

*Atlas Copco*



## Oil-free water injected screw compressors

AQ 15-55 VSD (15-55 kW / 20-75 hp)



## POWERFUL OIL-FREE AIR

When it comes to clean, oil-free compressed air, you cannot afford to compromise on quality. Over the past decades, Atlas Copco has pioneered oil-free water-injected screw technology, resulting in a broad range of compressors delivering 100% oil-free, clean air. Setting the standard through ISO 8573-1 CLASS 0 certification, the AQ meets your need for pure oil-free air while offering best in class energy efficiency.



### Zero risk of contamination

Whether your activities are in pharmaceutical production, food & beverage, critical electronics or in a similarly exacting industry, air quality is paramount for your end product and production process. Atlas Copco's AQ oil-free compressors eliminate the risks of oil contamination.

### Reduced energy costs

With energy amounting to over 70% of a compressor's lifecycle costs (LCC), its importance is clear. The most efficient compressed air solution optimizes the pressure, volume and air treatment equipment for each production process. Atlas Copco's AQ compressors provide you with the ultimate all-in-one package to reduce your electricity bill to a minimum.

### Renowned expertise

Drawing on vast experience and continuous technological innovations, Atlas Copco has been leading the industry in oil-free compressed air technology for over sixty years. With the protection of your application in mind, Atlas Copco has designed its AQ range to offer the superb 100% oil-free quality air you are in need of.



# ENGINEERED TO MEET YOUR NEEDS

At Atlas Copco we aim to provide you with compressors that fulfill and even exceed your expectations and demands. Built as the result of decades of experience in oil-free design and manufacturing, the AQ range of oil-free screw compressors gives you all of this experience and knowledge in a class leading package.

1

## Water-injected screw element

- Highly energy-efficient thanks to low temperatures.
- Water-lubricated, grease-free bearings.
- In-house design and manufacturing.
- Working pressure up to 13 bar.

2

## Water filter

- Ensuring a constant supply of clean water.
- The filtration capability equals 10 micron throughout the filter's lifetime.

3

## Heavy-duty air filter

- Protects the compressor components by removing 99.9% of dirt particles down to 3 microns.
- Differential inlet pressure for proactive maintenance while minimizing pressure drop.

4

## Separator vessel

- Stainless steel water separator vessel for separation via centrifugal and gravity forces.
- Three sensors included for precise water regulation.



5

## Induction motor

- IP55 induction motor, flange-mounted for perfect alignment.
- Combined with direct driven arrangement for superior energy efficiency.



6

## Reverse osmosis system

The built-in reverse osmosis system provides a reliable supply of high quality water, ensuring autonomy and continuous operation.

7

## Air-cooled fan and water-cooler

- Air and water-cooled variants are available throughout the range.
- Small footprint and installation thanks to built-in heat exchangers.
- Water-cooled units provide a continuous air temperature at the dryer inlet of less than 55°C (131°F).

8

## Integrated highly efficient dryer

- Excellence in air quality.
- 50% reduction in energy consumption compared to traditional dryers.
- Zero ozone depletion.



9

## Elektronikon® Graphic

Advanced Elektronikon® Graphic control and monitoring system, designed for integration in a (remote) process control system.

10

## Sound insulated canopy

No separate compressor room is required as the sound insulated canopy allows for installation in most working environments.

11

## Electronic no-loss water drain

- Ensures constant removal of condensate.
- Manual integrated bypass for effective condensate removal in case of power failure.
- Integrated with compressor's Elektronikon® with warning/alarm features.



# PROVEN TECHNOLOGY

At the heart of the new AQ range is a unique water-injected screw element working highly efficient near isothermal compression. The polymer ceramic rotors with their optimized rotor profile are supported by water-lubricated bearings, ensuring that no oil whatsoever can contaminate the compression element, thereby producing pure oil-free air.

