2015

CATALOGUE

CHELYABINSK
COMPRESSOR
PLANT

CHKZ.RU

CONTENTS

Chapter

01

General Information

Domestic compressor manufacturing leader!

Chelyabinsk Compressor Plant has been founded in 1999 and since that time has covered a long way from manufacturing rotary plate compressors to production of modern screw compressor units.

Nowadays CHKZ manufacteres screw compressor units with electric and diesel engines, medium and high pressure compressors, compressor block-modular stations, nitrogen membran units and stations, gas compressor units and stations, air vessels, autonomous diesel-generator units and compressed air treatment equipment.

Excellent quality and competitive prices allow many customers to highly appreciate all the advantages of the CHKZ compressor units.

The company has a strong presence on the Russian market as one of the main manufacturers of screw compressors with diesel and electrical motors. Chelyabinsk Compressor Plant improves its manugacturing facilities constantly and expands the assortment of products.

CHKZ today	2012	2013	2014
Annual turnover	2,1 billion rubles	2,6 billion rubles	2,6 billion rubles
Compressors' production per month	164	136	140
Total area	22000 m ²	22000 m ²	22000 m ²
Staff	400	415	455

Our company values:

- Ethics. We do our business pursuing high ethical principles and our partner's interests. In competitive struggle we are known for our enthusiasm and fair play.
- Customer focus. We work for and thanks to our clients. Every day we use all our knowledge and experience to help our client solve any problem and find the best solution.
- Innovation. We strive to exceed our customer's expectations making inventiveness and innovation our main challenge. We encourage innovation and creativity from every employee, in every department. Our innovations enable our clients with competitive advantages.
- Integrity. Close-knit team of professionals and professional development for all employees are our key to success.
- Corporate responsibility. We take an active part in the society life. Our compressors and equipment are produced with compliance of all modern ecological requirements.
- Fair mistake right. We accept fair mistakes which may appear during the development and experiment process. We consider failures as inevitable expenses of the movement forward.

Our clients:

Oil and gas industry:

«Evrasia» Ltd.

«Syrgytneftegaz» OJSC

«Rosneft» OJSC

«Gazprom» OJSC

«Tatneft» OJSC

«Sibir Service Company» CJSC

«Lukoil» OJSC

«Bashneft» OJSC

«KazTransOil» JSC

Mechanical engineering:

«Volgograd Drilling Equipment Plant» Ltd.

«Uralvagonzavod» OJSC

«Sinara» Group

«Russia Helicopters» OJSC

«Russian Transport Engineering Corporation» OJSC

Metallurgy industry:

«Severstal» OJSC

«Magnitogorsk Metallurgical Plant» OJSC

«Mechel» OJSC

«CHTPZ» Group

«Joint Metallurgical Company» CJSC

«Asha Metallurgical Plant» OJSC

Energy industry:

OGK-2

«RusGidro» OJSC

OGK-3

«Fortum» OJSC

TGK-13

«TVEL» OJSC

«Rosatom» State Corporation

Mining industry:

«AK Alrosa» OJSC

«SYEK» OJSC

«Kuzbass» Ltd.

«Belon» OJSC

«Uzhkuzbassugol» OJSC

«Kazahmys» Corporation

«Malomyrskiy Rudnik» OJSC

«Mihailovskiy GOK» OJSC

Railway:

«Russian Railways» OJSC

«Kazahstan Temir Zholy» JSK

«Uzbekiston Temir Yullari»

«Tajikistan Railway»

General Information

CHELYABINSK COMPRESSOR PLANTS PRODUCTS ARE MANUFACTURED FROM THE WORLDS LEADING MANUFACTURERS' COMPONENTS AND USING THE CONTEMPORARY EQUIPMENT.

CHKZ compressor units supply:

Air ends (Germany)

Couplings (Germany)

High pressure units (Germany)

Controllers (Belgium)

Diesel engines

Air valves (Italy)

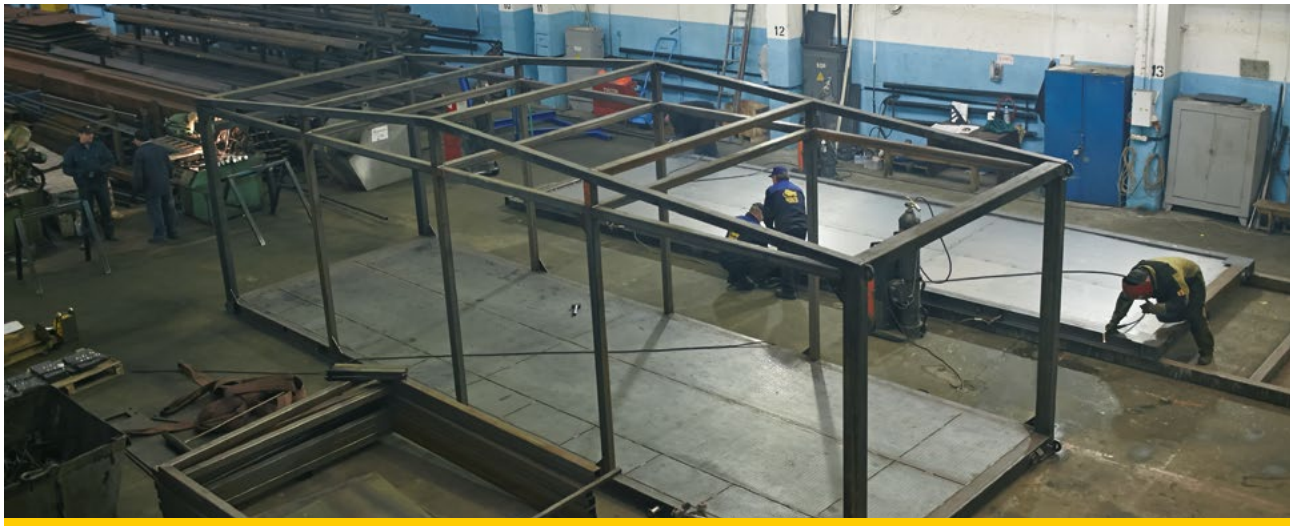
Electric engines

Air preparation

Assembly area

Laser technological process

Sheet-bending press



Block modular workshop

Powder painting line

Welding equipment

Machine workshop

Roll-bending machine

Chapter

02

Service and Comprehensive Approach

«Chelyabinsk Compressor Plant» LLC is specializing at comprehensive compressed air supply systems' solutions meeting the clients' requirements. The main target is the competent selection of components providing the most economically profitable result in short terms.

Comprehensive communication of CHKZ with clients:

1. Pneumatic audit

A complex study of a compressed air supply system at the customer's enterprise:

- **Preliminary analysis**
- **Compressed air consumption measurement**
- **Measurements' results analysis**
- **Equipment selection**
- **Planning solutions development**
- **Technical–economical analysis**

2. Complex supply

3. Starting-up and adjustment

- Contract supervision.
- Studying.
- Fist start up.
- Individual operation parameters' setting.
- Start of operation.

4. Warranty maintenance

5. Service and repair

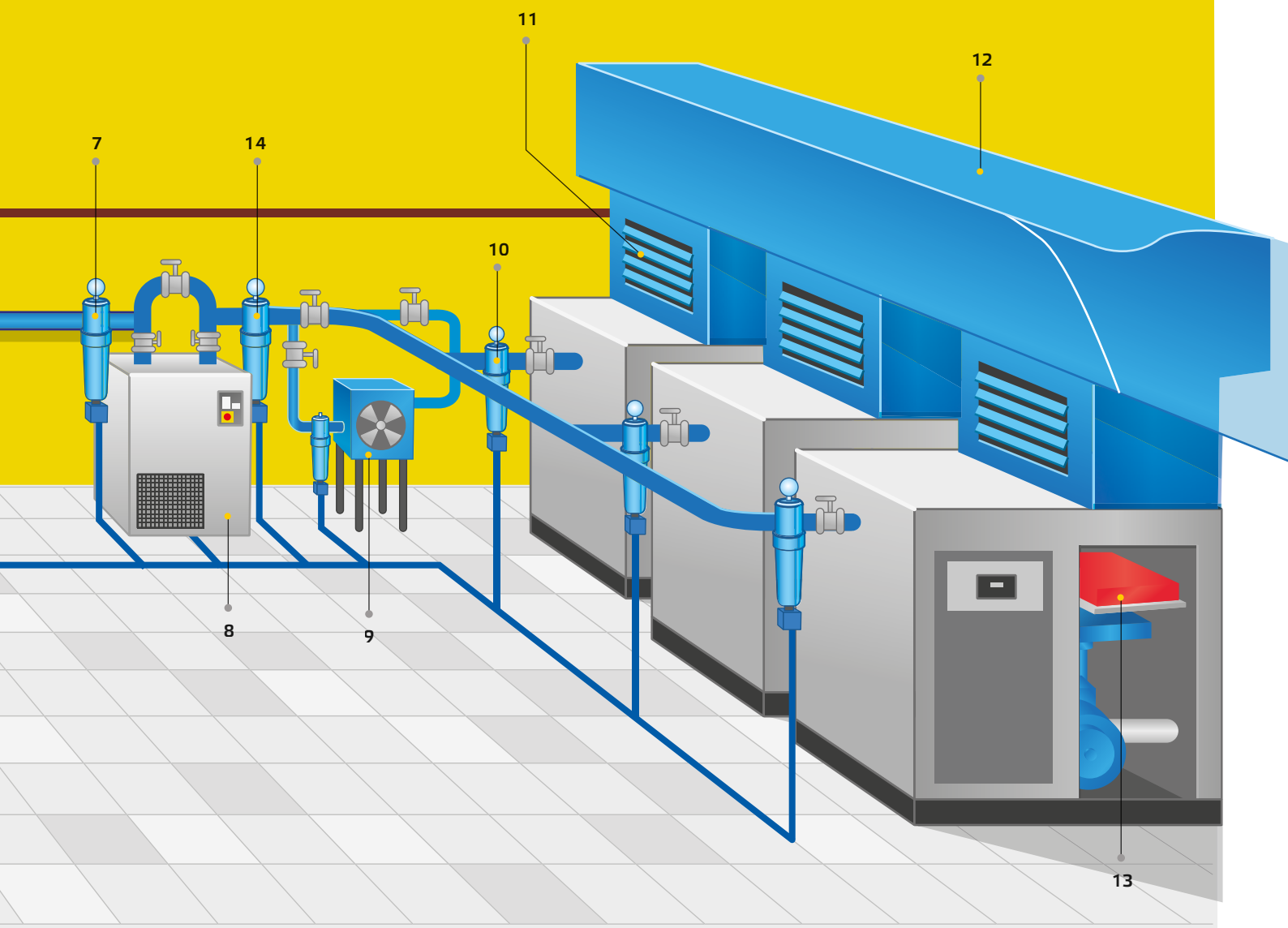
Main advantages of a comprehensive communication:

- a complete solution received by a customer;
- high power efficiency of the realized projects;
- guaranteed quality of the compressed air and a stable working pressure;
- the heat discharged from a compressor cooling system is used for the heating the compressor or nearby room;
- full automation of the whole pneumatic equipment.

An example of a complete compressor station with several compressor units, including air preparation equipment, main piping, remote control system (up to 1000 m distance and more), compressed air consumption control, hot airway from the compressors for industrial rooms' heating, domestic water heating system.

CHKZ developed a range of complete technical solutions for the high quality compressed air supply in order to meet the customers' possible needs in the following industries:

- mechanical engineering;
- mining;
- food;
- oil and gas;
- energy;
- construction;
- «Russian Railways» OJSC and services.



1 Operator working place
2 Air vessels
3 Compressed air consumption controller
4 Remote control unit for a group of compressors
5 Oil and water condensate separator
6 Multivariate flow meter
7 Compressed air fine filter
8 Dryer
9 Aftercooler
10 Oil-water separator with an automatic condensate drain
11 Automatic air valves with electric drive
12 Hot air airways
13 Oil-water heat exchanger
14 Prefilter

Chapter

03

DEN Screw Compressor Units With Electric Engine

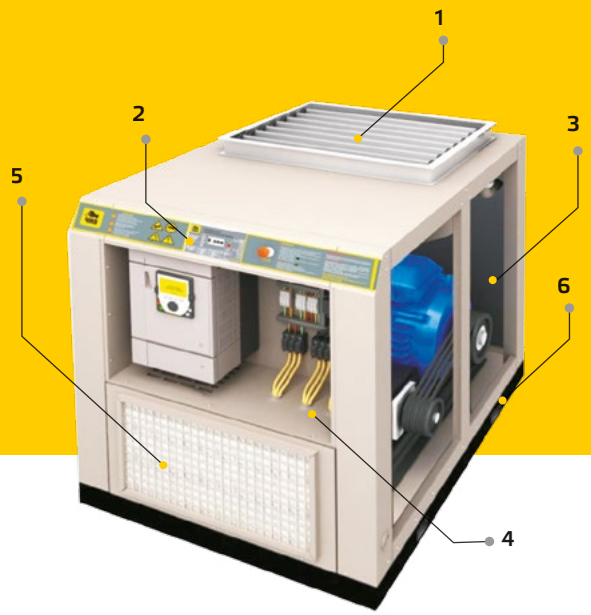
RELIABILITY AND EFFICIENCY

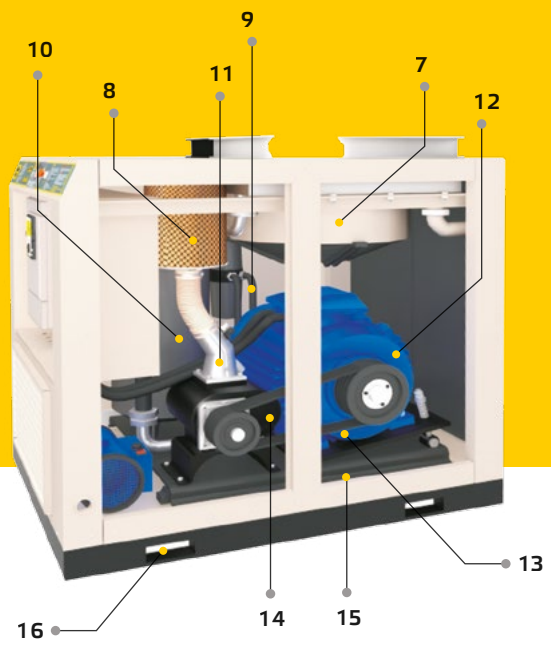
Electric driven screw compressor units type DEN with an efficiency fom 10,6 up to 1942,6 CFM (0,3-55 m³/min) and 101,5-188,5 psig (7-13 barg) working pressure are used in all manufacturing sectors.

Type DEN compressor units are a prefabricated, ready for operation package installed on a common frame without a special foundation, equipped with an acoustic enclosure and an automatic control system. It is built around a crew compressor with a service life of 40000 operating hours. The core of the automatic control system is a CMC Air Master Q1 (or S1) microprocessor control unit. For a remote control of a compressor group a Metacentre system is applied (option). The DEN compressor units are produced with an air (standard) or liquid cooling system (DEN «Dew»).

Standard supply

1 Automatic jalousie (option)
2 Controller
3 Noise-attenuating jacket
4 Power switchboard
5 Prefilter (option)
6 Frame
7 Cooling air system
8 Air filter
9 Oil filter
10 Oil separator
11 Intake valve
12 Driving electric motor / flexible coupling
13 Belt gear
14 Air end
15 Vibration-isolating supports
16 Holes for a fork lift





DEN COMPRESSOR UNITS OPERATE AT A WIDE RANGE OF CLIMATIC CONDITIONS:

- from +33,8°F up to +95°F (from +1°C up to +35°C) (standard version),
- from +33,8°F up to +113°F (from +1°C up to +45°C), high humidity («Tropic» special version),
- from -31°F up to +95°F (from -35°C up to +35°C) (special northern version).

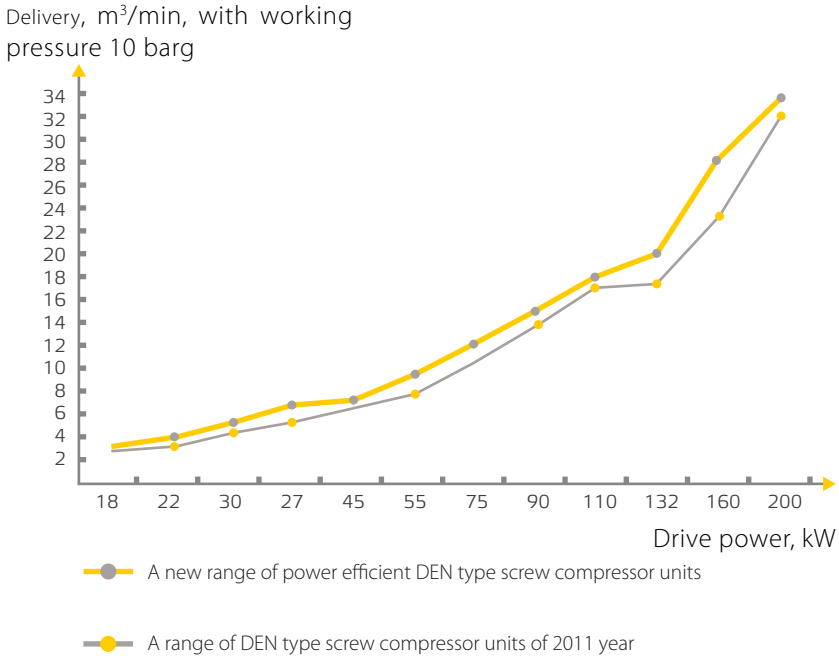
Upon a special request the DEN compressor units can be produced with a 362,6 psig (25 barg) working pressure.

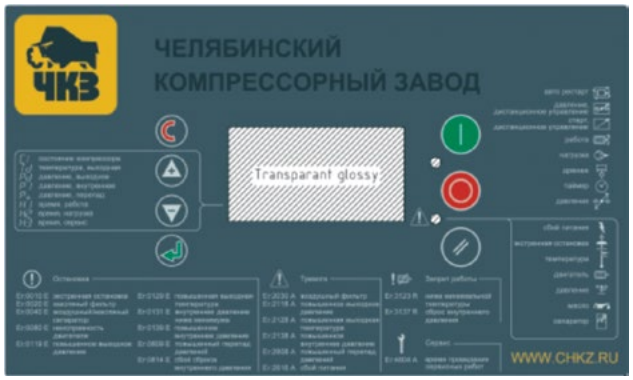
DEN COMPRESSOR UNITS' WARRANTY PERIOD IS 3 YEARS.

DEN new range

More compressed air – less power inputs!

Since 2012 «CHKZ», LLC offer a new range of compressor units DEN type. The modified design allowed enlarging the compressor units' capacity at the same energy consumption level. As a result the new power efficient DEN type screw compressor units enable to reduce your power expenses.





Compressor controller Airmaster S1 («CMC», Belgium)

- Allows setting up the main operation parameters and to control them automatically by means of LED display.
- Ensure the entire compressor protection at the pressure, temperature and overload by means of switching it off the electric circuit that prevent the equipment breakage.
- Enables uninterruptible compressor operation at the unstable voltage supply.
- Counts the moto hours and informs about the regular maintenance necessity .

Compressor controller AirmasterQ1 («CMC», Belgium)

Modern and hi-tech compressor controller. .

Main features of Airmaster Q1:

- Graphic interface available in Russian language.
- Errors description.
- Real time clock.
- Errors and events register with indication of their date and time.
- Automatic start of a compressor unit at the specified schedule.

DEN Screw Compressor Units

DEN-4 – DEN-7,5 «Econom»

Economy-size compressor unit with a small efficiency. The unit is installed on a frame without a jacket on the basis of a compact module VMC, Italy, which includes a screw compressor, inlet and air purification from oil system and a control system. The compact unit allows air flows' optimization and the reliability increase of the whole unit by means of the components quantity reduce.

DEN-5,5Sh - DEN-11Sh «Breeze»

The best alternative for the piston „garage" compressors. Round-the-clock operation in the most extreme conditions is possible. High and stable compressed air quality is provided. The control system is fully automatic. There are three versions possible: on a frame, on a receiver, on a receiver with a dryer. The unit can be optionally supplied with a group of filters, purifying from oil and dust. The highest efficiency at low cost.

DEN-15Sh – DEN-75Sh

Ideal solution for a small-scale production or a workshop (area, customer) using a decentralized compressed air supply system. The maintenance is rather simple thanks to an optimal design and easy access to all the main assemblies.

DEN-45ShM «OilField»

Special version for an oil-production enterprise. Maximal reliability in the most extreme conditions.

DEN-90Sh - DEN-110Sh

Industrial compressors that satisfy the highest requirements – power efficiency, reliability, long operating life. The units are specially designed for a high load operation in a separate workshop of middle and large-scale productions. No special foundation neither permanent presence of working staff is needed. According to their noise level the units can be installed near the working places.

DEN-132ShM – DEN-250ShM

A perfect combine of technologies suitable for a large consumers' supply as well as centralized compressor stations' construction. The ready to operate units are supplied with a slow start device, limiting the start points and reducing mechanical load of all the compressor units' components at the start and enlarge the maximal quantity of starts per hour. As a result – the operation life is also increasing.

DEN-315ShM – DEN 400ShM

Nowadays this is the most high-performance and power efficient compressor unit produced by CHKZ, which is considered to be the combination of the highest skills in design and production. A module design, consisting of a compressing, cooling and control modules enables to meet the highest clients' requirements and specific while reconstructing compressor stations or building new ones and to reduce the cooling system pipelines' length.

DEN compressor units are manufactured with a belt or direct drive (with a flexible coupling), and with an air or liquid cooling system.

Technical characteristics

Model	Delivery at STP*, cfm (m^3/min)	Rated Operating Pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH, in (Weight, lb)
DEN-4	20,48/15,89/11,30 (0,58/0,45/0,32)	101,5/145/188,5 (7/10/13)	5,4 (4)	22.8x28.3x25.6 (330.7)
DEN-5,5	26,49/21,19/16,60 (0,75/0,6/0,47)	101,5/145/188,5 (7/10/13)	7,4 (5,5)	22.8x28.3x25.6 (330.7)
DEN-7,5	37,08/28,25/22,95 (1,05/0,8/0,65)	101,5/145/188,5 (7/10/13)	10,1 (5,5)	22.8x28.3x26.2 (374.8)
DEN-5,5Sh	28,25/22,25/19,07 (0,8/0,63/0,54)	101,5/145/188,5 (7/10/13)	7,4 (5,5)	37.0x23.6x29.5 (440.9)
DEN-5,5Sh-R (250 l)	28,25/22,25/19,07 (0,8/0,63/0,54)	101,5/145/188,5 (7/10/13)	7,4 (5,5)	53.9x25.0x55.5 (661.4)
DEN-5,5Sh-R (500 l)	28,25/22,25/19,07 (0,8/0,63/0,54)	101,5/145/188,5 (7/10/13)	7,4 (5,5)	70.7x25.0x55.5 (881.8)
DEN-5,5Sh-OR (500 l)	28,25/22,25/19,07 (0,8/0,63/0,54)	101,5/145/188,5 (7/10/13)	7,4 (5,5)	70.7x25.0x55.5 (925.9)
DEN-7,5Sh	42,38/28,25/25,08 (1,16/0,82/0,71)	101,5/145/188,5 (7/10/13)	10,1 (7,5)	37.0x23.6x29.5 (551.2)
DEN-7,5Sh-R (500 l)	42,38/28,25/25,08 (1,16/0,82/0,71)	101,5/145/188,5 (7/10/13)	10,1 (7,5)	70.7x25.0x55.5 (992.1)
DEN-7,5Sh-OR (500 l)	42,38/28,25/25,08 (1,16/0,82/0,71)	101,5/145/188,5 (7/10/13)	10,1 (7,5)	70.7x25.0x55.5 (1047.2)
DEN-11Sh	63,57/56,50/49,44 (1,85/1,6/1,4)	101,5/145/188,5 (7/10/13)	14,8 (11)	37.0x23.6x29.5 (595.2)
DEN-11Sh-R (500 l)	63,57/56,50/49,44 (1,85/1,6/1,4)	101,5/145/188,5 (7/10/13)	14,8 (11)	70.7x25.0x55.5 (1036.2)
DEN-11Sh-OR (500 l)	63,57/56,50/49,44 (1,85/1,6/1,4)	101,5/145/188,5 (7/10/13)	14,8 (11)	70.7x25.0x55.5 (1102.3)
DEN-15Sh	95,35/84,76/74,16 (2,7/2,4/2,1)	108,7/145/188,5 (7,5/10/13)	20,1 (15)	47.2x31.5x39.4 (1113.3)
DEN-15Sh-R (500 l)	95,35/84,76/74,16 (2,7/2,4/2,1)	108,7/145/188,5 (7,5/10/13)	20,1 (15)	70.9x31.5x67.3 (1565.3)
DEN-15Sh-R (900 l)	95,35/84,76/74,16 (2,7/2,4/2,1)	108,7/145/188,5 (7,5/10/13)	20,1 (15)	80.7x31.5x74.4 (1807.8)
DEN-15Sh-OR (500 l)	95,35/84,76/74,16 (2,7/2,4/2,1)	108,7/145/188,5 (7,5/10/13)	20,1 (15)	72.8x31.5x67.3 (1653.5)
DEN-15Sh-OR (900 l)	95,35/84,76/74,16 (2,7/2,4/2,1)	108,7/145/188,5 (7,5/10/13)	20,1 (15)	83.9x31.5x74.4 (1918.0)
DEN-18Sh	109,48/95,35/77,69 (3,1/2,7/2,2)	108,7/145/188,5 (7,5/10/13)	24,8 (18)	47.2x31.5x39.4 (1135.4)
DEN-18Sh-R (500 l)	109,48/95,35/77,69 (3,1/2,7/2,2)	108,7/145/188,5 (7,5/10/13)	24,8 (18)	70.9x31.5x67.3 (1587.3)
DEN-18Sh-OR (500 l)	109,48/95,35/77,69 (3,1/2,7/2,2)	108,7/145/188,5 (7,5/10/13)	24,8 (18)	80.7x31.5x74.4 (1829.8)
DEN-18Sh-OR (500 l)	109,48/95,35/77,69 (3,1/2,7/2,2)	108,7/145/188,5 (7,5/10/13)	24,8 (18)	72.8x31.5x67.3 (1719.6)
DEN-18Sh-OR (900 l)	109,48/95,35/77,69 (3,1/2,7/2,2)	108,7/145/188,5 (7,5/10/13)	24,8 (18)	83.9x31.5x74.4 (1962.1)
DEN-22Sh	134,20/120,07/105,94 (3,8/3,4/3,0)	108,7/145/188,5 (7,5/10/13)	29,5 (22)	47.2x31.5x39.4 (1157.4)
DEN-22Sh-R (500 l)	134,20/120,07/105,94 (3,8/3,4/3,0)	108,7/145/188,5 (7,5/10/13)	29,5 (22)	70.9x31.5x67.3 (1609.4)
DEN-22Sh-R (900 l)	134,20/120,07/105,94 (3,8/3,4/3,0)	108,7/145/188,5 (7,5/10/13)	29,5 (22)	80.7x31.5x74.4 (1873.9)
DEN-22Sh-OR (500 l)	134,20/120,07/105,94 (3,8/3,4/3,0)	108,7/145/188,5 (7,5/10/13)	29,5 (22)	72.8x31.5x67.3 (1741.7)
DEN-22Sh-OR (900 l)	134,20/120,07/105,94 (3,8/3,4/3,0)	108,7/145/188,5 (7,5/10/13)	29,5 (22)	83.9x31.5x74.4 (2006.2)
DEN-30Sh	162,5/137,7/120,09 (4,6/3,9/3,4)	108,7/145/188,5 (7,5/10/13)	40,2 (30)	47.2x31.5x39.4 (1157.4)
DEN-30Sh «Plus»	201,29/176,57/148,32 (5,7/5,0/4,2)	116/145/188,5 (8/10/13)	40,2 (30)	47.2x39.4x55.1 (1807.8)
DEN-37Sh	229,55/201,29/165,98 (6,5/5,7/4,7)	116/145/188,5 (8/10/13)	49,6 (37)	47.2x39.4x55.1 (1873.9)
DEN-45Sh	264,9/229,55/183,66 (7,5/6,5/5,2)	116/145/188,5 (8/10/13)	60,3 (45)	63.8x47.2x58.3 (2314.9)
DEN-45ShM	247,20/229,55 (7,0/6,5)	101,5/145 (7/10)	60,3 (45)	63.4x39.4x60.2 (1873.9)
DEN-55Sh	353,15/312,53/275,45 (10,0/8,85/7,8)	116/145/188,5 (8/10/13)	73,8 (55)	63.8x47.2x58.3 (2866.0)
DEN-75Sh	423,78/342,55/275,45 (12,0/9,7/7,8)	116/145/188,5 (8/10/13)	100,6 (75)	63.8x47.2x58.3 (2866.0)
DEN-75Sh «Plus»	476,75/406,12/346,08 (13,5/11,5/9,8)	116/145/188,5 (8/10/13)	100,6 (75)	77.2x52.8x64.2 (3086.5)
DEN-90Sh	487,34/413,18/360,21 (13,8/11,7/10,2)	108,7/145/188,5 (7,5/10/13)	120,7 (90)	77.2x52.8x64.2 (3086.5)
DEN-90Sh «Plus»	547,38/494,41/409,65 (15,5/14,0/11,6)	116/145/188,5 (8/10/13)	120,7 (90)	77.2x52.8x64.2 (3747.9)
DEN-110Sh	670,98/593,29/476,75 (19,0/16,8/13,5)	116/145/188,5 (8/10/13)	147,5 (110)	77.2x52.8x64.2 (3968.3)
DEN-132ShM	794,58/582,69 (22,5/16,5)	101,5/145 (7/10)	177,0 (132)	98.4x57.1x71.7 (5291.1)
DEN-132ShM «Plus»	847,55/670,98 (24,0/19,0)	116/145 (8/10)	177,0 (132)	116.1x70.9x77.2 (6834.3)
DEN-160ShM	1024,13/935,84 (29,0/26,5)	116/145 (8/10)	214,6 (160)	116.1x70.9x77.2 (8046.9)
DEN-200ShM	1253,67/953,50 (35,5/32)	116/145 (8/10)	268,2 (200)	116.1x70.9x77.2 (8267.3)

