

# PARS COMPRESSOR



**AIR PRODUCTS**  
Instrument Air Compressor Package

**FOR 45 YEARS, WE HAVE  
INCREASED OUR CUSTOMERS' PRODUCTIVITY**

# PARS COMPRESSOR



OLD BUT GOLD

**The leader in oil-free compressed  
air technology in IRAN**

**Pars Compressor Mfg & Ind Co.** has been manufacturing air compressor packages since 1975. This company is the oldest and largest manufacturer of screw compressors and is known as a leading company compressors

The First Manufacturer of Screw Compressor in IRAN  
The First Manufacture of Air End in IRAN

For decades, we have been a trusted partner for our customers in various process industries and we made thousands of screw rotors at **PARS COMPRESSOR** through our unique Holroyd machines for Screw air compressors and also Dryer packages (Heatless/heating) type to make dry air suitable for Instrument air services in **Oil**, gas and petrochemical industries with more than 100 packages during past years.

Pars Compressor was cooperating with **GHH-Rand** and Atlas Copco as an **OEM** for packaging air compressors with their oil free **AIR-ENDS**.

### First Choice in oil-free air technology

Over the past 45 years **PARS COMPRESSOR** has pioneered the development of oil-free air technology, resulting in a range of air compressors and blowers that provide 100% pure, clean air for different applications, especially for Instrument actuators thorough his own dry air packages as well.

Zero risk of contamination.  
Zero risk of damaged or unsafe products.  
Zero risk of losses from operational downtime.  
Zero risk of damaging your company's hard-won professional reputation.

### Customized design

No application or environment or customer is the same. This is why we deliver products that are made according to your specifications and requirements. Do you have space restrictions, severe ambient conditions, is it difficult to do maintenance or do you have any other concern, we are ready to help you find a solution.

At **PARS COMPRESSOR** we are specialized in providing packages

according to the requirements of our customers. We are able to adapt our design and make a package suitable to fit in an existing space. Whether it is a replacement of an existing package or additional equipment on existing platform, our package will be designed with space and tie-in point restrictions in mind reducing the need for changes in the field.



## One responsible supplier

We can supply a full range of products, for example producing plant air, instrument air and high pressure nitrogen. The products can be placed on one common skid where all interconnecting piping, wiring and control systems are installed by **PARS COMPRESSOR**. We take full responsibility and warranty for all items installed on the package. As a customer you only need to deal with one supplier during the entire lifetime of the package (including engineering and built up in project phase).

## Service and optimization for your compressed air system

Sustainable economic performance, reduced energy, costs and improved profitability: Our services get you there faster.

Requirements for service and maintenance are just as varied as the range of compressed air systems available.

These requirements range from original replacement parts and premium maintenance agreements to system optimization.

With our perfectly tailored and extendable aftermarket products, we have the ideal solutions for worry-free compressed air systems and high availability.

service team are at your disposal regardless of whether you have purchased a compressor or dryer from us.

We can optimize your energy consumption, boost your availability and safeguard the reliability and efficient operation of your compressed air system for many years, or even decades, to come. Regular inspections of your systems, enable you to take advantage of the technical progress made and help you to steadily boost your efficiency.

## Overview of AIR PRODUCTS portfolio in PARS COMPRESSOR

### Portfolio of Air packages in Pars Compressor:

- Oil free/oil Injected Screw air compressor
- Oil free/lubricated reciprocating air compressor
- Integrally Geared Centrifugal air compressor

## Air Dryer Systems portfolio

- Heatless Adsorption Dryers
- Heated Adsorption Dryers
- Air Refrigerated Dryers
- Membrane Dryers

## Nitrogen Generation Package

Membrane Type  
PSA Type

## AIR SEPARATION UNITS (ASU)

Through Cryogenic process to produce compressed air, Liquid nitrogen, Gaseous nitrogen, Liquid oxygen, Gaseous oxygen and sometimes Argon as side product.

## DRY SCREW AND OIL INJECTED AIR COMPRESSOR PACKAGES:

For decades, we have been a trusted partner for our customers in various process industries and we made thousands of screw rotors at **PARS COMPRESSOR** through our unique Holroyd machines for Screw air compressors and also Dryer packages (Heatless/heating) type to make dry air suitable for Instrument air services in Oil, gas and petrochemical industries with more than 100 packages during past years.

Pars Compressor was cooperating with **GHH-Rand** and Atlas Copco as an **OEM** for packaging air compressors with their oil free **AIR-ENDS**.

We offer a complete range of oil-lubricated and oil-free air compressors suitable for any application and environment. All our products can be customized to your specifications and requirements. We are free to choose any compressor brand from **PARS COMPRESSOR** or upon your request or best suitability for the application.

They are available in a wide range of capacities, however, the pressures are limited to 11 bar(g) for the oil-free screw compressor and 13 bar(g) for oil-lubricated type depending on the ambient temperatures. The range of each compressor type can be found here. Do you need to go higher in capacity or pressure? Check out our reciprocating and centrifugal compressors or contact our sales team, they are ready to help you find your solution.

# PARS COMPRESSOR



**OIL FREE  
COMPRESSORS**

OLD BUT GOLD

**The leader in oil-free compressed  
air technology in IRAN**



## SINGLE STAGE OIL FREE

VM Series

Model	Power	Pressure	Free Air Delivery	Dimensions			Weight
	KW	bar	$\frac{m^3}{min}$	L (mm)	W (mm)	H (mm)	Kg
VM 10	18.5 ~ 75	2 ~ 3.5	2.9 ~ 9.7	2600	1150	1773	1500
VM 20	37 ~ 115	2 ~ 3.5	6.6 ~ 20.8	2600	1150	1773	1650
VM 30	55 ~ 160	2 ~ 3.5	10.9 ~ 31.7	2800	1150	1773	1690
VM 45	75 ~ 250	2 ~ 3.5	16.1 ~ 46.1	3300	1650	2000	2820
VM 75	110 ~ 335	2 ~ 3.5	26 ~ 75	4000	1775	2310	4020
VM 85	132 ~ 400	2 ~ 3.5	26 ~ 84	4000	1775	2310	6000
VM 140	200 ~ 630	2 ~ 3.5	38.7 ~ 143.1	4350	2000	2650	8500

VML Series

Model	Power	Pressure	Free Air Delivery	Dimensions			Weight
	KW	bar	$\frac{m^3}{min}$	L (mm)	W (mm)	H (mm)	Kg
VML 18	11 ~ 55	0.75 ~ 2	4.6 ~ 17	1500	1250	1570	780
VML 35	30 ~ 132	0.75 ~ 3	12.3 ~ 36.3	2800	1150	1773	1670
VML 60	45 ~ 200	0.75 ~ 4	21.5 ~ 62.3	3100	1650	2000	2790
VML 95	75 ~ 315	0.75 ~ 5	34.8 ~ 97.8	3750	1775	2310	4000
VML 150	110 ~ 500	0.75 ~ 6	52.5 ~ 147.8	5150	2300	2500	5500
VML 250	160 ~ 710	0.75 ~ 7	88.6 ~ 243.3	5500	2600	3000	7800

