TAJKISTAN



SOME OF OUR REFERENCE PROJECTS

ASHGABAT
INTERNATIONAL
AIRPORT

TURKMENISTAN



KENYA

SOME OF OUR REFERENCE PROJECTS



idealMakinA
www.idealMakinA.com
OXYGEN GENERATOR &
CYLINDERS FILLING STATION
+90 216 540 88 55

idealMakinA
www.idealMakinA.com
OXYGEN GENERATOR &
CYLINDERS FILLING STATION
+90 216 540 88 55

idealMakinA

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

SYRIA



Cevital

ALGERIA

SOME OF OUR REFERENCE PROJECTS



FISH FRY

MALTA



COMPRESSOR
INTERNATIONAL

UKRAINE



SOME OF OUR REFERENCE PROJECTS



OTTOMAN COMPANY

IRAQ



DALGA KIRAN

UKRAINE

SOME OF OUR REFERENCE PROJECTS



PERU



O2 BURKINA

BURKINA FASO



SOME OF OUR REFERENCE PROJECTS




LINERIA



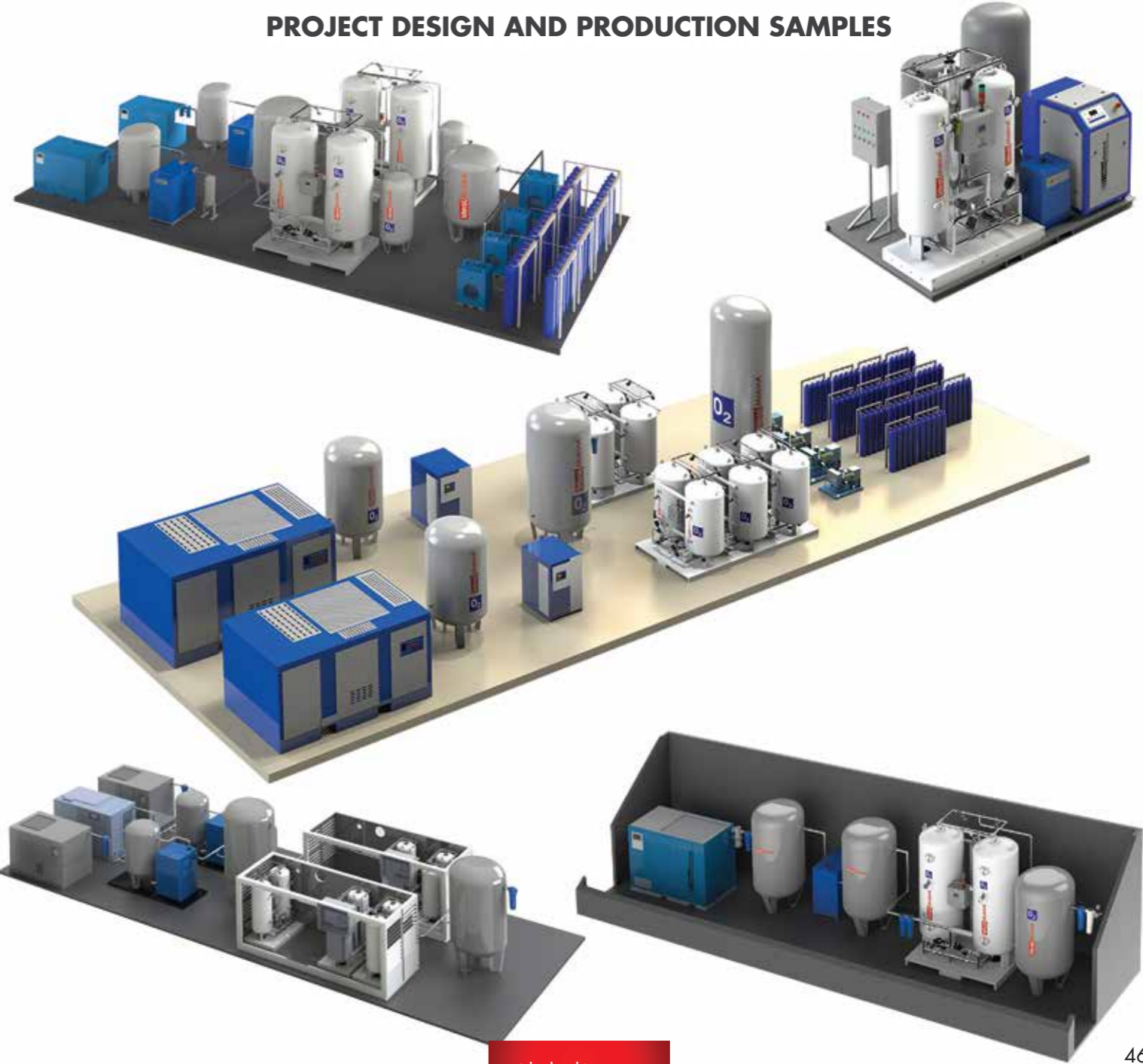
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AZERBAIJAN

PROJECT DESIGN AND PRODUCTION SAMPLES



PROJECT DESIGN AND PRODUCTION SAMPLES



OUR CERTIFICATES



The Growing World of
IDEAL MAKINA



İDEAL MAKİNA ENDÜSTRİ ÜRÜNLERİ SAN. ve TİC. A.Ş.
Esenkent Mh. Nato Yolu Cd. No:277 34776 Ümraniye - İSTANBUL / TURKEY
Phone: +90 216 540 88 55 Fax: +90 216 540 88 18



idealmakina.com