

Atlas Copco Stationary air compressors

GA VSD WorkPlace Air System series - 50/60 Hz
18-90 Kw / 25-120 hp oil injected rotary screw compressors
with integrated electronic frequency converter



ENERGY SAVING
WORKPLACE
COMPRESSED AIR SYSTEM



FRENCKEN

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Atlas Copco

A compressor that cuts the cost of compressed air energy by up to 35 %. Automatically.

Innovation in compressor technology

Most production facilities show an air demand profile with fluctuations according to the hour of the day, the day of the week or the period in an economical cycle. Traditional compressors can not follow precisely the air demand.

Atlas Copco pioneered the GA Variable Speed Drive compressors, offering the capability to match perfectly compressor capacity to air demand. A GA VSD compressor is able to follow the fluctuating demand by varying the speed of its drive motor. As air demand goes down, the GA VSD lowers the delivered flow and consequently the power consumption. This is the key feature of the GA VSD compressors: They reduce the energy consumption to a minimum by avoiding completely unloaded power consumption and save up to 22% on the total life cycle cost.

Atlas Copco designed the GA VSD range according to the “WorkPlace” concept, offering the possibility to move the compressor out of the conventional compressor room to the point of use. This concept has been made possible thanks to the extremely low noise levels and the integration of the optional ancillaries such as air and condensate treatment.

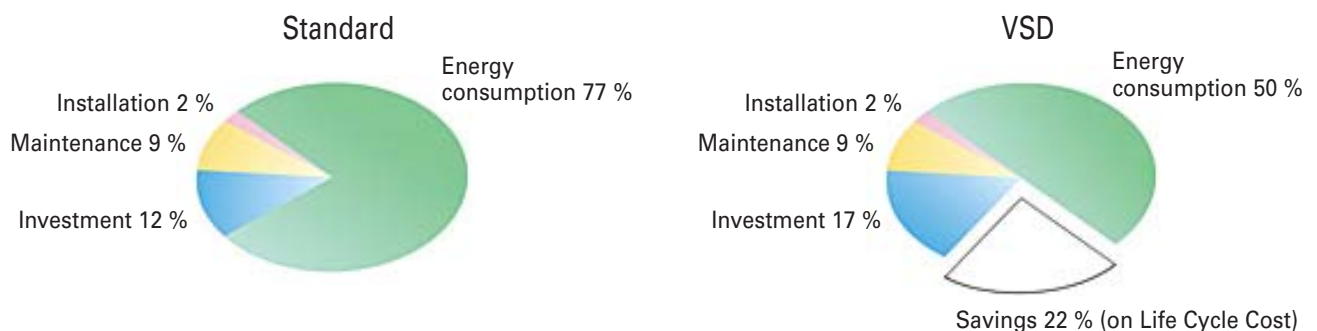
The GA 18-90 VSD units are delivered to the site equipped with oil and are ready to go. To put the compressor into operation simply connect the machine to the plant's power supply and compressed air network.

Maintaining a pipe network is cumbersome and costly. Besides the pressure drop over the pipe network, experience shows that leakages of up to 10 % of the total compressor capacity are not unusual. The “WorkPlace” concept offers the possibility to eliminate this unnecessary power consumption and save money.

The GA 18-90 VSD series are available as:

- Air- or water-cooled versions
- WorkPlace or WorkPlace Full Feature (including dryer) versions
- High ambient versions (up to 50 °C, 145 °F).

Life cycle cost comparison (LCC) over a period of 5 years.



35 % savings on energy consumption

The benefits of advanced technology.

✓ **Absolute reliability**

Designed and manufactured in accordance with ISO 9001 and ISO 14001 management system requirements, the GA 18-90 VSD range meets the industry's expectations of the highest quality standards. The GA 18-90 VSD range complies with the Electro-Magnetic Compatibility (EMC) standard. All units conform with the ISO 1217, ed.3, Annex C – 1996 test code.

✓ **Superior performance, cut energy costs with more than 35 %**

Thanks to the variable speed drive technology, air demand and compressor capacity can be perfectly matched, avoiding unloaded power consumption completely.

✓ **Very precise pressure control**

The GA VSD can keep the pressure within a ± 0.1 bar band, resulting in even more energy savings as every 0.5 bar reduction in delivery pressure reduces the power consumption with 3 %.

✓ **Pressure flexibility thanks to electronic gearing**

The GA VSD allows the user to choose any delivery pressure between 4 and 13 bar without any gears or belt to be changed.

✓ **Low maintenance costs**

The GA VSD performs a "soft" start avoiding current and torque peaks. As a result the unit can perform an unlimited number of motor starts, has less stresses and consequently wear on all mechanical components.