## Rotors

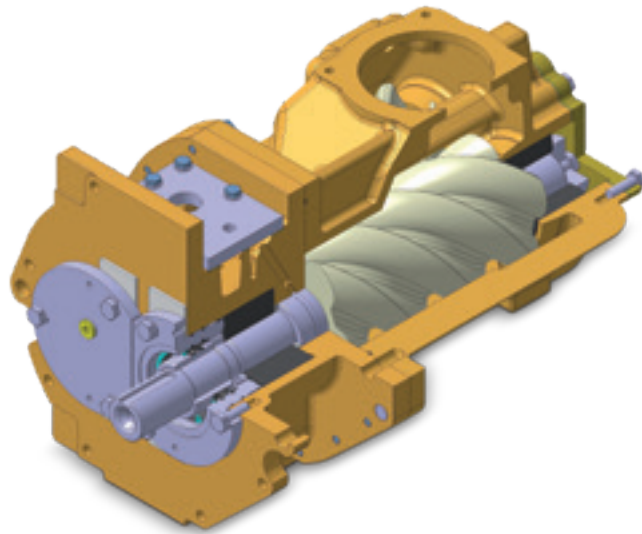
A highly efficient compression process is achieved thanks to high quality polymer mould ceramic rotors with optimum profiling. The combination of corrosion-free, high efficiency raw material and water lubrication results in a longer lifespan.

## Element housing

Strength and durability are ensured as a result of the aluminium bronze element housing without risk of corrosion within the element.

## Element bearings

The use of hydrodynamic bearings ensure long life as no physical contact is made within the bearing itself, it simply glides on a film of water removing the need for any oil or grease lubrication.



# EXCEPTIONAL VERSATILITY

Contrary to traditional compressor set-ups, Atlas Copco's AQ WorkPlace Air System compressors effortlessly fit onto your work floor. With their compact footprint and integration of air treatment equipment, AQ compressors ensure optimum efficiency and reliability. Designed to give the most versatile source of compressed air, they provide you with an all-in-one package that will have your production running smoothly for years to come.



## Oil-injected screw compressor set-up

- 1 High pressure drop across the system.
- 2 External filtration equipment/stand-alone dryer and condensate management.
- 3 Elaborate and costly piping system.
- 4 Multiple connections and air leaks.
- 5 Multiple monitoring points.

## Oil-free and WorkPlace Air System™

- 1 Minimum system pressure drop.
- 2 Integrated refrigerant dryer.
- 3 Reduced piping costs.
- 4 Single point connections.
- 5 Single point monitoring.

### High noise operation

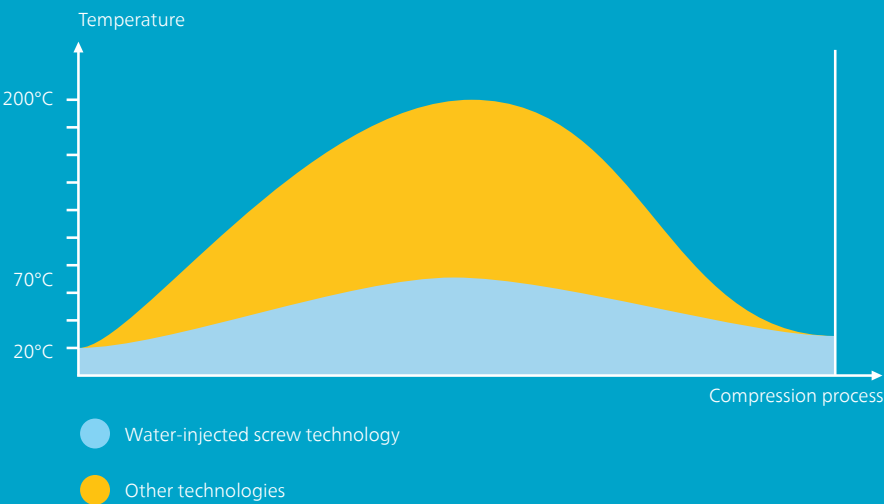
- ↳ Separate compressor room
- ↳ Raised installation & energy costs

### Low noise operation

- ↳ No need for dedicated compressor room
- ↳ Minimized installation costs

## Water-injected screw compression efficiency

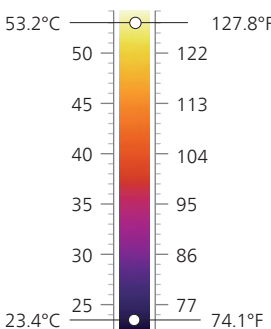
The superior cooling capability of water ensures that the heat is removed efficiently at the source. Removing the wasted energy that heat represents gives more air per kW of power. The low temperature of the compressed air reduces the stress on components ensuring long life.



