MINING EQUIPMENT

EXPLOSION PROOF SCREW COMPRESSORS

PRODUCTS CATALOGUE
Vision
Apator Group – A leader in Central-Eastern Europe for metering equipment and systems, and switchgear equipment.

Mission
Our challenge is to produce high technology, managing efficiently any kind of energy. Safety of our Customers and care about the environment are determinants in our action.

Strategical objective
To establish Polish technological group based on a strong brand Apator oriented on increasing sales on foreign markets.
Apator Mining LLC

**EXISTS SINCE:**
Apator Mining LLC was established on December 7, 1995 in Katowice under the name of Apator Service LLC

**BUSINESS PROFILE:**

**PRODUCTION**
- Flame-proof contactor starters
- Flame-proof transformer units
- Explosion-proof rotary screw compressors
- Automation equipment for mining
- Solenoid releases
- Explosion-proof accessories

**SERVICES**
- Overhaul and repair of explosion-proof electrical equipment and compressors
- Screw compressor and explosion-proof electrical equipment leasing
- Completion of automation equipment for mining
- Design and technical consultancy
- Training in construction, operation and maintenance of the manufactured equipment

**CERTIFICATES:**

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**Explosion proof screw compressors** 04

- PAS-22/A
- PAS-55/A
- PAS-75/A
- PAS-90/A
- PAS-110/A
- PAS-110/A (1.2 MPa)
APPLICATION

PAS**/A type compressor units comply with the requirements of European Directive 2014/34/UE ATEX for the I group of equipment of M2 category that can be applied in underground excavations of coal mines threatened with methane and coal dust explosion. PAS**/A type compressor units can be applied in bad ventilated excavations or at considerable depths in underground coal mines where keeping good climatic conditions complying with binding regulations makes problem for ventilating services.

All groups of PAS**/A type compressor units are designated for local power supply of equipment with pneumatic drive, pipelines and air-water installations with spraying system applied in combined cutter loaders.

DESIGN

The design of PAS**/A type compressor units is based on screw compressing set. The compressor units are air cooled but in case of their location in bad ventilated places or with high ambient temperature there is the possibility to make the equipment with additional water cooled oil cooler making use of water from fire-fighting water pipeline. Compressor units are built in solid container furnished with runners and grips for any kind of means of transportation. The width of PAS**/A type compressors is maximum 1000 meters and that makes their transportation and positioning easier in coal mine gallery.

The compressors units are furnished with automated control system providing their safe operation without necessity of permanent service. The control of compressor unit is performed by use of the starter being the integral part of the equipment. The starters are furnished with protection devices against the effects of: excessive rise of temperature of winding in motor, short-circuits, overloads, current and voltage asymmetry, excessive symmetric voltage supply reduction, improper sequence of phases and excessive reduction of insulation resistance.
Compressor units are furnished with “unload/load” pumping pressure stabilization system. The construction of the system is based on application of pressure switch where upper and lower thresholds of compressed pressure of the compressor are set. The “unload/load” operation of the system includes:
- closing air inflow on suction of compressor when the upper threshold of compressed pressure is reached – passing to idle running,
- during idle running after switch off time set of drive motor of compressor when compressed pressure is not reduced below lower pressure threshold,
- opening of air inflow on suction of compressor or automated switching on of the drive motor of compressor (depending on operation) when the pressure is reduced below the lower threshold.

Moreover, compressor unit has protection devices against the effects of excessive rise of temperature of oil and compressed air, pollution of oil filter and air filter indicators, manometer for measurement of pollution of oil separators and active self-extinguishing line.

The design of the compressor units is adjusted to cooperation with information transmission system devices on operation of the compressor i.e. to the surface of the underground coal mine.

Table 1. TECHNICAL DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>PAS-22/A</th>
<th>PAS-55/A</th>
<th>PAS-75/A</th>
<th>PAS-90/A</th>
<th>PAS-110/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max pumping pressure</td>
<td>0,75 MPa</td>
<td>1,2 MPa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>3,4 m³/min</td>
<td>9 m³/min</td>
<td>12,2 m³/min</td>
<td>14,4 m³/min</td>
<td>18,1 m³/min</td>
</tr>
<tr>
<td>Supply voltage*</td>
<td>500 V, 1000 V, 50 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor power</td>
<td>22 kW</td>
<td>55 kW</td>
<td>75 kW</td>
<td>90 kW</td>
<td>110 kW</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>3 ÷ 40 °C</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Parameters of water supply system for additional water cooled oil cooler
- Max water pressure: 2.0 MPa
- Water flow: do 30 l/min

Factory settings for „unload/load“ pumping pressure stabilization system
- Pressure switch – higher threshold: 0.65 MPa
- Pressure switch – lower threshold: 0.40 MPa
- Idle running time: 60 s
- Lock up time after turn off he motor: 60 s

Compressed air network connection
- G 1 ½”
- G 2”

Dimensions (LENxWIDxHIG)
- 2000 x 760 x 900 mm
- 2300 x 1050 mm lub 1900 x 900 x 1050 mm
- 2430 x 1100 mm lub 2030 x 900 x 1100 mm
- 2550 x 1450 mm
- 2700 x 1450 mm
- 2700 x 1000 x 1450 mm
- 2700 x 1450 mm

Oil content: 3 mg/m³

Cooling: Air, air-water

Marking of the appliance
- I M2 Ex d [ia] I Mb
- I M2 c
- I M2 Ex d [ia] I Mb
- I M2 c
- I M2 Ex d [ia] I
- I M2 c
- I M2 Ex d [ia] I

Certificate number
- OBAC 11ATEX 454X
- OBAC 12 C2/ATEX 439X
- OBAC 09ATEX 426X
- OBAC 09ATEX 435X
- OBAC 09ATEX 435X

*per clients special order, there is possibility to order appliance with different supply voltage
VERSIONS

Construction of compressor units type PAS-**/A allows user to adapt the appliance to 500 or 1000 V supply voltage, via external changeovers. Per client's special order, compressor units type PAS-**/A might be optionally equipped with:

- additional oil cooler with water flow control,
- electronic water shut off valve for additional oil cooler,
- modules allowing data transmission system connection.

DIMENSIONS

**PAS-22/A**

**PAS-55/A**