Model	Delivery at STP*, cfm (m^3/min)	Rated Operating Pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH, in (Weight, lb)
DEN-250ShM	1483,22 (42,0)	101,5 (7)	335,3 (250)	133.9x82.7x82.7 (compressor) 63.0x39.4x74.8 (cooling) (10251.5)
DEN-315ShM	1483,22 (42,0)	145 (10)	422,4 (315)	133.9x82.7x82.7 (compressor) 48.0x78.3x82.7 (cooling) (10251.5)
DEN-315ShM	1906,99 (54,0)	108,7 (7,5)	422,4 (315)	135.8x82.7x82.7 (compressor) 48.0x74.8x82.7 (cooling) 21.7x52.0x90.8 (control) (11397.9)
DEN-400ShM	1906,99 (54,0)	145 (10)	536,4 (400)	135.8x82.7x82.7 (compressor) 48.0x74.8x82.7 (cooling) 21.7x52.0x90.8 (control) (11397.9)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Available options

Option	DEN-4	DEN-5,5	DEN-7,5	DEN-5,5Sh	DEN-7,5Sh	DEN-11Sh	DEN-15Sh	DEN-18Sh	DEN-22Sh	DEN-30Sh	DEN-37Sh	DEN-45Sh	DEN-45ShM	DEN-55Sh	DEN-75Sh	DEN-90Sh	DEN-110Sh	DEN-132ShM	DEN-160ShM	DEN-200ShM	DEN-250ShM DEN-315ShM DEN-400ShM
Chassis	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	-	-	-
Vessel (receiver)	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Chassis and vessel (receiver)	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	-	-	-
"Winter package" (fan heater + automatic jalousie)	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
Schneider Electric smooth start device	-	-	-	-	+	+	+	+	+	+	+	ST	+	+	+	+	+	ST	ST	ST	ST
Remote control	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Air prefilter	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Flexible connection to the grid (RVD) or a high pressure metal hose (MR)	RVD	RVD	RVD	RVD	RVD	RVD	RVD	RVD	RVD	RVD	RVD	RVD		RVD	RVD	RVD	RVD	MR	MR	MR	MR
Separator	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Company color painting*	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Reactive power compensation device (RPCD)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+
Lifting textile slings	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+
Maintenance instruments kit	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

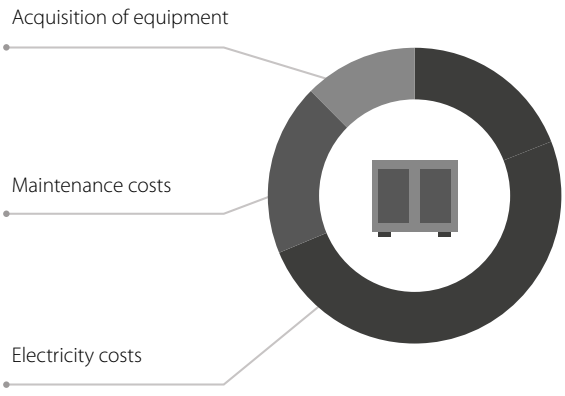
*Table symbols: (+) - option is available; (-) - option is not available; ST – option is available in a standard version; * - in case of more then 10 pieces' ordering*

DEN «OPTIM» Compressor Units With Variable Speed Drive

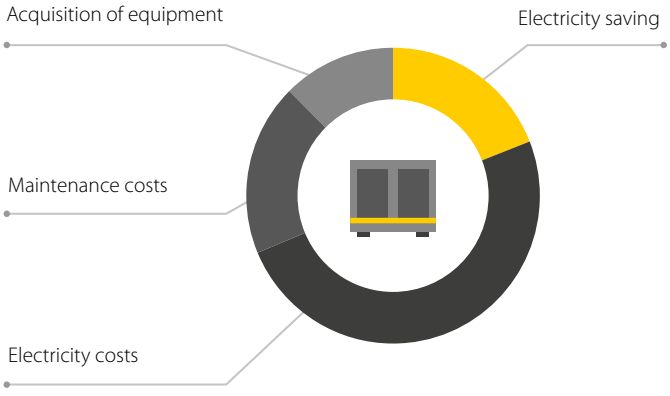
Compressors DEN «OPTIM» are equipped with a variable speed drive which allows to sufficiently save the electricity.

When purchasing new equipment it's important to pay attention to initial investment together with operation costs of the purchased compressors. The main part of the costs is comprised of energy costs. Using modern compressors DEN «OPTIM» you will save up to 30% of electricity with the same maintenance costs and slightly higher compressor price (compared to standard compressor DEN). Payback period of the compressor DEN «OPTIM» is usually no longer then one year.

Distribution of costs for a compressor unit without variable speed drive



Distribution of costs for a compressor unit with variable speed drive



Frequency drive allows:

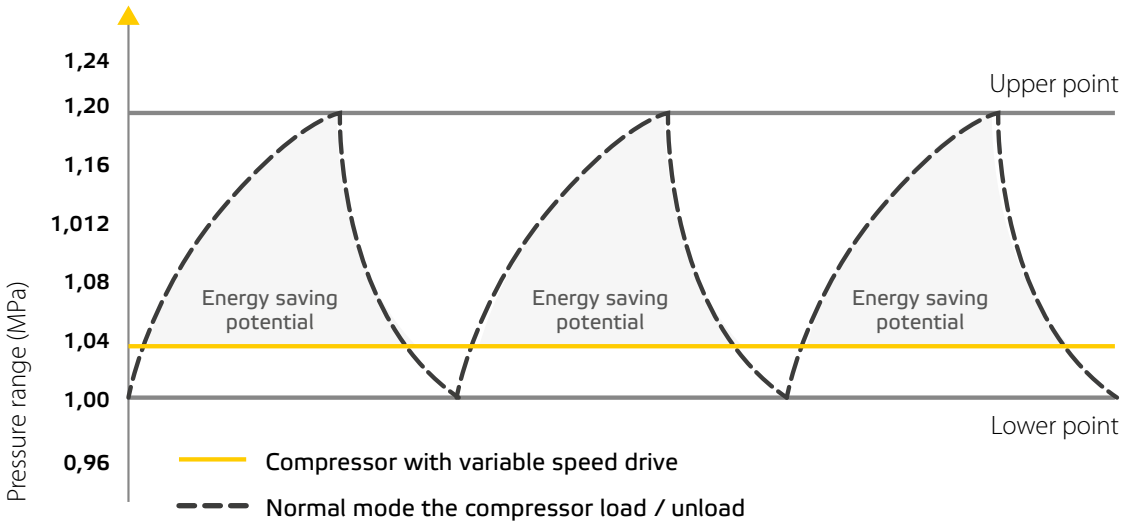
Serve as a consumer of compressed air, as needed at the moment.

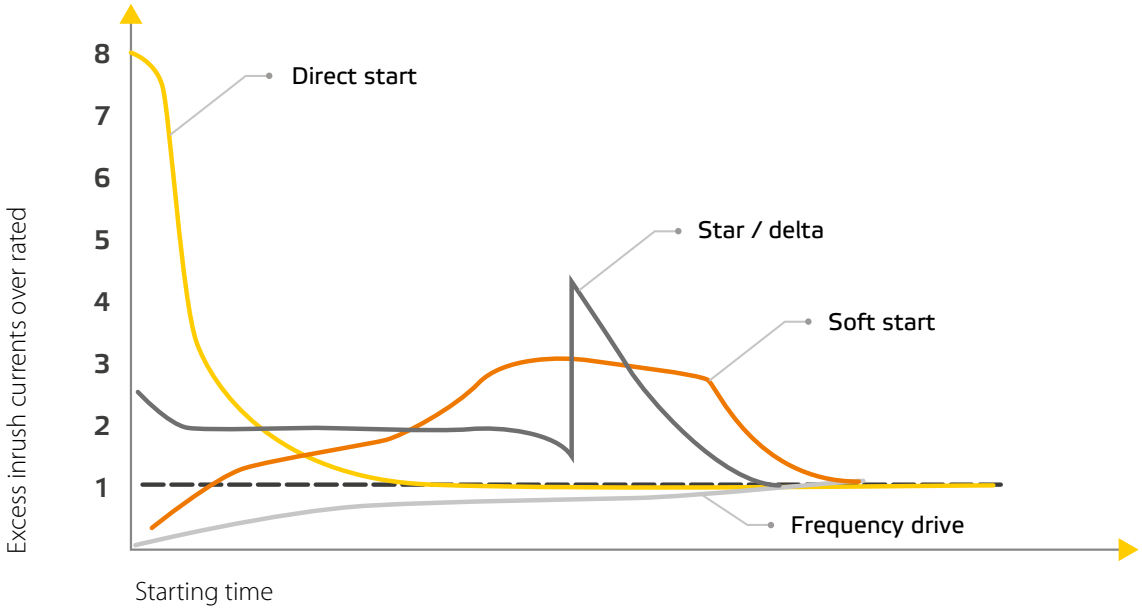
Maintain a positive pressure in the pneumatic system with a precision of 0,01 MPa. Increasing the pressure increases by 0,1 MPa, the power consumption of 6-8%.

Avoid the standard mode "work - idle - work" by reducing power consumption in unproductive idle. Savings in excess of 30%, depending on the operating mode.

Reduce the load on the grid enterprises inrush currents do not exceed the operating parametres.

Extend the life of the compressor by operating the compressor unit at a reduced speed.





For a group of compressors one variable speed drive compressor will be sufficient for capacity control. The compressor with a variable speed drive smoothens irregularity in compressed air demand (sustaining stable pressure in pneumatic circuit) and if necessary switches or shuts off a compressor without a variable speed drive.

Technical characteristics

Model	Delivery at STP*, m³/min	Rated Operating Pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH, in (Weight, lb)
DEN-5,5Sh «Optim»	0,4-0,8 / 0,32-0,63 / 0,27-0,54	101,5/145/188,5 (7/10/13)	7,4 (5,5)	37.0x23.6x29.5 (440.9)
DEN -5,5Sh -R (250 l) «Optim»	0,4-0,8 / 0,32-0,63 / 0,27-0,54	101,5/145/188,5 (7/10/13)	7,4 (5,5)	53.9x25.0x55.5 (661.4)
DEN -5,5Sh-R (500 l) «Optim»	0,4-0,8 / 0,32-0,63 / 0,27-0,54	101,5/145/188,5 (7/10/13)	7,4 (5,5)	70.7x25.0x55.5 (881.8)
DEN-5,5Sh -OR (500 l) «Optim»	0,4-0,8 / 0,32-0,63 / 0,27-0,54	101,5/145/188,5 (7/10/13)	7,4 (5,5)	70.7x25.0x55.5 (925.9)
DEN-7,5Sh «Optim»	0,5-1,1 /0,4-0,82 / 0,35-0,71	101,5/145/188,5 (7/10/13)	10,1 (7,5)	37.0x23.6x29.5 (551.2)
DEN-7,5Sh -R (500 l) «Optim»	0,5-1,1 /0,4-0,82 / 0,35-0,71	101,5/145/188,5 (7/10/13)	10,1 (7,5)	70.7x25.0x55.5 (992.1)
DEN-7,5Sh-OP (500 l) «Optim»	0,5-1,1 /0,4-0,82 / 0,35-0,71	101,5/145/188,5 (7/10/13)	10,1 (7,5)	70.7x25.0x55.5 (1047.2)
DEN-11Sh «Optim»	0,9-1,8 / 0,8-1,6 / 0,7-1,4	101,5/145/188,5 (7/10/13)	14,8 (11)	37.0x23.6x29.5 (595.2)
DEN-11Sh-R (500 l) «Optim»	0,9-1,8 / 0,8-1,6 / 0,7-1,4	101,5/145/188,5 (7/10/13)	14,8 (11)	70.7x25.0x55.5 (1036.2)
DEN-11Sh-OR (500 l) «Optim»	0,9-1,8 / 0,8-1,6 / 0,7-1,4	101,5/145/188,5 (7/10/13)	14,8 (11)	70.7x25.0x55.5 (1102.3)
DEN-15Sh«Optim»	1,1-2,7 /1,1- 2,4 /1,15- 2,1	108,7/145/188,5 (7,5/10/13)	20,1 (15)	47.2x31.5x39.4 (1113.3)
DEN-15Sh-R (500 l) «Optim»	1,1-2,7 /1,1- 2,4 /1,15- 2,1	108,7/145/188,5 (7,5/10/13)	20,1 (15)	70.9x31.5x67.3 (1565.3)
DEN-15Sh-R (900 l) «Optim»	1,1-2,7 /1,1- 2,4 /1,15- 2,1	108,7/145/188,5 (7,5/10/13)	20,1 (15)	80.7x31.5x74.4 (1807.8)
DEN-15Sh-OR (500 l)«Optim»	1,1-2,7 /1,1- 2,4 /1,15- 2,1	108,7/145/188,5 (7,5/10/13)	20,1 (15)	72.8x31.5x67.3 (1653.5)
DEN-15Sh-OR (900 l) «Optim»	1,1-2,7 /1,1- 2,4 /1,15- 2,1	108,7/145/188,5 (7,5/10/13)	20,1 (15)	83.9x31.5x74.4 (1918.0)
DEN-18Sh «Optim»	1,2-3,1 / 1,1-2,7 /1,1- 2,2	108,7/145/188,5 (7,5/10/13)	24,8 (18)	47.2x31.5x39.4 (1135.4)
DEN-18Sh-R (500 l) «Optim»	1,2-3,1 / 1,1-2,7 /1,1- 2,2	108,7/145/188,5 (7,5/10/13)	24,8 (18)	70.9x31.5x67.3 (1587.3)
DEN-18Sh-R (900 l) «Optim»	1,2-3,1 / 1,1-2,7 /1,1- 2,2	108,7/145/188,5 (7,5/10/13)	24,8 (18)	80.7x31.5x74.4 (1829.8)
DEN-18Sh-OR (500 l) «Optim»	1,2-3,1 / 1,1-2,7 /1,1- 2,2	108,7/145/188,5 (7,5/10/13)	24,8 (18)	72.8x31.5x67.3 (1719.6)
DEN-18Sh-OR (900 l) «Optim»	1,2-3,1 / 1,1-2,7 /1,1- 2,2	108,7/145/188,5 (7,5/10/13)	24,8 (18)	83.9x31.5x74.4 (1962.1)
DEN-22Sh «Optim»	1,1-3,8 / 1,2-3,4 / 1,1-3,0	108,7/145/188,5 (7,5/10/13)	29,5 (22)	47.2x31.5x39.4 (1157.4)
DEN-22Sh-R (500 l) «Optim»	1,1-3,8 / 1,2-3,4 / 1,1-3,0	108,7/145/188,5 (7,5/10/13)	29,5 (22)	70.9x31.5x67.3 (1609.4)

Model	Delivery at STP*, m^3/min	Rated Operating Pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH, in (Weight, lb)
DEN-22Sh-R (900 l) «Optim»	1,1-3,8 / 1,2-3,4 / 1,1-3,0	108,7/145/188,5 (7,5/10/13)	29,5 (22)	80.7x31.5x74.4 (1873.9)
DEN-22Sh-OR (500 l) «Optim»	1,1-3,8 / 1,2-3,4 / 1,1-3,0	108,7/145/188,5 (7,5/10/13)	29,5 (22)	72.8x31.5x67.3 (1741.7)
DEN-22Sh-OR (900 l) «Optim»	1,1-3,8 / 1,2-3,4 / 1,1-3,0	108,7/145/188,5 (7,5/10/13)	29,5 (22)	83.9x31.5x74.4 (2006.2)
DEN-30Sh «Optim»	1,2-4,6 / 1,2-3,9 / 1,4-3,4	108,7/145/188,5 (7,5/10/13)	40,2 (30)	47.2x31.5x39.4 (1157.4)
DEN-30Sh «Plus» «Optim»	1,5-5,7 / 1,5-5,0 / 1,5-4,2	116/145/188,5 (8/10/13)	40,2 (30)	47.2x39.4x55.1 (1807.8)
DEN-37Sh «Optim»	1,5-6,5 / 1,5-5,7 / 1,45-4,7	116/145/188,5 (8/10/13)	49,6 (37)	47.2x39.4x55.1 (1873.9)
DEN-45Sh «Optim»	1,6-7,5 / 1,4-6,5 / 1,4-5,2	116/145/188,5 (8/10/13)	60,3 (45)	63.8x47.2x58.3 (2314.9)
DEN-45ShM «Optim»	3,5-7,0 / 3,2-6,5	101,5/145 (7/10)	60,3 (45)	63.4x39.4x60.2 (1873.9)
DEN-55Sh «Optim»	2,8-10,0 / 2,7-8,85 / 2,7-7,8	116/145/188,5 (8/10/13)	73,8 (55)	63.8x47.2x58.3 (2866.0)
DEN-75Sh «Optim»	3,0-12,0 / 2,7-9,7 / 2,4-7,8	116/145/188,5 (8/10/13)	100,6 (75)	63.8x47.2x58.3 (2866.0)
DEN-75Sh «Plus» «Optim»	3,1-13,5 / 3,0-11,5 / 2,9-9,8	116/145/188,5 (8/10/13)	100,6 (75)	77.2x52.8x64.2 (3086.5)
DEN-90Sh «Optim»	2,7-13,8 / 2,8-11,7 / 2,7-10,2	108,7/145/188,5 (7,5/10/13)	120,7 (90)	77.2x52.8x64.2 (3086.5)
DEN-90Sh «Plus» «Optim»	4,9-15,5 / 5,0-14,0 / 7,3-11,6	116/145/188,5 (8/10/13)	120,7 (90)	77.2x52.8x64.2 (3747.9)
DEN-110Sh «Optim»	5,1-19,0 / 5,0 -16,8 / 7,1-13,5	116/145/188,5 (8/10/13)	147,5 (110)	77.2x52.8x64.2 (3968.3)
DEN-132ShM «Optim»	11,2-22,5 / 8,2-16,5	101,5/145 (7/10)	177,0 (132)	98.4x57.1x71.7 (5291.1)
DEN-132ShM «Plus» «Optim»	13,0-24,0 / 12,5-19,0	116/145 (8/10)	177,0 (132)	116.1x70.9x77.2 (6834.3)
DEN-160ShM «Optim»	12,8-29,0 / 13,1-26,5 / 12,4-22,0	116/145 (8/10)	214,6 (160)	116.1x70.9x77.2 (8046.9)
DEN-200ShM «Optim»	13,0-35,5 / 12,7-32,0	116/145 (8/10)	268,2 (200)	116.1x70.9x77.2 (8267.3)
DEN-250ShM «Optim»	21,0-42,0	101,5 (7)	335,3 (250)	133.9x82.7x82.7 (compressor) 63.0x39.4x74.8 (cooling) (10251.5)
DEN-315ShM «Optim»	21,0-42,0	145 (10)	422,4 (315)	133.9x82.7x82.7 (compressor) 48.0x78.3x82.7 (cooling) (10251.5)
DEN-315ShM «Optim»	27,0-54,0	108,7 (7,5)	422,4 (315)	135.8x82.7x82.7 (compressor) 48.0x74.8x82.7 (cooling) 21.7x52.0x90.8 (control) (11397.9)
DEN-400ShM «Optim»	27,0-54,0	145 (10)	536,4 (400)	135.8x82.7x82.7 (compressor) 48.0x74.8x82.7 (cooling) 21.7x52.0x90.8 (control) (11397.9)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

DEN «VOLT» Compressor Units, Designed for Operation at 6kV (10kV) Voltage

Designed by CHKZ specialists screw compressors DEN «VOLT» enable our clients to get the following benefits:

No need to install PTS (package transformer substation) which steps down the voltage from 6 (10)kV to 0,4kV.

Power inputs reduction (because the power rates in 6kV network is lower).

Increase of compressor unit electric motor life due to low inrush currents.

Model	Delivery at STP*, cfm (m^3/min)	Rated Operating Pressure psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
DEN-160ShM «VOLT»	882.87/776.92 (25,0/22,0)	101.5/130.5 (0,7/0,9)	214.6 (160)	114.2x82.7x82.7 (2900x2100x2100)	10912,9 (4950)
DEN-200ShM «VOLT»	11.83/1059.44/953.50 (33,5/30,0/27,0)	101.5/130.5/145.0 (0,7/0,9/1,0)	268.2 (200)		10912,9 (4950)
DEN-250ShM «VOLT»	1483.22 (42,0)	101.5 (0,7)	335.3 (250)	133.9x82.7x82.7 (compressor) 63.0x39.4x74.8 (cooling) (3400x2100x2100 (compressor) 1600x1000x1900 (cooling)	10251,5 (4650)
DEN-315ShM «VOLT»	1483.22 (42,0)	145.0 (1,0)	422.4 (315)	133.9x82.7x82.7 (compressor) 48.0x78.3x82.7 (cooling) (3400x2100x2100 (compressor) 1220x1990x2100 (cooling))	10251,5 (4650)
DEN-315ShM «VOLT»	1906.99 (54,0)	101.5 (0,7)	422.4 (315)	8 140,2x88,6x86,6 (compressor) 48.0x74.8x82.7 (cooling) (3560x2250x2200 (compressor) 1220x1990x2100 (cooling)	11397.9 (5170)
DEN-400ShM «VOLT»	1906.99 (54,0)	145.0 (1,0)	536.4 (400)		

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Upon clients' demand Chelyabinsk Compressor Plant CJSC together with Chelyabinsk Electric Equipment Plant LLC can supply single-end service assembled chamber (KSO-203) for compressors DEN power connection to 6kV (10kV) network.

KSO-203 manufactured according to the Technical Requirements No. 3414-007-65711427-2010 is designed for acceptance and distribution of a three phase, 50 – 60 Hz frequency and 6 (10) kW voltage alternating current in a circuit with an isolated and arc-suppressing reactor grounded neutral.

The KSO consists of the most contemporary components, including commutation devices, isolators, overvoltage stoppers and modern microprocessor protection units. It provides supply reliability of the compressor units' in accordance with their peculiarities.

LLC «Chelyabinsk Electric Equipment Plant»
454085, Chelyabinsk, prospect Lenina, 2b, post office box 8814
Phone: 8-351-777-34-64, 247-65-94, 239-90-31.
Fax: 8(351) 246-15-18, 246-15-19
E-mail: info@chelzeo.ru

WWW.CHELZEO.RU

DEN «DEW» Compressor Units With Liquid Cooling System

For companies which already possess compressor equipment fleet with liquid cooling and a water cooling tower, or companies having special operational environment CHKZ is ready to offer compressors with liquid cooling which are suitable in cases when air pipelines laying is impossible or unreasonable.

The units are supplied with high-efficient plate heat exchangers made of stainless steel. Their compact sizes allow to integrate the exchangers into the compressor units. Heat exchanger material and design guarantee long life service. Self-cleaning technology will provide minimal maintenance costs.

Наименование	Delivery at STP*, cfm (m^3/min)	Rated Operating Pressure, psig (barg)	Drive power HP (kW)	Cooling water consumption, gal./h (m^3/h)	Dimensions, LxWxH, in (Weight, lb)
DEN-75Sh «ROSA»	423,78/342,55/275,45 (12,0/9,7/7,8)	116/145/188,5 (8/10/13)	100,6 (75)	792,5 (3,0)	63.8x47.2x58.3 (2866.0)
DEN-75Sh «Plus» «ROSA»	476,75/406,12/346,08 (13,5/11,5/9,8)	116/145/188,5 (8/10/13)	100,6 (75)	1109,5 (4,2)	77.2x52.8x64.2 (3086.5)
DEN-90Sh «ROSA»	487,34/413,18/360,21 (13,8/11,7/10,2)	108,7/145/188,5 (7,5/10/13)	120,7 (90)	1109,5 (4,2)	77.2x52.8x64.2 (3086.5)
DEN-90Sh «Plus» «ROSA»	547,38/494,41/409,65 (15,5/14,0/11,6)	116/145/188,5 (8/10/13)	120,7 (90)	1109,5 (4,2)	77.2x52.8x64.2 (3747.9)
DEN-110Sh «ROSA»	670,98/593,29/476,75 (19,0/16,8/13,5)	116/145/188,5 (8/10/13)	147,5 (110)	1109,5 (4,2)	77.2x52.8x64.2 (3968.3)
DEN-132ShM «Plus» «ROSA»	847,55/670,98 (24,0/19,0)	116/145 (8/10)	177,0 (132)	1452,95 (5,5)	116.1x70.9x77.2 (6834.3)
DEN-160ShM «ROSA»	1024,13/935,84 (29,0/26,5)	116/145 (8/10)	214,6 (160)	1637,87 (6,2)	116.1x70.9x77.2 (8046.9)
DEN-200ShM «ROSA»	1253,67/953,50 (35,5/32)	116/145 (8/10)	268,2 (200)	1981,3 (7,5)	116.1x70.9x77.2 (8267.3)
DEN-250ShM «ROSA»	1483,22 (42,0)	101,5 (7)	335,3 (250)	2377,55 (9,0)	133.9x82.7x82.7 (compressor) 63.0x39.4x74.8 (cooling) (10251.5)
DEN-315ShM «ROSA»	1483,22 (42,0)	145 (10)	422,4 (315)	2800,2 (10,6)	133.9x82.7x82.7 (compressor) 48.0x78.3x82.7 (cooling) (10251.5)
DEN-315ShM «ROSA»	1906,99 (54,0)	108,7 (7,5)	422,4 (315)	2800,2 (10,6)	135.8x82.7x82.7 (compressor) 48.0x74.8x82.7 (cooling) 21.7x52.0x90.8 (control) (11397.9)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Compressor units DEN-132, 160, 200,250, 315 ShM are equipped with a electric motor smooth start device. The electric motor smooth start device can be supplied from DEN-18Sh.
Sh - sound-absorbing cabinet, M – flexible coupling

Explosion Proof DEN Screw Compressor Units

IN ORDER TO SATISFY CUSTOMERS' NEEDS CHKZ SPECIALISTS HAVE DEVELOPED AND CERTIFIED SEVERAL SERIES OF SCREW COMPRESSORS DEN IN AN EXPLOSION-PROOF VERSION.