## Superior water-injected screw element

- Increased free air delivery.
- Low specific energy consumption.
- Near isothermal compression process.
- Pressure ratings of 7, 10 and 13 bar.

The highly effective cooling capabilities of water combined with precision engineering ensure the supreme energy efficiency of the AQ compressors.



# ISO 8573-1 CLASS 0

## ATLAS COPCO SETS A NEW INDUSTRY STANDARD

When it comes to clean, oil-free compressed air for your critical processes, you can't afford to compromise. Atlas Copco, a pioneer in oil-free air screw technology, is known for its range of water-injected compressors designed especially for applications that require oil-free air. Now Atlas Copco has achieved a new milestone: setting the standard for air purity as the first manufacturer to be certified ISO 8573-1 CLASS 0.

### Why a new class?

Industries such as pharmaceuticals, food and beverages, electronics and textiles must exclude any risk of contamination. Otherwise severe consequences could follow: spoiled or unsafe products, production downtime and damage to both brand and reputation. To address the needs of critical applications where air purity is essential, the ISO 8573-1 compressed air standard was revised in 2001. Along with a more comprehensive measuring methodology, a new and more stringent class was added to the five existing purity classes: ISO 8573-1 CLASS 0.

### First to achieve ISO 8573-1 CLASS 0

As the industry leader committed to meeting the needs of the most demanding customers, Atlas Copco requested the renowned TÜV institute to type-test its AQ range of oil-free water-injected screw compressors. Using the most rigorous testing methodologies available, all possible oil forms were measured across a range of temperatures and pressures. The TÜV found no traces of oil at all in the output air stream. Thus Atlas Copco not only became the first compressor manufacturer to receive CLASS 0 certification, but also exceeded ISO 8573-1 CLASS 0 specifications.

### Atlas Copco eliminates any risk

Only oil-free compressors deliver oil-free air. Whether your activities are in pharmaceutical production, food processing, critical electronics or a similarly exacting industry, it is essential to eliminate risk. That's why you need an Atlas Copco risk-free solution: oil-free screw compressors especially for applications demanding the highest levels of purity. Zero oil means zero risk. Zero risk of contamination. Zero risk of damaged or unsafe products. Zero risk of losses from operational downtime. Above all, zero oil means zero risk of ruining your hard-won reputation.

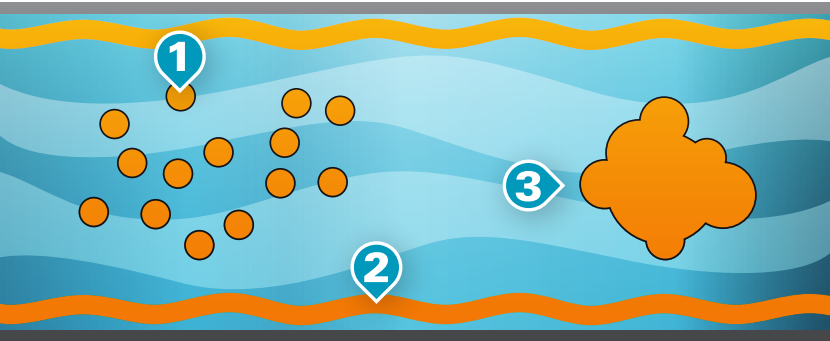
CLASS	Concentration total oil (aerosol, liquid, vapor) mg/m <sup>3</sup>
0	As specified by the equipment user or supplier and more stringent than class 1
1	< 0.01
2	< 0.1
3	< 1
4	< 5

Current ISO 8573-1 (2010) classes (the five main classes and the associated maximum concentration in total oil content).



