ATLAS COPCO
VACUUM SOLUTIONS

TABLE OF CONTENTS

ATLAS COPCO VACUUM SOLUTIONS

Vacuum is critical in a wide variety of applications – and the need for vacuum continues to grow. Atlas Copco has been developing state-of-the-art vacuum solutions for over 20 years. We have a market-leading status in the ongoing innovation of gas compression techniques such as screw, claw and scroll. Our vacuum specialists are constantly improving the performance of our products, targeting new application areas and meeting new challenges.

THE RELIABILITY YOU NEED

When it comes to the provision of vacuum to your critical processes, you cannot afford to compromise. Whether your activities are in printing, plastics, packaging, woodworking, bottling, canning or similar exacting industries, it is essential to eliminate risk. Atlas Copco is known for its range of highly reliable vacuum solutions, designed especially for applications that require consistent and efficient vacuum creation.

HIGH PRODUCTIVITY AND LOW TOTAL COST OF OWNERSHIP

Atlas Copco Vacuum Solutions, based in Crawley, UK is a division within Atlas Copco's Compressor Technique business area. It develops, manufactures and markets vacuum pumps, abatement systems, valves and related service products mainly under the Edwards, Quincy and Atlas Copco brands. The main market segments served are semiconductor, flat panel display, solar, scientific and utility vacuum. The division's focus and main drive is on developing and marketing a wide portfolio of vacuum pumps that consistently help our customers become more efficient by lowering the cost of ownership, increasing sustainable productivity and enhancing final product quality.

CENTRALIZED VACUUM; MULTIPLE BENEFITS

We specialize in complete centralized vacuum systems, which provide benefits such as:

- Remote monitoring, enabling you to keep an eye on the system's performance anywhere, anytime over the Internet.
- Powering multiple machines simultaneously.
- More floor space available in your production area.
- Less noise in your production area.
- Less heat in your production area, allowing for energy savings when the production area needs to be cooled.
- Easier maintenance.
- Reduced risk of oil contamination.

A SOLUTION FOR EVERY APPLICATION

Many industries rely on a steady supply of vacuum for their production. From powering conveyor belts to packing finished products, vacuum is everywhere in production halls all around the world. Also medical facilities, workshops and engineering laboratories have various applications that run on vacuum. Whatever your application, we can provide a vacuum solution.

What's your vacuum?

One of the first questions you have to consider is the type of vacuum you need. The vacuum market can be divided into two segments – rough and fine. These two areas of vacuum are very different; they utilize different technologies, products and solutions, and often serve different markets, although there are some overlaps.

The rough vacuum segment is characterized by vacuums from atmosphere down to 1 mbar. Atlas Copco operates in this segment under its Utility Vacuum business unit and its Atlas Copco and Quincy brands.

The fine vacuum segment is further divided into:

- Medium vacuum: from 1 mbar down to 10^{-3} mbar. Here we provide vacuum solutions under the Edwards and Atlas Copco brand names.
- High vacuum: 10^{-3} to 10^{-9} mbar. We provide solutions for this segment under the Edwards brand name.

UTILITY VACUUM APPLICATIONS

Below are some of the most common utility vacuum applications. Most of these applications require a pressure limit around 1 – 0.1 mbar (hPa) and demand vacuum and compressed air simultaneously in the machine. Some applications also use nitrogen and oxygen in the process. In this case Atlas Copco's NGP and OGP products are recommended.