DEN «MINER» Compressor Units

DEN «MINER» screw compressor units are marked as explosion-proof PB ExdiasI according to Certificate of compliance to Customs Union Technical Regulations «About equipment's safety during operation in dangerously explosive environment» (TP TC 012/2011).

The units are designed to provide compressed air to pneumatic instruments, pneumatic drilling rigs and mechanism drives in underground mines, in pithead buildings. In non-hazardous gas, vapor and dust conditions the compressors are supplied in a «mining normal» version («MN»). In gas- and dust hazardous conditions the compressors are performed in «PB ExdiasI» design.

Upon customer's demand «CHKZ», LLC builds a compressor in «MN» or «PB ExdiasI» design in performance range from 17,66 to 1483,44 cfm (from 0,5 to 42 m^3/min).

The model range correspond to the Federal Rules and Regulations of Industrial Safety «Coal Mines Safety Rules».

Model	Delivery at STP*, cfm (m^3/min)	Rated Operating Pressure psig (barg)	Drive power HP (kW)	Dimensions, LxWxH, in	Weight lb (kg)
DEN-5,5ShM «Shahter»	28.25 (0,8)	101.5 (0,7)	7,4 (5,5)	47.6x23.2x47.4	771,6 (350)
DEN-7,5ShM «Shahter»	45.92 (1,3)	101.5 (0,7)	10,1 (7,5)	40.9x23.6x37.0	815,7 (370)
DEN-45ShM «Shahter»	229.55 (6,5)	101.5 (0,7)	60,3 (45)	77.6x35.4x43.3	2866,0 (1300)
DEN-455ShM «Shahter»	250.73 (7,1)	101.5 (0,7)	60,3 (45)	66,9x35,4x43,3	2535,3 (1150)
DEN-75ShM «Shahter»	388.46 (11,0)	101.5 (0,7)	100.6 (75)	90,6x41,3x43,3	3902,2 (1770)
DEN-110ShM «Shahter»	543.85 (15,4)	101.5 (0,7)	147,5 (110)	114,6x43,3x54,9	5732 (2600)
DEN-132ShM «Shahter»	776.92 (22,0)	101.5 (0,7)	177,0 (132)	121,3x58,1x70,9	7936,6 (3600)
DEN-200ShM «Shahter»	953.50 (27,0)	145.0 (1,0)	268,2 (200)	117,3x70,9x94,5	9479,9 (4300)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Options:

- Mounting on a wheel pair (standard supply – on sledge)
- Electric motor supply voltage 660/1140 (standard supply voltage 380/6600)
- Explosimetric sensor, dry-powder fire-extinguishing system

DEN «Ex» Compressor Units

The DEN Ex are used for technical processes supply with the compressed air in such industries as chemical, oil and gas, which allow their operation in dangerously explosive conditions of 1 A class, categories IIA, IIB. The compressor units have the explosion proof 1Ex d IIB T4 Gb or 1 Ex d ia IIB T4 Gb in accordance with the Customs Union Technical Regulations «About equipment's safety during operation in dangerously explosive environment» (TP TC 012/2011).

Upon customer's demand «CHKZ», LLC builds a compressor in «Ex» design in performance range from 17,66 to 1907,01 cfm (from 0,5 to 54 m^3/min).

The model range correspond to the Federal Rules and Regulations of Industrial Safety «Coal Mines Safety Rules».

Model	Delivery at STP*, cfm (m^3/min)	Rated Operating Pressure, psig (barg)	Drive power HP (kW)
DEN-5,5Sh Ex	28,25/22,25/19,07 (0,8/0,63/0,54)	101,5/145/188,5 (7/10/13)	7,4 (5,5)
DEN-7,5Sh Ex	42,38/28,25/25,08 (1,16/0,82/0,71)	101,5/145/188,5 (7/10/13)	10,1 (7,5)
DEN-11Sh Ex	63,57/56,50/49,44 (1,85/1,6/1,4)	101,5/145/188,5 (7/10/13)	14,8 (11)
DEN-15Sh Ex	95,35/84,76/74,16 (2,7/2,4/2,1)	108,7/145/188,5 (7,5/10/13)	20,1 (15)
DEN-18Sh Ex	109,48/95,35/77,69 (3,1/2,7/2,2)	108,7/145/188,5 (7,5/10/13)	24,8 (18)
DEN-22Sh Ex	134,20/120,07/105,94 (3,8/3,4/3,0)	108,7/145/188,5 (7,5/10/13)	29,5 (22)
DEN-30Sh Ex	162,5/137,7/120,09 (4,6/3,9/3,4)	108,7/145/188,5 (7,5/10/13)	40,2 (30)
DEN-30Sh «Plus» Ex	201,29/176,57/148,32 (5,7/5,0/4,2)	116/145/188,5 (8/10/13)	40,2 (30)
DEN-37Sh Ex	229,55/201,29/165,98 (6,5/5,7/4,7)	116/145/188,5 (8/10/13)	49,6 (37)
DEN-45Sh Ex	264,9/229,55/183,66 (7,5/6,5/5,2)	116/145/188,5 (8/10/13)	60,3 (45)
DEN-45ShM Ex	247,20/229,55 (7,0/6,5)	101,5/145 (7/10)	60,3 (45)
DEN-55Sh Ex	353,15/312,53/275,45 (10,0/8,85/7,8)	116/145/188,5 (8/10/13)	73,8 (55)
DEN-75Sh Ex	423,78/342,55/275,45 (12,0/9,7/7,8)	116/145/188,5 (8/10/13)	100,6 (75)
DEN-75Sh «Plus» Ex	476,75/406,12/346,08 (13,5/11,5/9,8)	116/145/188,5 (8/10/13)	100,6 (75)
DEN-90Sh Ex	487,34/413,18/360,21 (13,8/11,7/10,2)	108,7/145/188,5 (7,5/10/13)	120,7 (90)
DEN-90Sh «Plus» Ex	547,38/494,41/409,65 (15,5/14,0/11,6)	116/145/188,5 (8/10/13)	120,7 (90)
DEN-110Sh Ex	670,98/593,29/476,75 (19,0/16,8/13,5)	116/145/188,5 (8/10/13)	147,5 (110)
DEN-132ShM Ex	794,58/582,69 (22,5/16,5)	101,5/145 (7/10)	177,0 (132)
DEN-132ShM «Plus» Ex	847,55/670,98 (24,0/19,0)	116/145 (8/10)	177,0 (132)
DEN-160ShM Ex	1024,13/935,84 (29,0/26,5)	116/145 (8/10)	214,6 (160)
DEN-200ShM Ex	1253,67/953,50 (35,5/32)	116/145 (8/10)	268,2 (200)
DEN-250ShM Ex	1483,22 (42,0)	101,5 (7)	335,3 (250)
DEN-315ShM Ex	1483,22 (42,0)	145 (10)	422,4 (315)
DEN-315ShM Ex	1906,99 (54,0)	108,7 (7,5)	422,4 (315)
DEN-400ShM Ex	1906,99 (54,0)	145 (10)	536,4 (400)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Dimensions are in accordance with customer's requirements

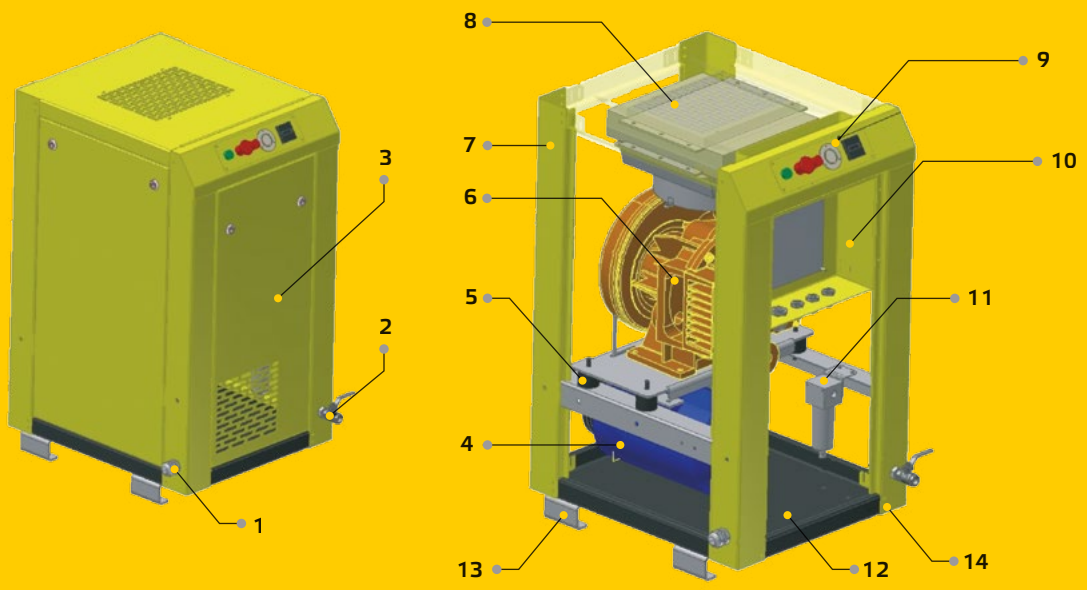
Chapter

04

KS Oil Free Compressor Units

Oil free compressor unit KS-5,5

1 cable entry;
2 dispensing valve;
3 front panel;
4 drive motor;
5 vibration mount;
6 compressor;
7 hood support rod;
8 cooling unit;
9 control panel;
10 electric panel;
11 mist eliminating filter (option);
12 bottom;
13 support;
14 frame.



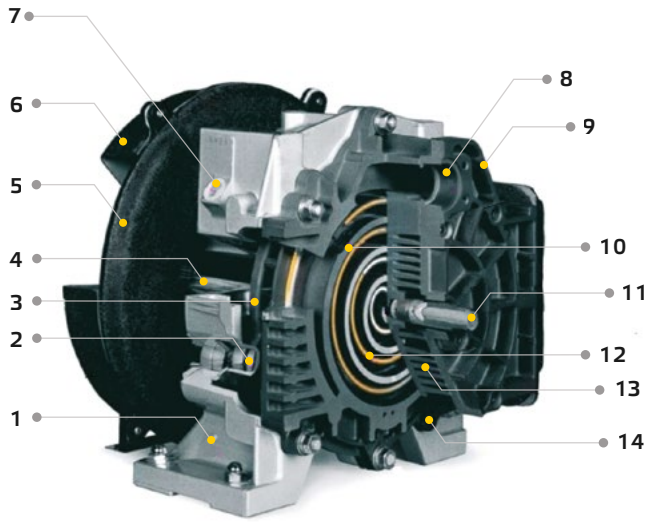
Since January 2014 the assortment of range of the equipment produced by Chelyabinsk Compressor Plant, LLC has been added by oil free scroll compressor units KS. These state-of -the-art machines are designed using advanced technologies and high-quality components from the leading manufacturers.

Oil free scroll compressors KS series produced by Chelyabinsk Compressor Plant, LLC are designed for supplying customers with oil free compressed air in applications with high requirements to the air purity. High quality of the compressed air (100% oil free air) and operational reliability can be guaranteed by a scroll compressor.

The main item of the unit is an oil free scroll compressor that is produced for production of the compressed air of the first class according to ISO.

The working tools of the unit are two steel scrolls which are interposed in each other. Under the influence of eccentric a moving scroll moves in a plane-parallel way towards a fixed scroll.

The nodes and components are installed on a common base plate with account of the free access for maintenance. A unit is placed in a soundproofed hood and powder painted that's why it is safely protected from corrosion during all the period of mechanical life.



1 body frame;
2 screwdown of moving scroll;
3 counterweight;
4 pulley bearing and fan support;
5 inner fan casing;
6 outer fan casing;
7 plug;
8 upper air purifier tube;
9 fix scroll casing;
10 fix scroll;
11 compressed air outlet;
12 moving scroll;
13 scroll cooling fins;
14 lower intake hose chamber.

Characteristic feature of oil free compressor units KS is a low noise level achieved through compressor balance, antivibration mounts, sound proof hooding. Compressor units can be installed in close proximity to operational location.

Another feature of oil free scroll compressors KS series is unsurpassed reliability. Comparatively low amount of rotating parts, low demand for expandable materials allow optimizing number and intervals of schedule maintenance, to increase considerable compressor lifetime compressor.

Model	Minimum delivery at STP*, cfm (m^3/min)	Output pressure, psig (barg)	Drive power, HP (kW)	Dimensions LxWxH, in (mm)
KS-2	8,48/7,06 (0,24/0,2)	116/145 (8/10)	2,95 (2,2)	25,59x21,65x39,76 (650x550x1010)
KS-2R (250 l)	8,48/7,06 (0,24/0,2)	116/145 (8/10)	2,95 (2,2)	51,75x23,62x64,17 (1310x600x1630)
KS-5,5	21,19/15,54 (0,6/0,44)	116/145 (8/10)	7,4 (5,5)	25,59x21,65x39,76 (650x550x1010)
KS-5,5R (250 l)	21,19/15,54 (0,6/0,44)	116/145 (8/10)	7,4 (5,5)	51,75x23,62x64,17 (1310x600x1630)
KS-5,5R (500 l)	21,19/15,54 (0,6/0,44)	116/145 (8/10)	7,4 (5,5)	70,78x25,59x68,90 (1800x650x1750)
KS-7,5	30,02 (0,85)	116 (8)	10,1 (7,5)	31,50x25,59x45,28 (800x650x1150)
KS-7,5R (250 l)	30,02 (0,85)	116 (8)	10,1 (7,5)	51,57x25,59x68,90 (1310x650x1750)
KS-7,5R (500 l)	30,02 (0,85)	116 (8)	10,1 (7,5)	70,87x25,59x74,80 (1800x650x1900)
KS-22	84,76 (2,4)	116/145 (8/10)	29,5 (22)	on request

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Chapter

05

KV Screw Compressor Units With Diesel Engine

ECONOMY, UNPRETENTIOUSNESS, RELIABILITY!

KV compressor units with a capacity from 88,29 up to 1059,44 cfm (from 2,5 up to 30 m^3/min), working pressure from 87 up to 435,1 psig (from 6 up to 30 barg) are designed for the compressed air supply to the equipment used in the territories with limited or absent power supply and for the operation in adverse climatic conditions up to -31°F (-35°C) with the additional equipment being installed.

The function of KV compressor units with diesel engine drive is based on volume compression approach. KV compressor units are manufactured on the basis of German or Italian screw air ends and diesel engines by YaMZ, MMZ, Deutz. The units are mounted on the own frames in soundproof cabinets with no need to have a special foundation.

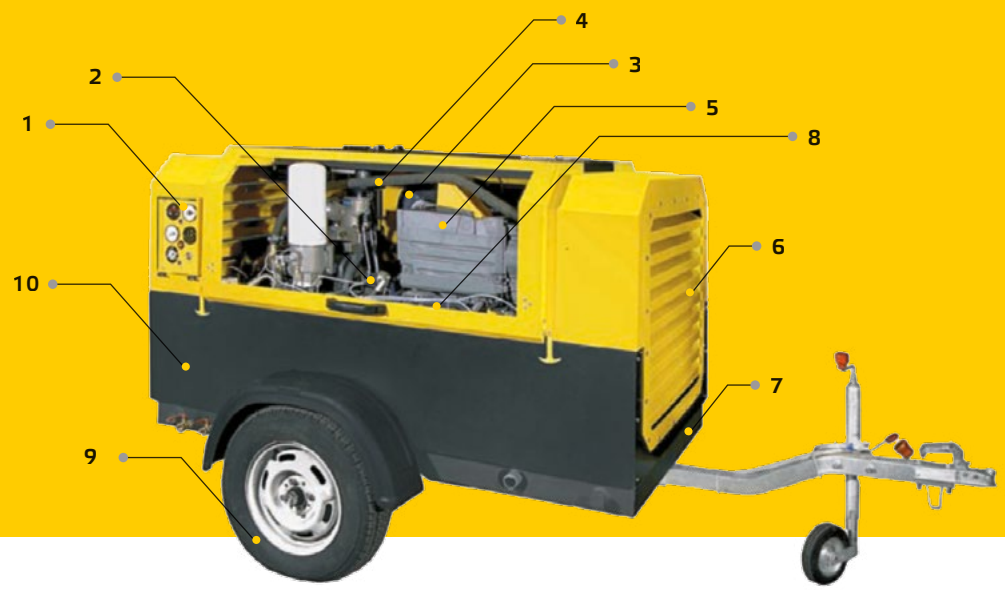
Compressors KV have all-weather, powder-painted housing which protects against corrosion throughout compressor lifetime

In their standard version the units are designed for operation at the climatic implementation category No.1 according to GOST 15150-69 and at the ambient temperature from 32 °F up to 104 °F (from 0°C up to +40°C). If the unit is equipped with a prestart heater the range of the working temperature is from -31°F up to 104 °F (from -35°C up to 40°C).

KV compressor units can be whether stationary or mobile.

Рисунок

1 Control console
2 Screw compressor
3 Fuel system
4 Oil-air system
5 Diesel engine
6 Cooling unit
7 Frame
8 Electric system
9 Chassis or sleigh (portable version)
10 Sound-proof all-weather powder-painted housing



KV compressor units are equipped with a continuous efficiency control, that guarantee a reliable and economical operation.

KV compressor units can be additionally equipped with a wide range of components (optional).

40000 hours

The operation life of the screw compressor at the average.

THE KV COMPRESSOR UNIT WARRANTY PERIOD IS 1 YEAR.

KV Screw Compressor Units

Compressor units
KV-3/8, KV-5/10, KV-6/7

These compressors are intended for providing operation of three pneumatic hammers, one perforator or other pneumatic tools. Due to light weight they can be transported with a car (for versions on chassis) or in a small truck body (stationary version).

Compressor units
KV-8/8, KV-10/8, KV-12/10

These compressors are developed to perform the works which need simultaneous connection with up to 10 pick hammers. These units are designed to conduct continuous operation with high-capacity sandblasters and concrete pumps.

Compressor units
KV-10/16, KV-12/12

These compressors are applied for pipeline pressure tests, fiber-optic communication lines laying, compressed air supply for special sandblasters.

Compressor units
KV-20/30, KV-20/25, KV-25/16, KV-30/10

These are high-capacity compressors, which are applied for sandblasting, drilling-and-blasting, pipelines tests, fiber-optic communication lines laying, etc.

These ompressor units are equipped with efficiency control system which functions on the basis of idle - capacity - idle approach. It is controlled with the VMC intake valve (Italy), which is sensitive to working pressure changes in the receiver-oil separator.

The working pressure can be regulated in the range 87.02- 435.11psi (6 – 30 bar).

These units have given a good account of themselves both in Russian southern and northern regions, where oilfields, gas fields and diamonds deposits (JSC Alrosa) are developed.

Technical characteristics

Model	Delivery at STP*, cfm (m^3/min)	Rated Operating Pressure psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KV-3/8	88,29 (2,5)	116,0-174,0 (8-12)	32,4 (24,2)	67,6x47,8x40,2 (1718x1214x1020)	1543,2 (700)
KV-3/8M	88,29 (2,5)	116,0-174,0 (8-12)	32,4 (24,2)	121,5x61,5x49,1 (3086x1561x1247)	1653,5 (750)
KV-5/10	176,57 (5,0)	145,0 (10)	48,0 (35,8)	76,2x 51,0x49,0 (1936x1295x1245)	1653,5 (750)
KV-5/10M	176,57 (5,0)	145,0 (10)	48,0 (35,8)	126,0x61,4x58,2 (3200x1560x1478)	1763,7 (800)
KV-6/7	211,92 (6,0)	101,5 (7)	48,0 (35,8)	76,2x 51,0x49,0 (1936x1295x1245)	1653,5 (750)
KV-6/7M	211,92 (6,0)	101,5 (7)	48,0 (35,8)	126,0x61,4x58,2 (3200x1560x1478)	1763,7 (800)
KV-8/8	282,56 (8,0)	116,0 (8)	79,8 (59,6)	114,8x55,9x69,3 (2915x1420x1760)	3306,9 (1500)
KV-8/8M	282,56 (8,0)	116,0 (8)	79,8 (59,6)	156,3x72,4x75,6 (3970x1840x1920)	3527,4 (1600)
KV-10/16	353,15 (10,0)	232,0 (16)	177,0 (132)	121,9x62,1x67,3 (3095x1577x1710)	5401,3 (2450)
KV-10/16M	353,15 (10,0)	232,0 (16)	177,0 (132)	172,8x74,8x74,8 (4388x1900x1900)	5732,0 (2600)
KV-10/8	353,15 (10,0)	116,0 8	107,3 (80)	114,8x55,9x69,3 (2915x1420x1760)	3306,9 (1500)
KV-10/8M	353,15 (10,0)	116,0 8	107,3 (80)	156,3x72,4x75,6 (3970x1840x1920)	3527,4 (1600)
KV-12/10	423,78 (12,0)	145,0 (10)	138,1 (103)	114,8x55,9x69,3 (2915x1420x1760)	3306,9 (1500)
KV-12/10M	423,78 (12,0)	145,0 (10)	138,1 (103)	156,3x72,4x75,6 (3970x1840x1920)	3527,4 (1600)
KV-12/12	423,78 (12,0)	174,0 (12)	177,0 (132)	121,9x62,1x67,3 (3095x1577x1710)	5401,3 (2450)
KV-12/12 Cummins (without hood)	423,78 (12,0)	174,0 (12)	177,0 (132)	102,6x48,7x95,9 (2605x1237x2435)	3306,9 (1500)
KV-12/12M	423,78 (12,0)	174,0 (12)	177,0 (132)	172,8x74,8x74,8 (4388x1900x1900)	5732,0 (2600)
KV-20/25	706,29 (20,0)	362,6 (25)	325,8 (243)	158,3x79,9x92,1 (4020x2030x2340)	7936,6 (3600)
KV-20/25M	706,29 (20,0)	362,6 (25)	325,8 (243)	237,4x79,9x95,9 (6030x2030x2435)	9259,4 (4200)
KV-20/30	706,29 (20,0)	435,1 (30)	394,2 (294)	158,3x79,9x92,1 (4020x2030x2340)	9920,8 (4500)
KV-20/30M	706,29 (20,0)	435,1 (30)	394,2 (294)	237,4x79,9x95,9 (6030x2030x2435)	10582,2 (4800)
KV-25/16	882,87 (25,0)	232,0 (16)	325,8 (243)	158,3x79,9x92,1 (4020x2030x2340)	9920,8 (4500)
KV-25/16M	882,87 (25,0)	232,0 (16)	325,8 (243)	237,4x79,9x95,9 (6030x2030x2435)	10582,2 (4800)
KV-30/10	1059,44 (30,0)	145,0 (10)	325,8 (243)	158,3x79,9x92,1 (4020x2030x2340)	9920,8 (4500)
KV-30/10M	1059,44 (30,0)	145,0 (10)	325,8 (243)	237,4x79,9x95,9 (6030x2030x2435)	10582,2 (4800)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Table of available options

№	Options	KV-3/8 Deutz F02 M2011	KV-5/10 Deutz F02 L2011	KV-6/7 Deutz F03 L2011	KV-8/8 Д-243	KV-10/16 ЯМЗ-236М2	KV-10/8 Д-245	KV-12/10 Deutz BFO4M2012C	KV-12/12 ЯМЗ-236М2	KV-20/25 KV-25/16 KV-30/10 ЯМЗ-238Д	KV-20/30 ЯМ35-7511(294)
1	After coolera	-	ST	ST	+	-	+	-	-	-	-
2	Moisture separator	-	+	+	+	+	+	+	+	+	+
3	Lubricator	+	+	+	+	+	+	+	+	-	-
4	Wheel chocks with fixation	+	+	+	+	+	+	+	+	+	+
5	Toolbox	-	-	-	+	+	+	+	+	+	+
6	Optical filter clogging indicator	ST	ST	ST	+	+	+	ST	+	+	+
7	Antitheft chain with lock	+	+	+	+	+	+	+	+	+	+
8	Air treatment filter	+	+	+	+	+	+	+	+	+	+
9	Ball / ring maunting	+/+	+/+	+/+	-/+	-/+	-/+	-/+	-/+	-/+	-/+
10	Winter start-up package	+	+	+	+	+	+	+	+	+	+
11	Company color painting*	+	+	+	+	+	+	+	+	+	+
12	Air hose reel	+	+	+	+	+	+	+	+	+	+
13	Tool kit for compressor maintenance	+	+	+	+	+	+	+	+	+	+

Symbols in the table:
(+) – option available
(-) – option unavailable

ST – option included in standard configurtion
* - for orders minimum 10 pcs

Options for KV compressor units

Additional DEUTZ fuel filter

Ensures water and solid particles removal from the fuel. Protects engine fuel system if diesel fuel is of low quality.

«Winter package»

Prestarting heater with timer warms coolant or heats crankcase that assures fail-safe start at the ambient temperature up to -31°F (-35 °C).

Lubricator (main oilier)

Pulverize oil in the compressed air making oil mist which provides lubrication of instrument and prevents covering with ice.
The intension of consumption is controlled by stopcock. The compressor capacity is enough for one shift of compressor work.

Toolbox

Double or single box for tools which is kept inside the closed compressor frame.

Antitheft chain

It is a solid alloy chain in polymeric cover with lock.

Compressed air treatment equipment

Upon customers' request the compressors KV can be equipped with the filters, which purifies the compressed air from the dust (up to 0,01 mm) and oil (up to 0,003mg/m^3). Adsorption air dryer (dew point -94°F (-70°C)) can be installed nearby the compressor.

Chapter

06

Medium and High Pressure Piston Compressors

«Chelyabinsk Compressor Plant» LLC offers KP, VShV «Powerman» boosters and piston compressors. Upon your request we can supply to you medium and high pressure compressors and medium and high pressure boosting compressors (boosters).

All the high pressure KP, VShV compressors are equipped with the automatic control system (based on micro-processor controller Airmaster or B-Control). The group of compressors can be controlled remotely.
The basement is not obligatory for starting the compressor.

SV (SVB) series:

- capacity range:
  4,41-462,62 cfm (0,125 - 13,1 m³/min);
- working pressure range:
  362,6-5076,3 psi (25 - 350 bar);
- electric motor direct drive;
- air cooling system;
- usage the heat released from the cooling system for the heating the compressor unit and adjoining premises;
- life time before routine maintenance is 2000 operating hours;
- high efficiency and low noise level.

Verticus series:

- capacity range:
  3,0-54,03 cfm (0,085 - 1,530 m³/min);
- working pressure range:
  362,6-7251,9 psi (25 - 500 bar);
- electric motor belt drive;
- air or water cooling system;
- packaged version (vertical arrangement of unit assemblies – piston barrel is above motor), occupies about 1 m^2;
- smart control system;
- effective noise-absorbing housing – as an option;
- equipped with the additional high-pressure vessels – as an option;
- filter system – as an option.

K22 - K52 series:

- capacity range:
  22,95-1010,0 cfm (0,65 - 28,6 m³/min;
- working pressure range:
  362,6-7251,9 psi (25 - 500 bar);
- electric motor belt or direct drive;
- air or water cooling system;
- continuous system of condensate drain at every stage (without unit stop);
- smart control system;
- operation when it is heeled by 30°;
- possibility of frequency regulation drive;
- effective noise-absorbing housing – as an option;
- filter system – as an option;
- diesel engine can be installed (vertical configuration).