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## DOUBLE STAGE OIL FREE SCREW COMPRESSOR

Model	Power	Pressure	Free Air Delivery		Water Cooled			
	KW / HP	bar	m <sup>3</sup> / min	cfm	Dimensions			Weight
					L (mm)	W (mm)	H (mm)	Kg
PCF 60	45 / 60	7	6.67	235.43	2500	1350	2110	2500
		10	5.16	182.22				
PCF 75	55 / 75	7	8.28	292.22	2500	1350	2110	2600
		10	8.77	238.22				
PCF 100	75 / 100	7	11.52	406.7	2500	1350	2110	2700
		10	10	353.14				
PCF 125	90 / 125	7	13.17	464.97	2500	1350	2110	2760
		10	12.08	426.71				
PCF 150	110 / 150	7	16.67	588.57	2500	1350	2110	3100
		10	15.66	553.02				
PCF 180	132 / 180	7	21.67	765.14	2501	1350	2110	3250
		10	18.33	647.42				

Performance data based on the intake of air 1bar , 20 °C



# DOUBLE STAGE

## OIL FREE SCREW COMPRESSOR

## PORTABLE (AIRMAN)

Compressor					Engine				Dimension Weight					
Model	Type	Pressure	Free Air Delivery		Air Outlet	Type	Power	No. of Cylinder	Fuel Oil	Dimension			Total Weight	Tyre Size
		bar	m <sup>3</sup> / min	cfm	DN / Pcs		KW rpm		Lit	L (mm)	W (mm)	H (mm)	Kg	

## HIGH PRESSURE

PDS390S	Single Stage	10.5	8.9	314.29	50 / 1 20 / 4	4 cycle	110 2400	6	182 13	3810	1800	1780	2040	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDSF530S	Single Stage	10.7	15.0	529.71	50 / 1 20 / 2	4 cycle	116 2500	6	270 23	3650	1685	2070	3230	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDSF830S	Single Stage	10.5	23.5	829.88	50 / 2 20 / 1	4 cycle	206 2200	6	400 45	4000	1900	2130	4400	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDSG480S	Single Stage	13	12.5	441.43	50 / 1 20 / 2 10 / 1	4 cycle	223 2000	6	270 23	4000	1900	2130	4400	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDSG750S	Single Stage	13	21.2	748.66	50 / 1 20 / 2	4 cycle	223 2000	6	400 45	4000	1900	2130	4400	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDSF920S PDSG820S	Single Stage	13	36.0	1271.30	50 / 1 20 / 1	4 cycle	324/320 (238/235) 2200/2200	6	555 49	4350	2000	2445	5300	7.50-16 10PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Turbo charger with after cooler								
PDSG1300S	Single Stage	13	36.0	1271.30	80 / 1	4 cycle	364 1800	6	700 80	4650	1870	2050	8000	
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Turbo charger with after cooler								
PDSH850S	Single Stage	17.5	24.0	847.54	50 / 1 20 / 1	4 cycle	310 2000	6	555 49	4350	1900	2350	5650	7.50-16 10PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Turbo charger with after cooler								
PDSJ750S	Two Stage	21.1	21.2	748.66	50 / 1 20 / 1	4 cycle	228 2000	6	555 49	4300	1900	2230	5350	7.50-16 10PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Turbo charger with after cooler								
PDSK900S	Two Stage	24.8	25.5	900.51	50 / 1 20 / 1	4 cycle	327.3 1800	6	610 85	4670	2100	2315	6950	
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Turbo charger with after cooler								



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## PORTABLE (AIRMAN)

Compressor					Engine				Dimension Weight					
Model	Type	Pressure	Free Air Delivery		Air Outlet	Type	Power	No. of Cylinder	Fuel Oil	Dimension			Total Weight	Tyre Size
		bar	3 m / min	cfm	DN / Pcs		KW rpm		Lit	L (mm)	W (mm)	H (mm)	Kg	

## PORTABLE

PDS130S	Single Stage	7.1	3.5	123.60	20 / 2	4 cycle	28 3300	3	70 6	2470	1510	1360	830	5-10 6PR*2W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type								
PDS185S	Single Stage	7.1	5.0	176.57	20 / 3	4 cycle	37.9 3000	4	95 10	2740	1510	1360	915	175R13 8PR*2W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type								
PDS265S	Single Stage	7.1	7.5	264.86	20 / 3 50 / 1	4 cycle	62 2600	4	114 10	3020	1600	1615	1410	650-14 8PR*2W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDS390S	Single Stage	7.1	11.0	388.45	20 / 4	4 cycle	80.9 2400	4	190 13	3810	1800	1780	2040	650-14 8PR*2W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDS655S	Single Stage	7.1	18.5	653.31	50 / 1 20 / 2	4 cycle	116 2500	6	270 23	3850	1685	2070	3225	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type								
PDS750S	Single Stage	7.1	21.2	748.66	50 / 1 20 / 2	4 cycle	144.5 2100	6	310 23	3850	1685	2070	3335	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								
PDSE900S	Single Stage	8.8	25.0	882.85	50 / 2 20 / 1	4 cycle	280 2200	6	400 45	4000	1900	2150	4600	650-14 8PR*4W
	Oil Cooled					Water Cooled								
	Rotary Twin Screw					Direct Injection Type Turbo								



PORTABLE  
AIRMAN



## STATIONARY OIL INJECTED SCREW COMPRESSOR (BELT DRIVE)

Model	Power	Pressure	Free Air Delivery		Dimension			Weight
	KW / HP	bar	m <sup>3</sup> / min	cfm	L (mm)	W (mm)	H (mm)	Kg
PC 75	55 / 75	7	9.2	327.71	2000	1400	1590	1640
		8	8.9	314.65				
		10	7.8	276.86				
		13	6.4	226.36				
		15	5.7	201.29				
PC 100	75 / 100	7	12.5	442.48	2000	1400	1590	1730
		8	11.8	417.76				
		10	10.4	368.33				
		13	8.9	317.47				
		15	8.1	288.52				
PC 125	90 / 125	7	14.8	522.65	2300	1600	1980	2000
		8	13.7	486.63				
		10	12.3	437.19				
		13	10.9	385.98				
		15	9.2	325.60				
PC 150	110 / 150	7	17.7	625.76	2301	1601	1981	2350
		8	16.3	578.09				
		10	14.6	517.35				
		13	12.8	454.49				
		15	12.1	428.36				
PC 180	132 / 180	7	22.4	792.45	2200	1840	2160	3300
		8	21.2	748.66				
		10	18.6	660.02				
		13	15.4	545.60				
		15	14.8	525.12				
PC 220	160 / 220	7	26.6	940.06	2200	1840	2160	3400
		8	25.4	900.15				
		10	22.1	781.15				
		13	18.5	655.07				
		15	17.9	632.47				