✓ **Outstanding electrical characteristics**

The GA VSD draws no starting current peaks and has a high power factor avoiding penalties from electricity companies.

✓ **Low noise level**

The use of a radial low speed fan and modern techniques of vibro-acoustic optimization has resulted in extremely low noise levels.

✓ **Elektronikon® control**

This advanced control, monitoring and communication system maximizes overall compressor efficiency and reliability, and minimizes maintenance costs. At the same time, all world-wide interfaces for remote control and communication are available.

✓ **Full Feature, All-in-One package**

All air and condensate treatment equipment can be integrated in the compressor package, reducing the installation cost and floor-space requirements to the absolute minimum.

✓ **Global sales and service organisation**

From concept to installation, from advice to preventive maintenance and service activities, Atlas Copco is your compressed air partner helping to maintain your production process.

GA VSD "WorkPlace" compressed air system



1. Fan

- Low speed radial fan providing a high cooling air flow at extremely low noise levels.

2. Elektronikon®

- Automatic electronic control and monitoring of the compressor optimizes the operation for efficiency and reliability.

3. Air inlet filter

- Heavy-duty, multi-stage inlet filter with particle removal down to 1 μ .
- Large element surface for long life and minimal pressure drop.

4. Oil separator

- Multi-stage oil separator yields a 2 ppm oil carry over for minimum contamination and maintenance.

5. Integrated frequency converter

High efficiency state-of-the-art frequency converter that is engineered along with the drive motor and package integration for superior reliability.

6. Integrated refrigerant dryer

- The Full Feature version includes as standard a refrigerant dryer for minimal installation cost and floor space requirement.
- The refrigerant dryer can be upgraded with optional filter kits for clean air according to ISO 8573-1 class 1 or class 2.



System: reliability, efficiency and integration

7. Coolers

- Compact coolers dimensioned to ensure ideal running temperatures under all conditions - easy to clean.

8. Compressor element

- Atlas Copco's patented screw element for optimal energy efficiency and outstanding reliability.

9. Drive arrangement

- Direct drive for optimal energy efficiency and minimal maintenance.

10. Motor

- High efficiency, totally enclosed fan-cooled (TEFC), IP55, class F electrical motor for continuous trouble-free operation.
- Designed and optimised for variable speed drive applications.
- Permanent aligned with the compressor element.



Elektronikon[®] : A superior electronic control, monitoring and communication system.

Atlas Copco's patented Elektronikon is an advanced microprocessor based, real time operating system with an ergonomic alphanumeric user interface.



Reliability

- Protects the compressor pro-actively by means of service and warning indications.
- Shuts down safely the compressor in case vital errors occur.

Energy efficiency

- Precise pressure control for optimal efficiency.

User friendliness

- Can be programmed in 2 languages out of a selection of 23 languages.
- Setting of operating parameters (password protected)
 - Working pressure
 - Warning levels
 - Service levels
 - Week timer.
- Historical and actual data read-out via the easy-to-read display
 - Working pressure, operating temperatures , number of motor starts, operating hours, service information
 - Status data during the 5 last shutdowns.

Service friendliness

- Automatic indication when service is required, minimizing downtime and simplifying maintenance planning.

Digital remote control and monitoring

- Possibility to start/stop the compressor from a remote area.
- Remote indication of automatic operation, general warning and shutdown.

Communication

- CAN connection (standard)
- ModBUS/Profibus interface (option)
- AIRmonitor interface to world wide web (option)

Compressor Room Control

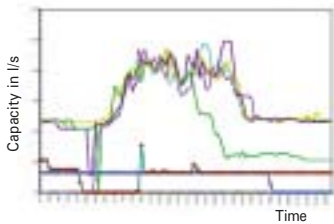
Multiple compressor installations can benefit from a centralized control system, which coordinates the operation of the individual compressors and ancillaries. From simple sequencing to complete compressor room monitoring, Atlas Copco can offer it all using the latest state-of-the-art communication technology.

GA VSD, the energy saving genius.

VSD - Savings & Pay Back

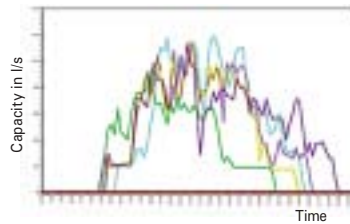
The realised savings and resultant pay back are strongly dependant upon the fluctuations in the air demand. Surveys show three typical air demand profiles.

Profile 1



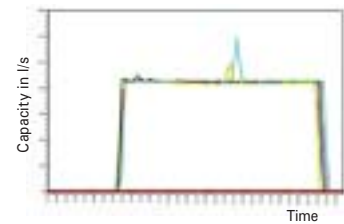
Typical 24 hrs/day operation with low night shift and high day shift consumption. Steady weekend consumption (leakages). (64 % of installations).