- Packaging:
  - o Food processing: general packaging, cheese processing, vacuum cooling of produce.
  - o Meat packing: fresh and cooked meat, poultry, modified atmosphere packaging, tumbling, filling and sealing.
- Woodworking: CNC cutting and routing, loading and unloading systems.
- Rubber and plastics: thermoforming applications, extruder barrel degassing, mold degassing, material handling.
- R&D systems: central laboratory vacuum.
- Electronics: pick and place components, PCB manufacture, central vacuum systems.
- Material handling: vacuum lifting, pick and place, bulk material transfer, pneumatic conveying, bottling, canning, vacuum sewage.
- Paper and printing: presses (sheet fed, offset, etc.), bindery equipment including stitching lines and perfect binding, newspaper production, envelope machines.
- Medical and surgical vacuum: chest/lung drainage, removal of excess blood during surgery, collection of bodily fluids, gastric emptying, liposuction etc.
- Ceramics and brick-making: handling and extruding.
- Environmental: ground remediation etc.

Fine vacuum applications

Also known as scientific vacuum, for this segment we provide highly innovative, robust and reliable vacuum pumps for applications such as semiconductor manufacturing, analytics, R&D labs, and thin film coatings.

Choose your configuration

Many of our vacuum solutions come in various configurations to match your specific application requirements.

Our **standard** machines focus on delivering the exact performance you demand, at the minimum possible lifecycle cost. They are ideal for applications where you need to maintain a set vacuum level (a set point).

Our **humid** versions are configured for high water vapor tolerance and are thus suitable for high water content duties. Applications include plastics, clay molding, drying pipelines, salad cooling, freeze drying etc.

Our **turbo** models are fast evacuation versions which enable faster cycle times – meaning more production. They are ideal for meat, cheese and chicken packaging, as well as cooling, freeze drying and general vessel evacuation applications.

1. OIL-SEALED ROTARY SCREW VACUUM PUMPS

1.1 GHS VSD+ SERIES

Innovative, intelligent vacuum pumps

The GHS VSD+ Series is a range of new-generation, intelligent, oil-sealed rotary screw vacuum pumps with Variable Speed Drive (VSD) technology from Atlas Copco. Based on the well-known and durable plug-and-play design principles of Atlas Copco compressors, these vacuum pumps have been designed by vacuum engineers to deliver peak performance at your operating pressure. These unique products offer:

- Superior performance against benchmarked oil-sealed and dry vane vacuum pump technologies.
- Increased efficiency – State-of-the-art screw technology, Variable Speed Drive (VSD) and innovative motor design combine to produce a leap forward in efficiency.
- Quiet operation – Noise levels are around half that of comparable technologies.
- Sustainable productivity thanks to built-in efficiency.
- Reduced environmental impact due to ultra-high oil retention at all operating pressures.

TECHNICAL SPECIFICATIONS GHS VSD+

MODEL	Nominal displacement		Ultimate pressure	Oil quantity		Noise level range	Permissable ambient temperature range		Gross weight	Inlet connection size	Outlet connection size	Shaft power	
	m³/hr	cfm	mbar(a)	litres	Gallons	dB(A)	°C	°F	kg/lbs			kW	hp
GHS 350 VSD+	390	230	0.35	16	4.2	51-65	0 to 46	32 to 115	550/1210	DN80 (PN6)	2 1/2" bsp	5.5	7.5
GHS 585 VSD+	560	330	0.35	16	4.2	51-68	0 to 46	32 to 115	550/1210	DN80 (PN6)	2 1/2" bsp	7.5	10
GHS 730 VSD+	730	430	0.35	16	4.2	51-73	0 to 46	32 to 115	560/1232	DN80 (PN6)	2 1/2" bsp	11	15
GHS 900 VSD+	870	510	0.35	16	4.2	51-76	0 to 46	32 to 115	570/1255	DN80 (PN6)	2 1/2" bsp	15	20

ISO21360-2:2012
Multiple pump controllers and other essential vacuum accessories are available as options or accessories.
Electrical/canopy specification: 380/460V 50/60Hz IP54 canopy CSA/UL.
220V/575V are available on request.
Available oils include mineral, synthetic and food grade.