### The most stringent air purity testing available

Most manufacturers prefer "partial flow" testing, which targets only the center of the air flow. The Atlas Copco AQ range of oil-free water-injected screw compressors was tested using the more stringent "full flow" method. This examines the entire air flow to measure aerosols, vapors and wall flow. Even with such rigorous testing, no traces of oil were found in the output air stream.



- 1 Aerosols  
Minute droplets of oil suspended in the air stream
- 2 Wall flow  
Oil in liquid form, which creeps along the pipe wall
- 3 Vapors or oil mist  
Vaporized oil in a cloud form



### Can oil-injected compressors with oil removal filters deliver oil-free air?

Often referred to as "technically oil-free air", this system relies on air cooling devices and several stages of oil removal with multiple components. A failure of any of these components or inadequate maintenance can result in oil contamination of a process. Therefore, with oil-injected compressors there will always be a risk of contamination and the possibility of severe consequences for your business.

TÜV (Technische Überwachungsverein/Technical Monitoring Association) reporting on the Atlas Copco AQ range of oil-free water-injected screw compressors.

Move up to a risk-free standard.  
Visit [www.classzero.com](http://www.classzero.com)

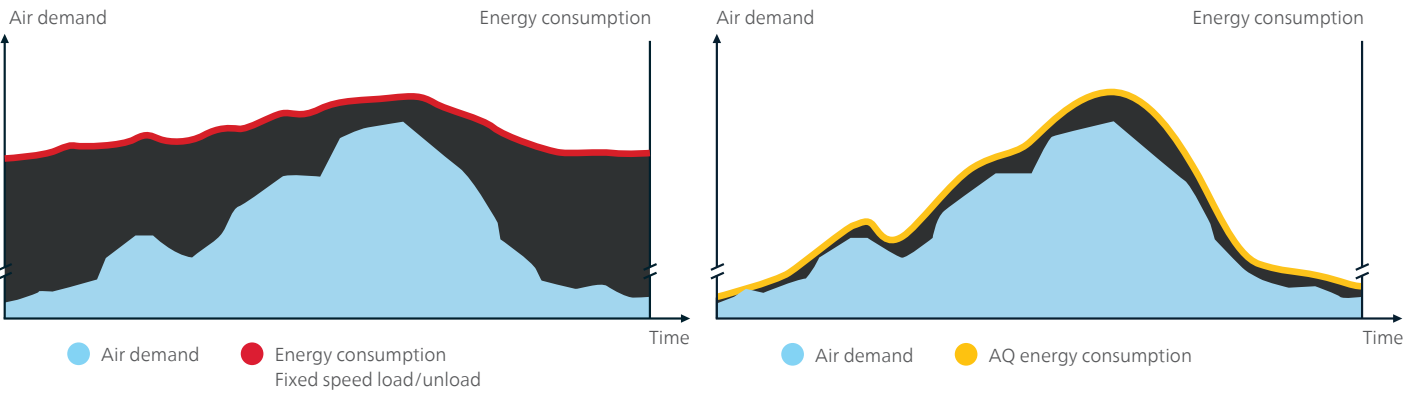


# VSD: DRIVING DOWN YOUR ENERGY COSTS

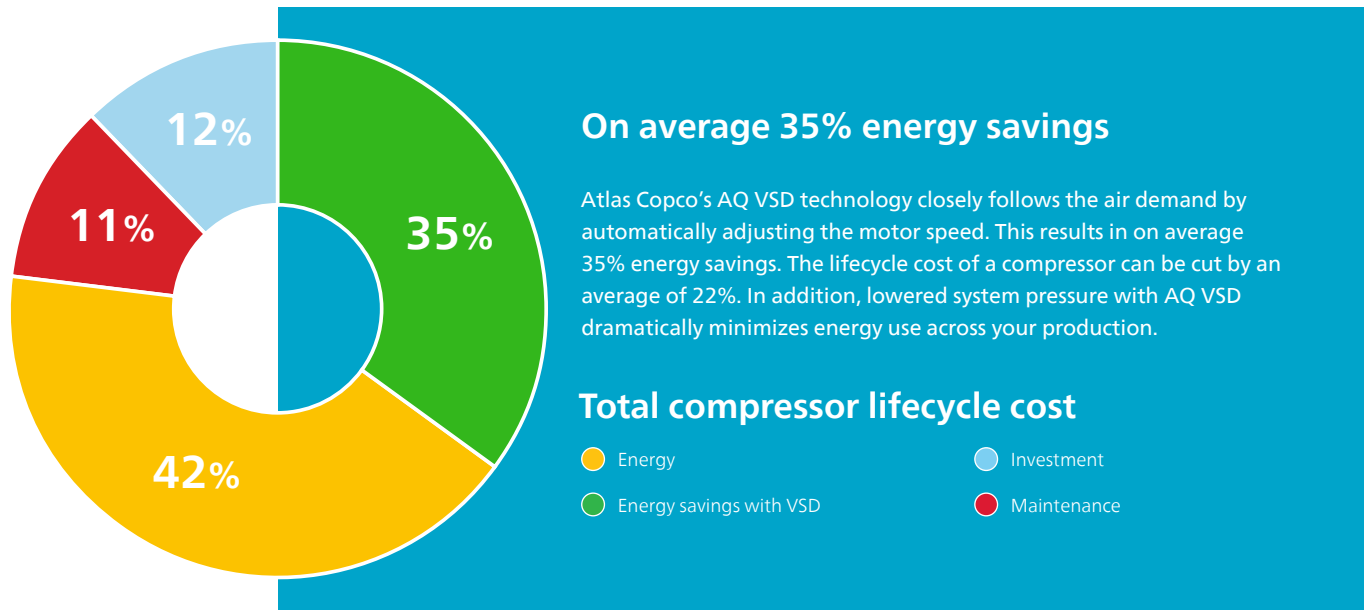
Over 80% of a compressor’s lifecycle cost is taken up by the energy it consumes. Moreover, the generation of compressed air can account for more than 40% of a plant’s total electricity bill. To cut your energy costs, Atlas Copco pioneered Variable Speed Drive (VSD) technology in the compressed air industry. VSD leads to major energy savings, while protecting the environment for future generations. Thanks to continual investments in this technology, Atlas Copco offers the widest range of integrated VSD compressors on the market.

## Why Atlas Copco Variable Speed Drive technology?

- On average 35% energy savings during fluctuations in production demand with an extensive turndown range.
- Integrated Elektronikon Graphic controller controls the motor speed and high efficiency frequency inverter.
- No wasted idling times or blow-off losses in normal operation.
- Compressor can start/stop under full system pressure without the need to unload with special VSD motor.
- Eliminates peak current penalty during start-up.
- Minimizes system leakage due to a lower system pressure.
- EMC Compliance to directives (2004/108/EG).