Maximum working pressure 580 psig (40 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-125/40	4,41 (0,125)	362,6 (25)	3,0 (2,2)	25,6x19,7x24,0 (650x500x610)	235,9 (107)
KP-200/40	7,06 (0,200)		5,4 (4)	25,6x19,7x24,0 (650x500x610)	235,9 (107)
KP-245/40	8,65 (0,245)		5,4 (4)	25,6x19,7x24,0 (650x500x610)	246,9 (112)
KP-500/40	17,66 (0,500)		10,1 (7,5)	33,5x25,2x27,6 (850x640x700)	440,9 (200)
KP-600/40	21,19 (0,600)		12,1 (9)	33,5x25,2x27,6 (850x640x700)	440,9 (200)
KP-1100/40	38,85 (1,100)		24,8 (18,5)	51,2x35,4x37,4 (1300x900x950)	903,9 (410)
KP-2400/40	84,76 (2,400)		40,2 (30)	57,5x42,5x42,7 (1460x1080x1085)	1300,7 (590)
KP-2350/50	84,76 (2,350)		49,6 (37)	61,8x42,5x42,7 (1570x1080x1085)	1477,1 (670)
KP-3020/40	106,65 (3,020)		60,3 (45)	61,8x44,1x42,7 (1570x1120x1085)	1521,2 (690)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Maximum working pressure 914 psig (63 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-210/63	7,42 (0,210)	725,2 (50)	5,4 (4)	25,6x19,7x21,3 (650x500x540)	264,6 (120)
KP-215/63	7,59 (0,215)	435,1 (30)	4,7 (3,5)	44,9x32,7x59,6 (1140x830x1515)	760,6 (345)
KP-670/63	23,66 (0,670)		14,8 (11)	81,1x28,7x48,8 (2060x730x1240)	992,1 (450)
KP-950/63	33,55 (0,950)		20,1 (15)	81,1x28,7x48,8 (2060x730x1240)	1014,1 (460)
KP-1100/63	38,85 (1,100)		24,8 (18,5)	51,2x35,4x37,4 (1300x900x950)	903,9 (410)
KP-1350/63	47,67 (1,350)		29,5 (22)	88,6x31,5x47,2 (2250x800x1200)	1477,1 (670)
KP-1730/63	61,09 (1,730)		40,2 (30)	88,6x31,5x47,2 (2250x800x1200)	1631,4 (740)
KP-2400/63	84,76 (2,400)		49,6 (37)	122,0x49,2x65,2 (3100x1250x1655)	3152,6 (1430)
KP-2850/63	100,65 (2,850)		60,3 (45)	122,0x49,2x65,2 (3100x1250x1655)	3218,7 (1460)
KP-3400/63	120,07 (3,400)		73,8 (55)	122,0x49,2x65,2 (3100x1250x1655)	3306,9 (1500)
KP-3570/63	126,07 (3,570)		73,8 (55)	118,9x51,2x60,0 (3020x1300x1525)	5511,6 (2500)
KP-5400/63	190,7 (5,400)		120,7 (90)	118,9x51,2x60,0 (3020x1300x1525)	7716,2 (3500)
KP-5900/63	208,36 (5,900)		120,7 (90)	122,0x49,2x65,2 (3100x1250x1655)	4585,6 (2080)
KP-6800/63	240,14 (6,800)		147,5 (110)	122,0x49,2x65,2 (3100x1250x1655)	5136,8 (2330)

Maximum working pressure 1015 psig (70 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-3000/70	105,96 (3,0)	725,2 (50)	60,3 (45)	59,9x48,0x47,2 (1522x1220x1200)	187,4 (850)

Maximum working pressure 1088 psig (75 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-130/75	4,59 (0,130)	928,2 (64)	2,7 (2)	40,2x29,1x51,2 (1020x740x1300)	738,5 (335)
KP-170/75	6,0 (0,170)		4,0 (3)	44,9x32,7x59,6 (1140x830x1515)	749,6 (340)
KP-215/75	7,59 (0,215)		5,4 (4)	44,9x32,7x59,6 (1140x830x1515)	760,6 (345)
KP-850/75	30,02 (0,850)		20,1 (15)	81,1x28,748,8 (2060x730x1240)	1014,1 (460)
KP-1250/75	44,14 (1,250)		29,5 (22)	88,6x31,5x47,2 (2250x800x1200)	1477,1 (670)
KP-1700/75	60,03 (1,700)		40,2 (30)	88,6x31,5x47,2 (2250x800x1200)	1620,4 (735)
KP-2000/75	70,63 (2,000)		49,6 (37)	122,0x49,2x65,0 (3100x1250x1650)	3152,6 (1430)
KP-2600/75	91,82 (2,600)		60,3 (45)	122,0x49,2x65,0 (3100x1250x1650)	3218,7 (1460)
KP-3300/75	116,54 (3,300)		73,8 (55)	122,0x49,2x65,0 (3100x1250x1650)	3306,9 (1500)

Maximum working pressure 1160 psig (80 $bar_{at\ STP*}$). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-1100/80	38,85 (1,100)	870,2 (60)	24,8 (18,5)	51,2x35,4x37,4 (1300x900x950)	1300,7 (590)
KP-2000/80	70,63 (2,000)		40,2 (30)	57,5x42,5x42,7 (1460x1080x1085)	1300,7 (590)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Maximum working pressure 1305 psig (90 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-140/90	4,94 (0,140)	1087,8 (75)	4,0 (3)	44,9x32,7x59,6 (1140x830x1515)	738,5 (335)
KP-215/90	7,59 (0,215)		5,4 (4)	44,9x32,7x59,6 (1140x830x1515)	760,6 (345)
KP-650/90	22,95 (0,650)		14,8 (11)	81,1x28,748,8 (2060x730x1240)	1058,2 (480)
KP-800/90	28,25 (0,800)		20,1 (15)	81,1x28,748,8 (2060x730x1240)	1080,3 (490)
KP-950/90	33,55 (0,950)		24,8 (18,5)	81,1x28,748,8 (2060x730x1240)	1124,4 (510)
KP-1600/90	56,50 (1,600)		40,2 (30)	120,1x49,2x63,8 (3050x1250x1620)	3637,6 (1650)
KP-2000/90	70,63 (2,000)		49,6 (37)	120,1x49,2x63,8 (3050x1250x1620)	3792,0 (1720)
KP-2500/90	88,29 (2,500)		60,3 (45)	120,1x49,2x63,8 (3050x1250x1620)	3924,2 (1780)
KP-3300/90	116,54 (3,300)		73,8 (55)	120,1x49,2x63,8 (3050x1250x1620)	3968,3 (1800)

Maximum working pressure 1740 psig (120 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-1100/120	38,85 (1,100)	1160,3 (80)	29,5 (22)	53,5x35,4x37,4 (1360X900X950)	1300.7 (590)

Maximum working pressure 2176 psig (150 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-270/150	9,53 (0,270)	1740,5 (120)	7,4 (5,5)	30,3x25,2x24,0 (770x640x610)	440,9 (200)
KP-1100/150	38,85 (1,100)		29,5 (22)	54,3x41,3x42,7 (1380x1050x1085)	1300,7 (590)

Maximum working pressure 3626 psig (250 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-225/250	7,95 (0,225)	2610,7 (180)	7,4 (5,5)	30,3x25,2x24,0 (770x640x610)	368,2 (167)
KP-300/250	10,59 (0,300)		10,1 (7,5)	45,9x28,9x32,5 (1165x735x825)	628,3 (285)
KP-455/250	16,07 (0,455)		12,1 (9)	45,9x28,9x32,5 (1165x735x825)	650,4 (295)
KP-585/250	20,66 (0,585)		20,1 (15)	47,4x35,0x36,4 (1205x890x925)	970,0 (440)
KP-705/250	24,90 (0,705)		24,8 (18,5)	47,4x35,0x36,4 (1205x890x925)	1036,2 (470)
KP-1100/250	38,85 (1,100)		40,2 (30)	57,5x41,3x42,7 (1460x1050x1085)	1322,8 (600)
KP-1400/250	49,44 (1,400)		49,6 (37)	61,8x41,3x42,7 (1570x1050x1085)	1521,2 (690)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Maximum working pressure 5076 psig (350 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-85/350	3,0 (0,085)	1305,3 (90)	4,0 (3)	40,2x29,1x51,2 (1020x740x1300)	551,2 (250)
KP-125/350	4,4 (0,125)		5,4 (4)	40,2x29,1x51,2 (1020x740x1300)	562,2 (255)
KP-170/350	6,0 (0,170)			40,2x29,1x51,2 (1020x740x1300)	573,2 (260)
KP-215/350	7,59 (0,215)		7,4 (5,5)	40,2x29,1x51,2 (1020x740x1300)	
KP-225/350	7,95 (0,225)	3625,9 (250)		30,3x25,2x24,0 (770x640x610)	368,2 (167)
KP-290/350	10,24 (0,290)		12,1 (9)	45,9x28,9x32,5 (1165x735x825)	628,3 (285)
KP-300/350	10,6 (0,300)	1305,3 (90)	10,1 (7,5)	58,27x32,68x59,84 (1480x830x1520)	804,7 (365)
KP-340/350	12,0 (0,340)			58,27x32,68x59,84 (1480x830x1520)	970,0 (440)
KP-420/350	14,8 (0,420)		14,8 (11)	58,27x32,68x59,84 (1480x830x1520)	992,1 (450)
KP-445/350	15,75 (0,445)	3625,9 (250)		45,9x28,9x32,5 (1165x735x825)	650,4 (295)
KP-500/350	17,66 (0,500)	1305,3 (90)		58,27x32,68x59,84 (1480x830x1520)	992,1 (450)
KP-575/350	20,31 (0,575)	3625,9 (250)	20,1 (15)	47,4x35,0x36,4 (1205x890x925)	970,0 (440)
KP-610/350	21,54 (0,610)	1305,3 (90)		58,27x32,68x59,84 (1480x830x1520)	1036,2 (470)
KP-650/350	22,96 (0,650)			84,25x28,35x49,21 (2140x720x1250)	1080,3 (490)
KP-700/350	24,72 (0,700)	3625,9 (250)	24,8 (18,5)	47,4x35,0x36,4 (1205x890x925)	1036,2 (470)
KP-800/350	28,26 (0,800)	1305,3 (90)		84,25x28,35x49,21 (2140x720x1250)	1124,4 (510)
KP-930/350	32,85 (0,930)		29,5 (22)	84,25x28,35x49,21 (2140x720x1250)	1256,6 (570)
KP-1100/350	38,85 (1,100)	3625,9 (250)	40,2 (30)	57,5x41,3x42,7 (1460x1050x1085)	1322,8 (600)
KP-1300/350	45,92 (1,300)	1305,3 (90)		88,98x34,06x51,77 (2260x865x1315)	2535,3 (1150)
KP-1400/350	49,44 (1,400)	3625,9 (250)	49,6 (37)	61,8x41,3x42,7 (1570x1050x1085)	1521,2 (690)
KP-1500/350	52,98 (1,500)	1305,3 (90)		88,98x34,06x51,77 (2260x865x1315)	2535,3 (1150)
KP-1900/350	67,1 (1,900)		60,3 (45)	126,0x53,1x63,0 (3200x1350x1600)	3858,1 (1750)
KP-2200/350	77,7 (2,200)		67,1 (50)	126,0x53,1x63,0 (3200x1350x1600)	5070,6 (2300)
KP-2500/350	88,3 (2,500)		73,8 (55)	126,0x53,1x63,0 (3200x1350x1600)	
KP-3400/350	120,09 (3,400)		100,6 (75)	126,0x53,1x63,0 (3200x1350x1600)	
KP-3500/350	123,60 (3,500)			118,9x51,2x60,0 (3020x1300x1525)	4299,01 (1950)
KP-3660/350	129,25 (3,660)		1207 (90)	118,9x51,2x60,0 (3020x1300x1525)	5511,6 (2500)
KP-4500/350	158,92 (4,500)		147,5 (110)	126,0x70,9x78,7 (3200x1800x2000)	8818,5 (4000)
KP-6800/350	240,14 (6,800)		214,6 (160)	126,0x70,9x78,7 (3200x1800x2000)	8818,5 (4000)

Maximum working pressure 6092 psig (420 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-310/420	10,95 (0,310)	5076,3 (350)	10,1 (7,5)	44,9x32,7x59,6 (1140x830x1515)	970,0 (440)
KP-420/420	14,83 (0,420)		14,8 (11)		992,1 (450)
KP-510/420	18,01 (0,510)		20,1 (15)		1036,2 (470)
KP-800/420	28,26 (0,800)		29,5 (22)	84,25x28,35x49,21 (2140x720x1250)	1256,6 (570)

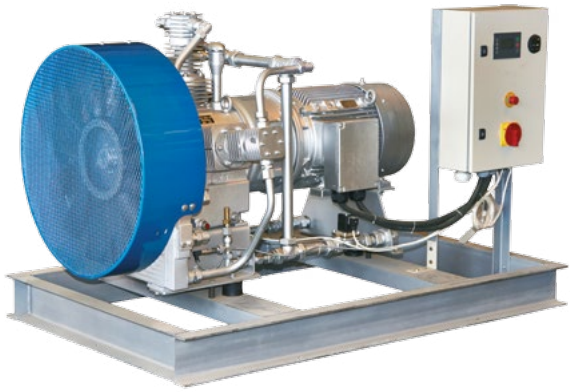
Maximum working pressure 7252 psig (500 barg). Compression of atmospheric air.

Model	Delivery at STP*, cfm (m³/min)	Minimum working pressure, psig (barg)	Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
KP-310/500	10,95 (0,310)	5076,3 (350)	10,1 (7,5)	44,9x32,7x59,6 (1140x830x1515)	970,0 (440)
KP-420/500	14,83 (0,420)		14,8 (11)		992,1 (450)
KP-550/500	19,42 (0,550)		20,1 (15)		1058,2 (480)
KP-1900/500	67,1 (1,900)		60,3 (45)	126,0x53,1x63,0 (3200x1350x1600)	4254,9 (1930)
KP-2300/500	81,22 (2,300)		73,8 (55)		4299,0 (1950)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Medium and High Pressure Compressors VShV «Powerman»

Special Version for Energy Industries



They proved to be a perfect solution for various applications in energy industries:

atomic power plants;

hydroelectric power plants;

thermal power plants;

transforming stations.

Maximum working pressure 580 and 5076 psig (40 and 350 barg).

Compression of atmospheric air

- capacity range: 17,66-123,6 cfm (0,5 - 3,5 m³/min);
- belt or direct driven electric motor;
- air or water cooling system;
- heat recovery;
- life time before routine maintenance is 2000 operating hours;
- base is not required;
- equipped with the automatic control system (micro-processor controller.

Ensure fail-safe operation of such systems as:

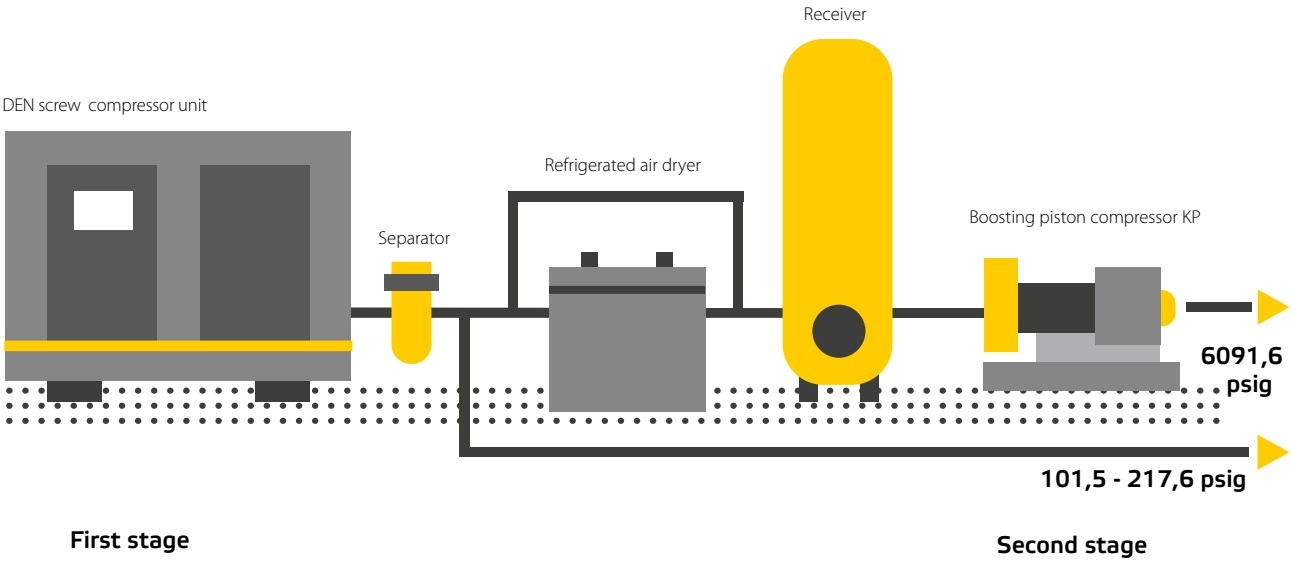
- pulse air supply;
- air for control and measuring devices and automatic equipment;
- hydro turbine blowdown;
- hydro turbine control;
- pressure vessels and pipelines pneumatic tests;
- high-voltage circuit-breakers inside the power stations and substations distribution box.

Working pressure range: 363-580 psig (25-40 barg) + versions for 725, 928, 1160, 1740, 2176, 3626, 5076 psig (50, 64, 80, 120, 150, 250, 350 barg)

Model	Delivery at STP**, cfm (m³/min)	Drive power HP (kW)	Weight lb (kg)
VSHV-0,5/40	17.66 (0,500)	10,1 (7,5)	440.9 (200)
VSHV-1,1/40	38.85 (1,100)	24,8 (18,5)	903.9 (410)
VSHV-1,1/64			
VSHV-1,1/80			1300.7 (590)
VSHV-1,1/120		29,5 (22)	
VSHV-1,1/150			1168.4 (530)
VSHV-1,1/250		40,2 (30)	1322.8 (600)
VSHV-1,1/350			
VSHV-2,4/40*	84.76 (2,400)	49,6 (37)	1477.1 (670)
VSHV-2,4/50*			
VSHV-3/40	106.65 (3,020)	60,3 (45)	1521.2 (690)

**-special version for operation in extreme conditions*
*** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

KP Medium Pressure Boosting Compressor



Nowadays combination of screw compressor at the first stage and boosting piston compressor at the second stage is the most economical option for air compression to 6091 psig (420 barg).

Maximum working pressure 580 psig (40 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m³/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-1/40D	63,57-120,07 (1,8-3,4)	72,5-145,0 (5-10)	290,1 (20)	290,1-580,2 (20-40)	14,8-20,1 (11-15)	48,6x26,4x27,4 (1235x670x695)	619,5-650,4 (281-295)
KP-1/40D1	35,31-88,29 (1,0-2,5)	72,5-188,5 (5-13)					
KP-1/40D2	134,2-268,39 (3,8-7,6)	108,8-188,5 (7,5-13)			24,8-29,5 (18,5-22)	54,3x32,3x35,8 (1380x820x910)	848,8-925,9 (385-420)
KP-1/40D3	204,9-392,1 (5,8-11,1)	108,8-188,5 (7,5-13)			29,5-40,2 (22-30)	59,4x36,2x35,8 (1510x920x910)	943,6-970,0 (428-440)
KP-1/40D4	462,62 (13,1)	188,5 (13)		580,2 (40)	60,3 (45)	65,0x40,2x35,8 (1650x1020x910)	1201,5 (545)
KP-1/40D5	459,09-1010,0 (13,0-28,6)	58,0-145,0 (4-10)		290,1-580,2 (20-40)	100,6-214,6 (75-160)	96,9x59,3x70,9 (2460x1505x1800)	7782,3 (3530)

Maximum working pressure 725 psig (50 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m³/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-1/50D	21,54-63,92 (0,61-1,81)	72,5-145,0 (5-10)	362,6 (25)	362,6-725,2 (25-50)	7,4 (5,5)	44,9x32,7x59,6 (1140×830×1515)	804,7 (365)
KP-1/50D1	24,72-54,03 (0,7-1,53)	108,8-188,5 (7,5-13)					826,7 (375)

Maximum working pressure 914 psig (63 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m³/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-2/63D	98,88-218,24 (2,800-6,18)	58,0-145,0 (4-10)	362,6-580,2 (25-40)	580,2-913,7 (40-63)	49,6 (37)	52,8x46,5x82,7 (1340×1180×2100)	2579,4 (1170)

Maximum working pressure 1088 psig (75 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m³/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-2/75D	324,89-720,42 (9,2-20,4)	58,0-145,0 (4-10)	362,6-580,2 (25-40)	580,2-1087,8 (40-75)	100,6-214,6 (75-160)	96,9x59,3x70,9 (2460x1505x1800)	7782 (3530)

Maximum working pressure 1160 psig (80 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m³/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-2/80D	72,75-189,29 (2,06-5,36)	58,0-174,0 (4-12)	362,6-725,2 (25-50)	580,2-1160,3 (40-80)	49,6 (37)	52,8x46,5x82,7 (1340×1180×2100)	2579,4 (1170)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Maximum working pressure 1450 psig (100 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m^3/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-2/100D	329,31-393,41 (9,325-11,14)	116,0-145,0 (8-10)	580,2-725,2 (40-50)	1160,3-1450,4 (80-100)	120,7 (90)	76,8x57,1x55,1 (1950x1450x1400)	4629,7 (2100)
KP-2/100D1	229,55-505,0 (6,5-14,3)	58,0-145,0 (4-10)	362,6-725,2 (25-50)	725,2-1450,4 (50-100)	100,6-177,0 (75-132)	96,9x59,3x70,9 (2460x1505x1800)	7407,5 (3360)

Maximum working pressure 3176 psig (150 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m^3/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-2/150D	247,2-278,99 (7,0-7,9)	101,5-145,0 (7-10)	1450,4 (100)	2175,6 (150)	100,6 (75)	88,6x48,8x55,1 (2250x1240x1400)	4299,0 (1950)

Maximum working pressure 5076 psig (350 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m^3/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-2/350D	7,06-16,77 (0,2-0,475)	72,5-159,5 (5-11)	1305,3 (90)	5076,3 (350)	7,4 (5,5)	44,9x32,7x59,6 (1140×830×1515)	804,7 (365)
KP-2/350D1	18,01-26,49 (0,51-0,75)	101,5-145,0 (7-10)			14,8 (11)		992,1 (450)
KP-3/350D	15,89-28,25 (0,45-0,8)	29,0-58,0 (2-4)			20,1 (15)		804,7 (365)
KP-4/350D	46,97-86,17 (1,33-2,440)	29,0-65,3 (2-4,5)	1305,3-2900,8 (90-200)	2900,8-5076,3 (200-350)	49,6 (37)	52,8x46,5x82,7 (1340×1180×2100)	2535,0 (1150)
KP-4/350D1	54,74-109,48 (1,55-3,1)	65,3-145,0 (4,5-10)	1305,3-2900,8 (90-200)				2601,5 (1180)
KP-4/350D2	69,6-116,6 (1,97-3,3)	116,0-203,05 (8-14)	2175,6-2900,8 (150-200)				
KP-3/350D1	63,57-158,92 (1,85-4,5)	232,1-551,1 (16-38)	2175,6-2900,8 (150-200)	3625,9-5076,3 (250-350)			
KP-4/350D3	77,69-185,05 (2,2-5,24)	14,5-58,0 (1-4)	1305,3-2900,8 (90-200)	2900,8-5076,3 (200-350)	100,6 (75)	76,8x57,1x55,1 (1950×1450×1400)	3659,7 (1660)
KP-4/350D4	88,29-194,23 (2,5-5,5)	58,0-145,0 (4,0-10)	1740,5-3190,8 (120-220)	4351,1-5076,3 (300-350)			
KP-4/350D5	87,58-165,98 (2,48-4,7)	116,0-232,1 (8-16)	2175,6-3625,9 (150-250)	5076,3 (350)	73,8 (55)		3306,9 (1500)
KP-4/350D6	173,04-331,96 (4,9-9,4)	29,0-65,3 (2-4,5)	1305,3-2900,8 (90-200)	2900,8-5076,3 (200-350)	100,6-177,0 (75-132)	96,9x59,3x70,9 (2460x1505x1800)	7385,5 (3350)
KP-4/350D7	180,1-360,21 (5,1-10,2)	65,3-145,0 (4,5-10)	1305,3-2900,8 (90-200)	3625,9-5076,3 (250-350)			
KP-4/350D8	268,39-437,9 (7,6-12,4)	145,0-246,6 (10-17)	2175,6-3625,9 (150-250)	5076,3 (350)	147,5-177,0 (110-132)		
KP-4/350D9	180,1-413,18 (5,1-11,7)	246,6-551,1 (17-38)	2175,6-3625,9 (150-250)	3625,9-5076,3 (250-350)	73,8-147,5 (55-110)		
KP-4/350D10	346,08-664,02 (9,8-18,8)	29,0-65,3 (2-4,5)	1305,3-2900,8 (90-200)	2900,8-5076,3 (200-350)	214,6-422,4 (160-315)	126,0x70,1x77,2 (3200x1780x1960)	10582,2 (4800)
KP-4/350D11	360,21-720,42 (10,2-20,4)	65,3-145,0 (4,5-10)	1305,3-2900,8 (90-200)	3625,9-5076,3 (250-350)	214,6-335,3 (160-250)		9546,0 (4330)
KP-4/350D12	536,78-875,8 (15,2-24,8)	145,0-246,6 (10-17)	2175,6-3625,9 (150-250)	5076,3 (350)	268,2-335,3 (200-250)		
KP-4/350D13	360,21-826,36 (10,2-23,4)	246,6-551,1 (17-38)	2175,6-3625,9 (150-250)		147,5-268,2 (110-200)		9259,4 (4200)

Maximum working pressure 6091 psig (420 barg). Boosting compressor units.