1. OIL-SEALED ROTARY SCREW VACUUM PUMPS

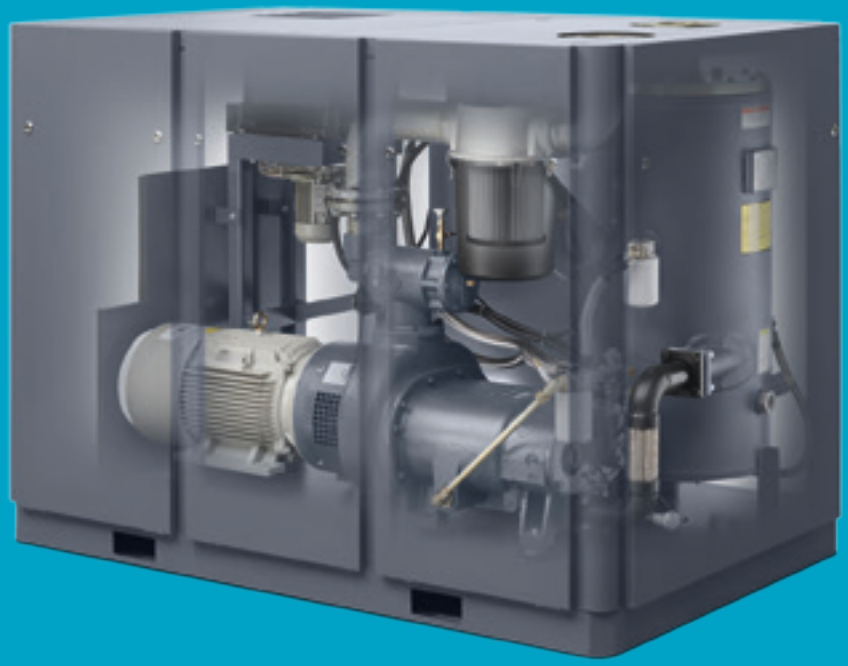
1.2 GHS 1000-4800

863-5734 m³/h, 508-3377 cfm

Reliable general vacuum for critical applications

Atlas Copco, the industry leader in compressed air solutions, has transferred its highly efficient and ultra-reliable screw compression technology to vacuum applications. The result is the GHS 1000-4800 series of oil-sealed rotary screw vacuum pumps. Providing around 5,000 m³/h of vacuum pumping performance across six models, the GHS series is ideal for critical applications in printing, electronics, plastics, packaging, woodworking, bottling, canning and similar exacting industries.

- Combining a technologically advanced screw design with robust and highly regarded oil-sealed rotary technology.
- Inherent reliability, optimal efficiency and life cycle costs.
- Available ready for use, with all the options you need, supported by the best know-how.



TECHNICAL SPECIFICATIONS GHS 1000-4800

MODEL	Maximum shaft power				Pumping speed		Ultimate pressure		Inlet connector	Dimensions (L x W x H)	Weight	
	Air-cooled		Water-cooled									
	kW	hp	kW	hp	m³/h	cfm	mbar (hPa)	torr		mm	kg	lbs
50 Hz version												
GHS 1000	20.4	27.4	20.2	27.1	863	508	0.7	0.5	DN100	2040 x 1280 x 1480	1105	2430
GHS 1200	30.8	41.3	30.5	40.9	1126	663	0.7	0.5	DN125	2040 x 1280 x 1480	1105	2430
GHS 1600	41.4	55.5	39.8	53.4	1601	942	0.7	0.5	DN125	2560 x 1710 x 1970	1805	3970
GHS 2500	58.2	78.1	56.5	75,8	2432	1432	0.7	0.5	DN200	2560 x 1710 x 1970	2860	6290
GHS 4800	118.5	159.9	115.8	155.3	4778	2814	0.7	0.5	DN200	2990 x 1990 x 2000	3680	8100
60 Hz version												
GHS 1000	22.1	29.6	21.7	29.1	1036	610	0.7	0.5	DN100	2040 x 1280 x 1480	1115	2450
GHS 1200	37.4	50.1	36.0	48.3	1351	796	0.7	0.5	DN125	2040 x 1280 x 1480	1130	2480
GHS 1600	49.5	66.4	48.6	65.2	1921	1131	0.7	0.5	DN125	2560 x 1710 x 1970	1820	4000
GHS 2500	69.1	92.7	67.5	90.5	2918	1719	0.7	0.5	DN200	2560 x 1710 x 1970	2885	6350
GHS 4800	142.6	191.2	140.3	188.2	5734	3377	0.7	0.5	DN200	2990 x 1990 x 2000	3680	8100