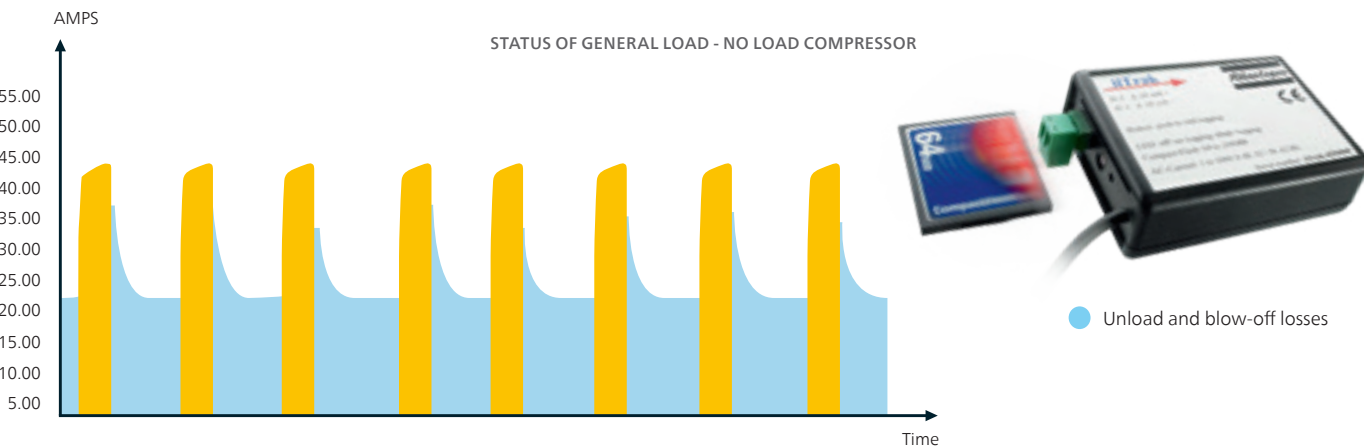


In almost every production environment, air demand fluctuates depending on different factors such as the time of the day, week or even month. Extensive measurements and studies of compressed air demand profiles show that many compressors have substantial variations in air demand. Only 8% of all installations have a more stable air demand.



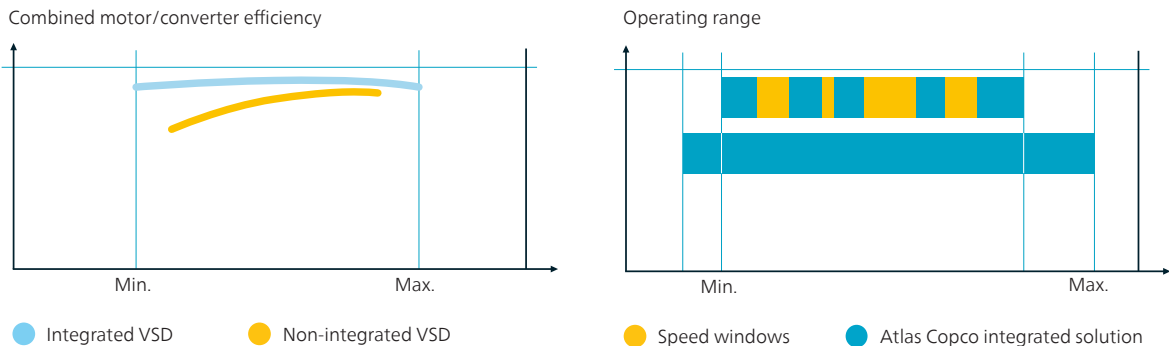
## How VSD technology saves energy

Contact your local Atlas Copco representative for an audit of your compressed air system. A real-time measurement simulation and audit report can be provided with recommendations for additional savings and sizing to meet your compressed air needs.



## What is unique about the integrated Atlas Copco AQ VSD?

- 1** The Elektronikon® controls both the compressor and the integrated converter, ensuring maximum machine safety within parameters.
- 2** Flexible pressure selection from 4 to 13 bar with electronic gearing reduces electricity costs.
- 3** Special electric motor specifically designed for VSD operation (inverter duty motor). Bearings are protected against induced bearing currents. Both motor and converter are perfectly tuned for highest efficiency across the entire speed range.
- 4** Electric motor specifically designed for low operating speeds with clear attention to motor cooling and compressor cooling requirements.
- 5** All Atlas Copco AQ VSD compressors are EMC tested and certified. External sources do not influence compressor operation, nor does the compressor affect the operation of other instruments via emissions or via the power supply line.
- 6** Mechanical enhancements ensure that all components operate below critical vibration levels throughout the entire compressor speed range.
- 7** A highly efficient frequency converter in a cool overpressure cubicle ensures stable operation.
- 8** No ‘speed windows’ that can jeopardize the energy savings and the stable net pressure. Turndown capability of the compressor is maximized.
- 9** The cubicle cooling booster increases the lifetime of electrical components due to a cool cubicle in overpressure and reduced dust ingress.
- 10** Offering precise control over pressure, net pressure band is maintained within 0.10 bar, 1.5 psi.



# A STEP AHEAD IN MONITORING AND CONTROLS

The next-generation Elektronikon® operating system offers a wide variety of control and monitoring features that allow you to increase your compressor’s efficiency and reliability. To maximize energy efficiency, the Elektronikon® controls the main drive motor and regulates system pressure within a predefined and narrow pressure band.