## STATIONARY OIL INJECTED SCREW COMPRESSOR (BELT DRIVE)

Model	Power	Pressure	Free Air Delivery		Dimension			Weight
	KW / HP	bar	m <sup>3</sup> / min	cfm	L (mm)	W (mm)	H (mm)	Kg
PC 20	15 / 20	7	2.5	89.70	1100	980	1060	400
		8	2.2	80.16				
		10	1.7	61.09				
		13	1.0	37.43				
		15	0.8	30.72				
PC 25	18.5 / 25	7	3.1	111.95	1100	980	1060	410
		8	2.9	102.41				
		10	2.4	87.58				
		13	1.6	59.33				
		15	1.2	45.56				
PC 30	22 / 30	7	3.8	134.19	1100	980	1060	420
		8	3.5	124.66				
		10	2.9	105.24				
		13	2.3	81.22				
		15	1.7	60.03				
PC 40	30 / 40	7	4.9	174.45	1460	1000	1360	720
		8	4.5	159.97				
		10	3.9	140.55				
		13	3.2	116.18				
		15	2.9	103.82				
PC 50	37 / 50	7	5.8	205.53	1460	1000	1360	760
		8	5.4	191.40				
		10	4.7	168.09				
		13	4.0	142.67				
		15	3.6	128.19				
PC 60	45 / 60	7	6.5	232.37	1460	1000	1360	810
		8	6.3	222.48				
		10	5.4	193.87				
		13	4.6	164.56				
		15	4.1	144.79				

Standard condition ( 20 °C, 1bar )

## STATIONARY OIL INJECTED SCREW COMPRESSOR (DIRECT DRIVE)

Model	Power	Pressure	Free Air Delivery		Dimension			Weight
	KW / HP	bar	m <sup>3</sup> / min	cfm	L (mm)	W (mm)	H (mm)	Kg
Pc15	11 / 15	7	1.2	44.85	1460	1000	1360	380
Pc20	15 / 20	7	2.2	79.46	1460	1000	1360	400
		10	1.2	43.44				
		13	1.1	42.02				
Pc25	18.5 / 25	7	2.7	98.53	1100	980	1060	410
		10	2.5	88.29	2200	1300	1630	
		13	1.1	42.02	1460	1000	1360	410
Pc30	22 / 30	10	2.7	96.41	1460	1000	1360	420
		13	2.4	87.23	2200	1300	1630	440
Pc40	30 / 40	10	2.7	96.41	1460	1000	1360	720
		13	2.6	94.64				
Pc50	37 / 50	7	5.5	194.23	1460	1000	1360	760
		10	5.4	191.76				
Pc60	45 / 60	13	5.3	189.28	1460	1000	1360	810
Pc100	75 / 100	7	11.2	396.58	2200	1600	2000	1730
		10	10.2	361.62	2970	1840	2100	1730
Pc125	90 / 125	10	11.0	391.28	2200	1600	2000	2000
		13	10.9	385.98				
Pc180	132 / 180	7	22.4	792.45	2970	1840	2100	3300
Pc220	160 / 220	10	22.1	781.15	3500	2400	2100	3400
Pc270	200 / 270	7	44.2	1564.06	2200	1840	2160	3700
		13	21.8	769.85	2970	1840	2100	3700
Pc340	250 / 340	7	44.2	1564.06	2200	1840	2160	4000
Pc420	315 / 420	10	43.6	1541.46	3500	2400	2100	4000
Pc480	355 / 480	13	43.0	1519.21	3500	2400	2100	4000

Performance data based on the intake of air 1bar, 20 °C



## OIL FREE/OIL LUBRICATED RECIPROCATING AIR COMPRESSOR PACKAGES

Our Manufacturer standard made oil free reciprocating air compressor packages are built for low flow and high pressure ranges of air products.

Pars compressor by using compressor bare block from **GHH-Rand**, **AIRMAN**, **COMPARE**, .... Will make small to medium size of Air packages.

Our reciprocating type compressor packages are capable of continuous duty with low levels of maintenance and are suitable for high temperature environments. Our reciprocating compressors can be delivered in different setups: horizontal, vertical or V-type.

Depending on the application and available space we can help you decide which type would be best suitable for your request. Reciprocating compressors are available in a wide range of capacities and can go up to very high pressures.

### Features:

Easy and low maintenance level

Low noise frequency

Suitable for high temperature environments and high pressures

Suitable for earthquake areas

Available in oil-lubricated and oil-free

All **compressor brands** are possible

**OIL FREE/OIL**  
LUBRICATED RECIPROCATING  
AIR COMPRESSOR PACKAGES

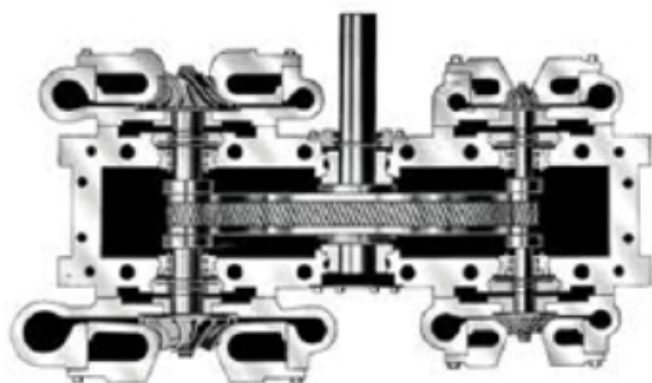


## CENTRIFUGAL AIR COMPRESSOR PACKAGES

Our centrifugal compressor packages are built using cutting-edge aerodynamic technology and proven, heavy-duty components as per API-672. They deliver the high Capacity **FAD** rates and pressure levels necessary for such important processes as plant air in petrochemical or industrial gas installations.

Utilizing multi-stage compression with as many as eight stages on a single gearbox, our centrifugal compressors can be supplied the high flow and pressure levels that might otherwise require additional machinery. Our centrifugal air compressors can handle flow volumes from 3500-50 000 Nm<sup>3</sup>/h and generate pressures up to 32 bar, and beyond. Exclusive impeller design and control options, such as variable inlet- and diffuser-guide vanes, ensure that pressure and flow rates remain constant even as factors such as ambient temperature or back pressure change.

Pars Compressor Centrifugal air packages are tailor made packages and in base of customer requirements, Control system and capacity could be modified accordingly.



Utilizing multi-stage compression

Suction pressure: 1 Bara to 8 Bara

Discharge pressure: up to 35 Bara

Suction Temperature: 40- to 50°C

Effective inlet flow range: 3500- 50 000 Nm<sup>3</sup>/Hr.