Model	Delivery at STP*, cfm (m^3/min)	Pressure			Drive power HP (kW)	Dimensions, LxWxH in (mm)	Weight lb (kg)
		inlet, psig (barg)	outlet min, psig (barg)	outlet max, psig (barg)			
KP-4/420D	84,76-100,65 (2,4-2,85)	101,5-174,0 (10-12)	2900,8 (200)	6091,6 (420)	49,6 (37)	52,8x46,5x82,7 (1340×1180×2100)	2601,5 (1180)
KP-/420D1	229,58 -324,9 (6,5-9,2)	87,0-130,5 (6-9)	2900,8-3625,9 (200-250)		177,0 (132)	96,8x 59,3x70,9 (2460x1505x1800)	7495,7 (3400)

Chapter

07

Compressor Block-Modular Stations (BKK)

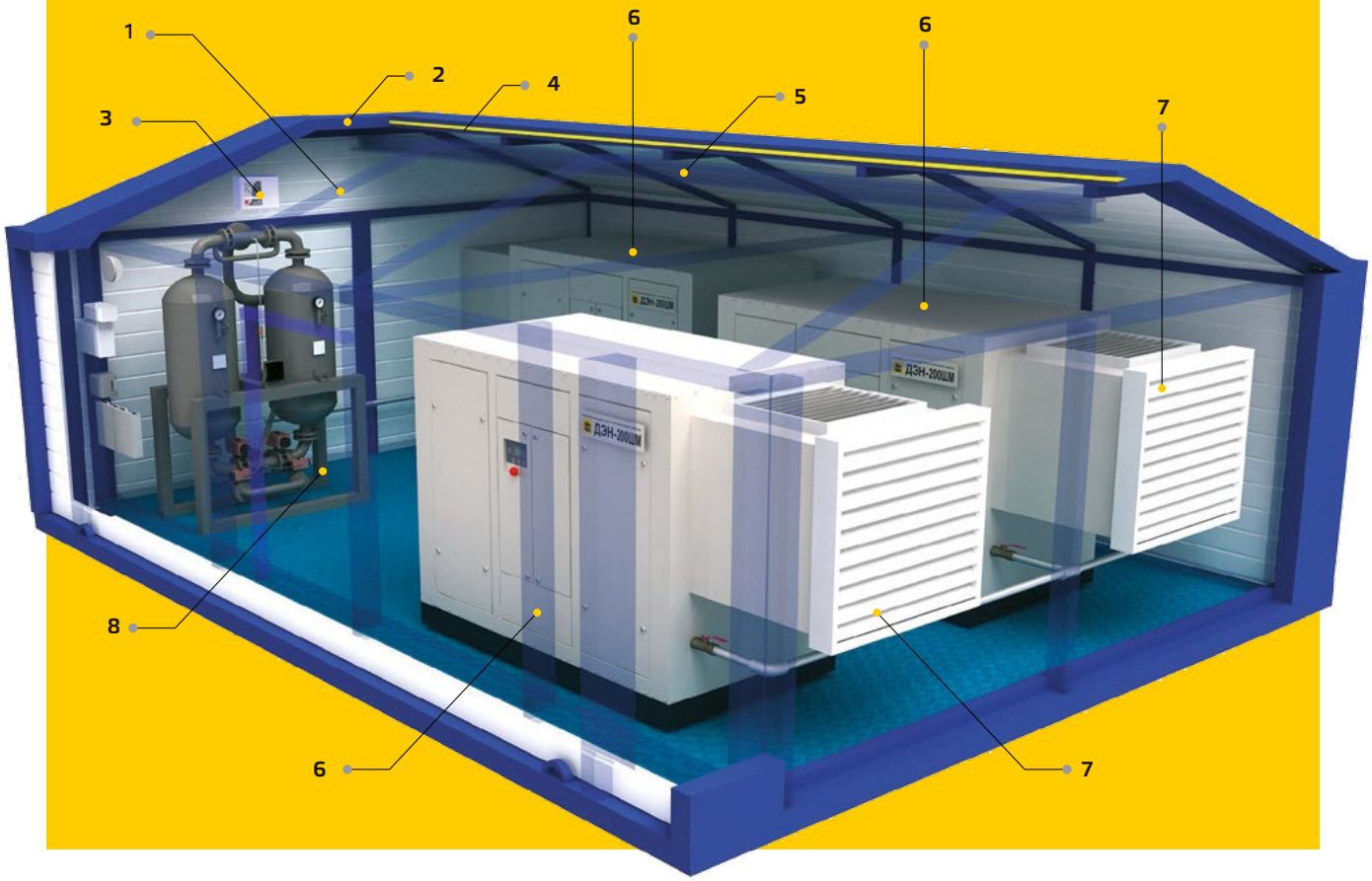
«Chelyabinsk Compressor Plant» LLC offers more than 135 standard compressor block-modular stations' versions and our experts can design compressor stations according to the customers' requirements based on:

Compressor block-modular stations (BKK, MKS) are complete autonomous compressor stations, manufactured on the basis of customers requirements specification and in accordance with the technical specifications 3643-364-51470687-2006 (Certificate of Conformity ROSS C-RU MP02.V.00056).

This is considered to be an efficient compressed air (nitrogen) supply solution for your technical processes with a capacity of 17,66-14125,87 cfm (0,5-400 m^3/min) and 21,8-7977,1 psig (1,5-550 barg) pressure.,

Standard supply

1 Lamp
2 Automatic fire-extinguishers
3 Metacentre system
4 Heat insulation
5 Monorail for movable hoist
6 Compressor units
7 Air outlet ports with automatic shutters
8 Adsorption air dryer

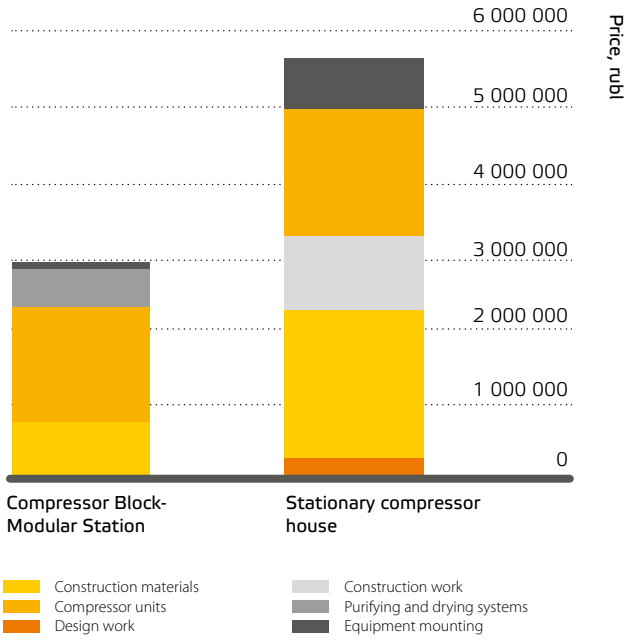


Compressor block-modular stations (BKK, MKS) field-performance data	
Year – round	Heating and venting systems allow operating at the wide temperature range: • from -40 °F up to + 104 °F (from -40 °C up to + 40 °C) – standard version • from -76 °F up to + 104 °F (from -60 °C up to +40 °C) - «North» version • from -40 °F up to + 122 °F (from -40 °C up to +50 °C) – «Tropic» version
Autonomy	The only things, which are required for the compressor block modular station operation, are a horizontal surface and a power supply connection. Each compressor block modular station is equipped by automatic heating and fire fighting systems.
Mobility	Compressor block modular station doesn't need any special base and can be moved to any convenient for a customer place. Moreover the BKK can be mounted on chassis or rails.

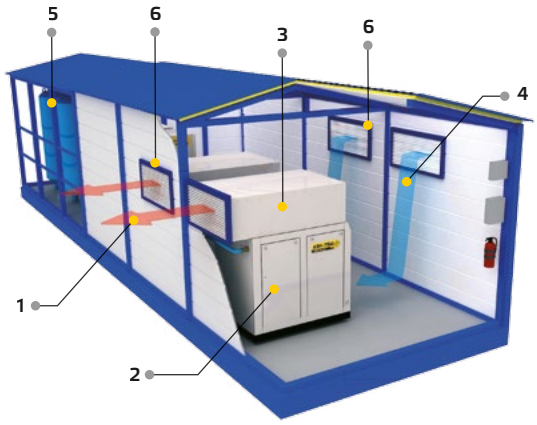
Compressor Block-Modular Stations (BKK) advantages

Sufficient savings for construction

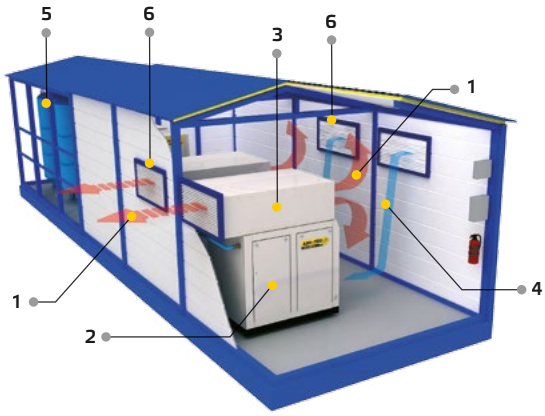
Incomparably shorter construction terms



BKK operation in summer period



BKK operation in winter period

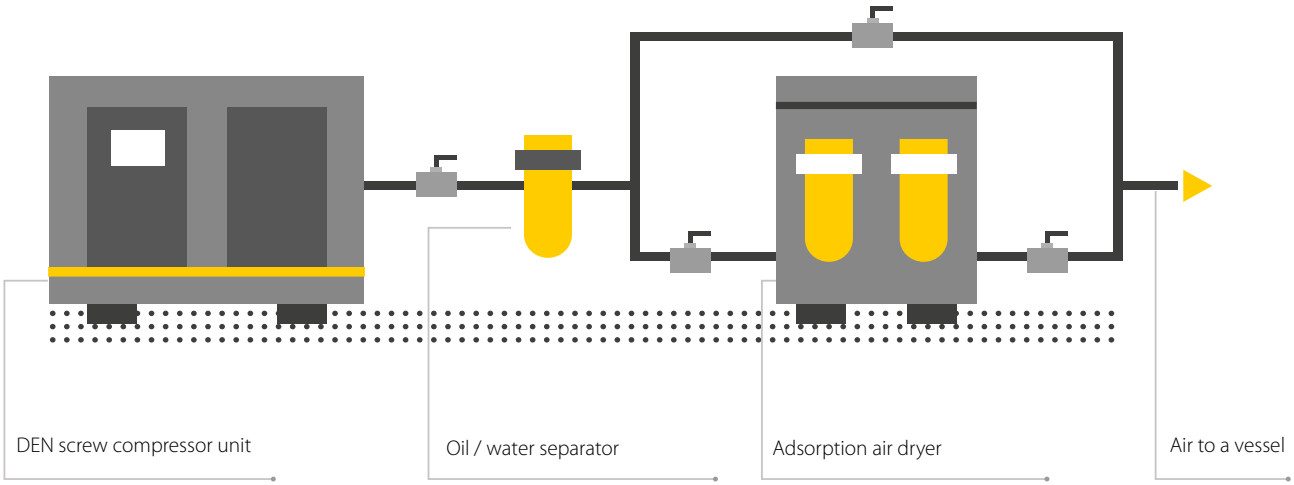


1 warm air
2 screw compressor unit
3 airpipe
4 cold air
5 air recievers
6 automatic shutters

Energy saving

Stable pressure and low compressed air losses

High quality of compressed air

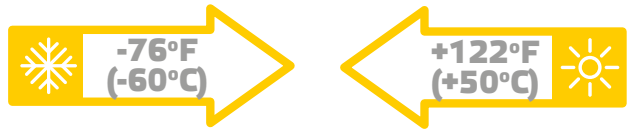


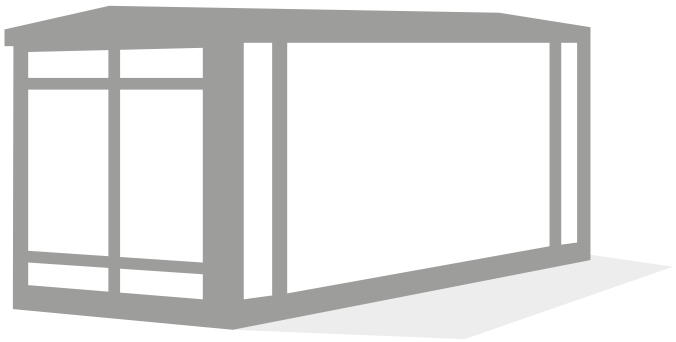
Fully-autonomous stations

All-season operation

Mobile construction

Automation and remote Metacentre control

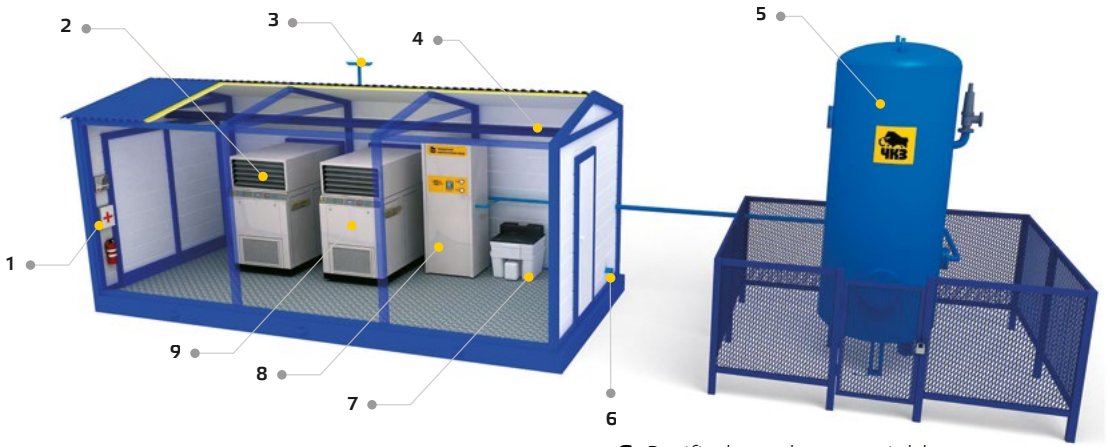




Wide range of working temperature

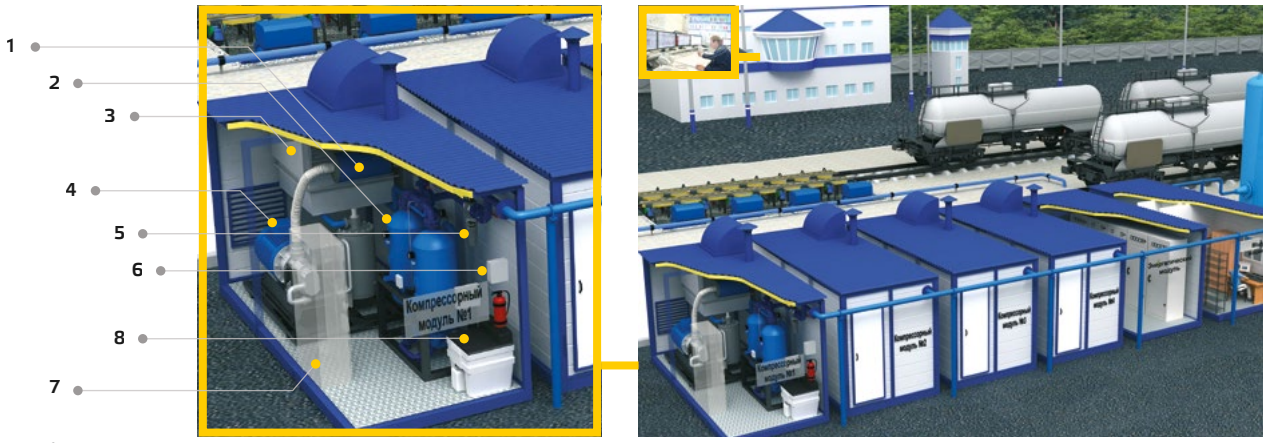
BKK is a Comprehensive Technical Solution for Railways

Compressor Block-Modular for switches blow-off



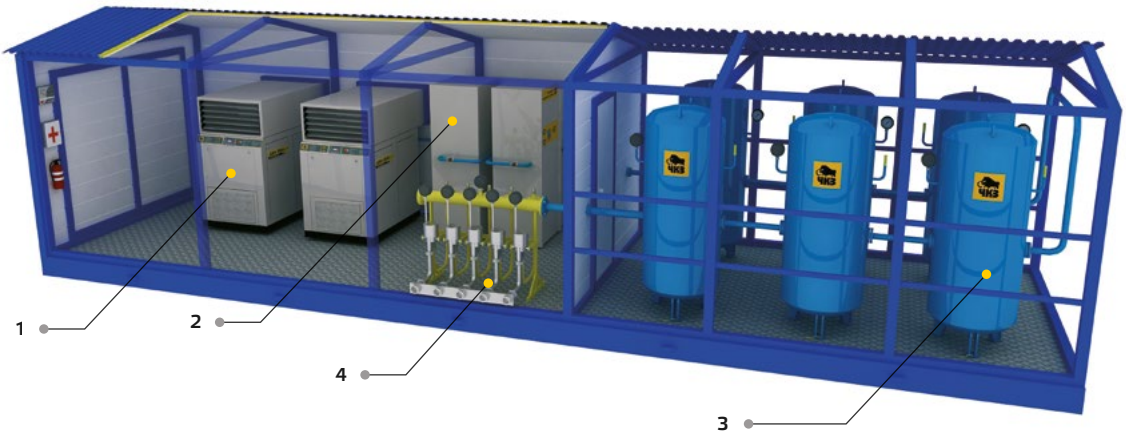
1 Remote control system Metacentre
2 Airpipe with automatic shutters
3 Compressed air bleeding by safety-valve
4 Monorail for movable hoist
5 Air vessel
6 Purified condensate yield
7 Oil / water separator
8 Adsorption air dryer
9 DEN screw compressor unit

Compressor Block-Modular for supply the compressed air to retarders at gravity yards

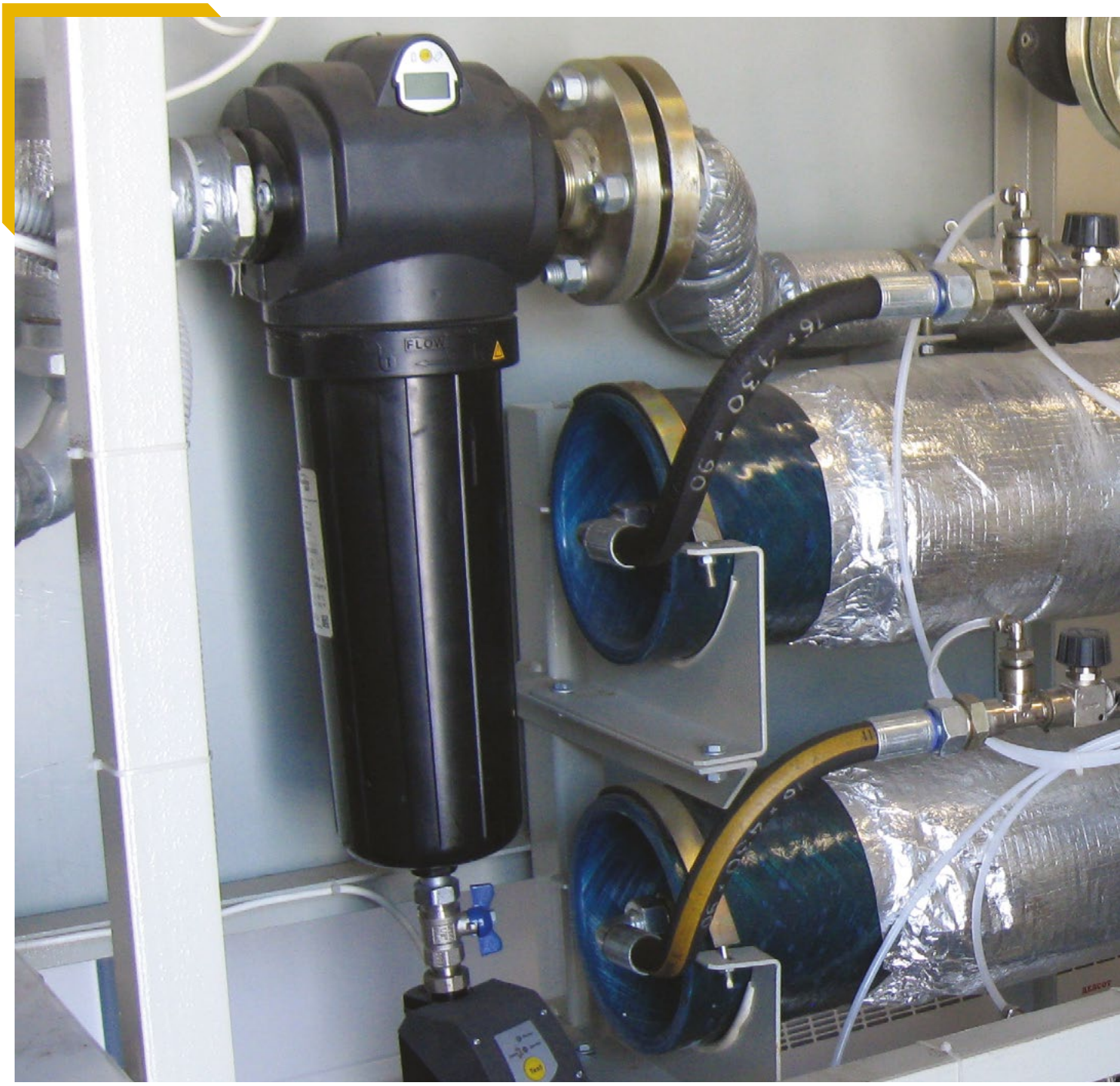


1 Air filter
2 Adsorption air dryer
3 Heat-exchange unit
4 Screw compressor unit DEN-132 ShM
5 Oil filter
6 Remote control system Metacentre
7 Power control box
8 Oil / water separator

Compressor Block-Modular with the rapid charging and testing brake device (UZOT –Radio) for railway rolling stock



1 Screw compressor units DEN-55 Sh
2 Adsorption air dryer
3 Rapid charging and testing brake device (UZOT –Radio)
4 Air vessels



Chapter

08

Nitrogen Membran Units (AMU) and Stations (BKK (AMU))

N_2

NITROGEN

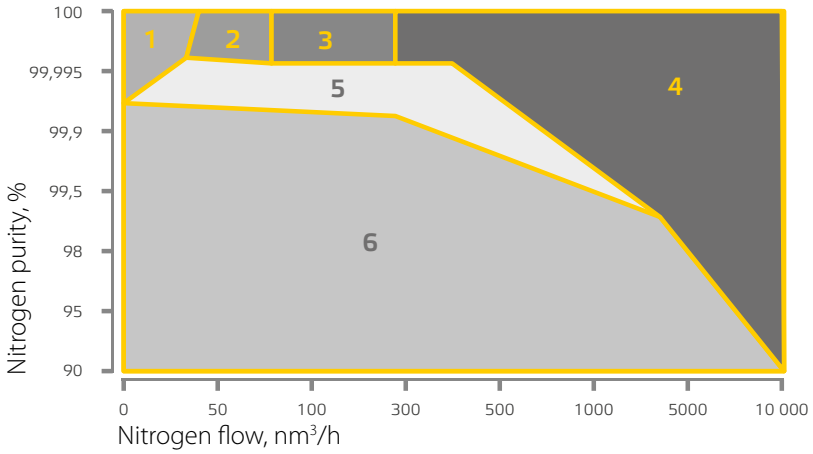
Inert, diatomic, colourless, odour-free, tasteless gas. It does not sustaine combustions, protects from oxidation and rotting.

Membrane technology for nitrogen production

There are several technologies for nitrogen production:

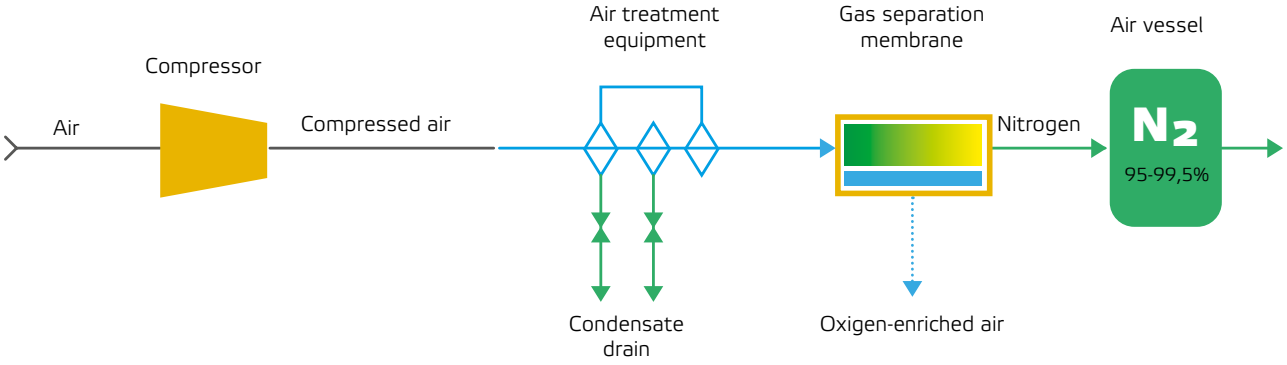
- **Membrane**
- **Adsorption**
- **Cryogenic**

Reasonability of usage of certain type units

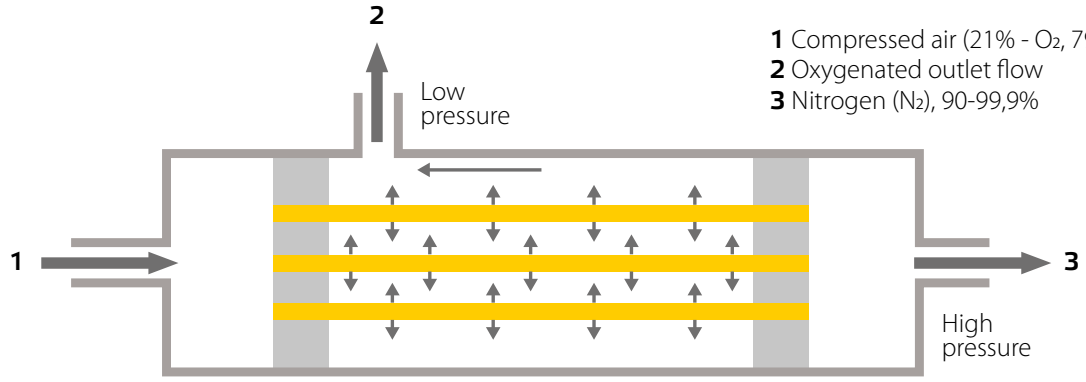


1 Supplied in vessels
2 Supplied in vessels or as liquid
3 Supplied liquid
4 Cryogenic plant
5 Adsorption plant
6 Membrane plant

Scheme of nitrogen membrane generator



Scheme of nitrogen membrane unit



1 Compressed air (21% - O_2, 79% - N_2)
2 Oxygenated outlet flow
3 Nitrogen (N_2), 90-99,9%

Compressed in the compressor and heated to the required temperature air is supplied to the gas-separation membrane modules. Oxygen and water vapor in the air, quickly penetrate through the polymer membrane and discharge from the membrane module through one of the outlet pipe to the network or the atmosphere. Nitrogen, as opposed to oxygen and water vapor, slowly permeates through the membrane, and is delivered to the consumer without pressure loss through another outlet of the membrane gas separation unit.

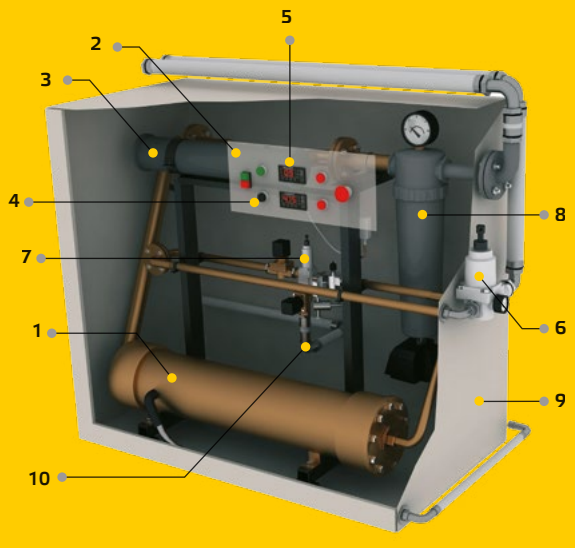
Chelyabinsk Compressor Plant offers the packaged technical solutions with nitrogen membrane stations (AMU) with the following characteristics range:

N_2 purity, %	Delivery at STP**, cfm (m^3/min)	Pressure, psig (barg)	Dew point,°F (°C)	Ambient temperature, °F (°C)
90 - 99,9	0,06 - 4120,8* (0,002 - 116,67*)	14,5 - 7251,9 (1 - 500)	up to -94 (up to -70)	from 37,4 up to +122 (+3 - +50)

** - higher delivery – subject to agreement;* *** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

CHKZ nitrogen membrane stations series AMU «Standard»

1 Membrane module
2 AMU controller
3 Compressed air heating unit
4 Gas analyzer display
5 Temperature sensor display
6 Reducer
7 Pneumatic valve fittings
8 Pre-filter (filter unit)
9 Noise insulation hood
10 Solenoid valve fittings



«Standard» series is the best gas separation station version for general industrial application.

The detailed structure of nitrogen membrane station is on the picture above. Filters unit ensures the purity of the air, which goes to gas separation module (air purification of required class according to Russian Standards; solid particles size less than 0,003 mg/m^3).

Automatic control system ensures the produced nitrogen quality. AMU can be produced in noise insulation hood or without it; the air electric heater is preinstalled.

CHKZ nitrogen membrane stations AMU «Standard» advantages:

No special requirements to ambient air quality (filters unit is integrated into the system).