## Improved user-friendliness

- 3.5-inch high-definition color display with clear pictograms and extra 4th LED indicator for service.
- Graphical display of key parameters (day, week, month) and 32 language settings.
- Internet-based compressor visualization using a simple Ethernet connection.
- On-screen Delayed Second Stop function and VSD savings indication.
- Graphical indication Serviceplan, remote control and connectivity functions.
- Software upgrade available to control up to 6 compressors by installing the optional integrated compressor controller.



## Optional integrated compressor controller

Install, with a simple license, the optional integrated compressor controller and get simple, central control to reduce system pressure and energy consumption in installations of up to 4 (ES4i) or 6 (ES6i) compressors.

# EXCELLENCE IN INTEGRATED AIR QUALITY

Untreated compressed air contains moisture and aerosols which increase the risk of corrosion and compressed air system leaks. This can result in a damaged air system and contaminated end product. Maintenance costs can far exceed air treatment costs. Our compressors provide the clean, dry air that improves your system’s reliability, avoids costly downtime and production delays, and safeguards the quality of your products.

## Save money and the environment

Avoid risk of corrosion and system leaks, and ensure the effective safe disposal of untreated condensate – all within ISO 14001 standards.



## On average 50% energy savings with newly designed integrated dryers

- Pressure dew point of 3°C (100% relative humidity at 20°C).
- Heat exchanger cross-flow technology with low pressure drop.
- Zero waste of compressed air thanks to no-loss condensate drain.
- Reduced operating costs.
- Environmentally-friendly characteristics; zero ozone depletion.
- Global warming potential has been reduced significantly by an average of 50% by reducing the amount of refrigerant in the new dryer.



## SMARTLINK\*: Data Monitoring Program

- Remote monitoring system that helps you optimize your compressed air system and save energy and costs.
- Provides a complete insight in your compressed air network.
- Anticipates on potential problems by warning you up-front.

\* Please contact your local sales representative for more information.

OPTIMIZE YOUR SYSTEM

Some applications may need or may benefit from additional options and more refined control/air treatment systems. To meet these needs, Atlas Copco has developed options and easily integrated compatible equipment.

		AQ 15-30 VSD	AQ 37-55 VSD
Air treatment	Integrated refrigerant dryer	•	•
	Thermistors & anti-condensation heaters	-	•
Extra protection	Water shut off valve**	•	•
	Main power isolator switch	•	•
Connectivity	Elektronikon® Graphic Plus	•	-
	ES4i	•	•
	ES6i	•	•
	IT ancillaries	•	•
	SMARTLINK	•	✓
General options	Booster pump for RO system	•	•
	Flanged inlet	•	•
	Alarm horn	-	•
	Anchor pads	•	•
	Performance test report	•	•

\* FF units only.  
\*\* Water-cooled units only.

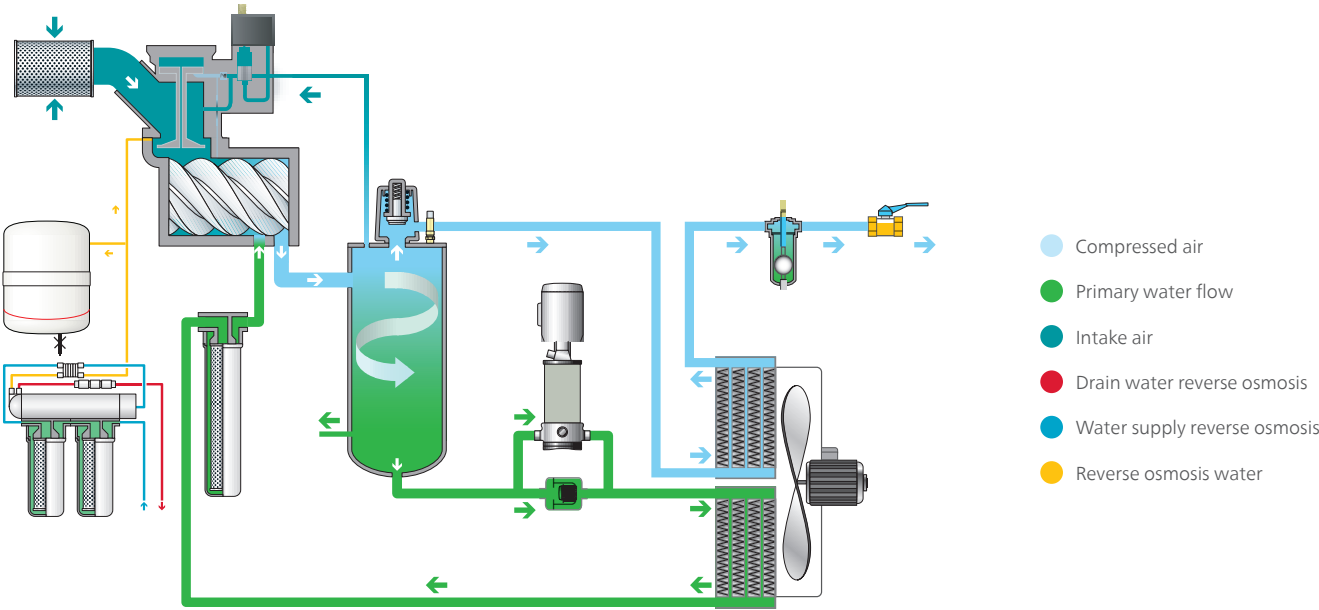
✓ : Standard    • : Optional    - : Not available