Number of stages: 1 to 6

Impeller type: open

Seals: Carbon ring+ Labyrinth

Capacity/Pressure Control: Variable inlet guide vanes/Inlet throttle valve

API: 672

Oil system: Manufacturer standard+ API -614

Coupling: Dry

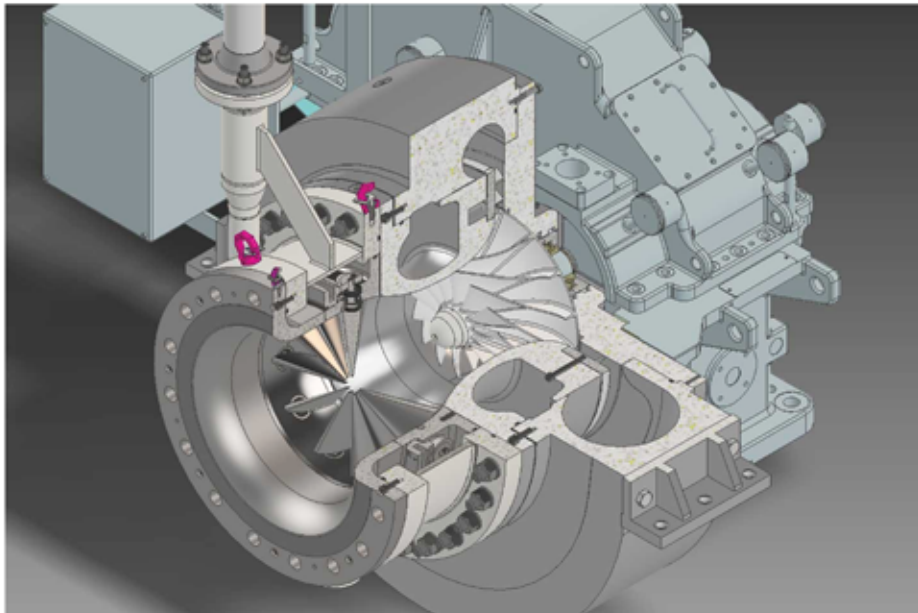
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## ENTRIFUGAL COMPRESSOR-INTEGRALLY GEARED AS PER API-617 FOR PROCESS GAS APPLICATION

Durable and reliable systems are essential to fulfil requirements in view of challenging ambient and process conditions. Besides offering standard solutions we provide high specified compressor solutions according to API 617, API 672, ASME, DIN and others. We ensure to deliver the best technical solution as per compressor solutions including our customer needs. We produce bare shaft units as well as complete all auxiliary equipment.

**Our range for integrally geared compressors are extremely wide:**

- Up to 100 bar (a)
- Up to flow rate of 200.000 Nm<sup>3</sup>/h
- Up to 6-stage geared compressors
- All gas mixtures





## AIR DRYER PACKAGES

When water vapor is compressed it becomes, well, water. Water running through compressed air lines, through pneumatic components, through magnetic coils and in motors can inhibit the proper function of industrial machines and affect their productive output. Moisture does this in a number of ways:

- It yields rust and oxidation.
- It displaces necessary lubricant, causing greater wear on parts.
- It dilutes paint that may be applied with compressed air.
- It can freeze under certain conditions, rendering parts inoperable.
- It can corrupt the air or gas thereby adversely affecting gauge and meter readings.

Needless to say, excess moisture leads to higher operating costs coming from repairs and delays.

Water vapor is in the air we breathe, at least most of the time, in various percentages. Compression raises the temperature of the air and consolidates the water vapor within it. As the air cools, the water is condensed in those machine segments that are downline from the compressor -- tanks, hoses, valves etc -- and remains to wreak its havoc. In short, moisture cannot be prevented but it must be removed after compression.

## Air Drying Methods

There are a variety of air dryer packages that perform the task using differing techniques. Some of these are described below:

### 1. Dryers (heatless/heated types)

Dessicant materials include activated alumina, silica gel and molecular sieve. The porous surfaces of these dessicants adsorb water molecules from the air and hold onto them until the compression process ceases, at which point the dessicants are stripped of the H<sub>2</sub>O content and are then re-usable.

Heated adsorption dryers include heating components

Heatless can also dessicants for water vapor removal.



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## ADSORPTION HEATLESS AIR DRYER

Model	Capacity	Air Connection	Dimension			Dessicant Weight per Tower	Total Weight
	m <sup>3</sup> /min	Inch	Length (mm)	Width (mm)	Height (mm)	Kg	Kg
PD-30 D	0.5	1	550	250	1080	8.5	50
PD-60 D	1	1	690	290	1490	17	70
PD-150 D	2.5	1 1/2	690	350	1600	21	105
PD-240 D	4	2	820	350	1750	38	130
PD-420 D	7	2	880	500	1770	61	180
PD-720 D	12	2 1/2	1000	500	1850	86	235
PD-840 D	14	2 1/2	1050	600	1990	106	315
PD-960 D	16	2 1/2	1050	600	2100	124	340
PD-1080 D	18	2	1050	600	2120	140	360
PD-1320 D	22	(4F)	1310	750	2195	182	505
PD-1710 D	28.5	(4F)	1310	750	2205	235	625
PD-2160 D	36	(4F)	1310	750	2225	280	640
PD-2580 D	43	(5F)	1520	830	2360	351	865
PD-3000 D	50	(5F)	1520	830	2380	413	960
PD-3600 D	60	(5F)	1870	1000	2420	570	1130
PD-4800 D	80	(5F)	1870	1000	2420	670	1230

### Standard Condition

Inlet Compressed air at 7bar and 35°C

Ambient Temperature at 20°C

Outlet Pressure Dew Point -20°C ~ -40°C



### فرمول محاسبه درایر جذبی

#### Multiplier for different inlet pressures in bar (g) (IP1)

bar (g)	4	5	6	7	8	9	10	11	12	13	14	15	16
Multiplier (IP1)	0.61	0.75	0.9	1	1.12	1.25	1.37	For a selection consult your distributor					

#### Multiplier for different inlet temperatures in °C (IT1)

	+5	+30	+35	+40	+45	+50
	1.00	1.00	1.00	0.92	0.77	0.6

### Example

Air volume ( V1 ) at dryer inlet : 900 m3/h  
 Inlet pressure (IP1) : 10 bar (g)  
 Inlet temperature (IT1) : +40 °C  
 V2: Required dryer capacity, corrected for 35 °C ,7bar (g)

### Calculation

$$V2: \frac{V1}{IP1 \times IT1} = \frac{900}{1.37 \times 0.60} = 1095 \text{ m3/h}$$

#### شرایط استاندارد

- دمای هوای ورودی ۳۵ درجه سانتیگراد با فشار ۷ بار
- دمای هوای محیط ۲۰ درجه سانتیگراد
- دمای نقطه شبنم خروجی ۲۰ - درجه سانتیگراد تا ۴۰ - درجه سانتیگراد