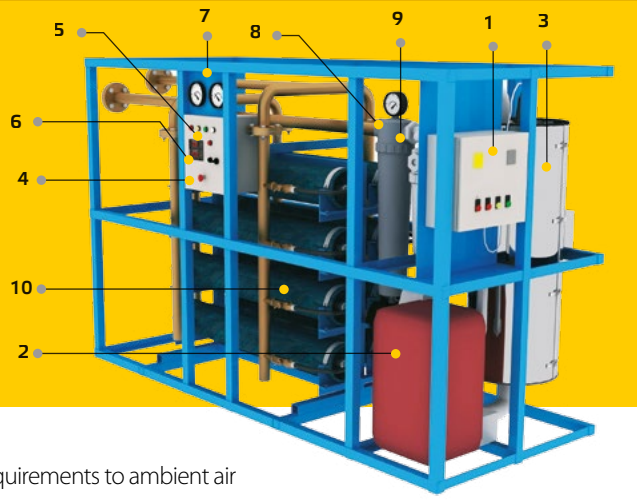
Low operating cost, easy maintenance.

Handiness, high reliability.

Flexible nitrogen purity and capacity adjustment .

CHKZ nitrogen membrane stations series AMU «Optim»

1 Eco Tec Converter controller
2 Eco Tec Converter heat exchanger
3 Catalyst-module with a heater
4 AMU controller
5 Gas analyzer display
6 Temperature sensor display
7 Solenoid valves unit
8 Nitrogen sampling and analyzing unit
9 Filter unit
10 Membrane module



CHKZ nitrogen membrane stations AMU «Optim» advantages:

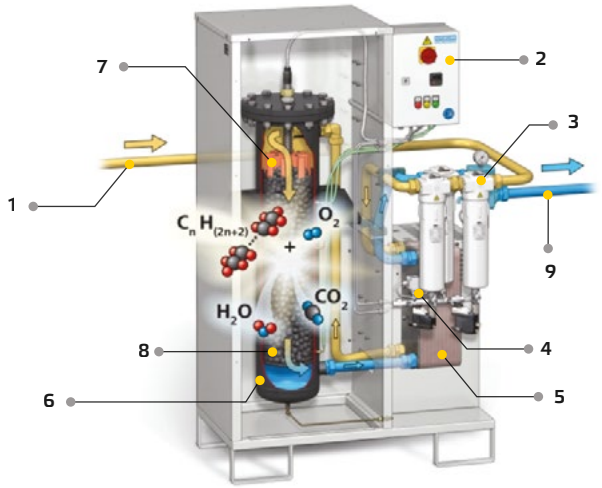
- Long operational life of the station – membrane module operational life is twice longer.
- High quality of produced nitrogen, no particles and oil.
- No special requirements to ambient air quality.
- Flexible nitrogen purity and capacity adjustment.
- Handiness, high reliability.

AMU «Optim» series is the best gas separation station version for crucial operating procedures.
The detailed structure of nitrogen membrane station is on the picture above. Filter unit and innovative purifying system Eco Tec Converter ensure the purity of the air, which goes to gas separation module (solid particles size less than 0,001 mkm; hydrocarbons concentration less than 0,0025 mg/m^3, what is significantly less than it is prescribed for 1 contamination class according to Russian Standards).
Automatic control system ensures the produced nitrogen quality.
AMU can be produced in noise insulation hood or without it.

«Eco Tec Converter» system
Eco Tec Converter (ETC) operation principle is to transform with the help of special catalyst the oil and other hydrocarbons during physical and chemical process into water and carbon dioxide.

This is a revolutionary process for removal oil from the compressed air, which states new standards for reliability, price, condensate cleaning and environmental protection.

Flow chart



1 Compressed air
2 Controller
3 Additional velocity change unit
4 Minimum pressure valve
5 Heat exchanger
6 Converter chamber
7 Heating element
8 Catalyst
9 Outlet into compressed air system

«Eco Tec Converter» » advantages:

- guaranteed oil-free compressed air, oil / carbohydrates concentration less than 0,001 mg/m^3 (compressed air);
- condensate generated in Eco Tec Converter compressed air network elements requires no further purification, consequently there is no need to install oil separator for condensate;
- low power consumption (~ 5 W/m^3);
- long operation period (20 000 hours) before cartridge-catalyst replacement;
- efficiency 100% during whole life time, because Eco Tec Converter productivity does not depend on inlet oil concentration (wide range), air humidity, inlet air temperature.

Nitrogen Compressor Station

Nitrogen compressor station designed for reliable operation of oil products underground storage «Podzemneftegaz» OJSC is a bright example of high-quality design and production of gas separation station based on BKK.

This compressor block-modular station is portable. To make the transportation easier it consists of four sections which can be disassembled and conserved after the testing at the plant, and the station can be transported by auto or railway transport.

The station is designed to meet the customers' requirements. «Podzemneftegaz» OJSC storage is remote from main power supply, it results in lack of energy. Chelyabinsk Compressor Plant proposed the following solution: first stage compressor voltage 6kV – new compressors series DEN «Volt», other equipment (such as Eco Tec Converter, boosting compressor stations), which consumes less energy, are designed for 0,4kV.

To ensure required compressed air purity (hydrocarbons residual concentration – less than 0,0025 mg/m^3) two hydrocarbons catalytic decomposition system Eco Tec Converter are integrated into the station.

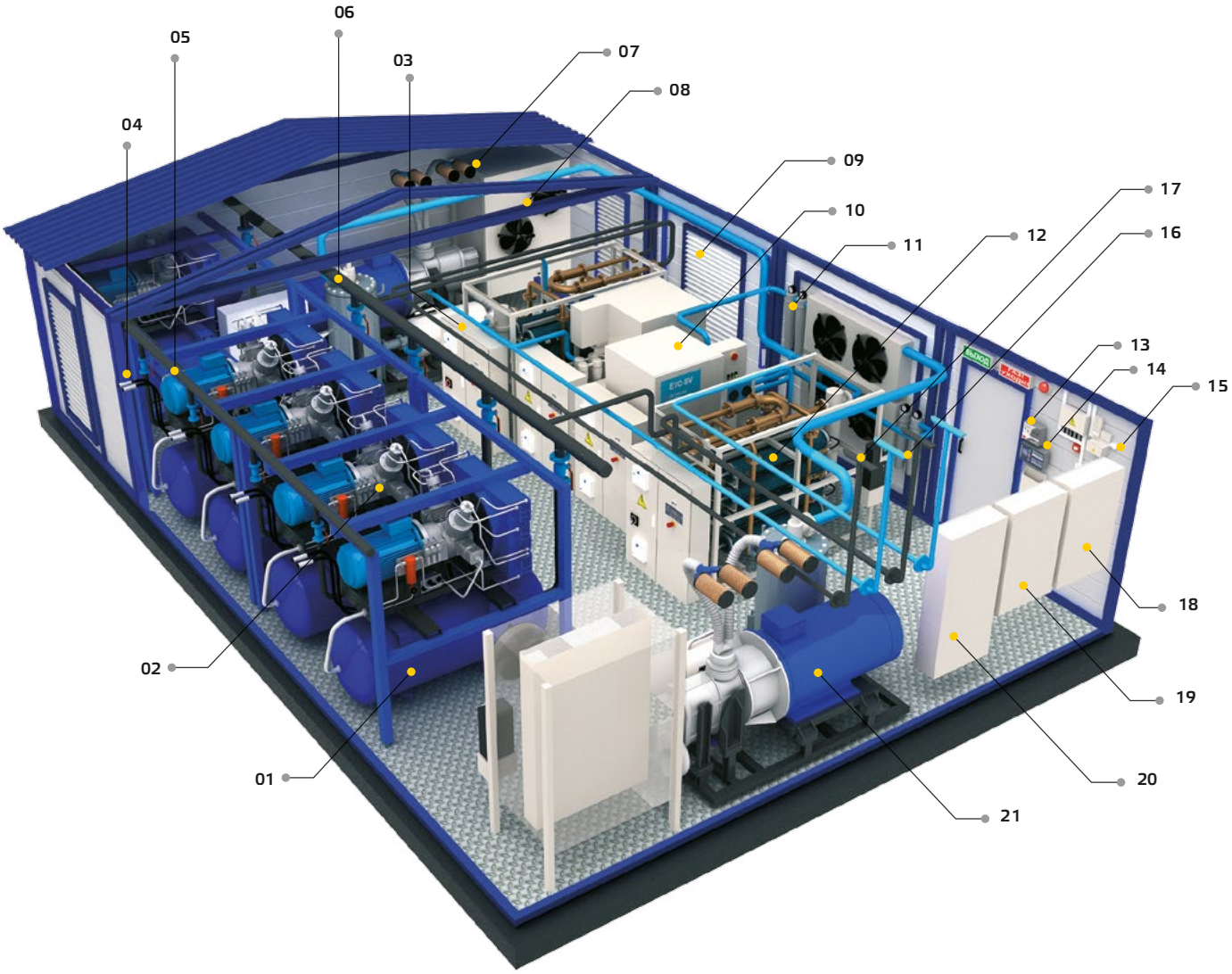
Central element of designed especially for «Podzemneftegaz» OJSC compressor block-modular station is gas separation membrane system.

Technical characteristics

Model	Nitrogen capacity at STP*, cfm (m^3/min)	Pressure, psig (barg)	Nitrogen purity, %
BKK-67/13-2	1413 (40)	2175 (150)	90

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

3D-model BKK-67/13-2 «Podzemneftegaz» OJSC



1 Surge tank
2 High pressure compressor unit KP-2/15D
3 High pressure compressor units control cabinet
4 High pressure compressor unit relief system muffler
5 High pressure nitrogen pipeline
6 Low pressure nitrogen pipeline
7 Air pre-filter
8 Fan blade rotation frequency – regulated compressor unit heat exchanger
9 Nitrogen compressor station ventilation system shutter
10 Hydrocarbons catalytic decomposition system
11 Flow filtration system
12 Nitrogen membrane station AMU-1200/90 «Optim»
13 Low pressure compressors group comtrol system Metacentre DCO3
14 High pressure compressors group comtrol system Metacentre SX
15 Fire alarm system
16 Permeate withdrawal
17 Off-nitrogen
18 Nitrogen compressor station life support system auxiliary board
19 High pressure compressor power supply cabinet
20 Low pressure compressor power supply cabinet
21 Compressor unit DEN-315ShM «Volt»

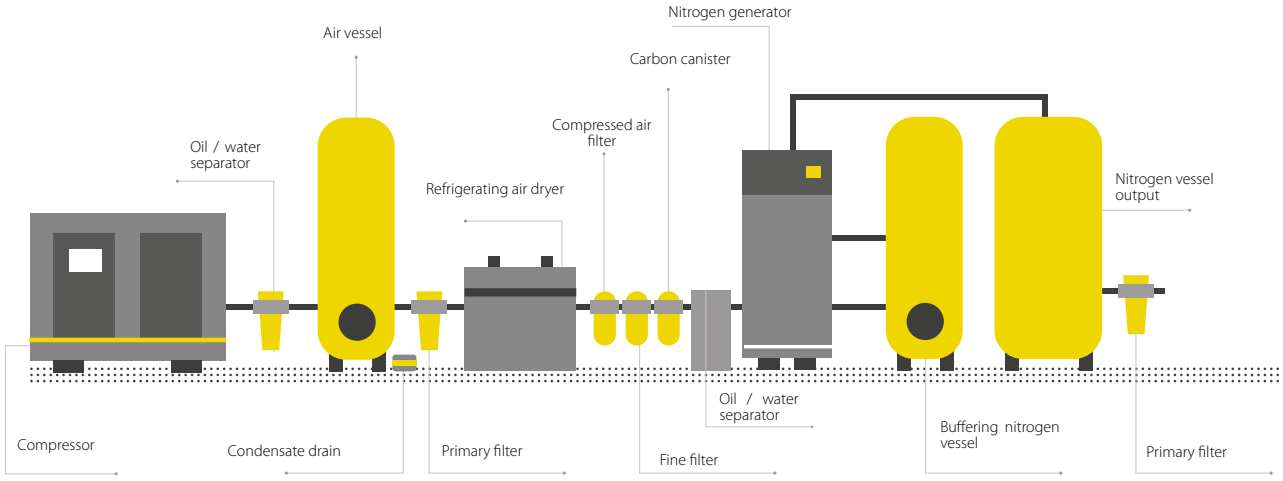
Adsorption Nitrogen Units

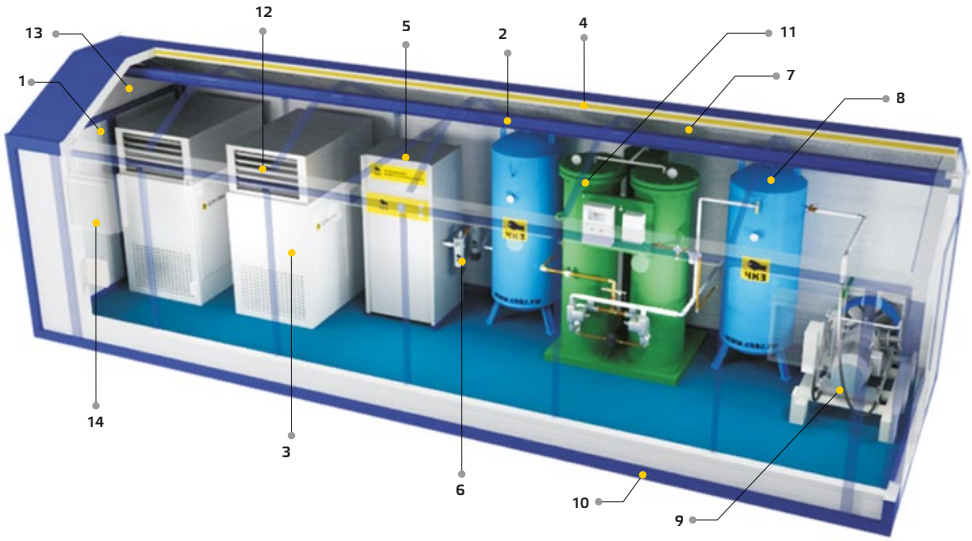
Adsorption gas separation technology is applied when it is necessary to produce the nitrogen with purity more than 99,95%. Adsorption technology is based on the absorption of certain substances with molecular sieves, which guarantees the separation of air mixture. The operation principle is bases on the different adsorption rate of certain gas mixture components depending on pressure and temperature.

Nitrogen purity, %	Delivery at STP**, cfm (m³/min)	Pressure, psig (barg)	Dew point, ºF (ºC)	Ambient temperature, ºF (ºC)
95 - 99,999	0,59-324,4* (0,017-9,185*)	14,5-7251,9 (1-500)	up to -94 (-70)	fom 37,4 up to 122 (+3 - +50)

** - higher delivery – subject to agreement; ** - STP standard conditions uses a temperature of 68ºF (20ºC) and an absolute pressure of 14,7 psig (1 barg)*

Scheme of nitrogen adsorption station





1 Lighter
2 Monorail for movable hoist
3 Compressor unit
4 Heat insulation
5 Adsorption air dryer
6 Filter
7 Heating system
8 Receiver
9 Boosting compressor
10 Shipping eye
11 Gas separation unit
12 Airpipe with shutters
13 Automatic fire-extinguisher
14 Remote control

On the picture is presented the comprehensive technical solution:

mobile gas separation station based on BKK, designed especially for Antipinsky Oil Refinery CJSC. Compressed air supply system (for control and instrumentation equipment) and nitrogen with purity 99,9% supply system (for supply to technological processes connected with oil products) are combined together in a single modular).

Chapter

09

Gas Screw Compressor Units and Stations

RECENT DEVELOPMENTS OF CHELYABINSK COMPRESSOR PLANT

are presented by gas screw compressor units with spool capacity control system for natural gas compression and the stations on the basis of such units.

They are produced in explosion-proof version, equipped with gaseous extinguishing system and in-built nitrogen fill station. The control is performed via controller Allen Bradley, the world leader in production of industrial automation systems. The gas compressor units are designed for high inlet pressure, as well as for minimum excessive pressure (vacuum) at inlet.

In 2013 Chelyabinsk Compressor Plant produced and supplied eight compressor stations for oil-dissolved gas in explosion-proof design with capacity of 13,5 m^3/min «BKK-13,5/7-1 Ex» to NGK Slavneft, JSC

«BKK-13,5/7-1 Ex»

BKK-13,5/7-1 Ex is a compressor block-container divided into two parts by ventilated space with a common skid.

The first part is a compressor (production) compartment. It houses a gas compressor unit, process pipeline, as well as field facilities of instrumentation and control. All equipment is designed in explosion-proof version.

The second part of the container is a control compartment (power compartment). It houses control cabinets BKK-13,5/7-1 Ex with monitoring operational parameters of the unit at a colour display. BKK-13,5/7-1 Ex can be controlled by touch display and buttons, as well as remotely controlled from the operator's room. The whole system is backed up with a 100% reserve which allows to start the reserve BKK-13,5/7-1 Ex in case of failure of BKK-13,5/7-1 Ex.

The block-container features heat and sound insulation over the entire surfaces, ventilation system, fire-alarm, air contamination monitoring, lighting and heating systems and automatic system of gaseous fire-extinguishing. It is provided with passages and space for routine maintenance and service of the equipment, canopy and outdoor lighting over the entrance door.

For facilitating repairing work lifting equipment inside the container is available.

In the power compartment fire-extinguishing system, compressor module control cabinet, power cabinet and in-house power cabinet are located.

One of the distinctive features of BKK–13,5/7-1 Ex is a screw compressor GEA Grasso with antifriction bearings, optimized rotors profile providing high efficiency. Convex rotor drive allows eliminating overload and guarantees long lifetime of the bearings and low noise and vibrations levels. Zero profile wear provide sustainable operational parameters during service lifetime.

The compressor is equipped with a spool regulator forming the compression zone so as to make the compressor to intake the required gas volume from the suction line to meet the feed demand. Gas volume is regulated within 10 -100% of the maximum possible feed at operating conditions – in a stepless mode. The spool is applied instead of drive frequency regulation system to improve energy efficiency of the entire aggregate.

BKK–13,5/7-1 Ex has a high energy efficiency. Power consumption of the unit does not exceed (and significantly below) the Energy Effeciency Index fixed by the Regulation of the Government of the Russian Federation.

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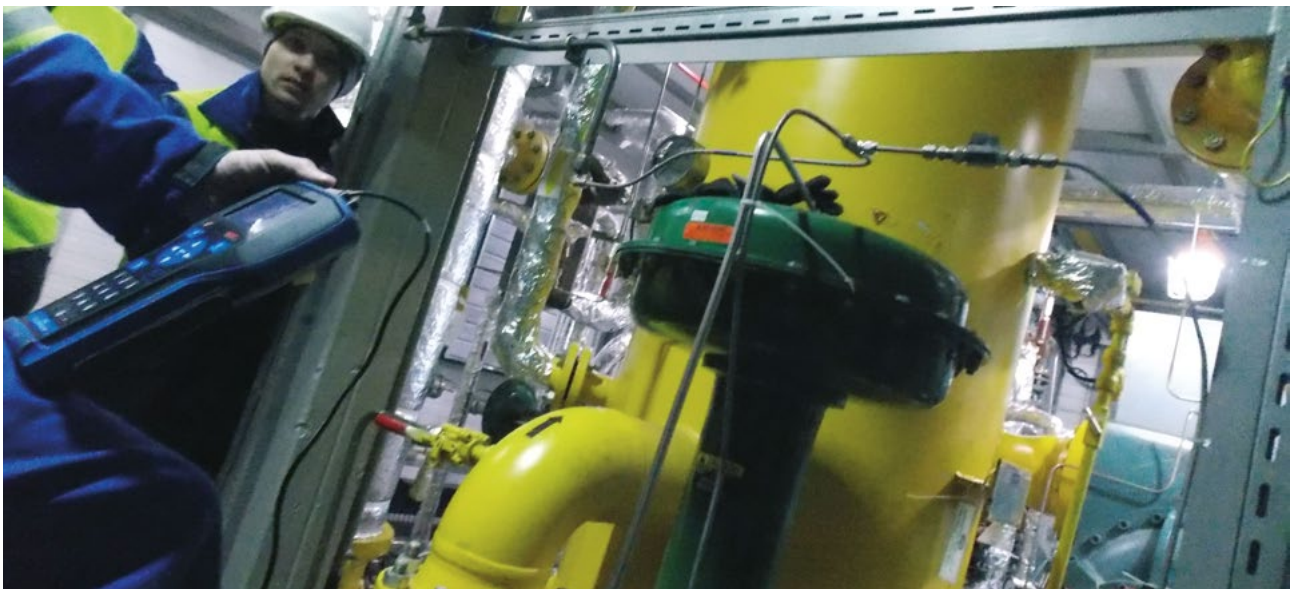


In 2014 Chelyabinsk Compressor Plant proceeded cooperation with NGK Slavneft, JSC and other oil and gas companies. The landmark order was a supply of 16 gas booster vacuum compressor stations to the petroleum company Rosneft for operation at eight oil deposits.

The cooperation began in 2013 when Chelyabinsk Compressor Plant and TNK-Uvat (current RN-Uvatneftegas, subsidiary company of NK Rosneft) came to agreement on updating six Canadian compressor units SAGE, previously purchased by the petroleum corporation, so as to meet the requirements of the Russian Regulations and GOST. The Canadian compressors were produced in conformity with international standards API, which have differences with GOST requirements and regulations in force on the territory of the Russian Federation, thus they could not be accepted by the Federal Supervision Agency Rostechnadzor and could not be commissioned.

Due to the striving of the Canadian manufacturer to minimize compressor dimensions operation and maintenance of the compressor implied some difficulties. Upon elaborated design drafting and its trilateral agreement with the manufacturer and the customer our specialists performed modernization of the compressor units providing easy access to the definite assemblies and components of the compressor during operation, maintenance and service.

To adapt the compressor equipment to the outdoor operation and weather conditions at the intended operating site Chelyabinsk Compressor Plant protected the compressor units with all-weather cover in the form of a modular block-container. Modular construction facilitates transportation of the units. The block-container allows maintaining operational temperatures of the equipment from -58 to +104 °F (from -60 to +40 °C).

After acceptance of the equipment by the customer at Chelyabinsk Compressor Plant site our specialists installed the equipment including arrangement of inter-block connections between the containers at the RN-Uvatneftegas site.
Commissioning works were performed in cooperation with the Canadian partners - SAGE company responsible for checking operational characteristics of its equipment and «Spartan Controls» responsible for checking automation system of operational process control.

All the equipment successfully passed 72-hour tests on a rare gas, and then on a real gas.

The unique cooperative project of Chelyabinsk Compressor Plant, LLC and the Canadian company SAGE was successfully completed.

«BKK-13,5/7-1 Ex» technical parameters

Parameter	Value
Dimensions, in (mm)	393,7x113,8x 123,2 (10000×2890×3130)
Weight, lb (kg)	31967,0 (14500)
Max. total rated power, HP (kW)	201,2 (150)
Supply voltage/frequency, V / Hz / Ph	380 / 50 / 3

Chapter

10

Autonomous Diesel-Generator Units

AUTONOMOUS DIESEL-GENERATOR UNIT (ADGU)

is an unit designed for electric energy production in autonomous conditions not depending on central power supply system.

Autonomous diesel-generator units can be also used as reserve (emergency) power sources in those industries where constant no-break power supply is required independent of voltage drops in the central electrical supply network.

At present the range of ADGU consists of products from 10kW till 500kW power, which are the most demanded on the market. Upon a special request there can be more high-powered units produced.

The main ADGU advantages are autonomy and mobility. The autonomous diesel-generator units which do not require capital construction are used when there is no possibility of using central power grids. For commissioning of such a unit it is needed only to deliver and to supply it with a required diesel fuel quantity, connect the unit to the local power grid and to start the operation of diesel-generator. The units could be equally efficiently applied for permanent and reserve operation, out of the country and in cities and for various facilities such as construction, trade, living or industrial area.

Main elements of an autonomous diesel-generator unit

1 Control panel
2 Silencer
3 Air filter
4 Cooling radiator
5 Diesel engine
6 Fuel filters
7 Tank
8 Frame

Manufacturers of the components for ADGU

Autonomous diesel-generator units are produced from the components made by largest European manufacturers which have gained excellent reputation for the long-term period of using in Russia. Applied state-of -the -art diesel engines guarantee reduced fuel consumption and a low level of exhaust emission. Generator models installed on the stations produced by "CHKZ" have increased resistance to various operational conditions of ADGU and do not require any odd maintenance costs.

List of components of autonomous diesel-generators CHKZ:

Generators:

STAMFORD	Stamford (UK)	AGGRETECH	ACG (Germany)
mecc alte	MeccAlte (Italy)	LEROY SOMER	Leroy Sommer (UK)
LINZ ELECTRIC	Linz (Germany)		

Engines:

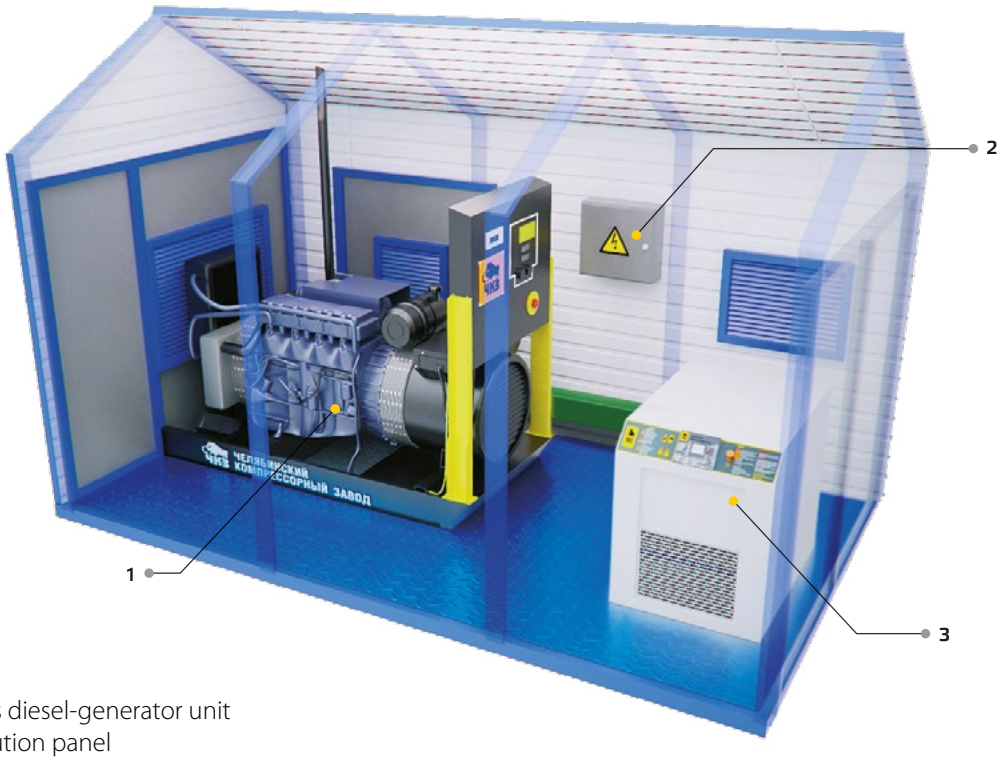
Perkins	Perkins (UK)	HATZ	Hatz (Germany)
VOLVO PENTA	Volvo Penta (Germany)	Cummins	Cummins (UK)
mtu	MTU (Germany)	YaMZ	YaMZ – Yaroslavl Motor (Russia)
YANMAR	Yanmar (Japan)	MMZ	MMZ – Minsk motor plant (Belorussia)
DEUTZ	Deutz (Germany)		

Control panel:

AGGRETECH	ACG (Germany)	COMAP	ComAp (Czech)	DSE	DeepSea Electronics (Germany)

Integrated solutions with ADGU

Example of an integrated solution: ADGU with a compressor DEN



1 Autonomous diesel-generator unit
2 Local distribution panel
3 Screw compressor DEN with an electric drive

Opened Autonomous Diesel-Generator Units

Opened autonomous diesel-generator units (ADGU) are used in specially equipped facilities, where all the peripheral systems, which are venting, heating, exhaust gases outlet, electrical equipment control and protection, additional fuel, fire alarm and firefighting, should be mounted.