TECHNICAL SPECIFICATIONS  
AQ 15-55 VSD (50/60 Hz versions)

COMPRESSOR TYPE	Max. working pressure (bar(e)/psig)		Capacity FAD¹			Installed motor power		Noise level²	Weight (kg/lbs)	
	Pack	Full Feature	l/s	m³/min	cfm	kW	hp	dB(A)	Pack	Full Feature
Air-cooled										
AQ 15 VSD	13/188	12.75/185	22-47	1.3-2.8	47-100	15	20	67	650 / 1433	700 / 1543
AQ 18 VSD	13/188	12.75/185	22-54	1.3-3.2	47-114	18	25	69	650 / 1433	700 / 1543
AQ 22 VSD	13/188	12.75/185	22-66	1.3-4.0	47-140	22	30	70	740 / 1631	800 / 1764
AQ 30 VSD	13/188	12.75/185	22-83	1.3-5.0	47-176	30	40	72	740 / 1631	810 / 1786
AQ 37 VSD	13/188	12.75/185	43-105	2.6-6.3	93-223	37	50	69	1195 / 2635	1306 / 2879
AQ 55 VSD	13/188	12.75/185	43-147	2.6-8.8	93-311	55	75	72	1195 / 2635	1314 / 2897
Water-cooled										
AQ 15 VSD	13/188	12.75/185	22-47	1.3-2.8	47-100	15	20	67	542 / 1195	592 / 1305
AQ 18 VSD	13/188	12.75/185	22-54	1.3-3.2	47-114	18	25	69	542 / 1195	592 / 1305
AQ 22 VSD	13/188	12.75/185	22-66	1.3-4.0	47-140	22	30	70	632 / 1393	692 / 1526
AQ 30 VSD	13/188	12.75/185	22-83	1.3-5.0	47-176	30	40	72	632 / 1393	702 / 1548
AQ 37 VSD	13/188	12.75/185	42-108	2.5-6.5	89-229	37	50	66	1090 / 2403	1201 / 2648
AQ 55 VSD	13/188	12.75/185	42-155	2.5-9.3	90-328	55	75	69	1090 / 2403	1209 / 2665

(1) Unit performance measured according to ISO1217 Annex E, Edition 4, 2009.  
(2) Mean sound pressure level according to ISO2151, uncertainty 3 dB(A).

Flow diagram AQ air-cooled pack



AQ 15-30 VSD

AQ 37-55 VSD

Height: 1500 mm, 59.1"

Depth: 974 mm, 38.5"

Width: 1976 mm, 77.4"

Height: 1840 mm, 72"

Depth: 965 mm, 40"

Width: 2435 mm, 96"

The image shows the physical unit of the AQ air-cooled pack. It is a large, industrial-grade machine with a grey and blue color scheme. The dimensions are indicated: H for height, D for depth, and W for width. The unit features a large blue 'A' logo and the text 'Oil-free air'.





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