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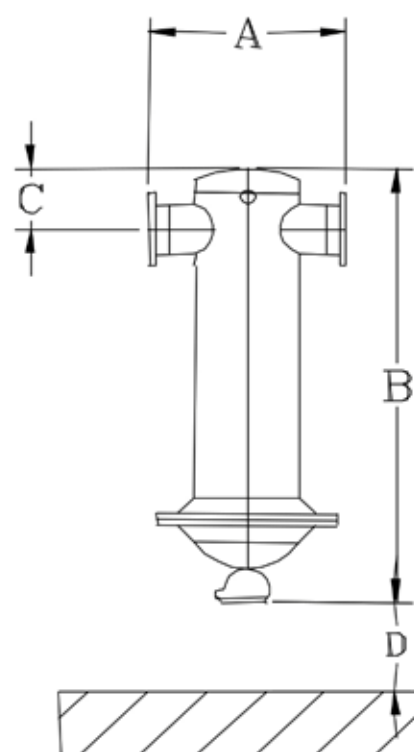
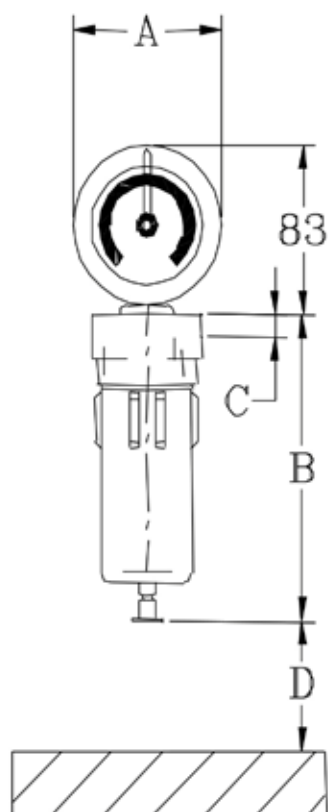
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## AIR FILTER ENGINEERING

Capacity m <sup>3</sup> / min	Air Connection in	Dimension				Weight (Kg)
		A (mm)	B (mm)	C (mm)	D (mm)	
0.6	G1/2	87	175	21	60	1.3
0.9	G1/2	87	209	21	75	1.4
1.3	G1/2	87	209	21	90	1.4
1.9	G1/2	87	279	21	90	1.7
3.3	G1	130	315	43	135	4.2
5.7	G1 1/2	130	415	43	235	4.8
9	G1 1/2	130	515	43	335	5.6
13.3	G1 1/2	130	715	43	525	8.4
17.4	G2	164	823	48	520	11.4
26.1	G2 1/2	164	1073	48	770	13
37.5	G3	250	1052	74	610	20
46.6	G3	250	1202	74	760	27.5
26.1	DN80	380	1260	170	530	54
37.5	DN80	440	1310	200	530	80
46.6	DN80	440	1310	200	530	80
52.3	DN100	500	1440	230	550	108
78.4	DN100	500	1440	230	550	110
104.7	DN150	640	1590	280	550	151
156.9	DN150	790	1660	300	550	212
209.2	DN200	790	1745	340	550	232
261.6	DN200	840	1780	360	550	357
313.9	DN250	940	1930	420	600	455
418.6	DN250	940	1930	420	600	462
523.3	DN300	940	1960	450	600	528

Standard condition ( 20°C, 1bar )

Filter Grade	Particle Removal Down to	Oil Removal Down to	Nominal Initial Pressure Drop
	Micron ( $\mu$ )	mg/m <sup>3</sup>	bar g
Pre	3	-----	0.03
Dust	1	0.5	0.05
Micro	0.01	0.01	0.09
After	-----	0.003	0.10



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[info@pars-compressor.ir](mailto:info@pars-compressor.ir)

## 2. Refrigerated Air Dryers

**Refrigeration drying works** in tandem with the process of cooling. In order to squeeze the maximum amount of vapor from the compressed air, refrigerant dryers generally obtain a 35 degree Fahrenheit temperature -- the maximum dew point for condensation. Hot compressed air enters the system to be cooled by the refrigeration component. During this operation, liquid droplets begin to form. These beads of moisture are then separated and trapped by a drain while the dried air then passes through the refrigerated compressed air dryer. This description, by the way, is simplified because many such systems can cool, re-heat and re-cool for optimal moisture removal.



# Refrigerated Air Dryers



## AIR REFRIGERANT DRYER

Capacity	Air Connection	Dimension			Total Weight
m <sup>3</sup> / min	Inch	Length (mm)	Width (mm)	Height (mm)	Kg
0.5	3/8	320	320	381	19
1	3/4	394	368	568	28
1.3	3/4	394	368	568	30
1.6	3/4	500	500	568	41
2.5	3/4	483	500	510	42
3	1	330	735	525	46
4.2	1	330	735	525	51
4.9	1	330	735	525	55
6.7	1 1/2	410	905	718	73
8.3	1 1/2	410	905	718	86
10.4	1 1/2	490	953	760	86
13.3	2	490	953	760	95
16.7	2	590	1052	801	109
20	2	590	1052	801	125
25	DN80	1232	1033	2115	480
30	DN80	1232	1033	2115	520
37.5	DN100	1243	1301	2116	690
45	DN100	1243	1301	2116	690
52.5	DN150	1400	1500	2112	880
60	DN150	1400	1500	2112	880
75	DN150	1400	1500	2112	1050
90	DN150	1400	1500	2112	1200

The Capacity of the Dryer is Based on the intake volume of the air compressor at 20°C 1bar

### 3. Membrane Air Dryers

Membrane dryers operate just as the name implies: a sheath-like bundle of hollow, poly-sulfone fibers allows air to pass through while capturing the water vapor. The vapor -- and some of the dried air -- disperses over the membrane surface area while the remaining air moves on toward its destination. Afterward, the trapped vapors are flushed out of the system by means of an air purge mechanism. There are variants of this technology: A nitrogen separation membrane produces nitrogen from air. A like membrane of hollow fibers, allows "fast gases", i.e. oxygen, carbon dioxide and, yes, water vapor, to permeate while retaining the "slow" nitrogen gas. This nitrogen is called the product while the other compounds are dubbed permeate. Purified nitrogen from an N<sub>2</sub> membrane is often used in the manufacturing of fertilizers, dyes, nitric acids, nylon fabric and even explosives. An oxygen separation membrane is made from ceramic materials and replaces a less efficient method whereby air is cooled enough to liquefy the oxygen and separate it from the other air components. With membrane technology, only the O<sub>2</sub> can permeate the surface while the remainder is kept back from the flow. Pure oxygen is actually an environmentally friendly medium in which to burn fossil fuels since it yields a purer carbon dioxide that can be captured and injected deep into the crust of the earth. Pure oxygen is also used in submarines and in health care venues.