2. OIL-SEALED ROTARY VANE VACUUM PUMPS

2.1 GVD 0.7-28 SERIES

0.7-27.5 m³/hr @ 50 hz - 0.5-19.5 cfm @ 60 Hz

The GVD series of small oil-sealed rotary vane pumps deliver excellent ultimate vacuum pressure, high pumping speeds and superior vapor handling capabilities with quiet operation. With over 200,000 units sold, these pumps offer proven performance that sets the industry standard for R&D and scientific pumping applications. All pumps/motors are approved to UL and CSA standards by an external test house and feature our patented mode selector switch, meaning one model is suitable for both high vacuum or high throughput applications. In summary, you can rest assured that when you choose an Atlas Copco GVD 2 stage oil-sealed rotary vane pump you are choosing a product you can rely on from a company you can trust.

- Ultra quiet operation and intrusive frequencies minimized.
- Easy-to-use gas ballast.
- Fast acting anti suck back system protection.
- High torque, 1-phase and 3-phase multi-voltage and 50/60 Hz motors available.
- Efficient high pressure lubrication.
- Oil-tight with printed gaskets, effective shaft seals.
- Clamped-in sight glass.
- Oil box well contains filling spills.
- Hi-tech polymer blades, large diameter, easy-clean oil passages.
- Consistent, built-in quality.
- Wide variety of accessories is available.

TECHNICAL SPECIFICATIONS

PUMP TYPE	Pumping speed*		Ultimate pressure		Motor power		Overall dimensions			Noise level
			Gas ballast closed		1-ph**		D	W	H	At 50 Hz
	m^3/hr	cfm	mbar	Torr	50 Hz (W)	60 Hz (W)	mm	mm	mm	dB(A)
GVD 0.7	0.75/0.95	0.4/0.5	3.0×10^{-3}	2.3×10^{-3}	90	90	151	324	178	43
GVD 1.5	1.6/2.0	0.8/1.2	3.0×10^{-3}	2.3×10^{-3}	160	160	151	324	178	54
GVD 3	3.3/3.9	2/2.3	2.0×10^{-3}	1.5×10^{-3}	450	550	170/158**	430	229	48
GVD 5	5.1/6.2	3.0/3.7	2.0×10^{-3}	1.5×10^{-3}	450	550	170/158**	430	229	48
GVD 8	8.5/10	5/5.9	2.0×10^{-3}	1.5×10^{-3}	450	550	180/158**	470/469**	265	48
GVD 12	12/14.2	7.1/8.4	2.0×10^{-3}	1.5×10^{-3}	450	550	180/158**	490/489**	265	48
GVD 18	17/20.4	10/12.1	1.0×10^{-3}	7.7×10^{-4}	550	750	183/171**	520	272	57
GVD 28***	27.5/33.0	16.2/19.5	1.0×10^{-3}	7.7×10^{-4}	750	900	183/162**	584/570**	272	57

** Pneurop 6602.*
*** 1-ph/3-ph (3-phase available GVD 3 to 28 inclusive).*
**** 3-phase motors are energy-efficient versions.*

Oil is hydrocarbon type, viscosity dependent on pump size.
Other oil types are available on special request.

All pumps are CSA and UL approved.
World voltages available for both 1-phase and 3-phase pumps.
Details can be found on the datasheets.