Profile 2

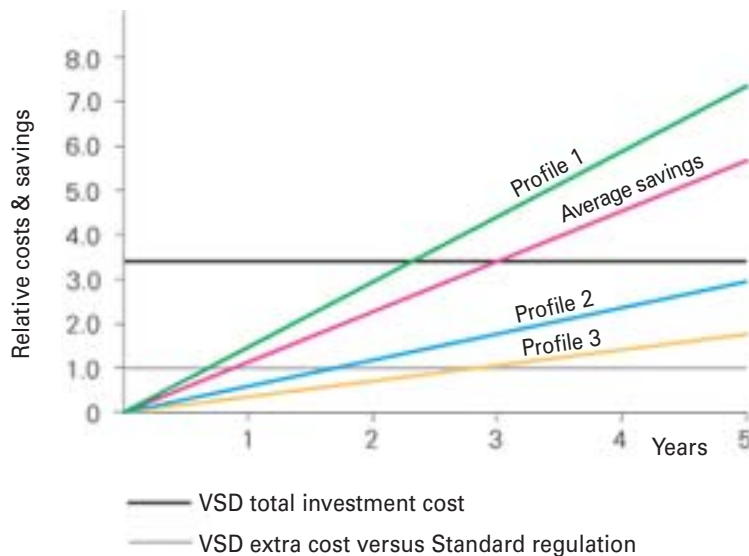


5 days/week operation, erratic demand fluctuations. (28 % of installations).

Profile 3



5 days/week operation, constant air demand. (8 % of installations).

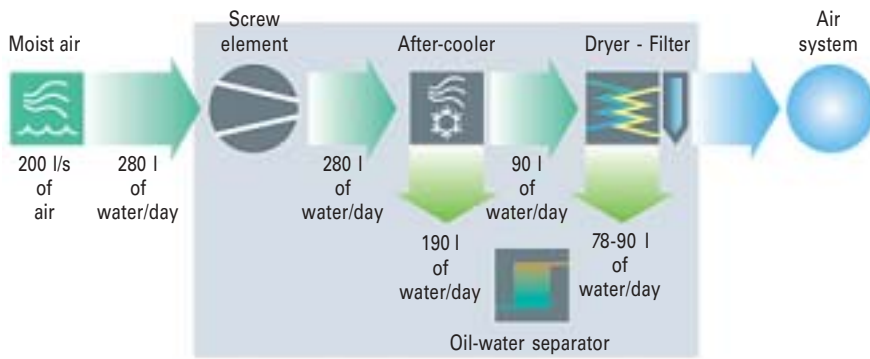


On average the extra cost of VSD compared to standard regulation will have a pay back of about 1 year thanks to realised energy savings. The complete cost of a VSD compressor is paid back within 3 years.

Atlas Copco developed a measurement box which quantifies the air demand. Based on these recordings, the implementation of a VSD compressor in an installation can be simulated by software. Future energy savings can be calculated prior to any capital investment commitment.



Optional equipment: The best value proposal.



Moisture, dirt particles and aerosols in plant air can damage pneumatic equipment and contaminate products. Dry and clean compressed air keeps production operations running smoothly. The GA 18-90VSD Full Feature units incorporate an integrated dryer using an environmental friendly refrigerant R404a. When adding the optional filter kits (DD-PD) these units will deliver dean and dry compressed air according to ISO 8573-1 class 1.4.1 or 2.4.2.



Options	GA18-30VSD	GA37-50VSD	GA75-90VSD
Class 1 filter kit (only Full Feature version)			•
Class 2 filter kit (only Full Feature version)	•	•	•
Dryer bypass	•	•	•
Oil/water separator	•	•	•
Electronic water drain	•	•	•
Oil containing frame	•	•	•
Energy recovery		•	•
Synthetic PAO oil	•	•	•
Food grade oil	•	•	•
Rain protection	•	•	•
Main motor			
Anti condensate heater			•
Thermal protection	•	••	••
Main power isolator switch	•	••	•
Special colours	•	•	•
* Cooling water solenoid valve		•	•
MODBUS interface	•	•	•
PROFIBUS interface	•	•	•
High ambient version (HAV 50 °C, 145 °F)			•

•• Standard

* Water-cooled version not available on GA37VSD

Condensate quality must meet legal requirements. The optional OSD oil-water separator raises condensate quality to surpass legal requirements, so there is no need to worry about discharging oil contaminated condensate.