This version is used for reserve operation of autonomous diesel-generator unit as well as for regular operation and is considered to be the most convenient.

Model	Prime power, HP (kW)	Maximum power, HP (kW)	Phases	Engine	Voltage, V	Frequency, Hz
ADGU 10Y-O	13,7 (10,2)	14,8 (11,0)	3	Yanmar	480	50
ADGU 15Y-O	20,4 (15,2)	21,6 (16,1)	3	Yanmar	480	50
ADGU 23Y-O	31,6 (23,6)	32,2 (24,0)	3	Yanmar	480	50
ADGU 35Y-O	47,2 (35,2)	48,3 (36,0)	3	Yanmar	480	50
ADGU 48P-O	65,2 (48,6)	71,3 (53,2)	3	Perkins	480	50
ADGU 59P-O	79,7 (59,4)	83,4 (62,2)	3	Perkins	480	50
ADGU 82P-O	110,1 (82,1)	121,2 (90,4)	3	Perkins	480	50
ADGU 103V-O	138,1 (103,0)	152,9 (114,0)	3	Volvo	480	50
ADGU 125V-O	167,6 (125,0)	175,7 (131,0)	3	Volvo	480	50
ADGU 162V-O	217,2 (162,0)	236,0 (176,0)	3	Volvo	480	50
ADGU 199V-O	266,9 (199,0)	295,0 (220,0)	3	Volvo	480	50
ADGU 252V-O	337,9 (252,0)	354,0 (264,0)	3	Volvo	480	50
ADGU 305V-O	409,0 (305,0)	447,9 (334,0)	3	Volvo	480	50
ADGU 332V-O	445,2 (332,0)	482,8 (360,0)	3	Volvo	480	50
ADGU 364V-O	488,1 (364,0)	543,1 (405,0)	3	Volvo	480	50
ADGU 404V-O	541,8 (404,0)	586,0 (437,0)	3	Volvo	480	50
ADGU 457V-O	612,8 (457,0)	677,2 (505,0)	3	Volvo	480	50
ADGU 507V-O	679,9 (507,0)	756,3 (564,0)	3	Volvo	480	50
ADGU 529M-O	709,4 (529,0)	783,2 (584,0)	3	MTU	480	50

Autonomous Diesel-Generator Units in a Sound-Proof Cabinet

Sound-proof cabinets for generator units provide working units' sound reducing. Moreover, units in cabinets could be placed outside, because the cabinet protects the unit from atmospheric influence such as rain, low temperature etc.

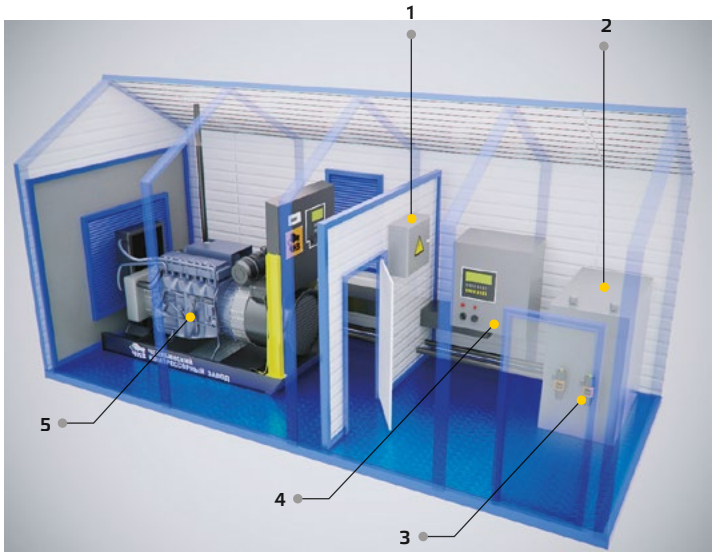
Cabinet is a solid metal framework, the inner side of which is glued over with a special sound-proof material. For a ADGU maintenance there are access doors from both side of a cabinet. There are also special openings for proper venting of a ADGU and mounted silencer for exhaust gases outlet.

Cabinet allows using the unit outside as well as inside of a building, because silent-proof cabinets reduce noise for 30dB, which sufficiently lowers noise level from the one of 100-110dB of operating unit.

It is recommended to supply a ADGU with a cooling liquid heater and an accumulator battery charging device when it is placed outside a building and in the cabinet.

Model	Prime power, HP (kW)	Maximum power, HP (kW)	Phases	Engine	Voltage, V	Frequency, Hz
ADGU 10Y-C	13,7 (10,2)	14,8 (11,0)	3	Yanmar	480	50
ADGU 15Y-C	20,4 (15,2)	21,6 (16,1)	3	Yanmar	480	50
ADGU 23Y-C	31,6 (23,6)	32,2 (24,0)	3	Yanmar	480	50
ADGU 35Y-C	47,2 (35,2)	48,3 (36,0)	3	Yanmar	480	50
ADGU 48P-C	65,2 (48,6)	71,3 (53,2)	3	Perkins	480	50
ADGU 59P-C	79,7 (59,4)	83,4 (62,2)	3	Perkins	480	50
ADGU 82P-C	110,1 (82,1)	121,2 (90,4)	3	Perkins	480	50
ADGU 103V-C	138,1 (103,0)	152,9 (114,0)	3	Volvo	480	50
ADGU 125V-C	167,6 (125,0)	175,7 (131,0)	3	Volvo	480	50
ADGU 162V-C	217,2 (162,0)	236,0 (176,0)	3	Volvo	480	50
ADGU 199V-C	266,9 (199,0)	295,0 (220,0)	3	Volvo	480	50
ADGU 252V-C	337,9 (252,0)	354,0 (264,0)	3	Volvo	480	50
ADGU 305V-C	409,0 (305,0)	447,9 (334,0)	3	Volvo	480	50
ADGU 332V-C	445,2 (332,0)	482,8 (360,0)	3	Volvo	480	50
ADGU 364V-C	488,1 (364,0)	543,1 (405,0)	3	Volvo	480	50
ADGU 404V-C	541,8 (404,0)	586,0 (437,0)	3	Volvo	480	50
ADGU 457V-C	612,8 (457,0)	677,2 (505,0)	3	Volvo	480	50
ADGU 507V-C	679,9 (507,0)	756,3 (564,0)	3	Volvo	480	50
ADGU 529M-C	709,4 (529,0)	783,2 (584,0)	3	MTU	480	50

Block-Container Energy Station (BKE)



Block-container energy station is a heat-insulated container inside of which there is a diesel-generator unit supplied with all the systems necessary for normal ADGU operation in aggressive ambient conditions.

The BKE is designed to fulfill the largest Russian diesel-generators consumers' needs and in accordance with all the necessary operating requirements.

1 Local distribution panel
2 Auxiliary fuel tank
3 Fuel purification separator
4 Power- transfer relay
5 Autonomous diesel-generator unit

Name	Characteristics, description, brand
1. Block-container station with arched roof design (in required climatic implementation)	Metal cage with bordering made of 60mm width 3-layer panels without framework according to Technical Specifications TS 67-18-165-93 with 56 kg/m³ density polyurethane foam heat insulation.
	Room category according to Fire Code 03-105-03.
	Fire resistance degree SNIP 21-01-99.
1.1. Automatic firefighting system	OSP-1 – automatic powder fire extinguisher. Response temperature: + 212ºF (+100 ºC).
1.2. Lightening system (inside)	Fluorescent lighting.
1.3. Lightening system (outside)	Halogen projector with symmetrical reflector, 500 W.
1.4. Combined extract-and-input system	Inlet and outlet windows' electric controlled jalousie (electric drive – BELIMO LM 230).
1.5. Heating system	Electric convector (electric radiator)
2. Diesel-generator	ADGU
3. Power supply control system	Auxiliaries board, cable input from external source, wiring layout through the block-modular station.

Autonomous Diesel-Generator Units With Engines of Russian Origin (YaMZ)

Diesel-generator units applying diesel drive YaMZ are used broadly due to long-term successful operation in diverse climatic conditions in various modes. DGU are in great demand nowadays due to its high reliability, broad maintenance experience, spare parts availability and low cost comparatively to foreign analogues. Due to the same reasons these engines are installed on new technical models as well. For the present moment the units have been modernized to conform to Euro-2 and -3 norms obligatory for operation in Russia, neighboring countries and beyond.

Model	Nominal power, HP (kW)	Maximum power, HP (kW)	Voltage, V	Frequency, Hz	Phases	Engine	Generator	Fuel consumption, g/kW.h	Speed, RPM
ADGU-60Ya	80,5 (60)	88,5 (66)	400	50	3	YaMZ	Leroy Somer or GS-B (Kursk)	230	1500
ADGU-100Ya	134,1 (100)	147,5 (110)	400	50	3	YaMZ	Leroy Somer or GS-B (Kursk)	230	1500
ADGU-150Ya	201,2 (150)	221,3 (165)	400	50	3	YaMZ	Leroy Somer or GS-B (Kursk)	230	1500
ADGU-200Ya	268,2 (200)	295,0 (220)	400	50	3	YaMZ	Leroy Somer or GS-B (Kursk)	220	1500
ADGU-315Ya	422,4 (315)	464,0 (346)	400	50	3	YaMZ	Leroy Somer or GS-B (Kursk)	208	1500

Optional equipment

Prestart heating of the cooling liquid – electric heater of the cooling liquid, which requires 220W power and is used for engine maintenance in the hot standby condition when mounted on the second and third automation stages' diesel electric stations or on the power plants working as reserve power sources. Cooling liquid temperature in a guard mode should be kept by a controller at 95-113° F (35-45° C).

Automatic reserve switching device – loading reserve power source for 2 and more inputs power-supply system intended for its reliability enhancement. It starts automatically when the main power-supply source stops its operation by any reason.

Separators – remove all the dirt, including organic and non-organic materials, microorganisms and water from the fuel. Separators' appliance sufficiently reduces operating costs and downtime and as a result not only saves money, but even brings extra profit.

Controller for the autonomous diesel generator stations' parallel operation. This controller performs automatic start and stop of a certain generator from an energy system, which consist of several generator units, depending on their power consumption. It also equally spreads the load and power between the working stations of the system and guarantee constant and high quality power supply of an object.

Reduced noise level silencer – are used for reduce of exhaust noise of the operating opened unit. Besides the «CHKZ» LLC ADGU units are supplied by standard silencers in basic version, they could be supplied by the ones which reduce the noise level for 20 dB. The units delivered in cabinets are supplied by this type of silencer on default.

ADGU remote access control. This option provides remote start and stop the of engine, control of the ADGU inlet parameters', adjustment operation regimes and the unit additional options' control.

Chassis. There are mobile implementations of ADGU units available on chassis (1- or 2-wheeled) or rails (upon request).

Chapter

11

Air Vessels (Receivers)

«Chelyabinsk Compressor Plant» LLC serially manufactures a wide range of air vessels (air receivers) with a capacity from 0,2 m³ up to 50 m³.

An air vessel is a vertical or horizontal welded cylindrical vessel with elliptical heads.

It is supplied with a manometer, safety valve and a response flange.

The operating temperature is from -94°F up to +392°F (from -70°C up to +70°C).

Operation life: 40 years.

In accordance with the customers' technical requirements besides from standard vessels' development and production of any other vessels working under pressure is available.

CHKZ vessels are produced on a contemporary equipment from the world leading manufacturers:

- Laser cutting machine "BYSTRONIK" provides high cutting accuracy and minimal metal deformation.
- Roll–bending machine "SAHINLER": shell diameter for one-joint welding is up to 196,85 in (5 meter).
- Welding machine "LINCOLN": welding joint thickness is up to 0,98 in (25 mm).

All the vessels' range is certified and has the appliance permission required for technical equipment used at dangerous industrial objects.

FOLLOWING THE CUSTOMERS' NEEDS «CHELYABINSK COMPRESSOR PLANT» LLC COULD MAKE A COLD ZINC COATING INSIDE (AT A CAPACITY OF MORE THAN 1M^3) AS WELL AS OUTSIDE (AT A CAPACITY FROM 0,5 UP TO 50M^3) A VESSEL).

Technical characteristics

Model	Volume, gal (m³)	Pressure, psig (barg)	Dimensions, LxWxH in (mm)	Weight lb (kg)*
Receivers				
RV-110-10	500,06 (0,11)	145,0 (10)	18,1x19,1x42,1 (460x485x1070)	132,3 (60)
RV-250-10	1136,50 (0,25)	145,0 (10)	24,4x22,8x51,2 (620x580x1300)	220,5 (100)
RV-500-10	2273,00 (0,5)	188,5 (13)	33,1x29,5x77,6 (840x750x1970)	440,9 (200)
RV-900-10	4091,40 (0,9)	145,0 (10)	35,4x37,0x89,4 (900x940x2270)	683,4 (310)
Air Receivers				
VV-0,9-0,8/1,0/1,6	4091,40 (0,9)	116,0/145,0/232,1 (8/10/16)	41,1x37,4x85,0 (1045x950x2160)	683,4 (310)
VV-1-0,8/1,0/1,6	4546,00 (1,0)	116,0/145,0/232,1 (8/10/16)	41,1x37,4x94,3 (1045x950x2395)	848,8 (385)
VV-1,6-0,8/1,0/1,6	7273,60 (1,6)	116,0/145,0/232,1 (8/10/16)	51,6x51,6x92,7 (1310x1310x2355)	1477,1 (670)
VV-2,0-0,8/1,0/1,6	9092,00 (2,0)	116,0/145,0/232,1 (8/10/16)	51,6x51,6x116,9 (1310x1310x2970)	1719,6 (780)
VV-2,7-0,8/1,0/1,6	12274,20 (2,7)	116,0/145,0/232,1 (8/10/16)	51,6x51,6x146,5 (1310x1310x3720)	2050,3 (930)
VV-3,2-0,8/1,0/1,6	14547,20 (3,2)	116,0/145,0/232,1 (8/10/16)	61,8x60,0x127,8 (1570x1525x3245)	2689,6 (1220)
VV-4,0-0,8/1,0/1,6	18184,00 (4,0)	116,0/145,0/232,1 (8/10/16)	61,8x60,0x153,7 (1570x1525x3905)	3130,6 (1420)
VV-5,0-0,8/1,0/1,6	22730,00 (5,0)	116,0/145,0/232,1 (8/10/16)	69,6x68,3x146,5 (1768x1735x3720)	3461,3 (1570)
VV-6,3-0,8/1,0/1,6	28639,80 (6,3)	116,0/145,0/232,1 (8/10/16)	69,5x68,3x182,3 (1765x1735x4630)	4069,7 (1846)
VV-8,0-0,8/1,0/1,6	36368,00 (8,0)	116,0/145,0/232,1 (8/10/16)	77,4x76,0x176,8 (1965x1930x4490)	4629,7 (2100)
VV-10,0-0,8/1,0/1,6	45460,00 (10,0)	116,0/145,0/232,1 (8/10/16)	77,4x76,0x216,1 (1965x1930x5490)	5467,5 (2480)
VV-12,5-0,8/1,0/1,6	56825,00 (12,5)	116,0/145,0/232,1 (8/10/16)	92,5x91,7x180,3 (2350x2330x4580)	6966,6 (3160)
VV-16,0-0,8/1,0/1,6	72736,00 (16,0)	116,0/145,0/232,1 (8/10/16)	92,5x91,7x219,5 (2350x2330x5575)	8267,3 (3750)
VV-20,0-0,8/1,0/1,6	90920,00 (20,0)	116,0/145,0/232,1 (8/10/16)	92,5x91,7x236,2 (2350x2330x6000)	9832,6 (4460)
VV-25,0-0,8/1,0/1,6	113650,00 (25,0)	116,0/145,0/232,1 (8/10/16)	92,5x91,7x279,1 (2350x2330x7090)	11089,3 (5030)
VV-32,0-0,8/1,0/1,6	145472,00 (32,0)	116,0/145,0/232,1 (8/10/16)	110,6x114,2x298,8 (2810x2900x7590)	16314,2 (7400)
VV-40,0-0,8/1,0/1,6	181840,00 (40,0)	116,0/145,0/232,1 (8/10/16)	110,6x114,2x384,8 (2810x2900x9775)	22046,2 (10000)
VV-50,0-0,8/1,0/1,6	227300,00 (50,0)	116,0/145,0/232,1 (8/10/16)	110,6x114,2x461,4 (2810x2900x11720)	29255,3 (13270)

** Weight is indicated for the air vessels with 145,0 psig (10 barg) pressure.*

Upon the request U2 and UHL1 versions air vessels could be manufactured. Production horizontal version of air vessels is also possible (RG and VG types).

Description:
U2 – operation at the temperature up to -40°F (-40°C), steel 09Г2С category 6, 12;
UHL1 - operation at the temperature up to -94°F (-70°C), steel 09Г2С category 8, 15;
RV – receiver vertical;
RG – receiver horizontal;
VV – air vessel vertical;
VG – air vessel horizontal.

Chapter

12

Tanks and Pressure Vessels

«Chelyabinsk Compressor Plant», LLC offers a wide range of tanks and pressure vessels: vertical and horizontal pressure vessels with elliptical ends and a tube bundle; horizontal pressure vessels with taper unbeaded ends, underground drain vessels, cylindrical vessels for liquid and gas non-aggressive mediums, air reservoirs, receivers etc.

Pressure vessels find application in oil-refining, petrochemical and other hazardous facilities. Pressure vessels are designed for accepting, storage, heating, separation, mixing and other operational procedures with liquid and gas substances with temperature from -94 °F up to + 392 °F (from -70°C up to +200°C) (depending on construction).

Chapter

13

Compressed Air Treatment Equipment

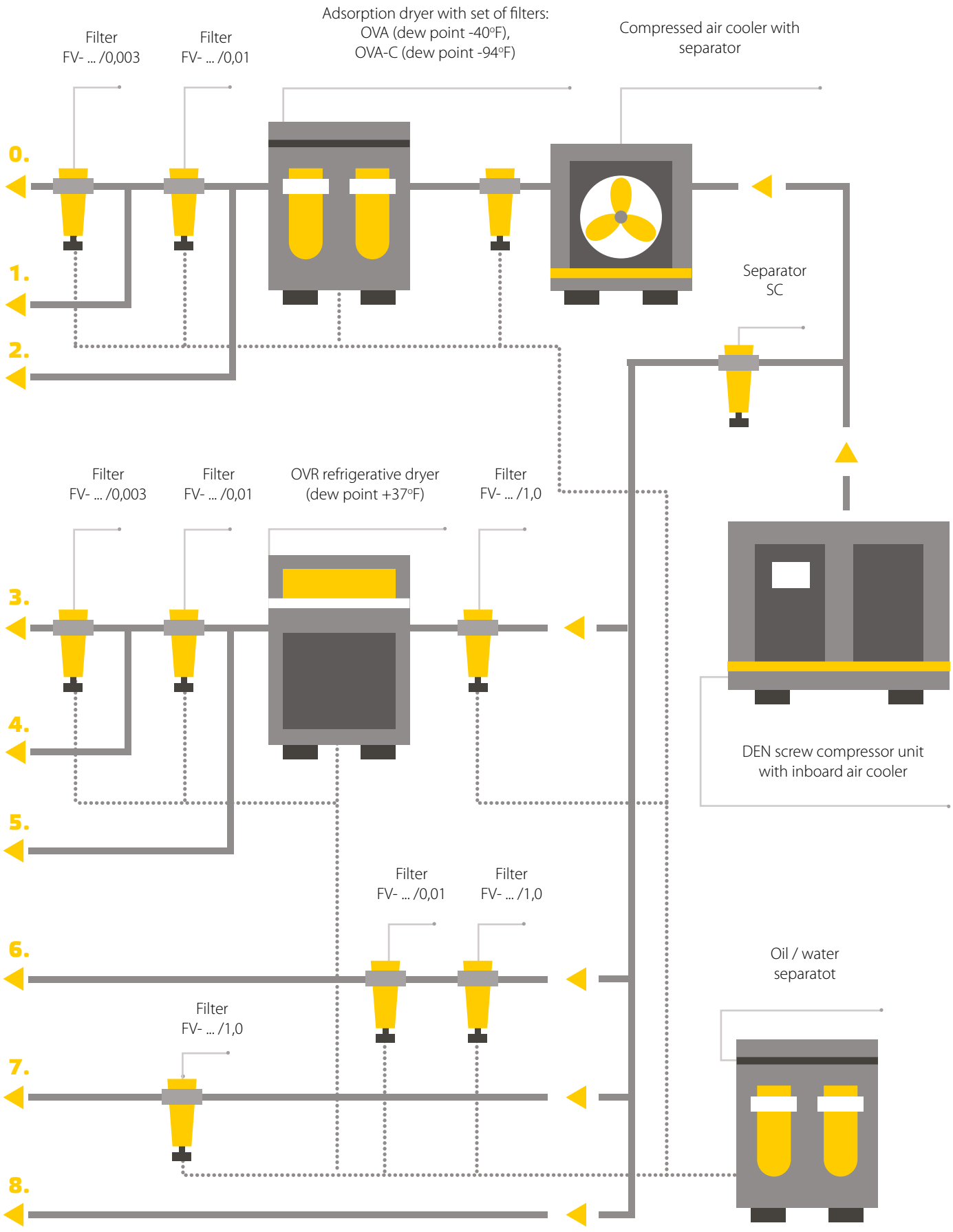
Clean air is the pledge of the quality of your products!

Moisture in a compressed air line may lead to:

- corrosion of pneumatic line inner surfaces which may result in higher pressure losses, compressed air leakages and finally increase in energy consumption;
- deoiling of inner surfaces in pneumatic instruments, higher abrasive wear, loss in performance, shorter service life and breakdown.

All these factors have adverse effect on the output quality, lead to increase of defects and finally client's dissatisfaction.

Specialists of Chelyabinsk Compressor Plant are ready to conduct an analysis of a compressed air system, to give specific recommendations on compressed air quality, energy efficiency, cost saving. Our specialists will select the necessary air treatment equipment to meet the requirements of the customer.


Filter
FV- ... /0,003
Filter
FV- ... /0,01
Adsorption dryer with set of filters:
OVA (dew point -40°F),
OVA-C (dew point -94°F)
Compressed air cooler with
separator
0.
1.
2.
Separator
SC
Filter
FV- ... /0,003
Filter
FV- ... /0,01
OVR refrigerative dryer
(dew point +37°F)
Filter
FV- ... /1,0
3.
4.
5.
DEN screw compressor unit
with inboard air cooler
Filter
FV- ... /0,01
Filter
FV- ... /1,0
6.
Oil / water
separatot
Filter
FV- ... /1,0
7.
8.

Air compressing plottings

0.

food industry (odor-free); as low as possible water vapor content (0,0033 g/m^3, dew point -70 °C) (0,117 g/m^3,dew point -40 °C), finest filtration of oil (max. 0,003 mg/m^3) and particles (max. 0,01 µm).

Grade higher than 1.1.1(2).
(Russian Standards)

1.

chemical plants, high-quality painting, electronic engineering, pharmaceutical industry, instrumentation equipment etc.; as low as possible water vapor content (0,0033 g/m^3, dew point -70 °C) (0,117 g/m^3,dew point -40 °C), filtration of oil (max. 0,01 mg/m^3) and particles (max. 0,01 µm).

Grade 1.1.1(2).
(Russian Standards)

2.

oil and gas industry (condensate-free at working temperature up to -70° C), light industry, powder coating; as low as possible water vapor content (0,0033 g/m^3, dew point -70 °C) (0,117 g/m^3,dew point -40 °C), filtration of oil (max. 0,03 mg/m^3) and particles (max. 0,01 µm).

Grade 2.1.1(2).
(Russian Standards)

3.

construction materials manufacturing, painting etc.; lower compressed air dew point (water vapor content 5,95 g/m^3, dew point +3 °C), finest filtration of oil (max. 0,003 mg/m^3) and particles (max. 0,01 µm).

Grade 1.1.4.
(Russian Standards)

4.

packing, technological processes control, pneumatic instrument drive;

5.

sandblasting, bead-blasting in construction;

6.

sandblasting, bead-blasting with no specific requirements to the compressed air quality; residual oil content 0,01 mg/m^3, dust particles up to 0,01 µ , 100%-humidity, oil water condensate.

Grade 1.1.-.
(Russian Standards)

7.

drilling and blasting, drill-blast works, air flush, chisel hammer;

8.

no requirements to the compressed air quality; residual oil content 3,5 — 5 mg/m^3, dust particles up to 5 µ, 100% — humidity, oil-water condensate.

Grade 4.3.-.
(Russian Standards)

RUSSIAN CLASSIFICATION OF COMPRESSED AIR QUALITY IS IN ACCORDANCE TO RUSSIAN STANDARDS

Compressed Air Treatment Equipment

Advantages of EcoTec Converter

EcoTec Converter system is designed to remove the oil from the compressed air. The EcoTec concept uses a special catalyst to convert the oil and other hydrocarbons in water and further harmless air components in a physical-chemical process. Compressed air treated with is technically oil-free (max. residual hydrocarbon vapors 0,003 mg/m). The quality of the air substantially exceeds requirements of contamination grade 1 according to GOST R ISO 8573-1-2005 (Russian Standards)) with maximum allowed oil content 0,01 mg/m³.

Technical characteristics of EcoTec Converter

Model	Flow capacity at 101,5 psig, cfm (m³/min)	Maximum pressure, psig (barg)	Dimensions, LxWxH, in (mm)	Weight, lb (kg)
ETC-SV04	14,13 (0,4)	232,1 (16)	27,5x13,3x55,0 (699x339x1397)	132,3 (60)
ETC-SV1	35,31 (1)	232,1 (16)	33,9x17,9x55,8 (860x455x1418)	308,6 (140)
ETC-SV2	70,63 (2)	232,1 (16)	33,9x17,9x63,7 (860x455x1618)	352,7 (160)
ETC-SV5	176,57 (5)	232,1 (16)	46,3x24,3x74,3 (1175x617x1887)	793,7 (360)
ETC-SV7	247,20 (7)	232,1 (16)	46,3x24,3x74,3 (1175x617x1887)	903,9 (410)
ETC-SV10	353,15 (10)	232,1 (16)	64,2x30,7x82,6 (1630x779x2098)	1300,7 (590)
ETC-SV15	529,72 (15)	232,1 (16)	64,2x30,7x82,6 (1630x779x2098)	1697,6 (770)
ETC-SV20	706,29 (20)	232,1 (16)	74,6x44,8x84,6 (1895x1138x2148)	1984,2 (900)
ETC-SV30	1059,44 (30)	232,1 (16)	74,6x44,8x84,6 (1895x1138x2148)	2425,1 (1100)
ETC-S40	1412,59 (40)	232,1 (16)	87,4x35,4x88,2 (2220x900x2240)	3306,9 (1500)
ETC-S50	1765,73 (50)	232,1 (16)	87,4x35,4x88,2 (2220x900x2240)	3747,9 (1700)
EcoTec Converter for high pressure				
ETC-MS6	204,83 (5,8)	652,7 (45)	37,9x18,4x59,8 (963x467x1518)	485,0 (220)
ETC-MS12	406,12 (11,5)	652,7 (45)	37,9x18,4x59,8 (963x467x1518)	595,2 (270)

Absolutely oil-free air – pure water condensate.