2. OIL-SEALED ROTARY VANE VACUUM PUMPS

2.2 GVD 40-275 SERIES

40-275 m³/hr @ 50 Hz - 25.9-180 cfm @ 60 Hz

The GVD series two stage oil sealed rotary vane vacuum pumps are renowned for their high ultimate vacuum, rapid pumping speeds, quiet operation and ability to handle water vapour. These direct drive rotary vane pumps are inherently compact and vibration free, and with their finger-proof fan and coupling housings they offer excellent operator protection. A comprehensive range of accessories is available to allow use on the widest variety of vacuum applications.

- Advanced pressurized oil circuit to give effective lubrication even under high gas loads.
- When the pump is switched off, the spring loaded distributor valve provides oil and air suck-back protection.
- Gas ballast control to assist in handling high water vapor loads.
- Industrial roller bearings on drive shaft for ultimate reliability and long, trouble free life.
- Full height oil sight glass for easy checking of oil level and condition.
- Easy change oil filter, with oil filter condition gauge on larger models.
- Central inlet port to allow easy mounting of mechanical booster pump if required.
- Easy to maintain, with convenient service kits and international customer support.
- A wide range of accessories to match your application needs.
- The pumps and accessories can be supplied either as individual components or as fully systemized, factory-tested combinations.

TECHNICAL SPECIFICATIONS

PUMP TYPE	Pumping speed*		Ultimate pressure		Motor power		Overall dimensions			Noise level
			Gas ballast closed		3-ph kW		D	W	H	At 50 Hz
	m³/hr	cfm	mbar	Torr	kW	hp	mm	mm	mm	dB(A)
GVD 40	37/44	21.8/25.9	1.0×10^{-3}	7.7×10^{-4}	1.1/1.5	1.5/2	253	665	409	65
GVD 80	74/90	43.6/53	1.0×10^{-3}	7.7×10^{-4}	2.2/3	3/4	274	796	445	70
GVD 175**	160/196	94/115	1.0×10^{-3}	7.7×10^{-4}	5.5/6.5	7.5/8.5	410	994	563	75
GVD 275**	255/306	150/180	1.0×10^{-3}	7.7×10^{-4}	7.5/8.5	10/11	415	1088	565	75

** Pneurop 6602.*
*** Water-cooled machines.*

Oil is hydrocarbon type. Other oil types are available on special request.
All motors are 3-phase energy-efficient.
IEC EN60034.
Available motor voltages:
- *400 V 50 Hz*
- *460 V 60 Hz NEMA premium*
- *200/380 V 50/60 Hz*

2. OIL-SEALED ROTARY VANE VACUUM PUMPS

2.3 GVS 20-300

20-365 m³/h, 12-215 cfm

Robust technology

The GVS 20-300 series operates according to the proven oil-sealed rotary vane principle that has been successfully used for many years in all general vacuum applications of industry. The GVS 20-300 series is a robust and highly regarded product coming from a technologically advanced market leading design.

- Packed with innovative features that ensure the highest possible performance at the lowest possible lifecycle cost.
- Built-in gas ballast fitted as standard to assist in water handling capability.
- Suitable for continuous operation between 400 mbar(a) and ultimate pressure.