Technical specifications

Compressor type 50/60 Hz	Max. working pressure				Capacity FAD ⁽¹⁾ min-max			Installed Motor power		Noise level ⁽²⁾ dB(A)	Weight (kg)	
	WorkPlace		WorkPlace Full Feature		l/s	m ³ /min	cfm	kW	hp		WorkPlace	WorkPlace Full Feature
	bar(e)	psig	bar(e)	psig								
GA18 VSD 13/175	4	58	3.75	54	20-56	1.2-3.4	42-119	18	25	67-68	509	574
	7.5	109	7.25	105	19-54	1.1-3.2	40-114					
	10	145	9.75	141	18-47	1.1-2.8	38-100					
	13	188	12.75	185	16-38	1.0-2.3	34-81					
GA30 VSD 13/175	4	58	3.75	54	20-76	1.2-4.6	42-161	30	40	70-71	519	584
	7.5	109	7.25	105	19-75	1.1-4.5	40-159					
	10	145	9.75	141	18-69	1.1-4.1	38-146					
	13	188	12.75	185	16-61	1.0-3.7	34-129					
GA37 VSD 13/175	4	58	3.75	54	26-115	1.6-6.9	55-244	37	50	67-68	1130	1255
	7.5	109	7.25	105	25-113	1.5-6.8	53-239					
	10	145	9.75	141	24-97	1.4-5.8	51-205					
	13	188	12.75	185	23-80	1.3-4.8	44-169					
GA50 VSD 13/175	4	58	3.75	54	26-151	1.6-9.1	55-320	50	67	71-74	1130	1255
	7.5	109	7.25	105	25-149	1.5-8.9	53-315					
	10	145	9.75	141	24-131	1.4-7.9	51-277					
	13	188	12.75	185	23-108	1.3-6.5	49-229					
GA75 VSD 13/175	4	58	3.75	54	39-218	2.3-13.1	83-462	75	100	70-71	1650	1800
	7.5	109	7.25	105	37-215	2.2-12.9	78-456					
	10	145	9.75	141	35-188	2.1-11.3	74-398					
	13	188	12.75	185	32-159	1.9-9.5	68-337					
GA90 VSD 13/175	4	58	3.75	54	41-271	2.5-16.3	87-574	90	120	73-74	1800	1950
	7.5	109	7.25	105	38-267	2.3-16.0	81-566					
	10	145	9.75	141	36-232	2.2-13.9	76-492					
	13	188	12.75	185	32-200	1.9-12.0	68-424					

(1) Unit performance measured according to ISO 1217, Ed 3, Annex C-1996

Reference conditions:

- absolute inlet pressure 1 bar (14.5 psi)
- intake air temperature 20°C (68°F)

At the following working pressures:

- 7 bar for working condition for max. pressure 7.5 bar
- 9.5 bar for working condition for max. pressure 10 bar
- 12.5 bar for working condition for max. pressure 13 bar

(2) Noise level measured according to Pneuop/Cagi PN8NTC2, tolerance: 2 dB(A).

(3) Inlet arrester on GA 37-50 VSD

Dimensions (mm)			
	Length	Width	Height
GA18-30 VSD	1680	650	1400
GA37-50 VSD	2113	903	1670
GA75-90 VSD	2542	1028	1949

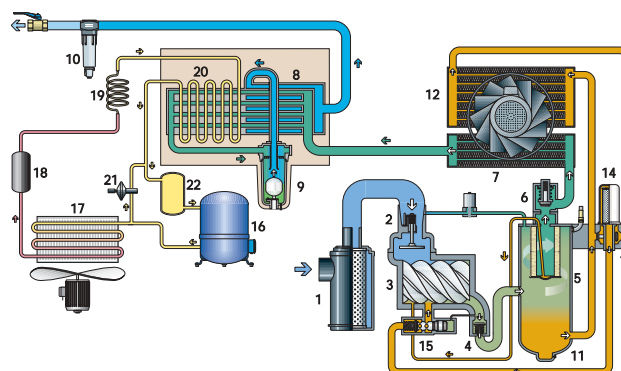
Flow diagram

Air flow

- Air intake filter
- Air intake valve *
- Compression element
- Non return valve
- Air/Oil separator vessel
- Minimum pressure valve
- After-cooler
- Air-air heat exchanger
- Water separator with drain
- DD filter (optional)

Oil flow

- Oil sump
- Oil cooler
- Thermostatic bypass valve
- Oil filter
- Oil stop valve



Refrigerant flow

- Refrigerant compressor
- Condenser
- Liquid refrigerant dryer/filter
- Capillary tube
- Evaporator
- Hot gas bypass valve
- Accumulator

Intake air	Quality dry air	Refrigerant liquid
Air/Oil mixture	Oil	Water
Wet air	Refrigerant gas	Insulation
Dry air		

* Inlet arrester on GA 37-50 VSD