Extremely robust performance characteristics of oil-injected screw compressor together with outstanding qualities of EcoTec Converter help to achieve the following parameters:

- guaranteed oil-free compressed air; oil/carbonate content max. 0,001 mg/m³;
- condensate separated in pneumatic system elements after EcoTec Converter, requires no further purification, as a result there is no necessity to install oil separators for condensate;
- low energy consumption (~ 5 W/m³);
- long working period (20 000 hours) before a catalyst agent cartridge replacement;
- absolute operating reliability because the degree of efficiency of the EcoTec Converter is independent of:
  - oil inlet concentration;
  - air humidity;
  - inlet temperature;
- full automation, as a result no continuous attendance is required and corresponding costs are eliminated;
- bacterial destruction in EcoTec Converter heated air (over +320°F (+160°C).

Chelyabinsk Compressor Plant provides any compressor DEN with EcoTec Converter equipment.

SC Main Cyclone Separators

Features:

- Patented design for effective water separation – more than 99%.
- Automatic drain, safe drain, safety valve and observation hole.
- Anodized aluminium alloy housing covered with epoxy inside and with dry powder coating – more than 10 years warranty.
- No filter – no need to replace filter.

Main characteristics:

- Max. working pressure: 232,1 psig (16 barg)
- Max. working temperature: 150,8°F (66°C)
- Pressure drop: 0,15 psig (0,01 barg)

Technical characteristics of separators SC

Model	Flow capacity at STP*, cfm (m³/min)	Dimensions, DxH, in (mm)	Pressure drop, psig (barg)	Weight, lb (kg)
SC-140R	52,97…88,29 (1,5…2,5)	3,54x8,07 (90x205)	0,15 (0,01)	2,2 (1,0)
SC-220R	81,22…134,20 (2,3…3,8)	3,54x9,06 (90x230)		2,4 (1,1)
SC-270R	102,41…194,23 (2,9…5,5)	3,54x10,04 (90x255)		2,4 (1,1)
SC-540R	187,17…441,43 (5,3…12,5)	4,72x12,13 (120x308)		6,0 (2,7)
SC-1260R	409,65…971,15 (11,6…27,5)	6,30x21,26 (160x540)		13,0 (5,9)
SC-2500R	858,15…1571,50 (24,3…44,5)	7,87x 23,62 (200x600)		28,4 (12,9)
SC-2500F	858,15…1571,50 (24,3…44,5)	15,75x42,52 (400x1080)		28,4 (12,9)
SC-2900R	1101,82…1801,05 (31,2…51,0)	7,87x 23,62 (200x600)		48,3 (21,9)
SC-2900F	1101,82…1801,05 (31,2…51,0)	18,90x42,13 (480x1070)		68,3 (31)
SC-3600F	1377,27…2436,71 (39,0…69,0)	18,90x45,28 (480x1150)		202,8 (92)
SC-6500F	2295,45…4061,19 (65,0…115,0)	25,20x 48,43 (640x1230)		352,7 (160)
SC-10800F	4131,82…6709,79 (117,0…190,0)	29,53x36,22 (750x920)		767,2 (348)
SC-17300F	6356,64…10770,97 (180,0…305,0)	29,13x39,76 (740x1010)		1124,4 (510)
SC-26000F	9888,11…16174,12 (280,0…458,0)	39,37x 38,98 (1000x990)		1459,5 (662)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*
***R** – threaded connection, **F** – flange connection, **SC** – cyclone separator*
Example of explanation:

SC – 140R
- *threaded connection*
- *air flow capacity, m³/h*

SC – 2900F
- *flange connection*
- *air flow capacity, m³/h*

Correction factors of separators SC

Pressure, psig (barg)	14,5 (1)	43,5 (3)	72,5 (5)	101,5 (7)	130,5 (9)	159,5 (11)	188,5 (13)	217,6 (15)	246,6 (17)	290,7 (20)
Factor	0,5	0,71	0,87	1,0	1,12	1,22	1,32	1,41	1,50	1,62

FV Main Air Filters

Compressed air is usually polluted with solid abrasive particles: dust, dirt, generated in pipelines rust, as well as with compressor oil, water and acid condensate, vapor, carbohydrates.
If these contaminants are not removed, costs for pneumatic equipment and tools technical maintenance increase and output quality decreases.

Features:

- Internal surface of the filter housing has high-qulity anticorrosion protection and is full conformity with standards for high pressure vessels. In ordinary operation conditions 15-year life time is guaranteed. Filter housing is adapted to a great variety of original filters.
- In filter elements with sizes 035 - 800 aerodynamic technologies are applied. Inlet nozzle with modified 90-gradus elbow eliminates turbulence and minimizes local resistance.
- A cone type diffusor at the filter element base is used – diffusion flow expands filter area.
- An adjusting pin simplifies filter element replacement.
- Filter elements are produced from high-performance fiber material.

Main characteristics:

Nominal working pressure .....87 psig ~ 116 psig (6 barg ~ 8 barg)
Permissible intake temperature..... .....≤ 140°F (60°C)
Ambient temperature.....: .....≤ 104°F (40°C)

Pressure drop:
dry air.....≤ 1 psig (0,07 barg)
wet air.....≤ 2 psig (0,14 barg)

5 types of the filters are presented:

Air filter	Type	Purpose	Residual content	
			Maximum concentration	Maximum particle size
FV	3,0	Dust filter	5 mg/m³	3 µm
FV	1,0	Particle filter	1 mg/m³	1 µm
FV	0,01	Oil filter	0,01 mg/m³	0,01 µm
FV	0,001	Super oil filter	0,001 mg/m³	0,01 µm
FV	0,003	Activated charcoal filter	0,003 mg/m³	0,01 µm

Main technical parametres:

Explanation:
FV – air filter
1. FV – xxxx / 3,0 ..... dust filter 3µm
2. FV – xxxx / 1,0 .....dust filter 1µm
3. FV – xxxx / 0,01 ..... oil filter 0,01 mg/m³
4. FV – xxxx / 0,001 .....super oil filter 0,001 mg/m³
5. FV – xxxx / 0,003 ..... activated carbon filter 0,003 mg/m³

Example of explanation:
FV – 0100/3,0
└ Filter element type
└ Air flow capacity, m³/h

Technical characteristics of filters FV

Model	Flow capacity at STP*, cfm (m^3/min)	Dimensions, DxH, in (mm)	Filter element		Weight, lb (kg)
			Model	Quantity	
FV-0100R	56,50 (1,6)	10,24x3,54 (260x90)	35E	1	4,0 (1,8)
FV-0160R	91,82 (2,6)	13,0x3,54 (330x90)	70E	1	4,6 (2,1)
FV-0230R	134,20 (3,8)	14,57x4,72 (370x120)	100E	1	7,1 (3,2)
FV-0300R	176,57 (5,0)	21,26x4,72 (540x120)	150E	1	9,3 (4,2)
FV-0420R	247,20 (7,0)	21,26x4,72 (540x120)	200E	1	10,6 (4,8)
FV-0510R	300,17 (8,5)	25,79x4,72 (655x120)	300E	1	11,7 (5,3)
FV-0690R	406,12 (11,5)	25,79x4,72 (655x120)	350E	1	13,7 (6,2)
FV-0810R	476,75 (13,5)	25,79x4,72 (655x120)	400E	1	20,3 (9,2)
FV-1020F	600,35 (17,0)	43,70x12,60 (1110x320)	600E	1	116,8 (53)
FV-1380F	812,24 (23,0)	48,43x12,60 (1230x320)	800E	1	127,9 (58)
FV-1620F	953,50 (27,0)	45,28x16,93 (1150x430)	400E	2	174,2 (79)
FV-2040F	1200,70 (34,0)	47,24x16,93 (1200x430)	600E	2	187,4 (85)
FV-2700F	1589,16 (45,0)	51,38x16,93 (1305x430)	800E	2	253,5 (115)
FV-3300F	1942,31 (55,0)	47,24x21,26 (1200x540)	600E	3	282,2 (128)
FV-3900F	2295,45 (65,0)	53,54x21,26 (1360x540)	800E	3	297,6 (135)
FV-5220F	3072,38 (87,0)	57,28x23,62 (1430x600)	800E	4	341,7 (155)
FV-6600F	3884,61 (110,0)	57,28x23,62 (1455x600)	800E	5	348,3 (158)
FV-7800F	4590,91 (130,0)	57,28x23,62 (1455x600)	800E	6	374,8 (170)
FV-9600F	5650,35 (160,0)	58,46x29,13 (1485x740)	800E	8	540,1 (245)
FV-12600F	7416,08 (210,0)	64,02x29,13 (1626x740)	800E	10	595,2 (270)
FV-15600F	9181,81 (260,0)	69,69x35,43 (1700x900)	1600E	6	705,5 (320)
FV-18600F	10947,55 (310,0)	69,69x36,61 (1770x930)	800E	14	992,1 (450)
FV-24600F	14479,01 (410,0)	59,06x36,61 (1500x930)	800E	19	959,0 (435)
FV-30600F	18010,48 (510,0)	65,75x38,74 (1670x984)	800E	23	959,0 (435)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*
***R** – threaded connection, **F** – flange connection*

Correction factors of filters FV

Pressure psig, (bar)	203 (14)	305 (21)	406 (28)	609 (42)	812 (56)	1015 (70)	1233 (85)	1537 (106)	2045 (141)	2553 (176)	3060 (211)
Factor	0,3	0,39	0,48	0,65	0,82	1,00	1,17	1,43	1,87	2,31	2,74

OVR Refrigerative Dryers

Main working characteristics:

Inlet air temperature..... +41°F (+5° C)<t ≤+113°F (+45°C) (≤+176°F (+80°C) for OVR-D)
Ambient temperature..... +41°F (+5° C) <t ≤+104°F (+40° C)
Working pressure..... 29-145 psig (2-10 barg)
Dew point ..... 35,6-50°F (2-10°C)
Cooling agent..... R134A, R407

Options:

- Various power supply voltage
- Thread connection NPT
- Dew point indicator
- Prefilter and after filter
- High ambient temperature
- PLC controller

Features:

- Stable dew point
- Low pressure losses
- Operational stability for a prolonged period
- External condensate drain - easy servicing

Dew point

In atmospheric air there's always some water vapor content which depends on air humidity and temperature. Lowering temperature of atmospheric air Air can be cooled to its maximum saturation value. If air temperature will be decreased below this value vapor will not be able to sustain its content in the air and will start falling out as miniature drops termed as condensate. This temperature values is called de point. The notion "dew point temperature" of compressed air defines the temperature value when water vapor contained in compressed air at the specified pressure will condense into water. With the use of after coolers, separators and drainage devices it becomes possible to remove up 80% of condensate. Retained moisture can be removed by a dryer.

Technical characteristics of refrigerated dryers with air inlet temperature up to +113°F (+45°C)

Model	Flow capacity at STP*		Dimensions			Weight, lb (kg)
	m³/min	CFM	Length, in (mm)	Width, in (mm)	Height, in (mm)	
OVR-0050R	0.7	25	19,69 (500)	15,75 (400)	22,05 (560)	110,2 (50)
OVR-0100R	1.6	56	19,69 (500)	15,75 (400)	23,62 (600)	154,3 (70)
OVR-0160R	2.6	92	24,80 (630)	16,93 (430)	23,62 (600)	172,0 (78)
OVR-0230R	3.8	134	24,80 (630)	16,93 (430)	27,95 (710)	176,4 (80)
OVR-0300R	5,0	177	30,32 (770)	19,69 (500)	31,89 (810)	187,4 (85)
OVR-0360R	6.0	212	30,32 (770)	19,69 (500)	31,89 (810)	242,5 (110)
OVR-0420R	7.0	247	32,28 (820)	19,69 (500)	31,89 (810)	260,1 (118)
OVR-0510R	8.5	300	34,25 (870)	21,65 (550)	31,89 (810)	264,5 (120)
OVR-0690R	11.5	406	46,46 (1180)	21,65 (550)	31,89 (810)	343,9 (156)
OVR-0810R	13.5	476	37,40 (950)	31,50 (800)	47,24 (1200)	440,9 (200)
OVR-1020R	17	600	37,40 (950)	31,50 (800)	47,24 (1200)	385,8 (175)
OVR-1380R	23	812	37,40 (950)	31,50 (800)	50,39 (1280)	462,9 (210)
OVR-1620F	27	953	45,28 (1150)	33,86 (860)	56,30 (1430)	661,4 (300)
OVR-2040F	34	1200	45,28 (1150)	41,34 (1050)	56,30 (1430)	837,7 (380)
OVR-2700F	45	1588	49,21 (1250)	37,40 (950)	58,27 (1480)	1058,2 (480)
OVR-3300F	55	1941	57,09 (1450)	41,34 (1050)	62,20 (1580)	1322,7 (600)
OVR-3900F	65	2294	57,09 (1450)	41,34 (1050)	62,20 (1580)	1499,1 (680)
OVR-5220F	87	3071	72,83 (1850)	45,28 (1150)	62,99 (1600)	1719,5 (780)
OVR-6600F	110	3883	72,83 (1850)	45,28 (1150)	62,99 (1600)	2160,4 (980)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Example of explanation:

OVR-0050

Air dryer (refrigeration) — Air flow capacity, m³/h

Technical characteristics of refrigerated dryers with air inlet temperature up to +176°F (+80°C)

Model	Flow capacity at STP*		Dimensions			Weight, lb (kg)
	m³/min	CFM	Length, in (mm)	Width, in (mm)	Height, in (mm)	
OVR-D-0050R	0.7	25	19,69 (500)	15,75 (400)	29,53 (750)	121,25 (55)
OVR-D-0100R	1.6	56	19,69 (500)	15,75 (400)	31,50 (800)	187,39 (85)
OVR-D-0160R	2.6	92	24,80 (630)	16,93 (430)	36,61 (930)	207,23 (94)
OVR-D-0230R	3.8	134	24,80 (630)	16,93 (430)	36,61 (930)	209,44 (95)
OVR-D-0300R	5.0	177	30,32 (770)	19,69 (500)	38,98 (990)	209,44 (95)
OVR-D-0360R	6.0	212	30,32 (770)	19,69 (500)	38,98 (990)	238,10 (108)
OVR-D-0420R	7.0	247	32,28 (820)	19,69 (500)	38,98 (990)	326,28 (148)
OVR-D-0510R	8.5	300	34,25 (870)	21,65 (550)	46,46 (1180)	363,76 (165)
OVR-D-0690R	11.5	406	46,46 (1180)	21,65 (550)	46,85 (1190)	451,94 (205)
OVR-D-0810R	13.5	476	49,21 (1250)	31,50 (800)	50,39 (1280)	564,38 (256)
OVR-D-1020R	17	600	53,15 (1350)	31,50 (800)	51,18 (1300)	462,97 (210)
OVR-D-1380R	23	812	53,15 (1350)	31,50 (800)	51,18 (1300)	573,20 (260)
OVR-D-1620F	27	953	68,90 (1750)	45,28 (1150)	60,24 (1530)	705,47 (320)
OVR-D-2040F	34	1200	68,90 (1750)	45,28 (1150)	57,09 (1450)	1014,12 (460)
OVR-D-2700F	45	1588	68,90 (1750)	45,28 (1150)	57,09 (1450)	1212,53 (550)
OVR-D-3300F	55	1941	68,90 (1750)	45,28 (1150)	65,75 (1670)	1410,94 (640)
OVR-D-3900F	65	2294	88,58 (2250)	49,21 (1250)	62,20 (1580)	1675,50 (760)
OVR-D-5220F	87	3071	98,43 (2500)	59,06 (1500)	92,91 (2360)	1918,00 (870)
OVR-D-6600F	110	3883	100,00 (2540)	84,65 (2150)	92,13 (2340)	2645,52 (1200)

** - STP standard conditions uses a temperature of 68°F (20°C) and an absolute pressure of 14,7 psig (1 barg)*

Example of explanation: **OVR-D-0050**

Air dryer (refrigeration) — with an integrated after cooler — Air flow capacity, m³/h

In case your working parameters diverge from default parameters (pressure: 101,5 psig (7 barg), temperature: 95°F (35°C)), for calculating capacity of the refrigeration dryer use the correction indexes listed below.

Formula: Capacity = Output / (f1xf2xf3)

Correction factors of refrigerated dryers

Correction factor – inlet air pressure

Pressure, psig (barg)	43,5 (3)	58,0 (4)	72,5 (5)	87,0 (6)	101,5 (7)	116,0 (8)	130,5 (9)	145,0 (10)	159,5 (11)	174,0 (12)	188,5 (13)	203,1 (14)
Factor f1	0,74	0,83	0,90	0,96	1,00	1,03	1,06	1,08	1,10	1,12	1,13	1,14

Correction factor – inlet air temperature

Temperature, °F (°C)	86 (30)	95 (35)	104 (40)	113 (45)	122 (50)	131 (55)	140 (60)
Factor f2	1,21	1,00	0,84	0,70	0,59	0,49	0,41

Correction factor – ambient temperature

Ambient temperature, °F (°C)	77 (25)	86 (30)	95 (35)	104 (40)	113 (45)	122 (50)
Factor f3	1,00	0,94	0,88	0,82	0,76	0,70

OVA Heatless Regeneration Adsorption Dryers

Main characteristics:

Working pressure.....72,5-145,0 psig (5 -10 barg)
Inlet temperature.....+35,6°F (+2°C)≤t≤ +113°F (+45°C)
Ambient temperature.....+37,4°F (+3°C)≤t≤ +113°F (+45°C)
Pressure dew point.....≤-40°F (-40°C)
(-94°F (-70 °C) for OVA-C)
Regeneration losses.....14,5 %
Cycle.....5-10 min.
Pressure losses..... ≤3 psi (0,21 bar)
Adsorbent.....activated alumina
Inlet oil content..... ≤0,1mg/m³
Power supply.....220V / 1ph / 50Hz
Pre-installed air filters
Adsorbent – molecular sieve for dew point .....-94°F (-70 °C)

Dryers OVA series are adsorption dryers with alternating phases of adsorption and regeneration.

While one absorber is used for drying the medium, the other one is use for regeneration. Following regeneration the chambers swap duty and the other chamber is then regenerated. This method secures continuity of the process.

The medium to be dried passes through a prefilter at the dryer inlet. Inlet micro filter eliminates condensate, air-oil mist and dirt particles.

At the absorber outlet the dried medium is lead to an after purification filter. Here the smallest dust particles and possible drying agent particles are caught by a dust filter. Then the dried and purified medium is directed to the working net.

Additional options:

- Specific power supply voltages 110V / 1ph / 60Hz
- Higher protection level IP65
- Dew point gauge
- Stainless steel pipelines and components

In case your working parameters diverge from default parameters (pressure: 101,5 psig (7 barg), temperature: 95°F (35°C)), for calculating capacity of the adsorption dryer use the correction indexes listed below.

Correction factors for heatless regenerative adsorption (dew point -40ºF (-40ºC))

Temperature, ºF (ºC)	Working pressure, psig (barg)						
	58,0 (4,0)	72,5 (5,0)	87,0 (6,0)	101,5 (7,0)	116,0 (8,0)	130,5 (9,0)	145,0 (10,0)
77 (25)	0,68	0,83	0,92	1,0	1,05	1,11	1,19
86 (30)	0,67	0,81	0,92	1,0	1,05	1,11	1,19
95 (35)	0,63	0,75	0,88	1,0	1,05	1,11	1,19
104 (40)	0,60	0,70	0,83	0,95	1,05	1,11	1,19
113 (45)	0,58	0,67	0,81	0,91	1,03	1,11	1,19
122 (50)	0,56	0,65	0,78	0,88	1,01	1,09	1,19

Correction factors for heatless regenerative adsorption (dew point -94ºF (-70ºC))

Temperature, ºF (ºC)	Working pressure, psig (barg)						
	58,0 (4,0)	72,5 (5,0)	87,0 (6,0)	101,5 (7,0)	116,0 (8,0)	130,5 (9,0)	145,0 (10,0)
77 (25)	0,68	0,83	0,92	1,0	1,05	1,11	1,19
86 (30)	0,67	0,81	0,92	1,0	1,05	1,11	1,19
95 (35)	0,63	0,75	0,88	1,0	1,05	1,11	1,19
104 (40)	0,60	0,70	0,83	0,95	1,05	1,11	1,19

Heatless regenerative adsorption dryers technical characteristics

Model OVA cold regeneration (dew point)		Flow capacity at STP*		Dimensions**			Weight**, lb (kg)
-40ºF (-40ºC)	-94ºF (-70ºC)	m³/min	CFM	Length, in (mm)	Width, in (mm)	Height, in (mm)	
0230	0230C	3.8	134	28,74 (730)	15,75 (400)	67,32 (1710)	529,10 (240)
0300	0300C	5.0	176	35,43 (900)	20,47 (520)	69,29 (1760)	564,38 (256)
0360	0360C	6.0	211	35,43 (900)	20,47 (520)	69,29 (1760)	621,70 (282)
0420	0420C	7.0	247	35,43 (900)	20,47 (520)	71,46 (1815)	683,43 (310)
0480	0480C	8.0	283	35,43 (900)	20,47 (520)	79,13 (2010)	753,97 (342)
0600	0600C	10.0	354	39,37 (1000)	22,44 (570)	75,39 (1915)	881,84 (400)
0720	0720C	12.0	425	39,37 (1000)	22,44 (570)	83,66 (2125)	1141,98 (518)
0860	0860C	14.0	507	48,03 (1220)	24,21 (615)	77,76 (1975)	1313,94 (596)
0960	0960C	16.0	566	50,00 (1270)	25,39 (645)	85,63 (2175)	1620,38 (735)
1200	1200C	20.0	708	57,48 (1460)	30,12 (765)	82,87 (2105)	1973,12 (895)
1500	1500C	25.0	885	61,81 (1570)	29,13 (740)	87,20 (2215)	2195,78 (996)
1800	1800C	30.0	1062	62,99 (1600)	34,45 (875)	75,59 (1920)	2303,81 (1045)
2100	2100C	35.0	1239	71,26 (1810)	34,45 (875)	93,11 (2365)	2524,27 (1145)
2580	2580C	43.0	1522	71,26 (1810)	34,45 (875)	102,36 (2600)	3075,42 (1395)
3300	3300C	55.0	1947	84,65 (2150)	41,73 (1060)	100,39 (2550)	3637,59 (1650)

** - STP standard conditions uses a temperature of 68ºF (20ºC) and an absolute pressure of 14,7 psig (1 barg)*

***Dimensions and weight are indicated excluding filters*

Example of explanation:

OVA – 0050 C

Adsorption air dryer — Air flow capacity, m³/h — Dew point -94°F (-70°C)

OVA-T Heated Regenerative Adsorption Dryers

Main characteristics:

Working pressure.....72,5-145,0 psig (5 -10 barg)
Inlet temperature.....+35,6°F (+2°C)≤t≤+113°F (+45°C)
Ambient temperature.....+37,4°F (+3°C)≤t≤ +113°F (+45°C)
Pressure dew point.....≤-40°F (-40°C)
(-94°F (-70 °C) for OVA-TC)
Regeneration losses.....6 %
Cycle.....120 minutes
Pressure losses..... ≤3 psi (0,21 bar)
Adsorbent.....activated alumina
Inlet oil content..... ≤0,1mg/m³
Power supply.....380V / 3ph / 50Hz

Features:

- Adsorption is supported by excess pressure, regeneration process occurs with application of heat.
- Prolonged switching cycle.
- Regeneration by high temperature of the electric heater. Regeneration cycle: heating + purge cooling.
- Heated dry air is used as a gas for regeneration and cooling, air consumption is minimal.
- Simple process, low failure rate, low investment value.
- User-friendly.
- Automatic operation, no permanent staff attendance.
- Pre-installed air filters.
- Adsorbent is a molecular sieve for dew point -94°F (-70°C).

Options:

- Specicfic power supply voltages 110V / 1ph / 60Hz
- Higher protection level IP65
- Dew point gauge
- Stainless steel pipelines and components

In case your working parameters diverge from default parameters (pressure: 101,5 psig (7 barg), temperature: 95°F (35°C)), for calculating capacity of the adsorption dryer use the correction indexes listed below.

Correction factors for heatless regenerative adsorption (dew point -40ºF (-40ºC))

Temperature, ºF (ºC)	Working pressure, psig (barg)						
	58,0 (4,0)	72,5 (5,0)	87,0 (6,0)	101,5 (7,0)	116,0 (8,0)	130,5 (9,0)	145,0 (10,0)
77 (25)	0,68	0,83	0,92	1,0	1,05	1,11	1,19
86 (30)	0,67	0,81	0,92	1,0	1,05	1,11	1,19
95 (35)	0,63	0,75	0,88	1,0	1,05	1,11	1,19
104 (40)	0,60	0,70	0,83	0,95	1,05	1,11	1,19
113 (45)	0,58	0,67	0,81	0,91	1,03	1,11	1,19
122 (50)	0,56	0,65	0,78	0,88	1,01	1,09	1,19

Correction factors for heatless regenerative adsorption (dew point -94ºF (-70ºC))

Temperature, ºF (ºC)	Working pressure, psig (barg)						
	58,0 (4,0)	72,5 (5,0)	87,0 (6,0)	101,5 (7,0)	116,0 (8,0)	130,5 (9,0)	145,0 (10,0)
77 (25)	0,68	0,83	0,92	1,0	1,05	1,11	1,19
86 (30)	0,67	0,81	0,92	1,0	1,05	1,11	1,19
95 (35)	0,63	0,75	0,88	1,0	1,05	1,11	1,19
104 (40)	0,60	0,70	0,83	0,95	1,05	1,11	1,19

Heated regenerative adsorption dryers technical characteristics

Model OVA heat regeneration (dew point)		Flow capacity at STP*		Heater, kW	Dimensions**			Weight**, lb (kg)
-40ºF (-40ºC)	-94ºF (-70ºC)	m³/min	CFM		Length, in (mm)	Width, in (mm)	Height, in (mm)	
0230T	0230TC	3.8	134	1.5	40,16 (1020)	18,70 (475)	69,09 (1755)	555,56 (252)
0300T	0300TC	5.0	176	1.8	40,16 (1020)	18,70 (475)	69,09 (1755)	593,04 (269)
0360T	0360TC	6.0	211	2.1	40,16 (1020)	18,70 (475)	76,97 (1955)	652,56 (296)
0420T	0420TC	7.0	247	2.4	40,16 (1020)	18,70 (475)	86,02 (2185)	718,70 (326)
0480T	0480TC	8.0	283	2.4	41,34 (1050)	20,47 (520)	78,74 (2000)	791,45 (359)
0600T	0600TC	10.0	354	4.5	48,43 (1230)	23,82 (605)	76,77 (1950)	925,93 (420)
0720T	0720TC	12.0	425	4.5	48,43 (1230)	23,82 (605)	83,86 (2130)	1199,30 (544)
0860T	0860TC	14.0	507	5.4	61,81 (1570)	28,35 (720)	76,77 (1950)	1380,08 (626)
0960T	0960TC	16.0	566	7.5	61,81 (1570)	28,35 (720)	77,95 (1980)	1701,95 (772)
1200T	1200TC	20.0	708	9	61,81 (1570)	28,35 (720)	84,25 (2140)	2072,32 (940)
1500T	1500TC	25.0	885	10.8	66,93 (1700)	32,68 (830)	83,86 (2130)	2303,81 (1045)
1800T	1800TC	30.0	1062	15	66,93 (1700)	32,68 (830)	93,70 (2380)	2418,45 (1097)
2100T	2100TC	35.0	1239	18	66,93 (1700)	32,68 (830)	103,54 (2630)	2649,93 (1202)
2580T	2580TC	43.0	1522	22.5	84,65 (2150)	41,73 (1060)	98,43 (2500)	3229,74 (1465)
3300T	3300TC	55.0	1947	28.8	79,92 (2030)	39,76 (1010)	104,33 (2650)	3820,57 (1733)

** - STP standard conditions uses a temperature of 68ºF (20ºC) and an absolute pressure of 14,7 psig (1 barg)*

***Dimensions and weight are indicated excluding filters*

Example of explanation:

Adsorption air dryer — **OVA-0050 T C** — Dew point -94°F (-70°C)

Air flow capacity, m³/h — In regeneration process heat energy is used

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