TECHNICAL SPECIFICATIONS

PUMP TYPE	Pumping speed		Ultimate pressure (1)		Motor size		Water handling capability		Motor supply specification
					1 ph	3 ph	Vapor limit		
	m³/h	cfm	mbar (hPa)	torr	kW	kW	mbar	kg/h	
GVS 20	20	11.7	2	1.50	0.75	Optional	15	0.25	1 - 220-240V 50Hz
	24	14.1	2	1.50	0.9	Optional	15	0.25	1 - 220-240V 60Hz
GVS 25	25	14.7	0.5	0.38	0.75	0.75	40	0.7	1 - 220-240V 50Hz
	29	17.0	0.5	0.38	0.9	0.9	40	0.7	1 - 220-240V 60Hz
GVS 40 (3)	40	23.5	0.1	0.08	-	1.1	14/40 (2)	0.5/1.3 (2)	3 - 175-260/300-450V 50Hz
	48	28.3	0.1	0.08	-	1.35	14/40 (2)	0.5/1.3 (2)	3 - 200-300/346-520V 60Hz
GVS 60 (3)	60	35.3	0.1	0.08	-	1.5	14/50 (2)	0.7/2.4 (2)	3 - 175-260/300-450V 50Hz
	72	42.3	0.1	0.08	-	1.8	14/50 (2)	0.7/2.4 (2)	3 - 200-300/346-520V 60Hz
GVS 100 (3)	106	62.3	0.1	0.08	-	2.2	11/40 (2)	1/3.2 (2)	IE2 motor 3 - 230, 400/265, 460V 50/60Hz
	127	74.7	0.1	0.08	-	2.7	11/40 (2)	1/3.2 (2)	IE2 motor 3 - 208-230, 460V 60Hz
GVS 150 (3)	151	88.8	0.1	0.08	-	3.3	11/50 (2)	1.4/5 (2)	IE2 motor 3 - 230, 400/265, 460V 50/60Hz
	181	106.5	0.1	0.08	-	3.7	11/50 (2)	1.4/5 (2)	IE2 motor 3 - 208-230, 460V 60Hz
GVS 200	205	120.7	0.5	0.38	-	5.5	25	3.5	IE2 motor 3 - 230, 400/265, 460V 50/60Hz
	245	144.2	0.5	0.38	-	6.6	25	3.5	IE2 motor 3 - 208-230, 460V 60Hz
GVS 300	305	179.5	0.5	0.38	-	7.5	25	5	IE3 motor 3 - 230, 400V 50Hz
	365	214.8	0.5	0.38	-	8.6	25	5	IE2 motor 3 - 208-230, 460V 60Hz

(1) For standard version, with gas ballast valve open. All units achieve better than 0.5 mbar (except GVS 20).
(2) High water handling capability.
(3) Humid version available: higher ultimate pressure of 4 mbar applies.

3. OIL-SEALED ROTARY PISTON VACUUM PUMPS

3.1 GLS 250-500 SERIES AND COMBINATIONS

138-1540 cfm

With over 10,000 units sold in 80 years, the Atlas Copco GLS rotary piston pump sets the standard for performance and reliability as the industry's most efficient, space-saving design. As part of the Atlas Copco group, Stokes Vacuum continues to innovate oil-lubricated rotary piston pumps. The GLS has been improved, upgraded and fine-tuned. It delivers even better dependability and productivity combined with minimal maintenance and process downtime, especially crucial in demanding applications such as the automotive or aerospace industry and their supply chains.

- Slow rotational speed for optimum reliability and low lifecycle cost.
- In-house service possible for extra peace of mind.
- Rugged reliable operation even in arduous or dirty applications.
- Efficient design provides maximum uptime with minimal moving parts and large clearance.
- Low ultimate pressure (blank-off): down to < 10^{-2} Torr.
- Simple design for easy maintenance.
- Compact design which saves up to 50% of valuable floor space.
- Advanced balancing reduces vibration to a practical minimum.
- Gas ballast as standard.