### In Summary

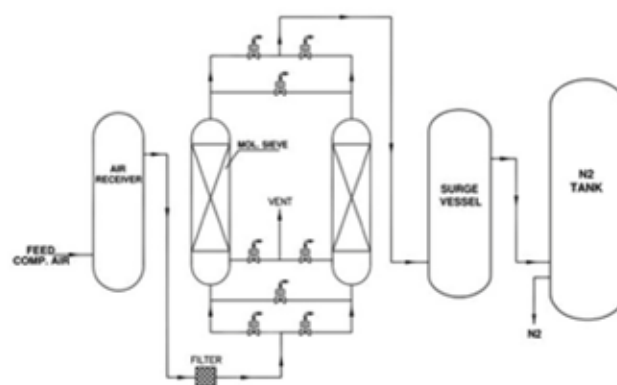
Given the damage and malfunctions caused by water droplets and vapors in industrial machinery that runs on compressed air, drying that air before it is put to use is of paramount importance. There are multiple means by which vapor can be extracted from compressed air, each with a set of advantages and disadvantages. Adsorption, refrigeration and membranes are but three of the techniques that effectively rid compressed air of moisture and protecting industrial machine integrity.

## Nitrogen Generation Packages

The largest component of breathable air is nitrogen gas -- 78 percent in fact. A noble gas that is not subject to chemical reaction, nitrogen is unnecessary for the survival of humans. On the other hand, it is essential to plant life and is thus a major ingredient in organic and chemical fertilizers. Yet it is so much more. In liquid form nitrogen serves as a refrigerant. It is used in chemical processing, and in the manufacturing of clothing fabrics, wall paper and other articles in home decor. One efficient way to obtain this ubiquitous element is through air compression.

When air is compressed, its constituents are likewise. So, an air compressor is in this respect also a nitrogen compressor. It would seem that compression would make nitrogen generation more difficult since the molecules become increasingly compact. Yet, in fact, the more concentrated the nitrogen molecules, ironically, the simpler it is to filter them. Using a membrane nitrogen generator is one method of doing this.

Consisting of hollow fibers with miniscule pores, the membrane blocks the nitrogen while allowing the oxygen and other air components to pass on through. More complex systems will purify the air of water vapors and hydrocarbons before trapping the nitrogen. Another technique for nitrogen apprehension from compressed air is based on the manipulation of pressure. A pressure swing adsorption (PSA) nitrogen air compressor sends the pressurized flow through a column or sieve, the surface of which is populated with carbon granules. These fragments attract the oxygen of the air so that O<sub>2</sub> molecules adhere to the column inside surface while the nitrogen passes through. At this point, the nitrogen flows through a de-pressurized column. In like manner, PSA generators can also have pre-treatment elements before nitrogen extraction.



Many air compressors cannot always deliver the necessary pressure for a particular job. A nitrogen booster compressor can supplement the usual compression instruments by jacking up the pressure four to six times what they are able.



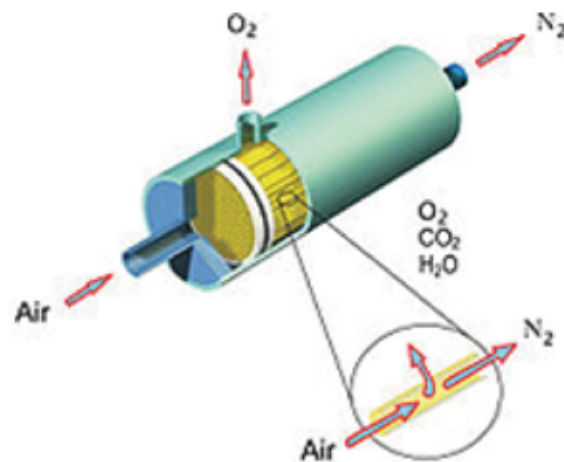


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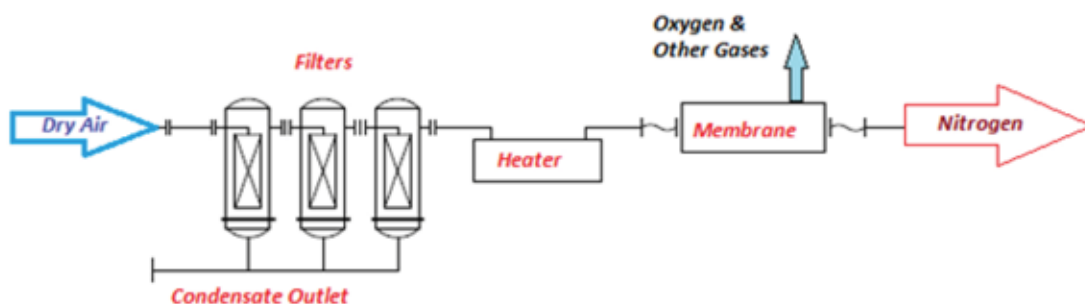
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## • MEMBRANE TYPE NITROGEN GENERATION PACKAGE

We offer a complete range of nitrogen generators suitable for any application and environment. All our products can be customized to your specifications and requirements. Our nitrogen generators are calculated, engineered and built in-house. Membrane type nitrogen generator packages are the ultimate space-saving solution for generating nitrogen. Our membrane type packages have a small footprint, are easy in maintenance and can deliver the required purity (up to 99.9%) within a few minutes making them very suitable for intermittent use. Membrane type nitrogen generators are a very cost-efficient substitute for bottle supply, especially in remote areas, on offshore platforms.



All our nitrogen generators are custom-engineered and calculated in-house to fit the required purity, pressure and flow. Depending on the flow and subsequent costs the membrane nitrogen generator can be fitted with large or small membranes. Do you need to produce large capacities of nitrogen at very high purities? Check out our PSA type nitrogen generator as a cost efficient substitute or contact our sales team, they are ready to help you find your solution.



Pressure Range: 5.13 Barg

Temperature: 5-50°C

Capacity: 7-1500 Nm<sup>3</sup>/hr

## Features:

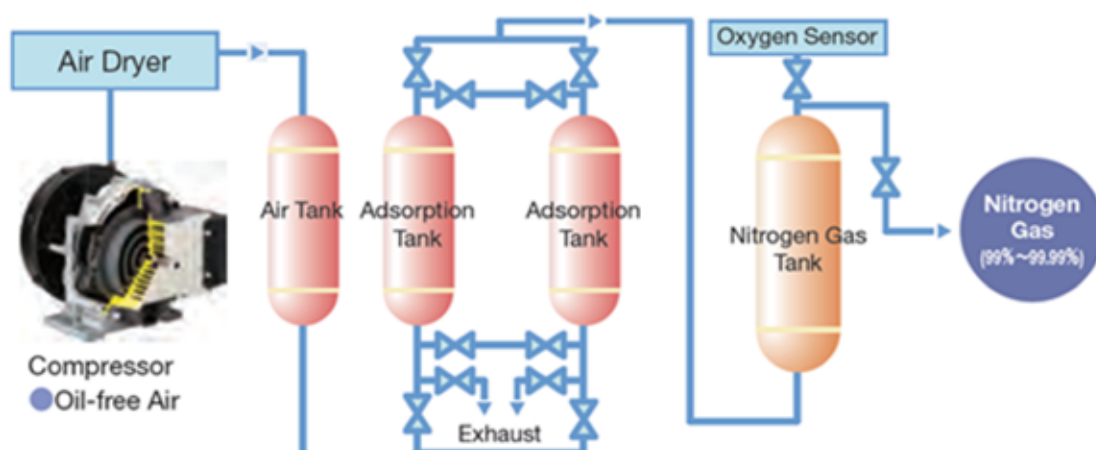
- Small footprint
- Easy and low level of maintenance
- Purity reached within minutes

## • PSA TYPE NITROGEN GENERATION PACKAGE

PSA type nitrogen generator packages are the solution for high capacity and high purity nitrogen supply. Our **PSA** type packages can deliver up to 99.99% pure nitrogen and can

# Nitrogen Generator Flow Chart

## PSA (Pressure Swing Adsorption)





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PSA type packages are not suitable for intermittent use since it can take days to reach the right purity.

All our nitrogen generators are custom-engineered and calculated in-house to fit the required purity.

## Features:

Suitable for high flows

Up to 99.99% pure Nitrogen possible

Pressure Range: 4-34 Barg

Temperature: 5-50C°

Capacity: up to 3000 Nm<sup>3</sup>/hr



# Nitrogen Generator



## AIR SEPARATION UNIT-ASU

Pars compressor joints to reputable ASU technology owners like HANGZHOU HANGYANG and SIAD ITALY for design manufacturing and installation of ASU plants in utility part of Oil/gas and petrochemical companies or steel plant to provide required liquid/gaseous Oxygen, nitrogen and ... from atmospheric air.

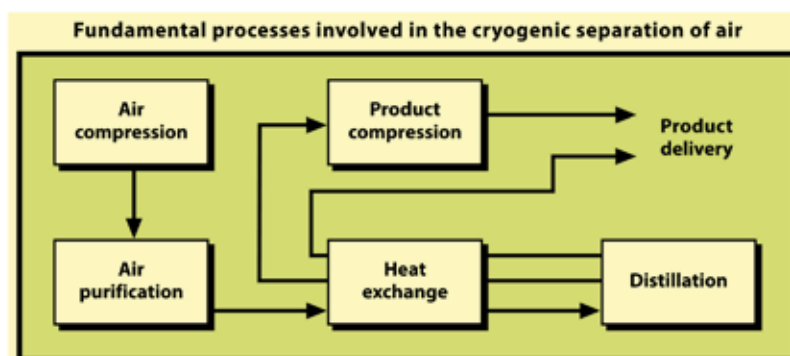
### Overview

Air separation is the most common process used to extract one or all of the main constituents of atmospheric air. The three main components are Nitrogen (%78.1), Oxygen (%20.9), and Argon (%9). The remaining gases in the air are in trace amounts and normally not recovered. In very large air separation units (ASU) Neon, Xenon and Krypton are recovered in small amounts. Cryogenic air separation utilizes the differing condensing/boiling points of the components of air to enable separation by distillation at cryogenic temperatures.

**At atmospheric pressure the main components of air have the following condensing/boiling points:**

- Nitrogen-320.4° F
- Oxygen-297.3° F
- Argon-302.5° F

Since air is a simple mixture, liquefying and distilling air provides a process to successfully separate the Nitrogen, Oxygen and Argon. All ASU's use this process.



## Basic Air Separation Unit (ASU) Components

### Main Air Compressor (MAC)

The MAC compresses atmospheric air, generally to 60-90 PSIG and delivers it to the system. These compressors are normally driven by electric motors or steam turbines. Inter-stage coolers are provided to remove heat of compression between each stage of compressor of which there are normally 2-3.

### Front End Clean Up

Modern ASUs utilize a Pre-purifier Unit (PPU), which removes moisture, CO<sub>2</sub> and most hydrocarbons from the air. Moisture and CO<sub>2</sub> must be removed to prevent ice and dry ice from forming later in the process. A PPU is typically made up of a chiller to cool the air to 40-55F, a condensate separator to remove free water and 2 vessels filled with desiccant and mole sieve material, which adsorbs the contaminants while allowing the air to pass through. One bed is always on line to the process, while the other bed is regenerated with heated waste Nitrogen to remove accumulated contaminants. Beds automatically switch every 5-8 hours. The air from the PPU is very close to moisture and CO<sub>2</sub> free. Some older ASUs utilize reversing heat exchangers to accomplish front end clean up. These systems contain special cryogenic heat exchangers that freeze out the moisture and CO<sub>2</sub>, allowing clean air to flow to the distillation process. The passes in the heat exchanger are switched every 3-10 minutes by a series of butterfly and check valves.

One pass removes contaminate while the other is regenerated by outgoing waste gases. Though moisture and CO<sub>2</sub> removal by reversing heat exchangers is economical both in capital cost and operating cost.

### Cold box

The cold box contains the cryogenic heat exchangers, distillation columns and associated valves and piping. Because parts of this system are very cold, all components are mounted inside the cold box and then encased in insulation. Cold boxes can be rectangular or cylindrical and are usually tall, some over 200', depending on capacity and type of Argon system.

Modern cold boxes are filled with perlite insulation, which is light and easy to install and remove, when necessary. Older cold boxes may be tightly packed with cryogenic rock wool, which is hand packed to 14 pounds per cubic foot. It is very time consuming to install and remove.

## Expander

All ASUs except some very small units have expanders. Expanders provide the required refrigeration to produce liquids in the distillation column system. Air, Nitrogen or Waste Nitrogen is fed to the expander, causing the wheel to turn and transfer energy to a compressor, generator or oil brake. This transfer of energy causes the gas to cool. As the process continues, the outlet temperature of the expander eventually reaches design temperature while cooling the column system.

## Liquid Argon System

There are 2 common types of liquid Argon systems. Many plants don't provide Argon separation equipment at all. In these cases, most Argon simply exits the ASU with the waste gas. The first type utilizes a crude Argon column that concentrates Argon to 2-3% O<sub>2</sub> content from a feed from the low pressure column of 88-92% O<sub>2</sub>. This crude Argon is warmed and mixed with Hydrogen before entering a catalytic reactor, where the H<sub>2</sub> and O<sub>2</sub> combine to make water. This wet Argon is then dried and again cooled to cryogenic temperatures after which the H<sub>2</sub> and N<sub>2</sub> are removed in a separator and distillation column, respectively.