TECHNICAL SPECIFICATIONS

PUMP TYPE	Pumping speed		Ultimate pressure		Motor power		Overall dimensions			Noise level
			Gas ballast closed		50 Hz	60 Hz	D	W	H	50/60 Hz
	m^3h^{-1}	ft^3min^{-1}	mbar	Torr	kW	Hp	mm	mm	mm	dB(A)
GLS 250	234*	138*	$<3.3 \times 10^{-2}$	$<2.5 \times 10^{-2}$	5.5	7.5	665	581	1195	77
GLS 500	442*	260*	$<3.3 \times 10^{-2}$	$<2.5 \times 10^{-2}$	11	15	1032	651	1380	83
GLS 250/ZRS 500	500	294	$<3.3 \times 10^{-3}$	$<2.5 \times 10^{-3}$	7.5	10	1020	1065	1245	78
GLS 250/ZRS 1200	1200	706	$<3.3 \times 10^{-3}$	$<2.5 \times 10^{-3}$	9.5	12	1140	1175	1245	78
GLS 500/ZRS 1200	1200	706	$<3.3 \times 10^{-3}$	$<2.5 \times 10^{-3}$	15	20	1245	1250	1427	84
GLS 500/ZRS 2600	2600	1530	$<3.3 \times 10^{-3}$	$<2.5 \times 10^{-3}$	18.5	25	1315	1530	1427	84

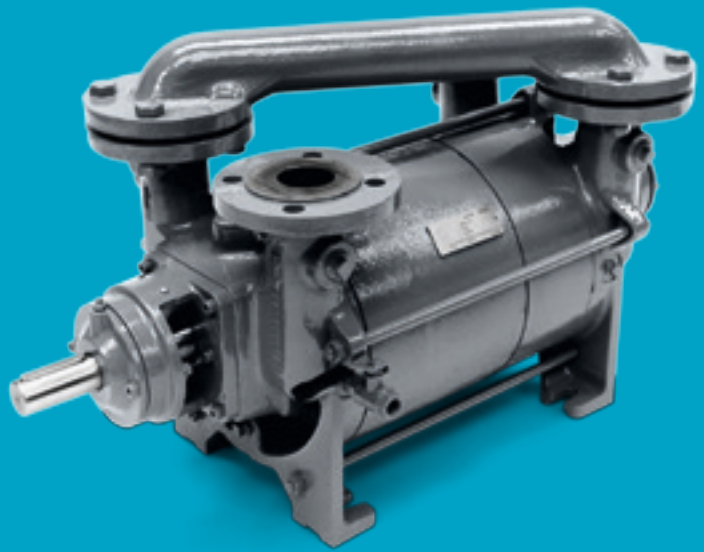
** Pneurop 6602*

4. LIQUID RING VACUUM PUMP PACKAGES

4.1 AWS & AWD SERIES

Atlas Copco liquid ring vacuum pumps are offered as standard packages in a number of configurations, suitable for operation in once through, partial or total recirculation. For partial or total re-circulation systems the pump package components are offered with stainless steel wetted parts as standard, irrespective of the materials of construction of the pump. The AW liquid ring vacuum pumps are available for both single (AWS) and two stage pumps (AWD) with capacities from 200-37500 m^3/h and vacuum levels down to 30 mbar(a).

- Standard package design: 50 Hz DIN or 60 Hz ANSI available.
- Modular design of 3 package types: once through, partial recirculation and total recirculation.
- Optional materials of construction: cast iron, stainless steel fitted, stainless steel complete.
- Accessories have stainless steel wetted parts as standard.
- Short lead times, minimum life cycle costs and optimized reliability.
- Easy design iteration steps without extensive dead time between phases.
- Certified for hazardous area operation (European ATEX Ex II 2Gc, IIBT3, USA Explosion proof Class 1 Division 1 Group C & D).
- Non-hazardous area versions and full range of skid mounted accessories are also available.