Cryogenic Argon systems depend solely on distillation for purification. Since it takes a great number of trays or packing to separate Argon from Oxygen, these columns can be over 200 feet tall. Many new plants use cryogenic Argon systems to avoid using an Argon compressor and Hydrogen in the process. The downside is the long recovery time to achieve purity after a start up or upset to the process, many times over 48 hours.





## (ASU) Different Types of Air Separation Units

### All gaseous product

On site gas generators are by far the most common type of ASU. These plants can produce Oxygen only, Oxygen and Nitrogen or Oxygen, Nitrogen and Argon or just Nitrogen. In all cases the gases that are not fully purified are used for refrigeration and vented to atmosphere. These units separate the air in liquid form, but utilize the refrigeration from the liquids before they exit the cold box. The products come off the cold box at fairly low pressure and ambient temperature. Product compressors are then used to increase the products to required header pressure. In some processes liquid products are pumped through the main heat exchangers where they are warmed to ambient temperature at the required pressure. Gas generators typically produce between 10-2000 short tons of combined product.

### All Liquid Product

This is normally considered a merchant plant. All desired product is liquefied for shipment in cryogenic transport trailers or rail cars. Generally, these units make liquid Oxygen (LOX), liquid Nitrogen (LIN) and liquid Argon (LAR), though in some oil/gas production areas there are large liquid Nitrogen only ASUs. These products are delivered into cryogenic tanks at the users site, where it is either warmed back to a gas before use or used as a liquid. Typically, the only users that utilize liquid products are food freezers, oil field service companies or other processes that require very cold temperatures.

Liquid plants are typically sized to produce from 150 to 1000 short tons per day of combined product. These ASU's have an additional section of equipment called a Nitrogen Liquefaction Unit (NLU) to provide the necessary refrigeration to liquefy all products. The NLU is generally the largest power user by far in an ASU.

### Combined Liquid and Gas Product

Commonly called "piggyback plants", these ASUs produce mostly gaseous product for pipeline use but also have NLU's to produce liquid products for shipment off site.

Piggyback plants are generally sized from 300 to 1000 short tons combined product.

## REFERENCE LIST

ردیف	نام کارخانه / شرکت تولیدی/کارفرما/بهره بردار	مدل دستگاه	تعداد
1	ایران ژاپن (پتروشیمی بندرامام)	PC- 340	2
2	شرکت نفت فلات قاره ایران	TZW- 70/S4-36	4
	" "	PDF185S	2
	" "	PDS655S	1
3	بازرگانی پتروشیمی	PC- 270	1
4	پتروشیمی آبادان	PC- 220	1
	" "	PC- 180	1
	" "	PC- 25	1
5	پتروشیمی خارك	PC- 180	1
	" "	PC- 25	1
	" "	750PRT	1
6	پتروشیمی رازی	PC- 180	2
	" "	PC- 40	2
	" "	PC- 30	1
7	پتروشیمی اصفهان	PC- 40	1
8	پتروشیمی تبریز	PC- 30	3
9	پتروشیمی خراسان	PC- 180	2
10	پتروشیمی اراك	PC- 150	1
11	شرکت نفت	PRT	4
12	صنایع تجهیزات نفت	PC- 60	2
13	کالای نفت تهران	PC- 25	7
	" "	PC- 125	25
	" "	PC- 60	2
	" "	H-P	1
14	نفت بهران	PC- 40	1
	" "	PC- 30	2
	" "	PC- 25	2
15	نفت پارس	PC- 60	1
	" "	PC10-(NK40)	2
	" "	GM10S/DN80	7
	" "	GM15L/DN80	3
	" "	GM3S/DN50	2

## REFERENCE LIST

ردیف	نام کارخانه / شرکت تولیدی / کارفرما / بهره بردار	مدل دستگاه	تعداد
16	نفت پژوهش	PC- 30	8
	" " "	PC- 50	4
17	نفت ستاد بازسازی	PRT	2
18	نفت ستاد بازسازی پتروشیمی اراک	PRT	8
19	نفت ستاد بازسازی پتروشیمی خراسان	PRT	4
20	خدمات و پشتیبانی صنعت نفت	PC- 125	2
21	پتروشیمی شیراز	PC- 30	1
22	پالایش نیرو	NK- 60	1
23	فرآورده های نفتی کویر یزد	PC- 30	1
24	پتروشیمی مبین	PC- 100	1
25	نفت و گاز کارون	HL103523-500	1
26	کالای نفت تهران	GM3S	1
27	کالای پتروشیمی (پتروشیمی رازی)	PC- 180	1
28	صنایع شیمیایی ساوه	PC- 30	1
29	طراحی و مهندسی و تامین قطعات و مواد شیمیایی صنایع پتروشیمی (spec)	PCF- 180	2
30	سوخت آما	PC- 30	2
31	اسکان شیمی	PC- 30	1
32	شرکت ملی گاز ایران- ۲ ایستگاه آب شیرین سیرجان (شرکت ایران ایتوک)	PCF100-(DT7/8)	1
33	شرکت ملی نفت مناطق مرکزی ایران	PDS390S	3
34	ملی مناطق نفت خیز جنوب - شرکت بهره برداری نفت گچساران	PDS265S	1
35	مدیریت توسعه صنایع پتروشیمی	GM35S(DN150)	4
36	شرکت ملی گاز ایران	PDSF750S	1
37	پشتیبانی ساخت و تهیه کالای نفت تهران	Mehrer کمپرسور هوا	4
38	بهران توس	PC- 30	1
39	شرکت ملی گاز ایران - منطقه ۵ عملیات	AGK- 0551	1
40	پترو پارت	PC- 15(NK40)	2
41	پالایش نفت آبادان	PDS655S- 4B2	5
42	پالایش نفت تهران	PC- 150	2
43	مهندسی توسعه نفت	PCF- 150	1
	" " "	PCF- 100	1
44	فرآورده های نفتی زمر آسیا	NK- 40	2
45	آ.ب.ب تجهیزات نفت	PC- 40	1

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ردیف	نام کارخانه / شرکت تولیدی/کار فرما/ بهره بردار	مدل دستگاه	تعداد
46	ملی حفاری ایران	PC- 50	2
47	نفت و گاز گچساران	PDSK900S	2
48	شرکت اوریتال اویل کیش ool	PC- 60	1
49	پالایش نفت تهران	PDSE900-411	5
50	عملیات اکتشاف نفت	PC- 50	2
51	ایتوک ایران ( ایستگاه تقویت فشار گاز پل کله )	PC- 220	2
52	ایتوک ایران ( ایستگاه تقویت فشار گاز دهق )	PC- 180	2
53	مهندسی و توسعه گاز ایران ( ایستگاه آباده )	PC- 220	2
54	مهندسی و توسعه گاز ایران ( ایستگاه خاوران )	PC- 220	2
55	شرکت ملی مناطق نفت خیز جنوب	PDSF 830-4B1	1
56	شیمی پتروشیمی ایران	PC- 25	1
57	CTEP - پترو پارس	GA500A- 10	5





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