TECHNICAL SPECIFICATIONS

AWD 200-4510 (Direct driven)

TYPE	Peak pumping speed		Motor power		Ultimate pressure		Motor speed	Seal fluid recirculation options
			50 Hz	60 Hz			50 Hz	
	m³/h (@50 Hz)	cfm (@60 Hz)	kW		mbar(a)	"Hg (vac)	rpm	O/P/T*
AWD 200	200	141	7,5	11	30	29	1450	O/P/T
AWD 400	400	283	15	22	30	29	1450	O/P/T
AWD 610	610	432	22	30	30	29	1450	O/P/T
AWD 1230	1230	869	45	55	30	29	980	O/P/T
AWD 1680	1680	1188	55	75	30	29	980	O/P/T
AWD 1960	1960	1386	75	90	30	29	735	O/P/T
AWD 3280	3280	2316	110	132	30	29	735	O/P/T
AWD 4510	4510	3186	132	150	30	29	735	O/P/T

AWS 3300-37500 (Belt driven)**

TYPE	Peak pumping speed		Motor power	Ultimate pressure		Motor speed		Seal fluid recirculation options
	50/60 Hz		50/60 Hz			50 Hz	60 Hz	
	m³/h	cfm	kW	mbar(a)	"Hg (vac)	rpm		O/P/T*
AWS 3300	3300	1940	75	160	25.2	1450	980	P/T
AWS 4500	4500	2650	110	160	25.2	1450	980	P/T
AWS 6000	6000	3530	132	160	25.2	1450	980	P/T
AWS 8500	8500	5000	220	180	24.6	1450	980	P/T
AWS 10500	10500	6180	220	160	25.2	1450	980	P/T
AWS 13800**	12800	8130	300	180	24.6	1450	980	P/T
AWS 17100**	17100	10100	400	180	24.6	1450	980	P/T
AWS 22500**	22500	13250	550	180	24.6	1450	980	P/T
AWS 30000**	30000	17700	560	180	24.6	1450	980	P/T
AWS 37500**	37500	22100	775	180	24.6	1450	980	P/T

** O/P/T: Once through, Partial recirculation, Total recirculation*

*** Gear box drive option available.*

5. VACUUM BOOSTER PUMPS

5.1 ZRS 250-4200 SERIES

The ZRS mechanical booster pumps, based on the simple roots principle, remain the favourite pumps for applications where high pumping speeds are required for pressures in the region of 0.01 to 50 mbar. This pump must always be backed by another pump, which can deliver against a high-pressure differential to atmospheric pressure. Operating at relatively low pressures, the mechanical booster pump is not exposed to the same concentrations of corrosive process media as is the backing pump, which makes it highly reliable.

- Suitable for applications where high pumping speeds are required in the pressure region of 0.01 to 50 mbar/0.0075 to 37.5 Torr.
- Operating at relatively low pressures makes it highly reliable.
- The ZRS pumps have a high quality, oil-free pumping mechanism.
- The proven shaft-seal arrangement ensures that no oil enters the pumping stator.
- The design of the shaft seals is optimized to ensure that no lubricants can migrate into the pumping mechanism.
- The dynamically balanced rotors and precision ground gears contribute to the smooth, quiet operation of the pumps, as demanded by manufacturers of advanced technology equipment.

TECHNICAL SPECIFICATIONS

PUMP TYPE	Displacement (swept volume)		Maximum pressure differential		Motor power		Overall dimensions			Weight
					Hydrocarbon		D	W	H	
	m3h-1	cfm	mbar	Torr	kW	Hp	mm	mm	mm	kg
ZRS 250	310/375	185/220	180/150	140/115	2.2	3	705	305	272	69
ZRS 500	505/605	300/335	110/90	83/68	2.2	3	791	305	265	106
ZRS 1200	1195/1435	715/845	90/75	68/56	3	4	952	380	334	149
ZRS 2600	2590/3110	1525/1830	80/67	60/50	11	15	1156	522	498	345
ZRS 4200	4140/4985	2440/2935	60/50	45/38	11	15	1336	522	498	481

Hydrokinetic drive is water-cooled on ZRS 1200 and above.

Motors conform to EN 60034 and are energy efficient.
Voltage options:
- *400 V 50 Hz*
- *230/460 V 60 Hz*
- *200/380 V 50 Hz*
- *200/380 V 60 Hz*

Oil is 100cSt hydrocarbon type. Other oil types are available on special request.

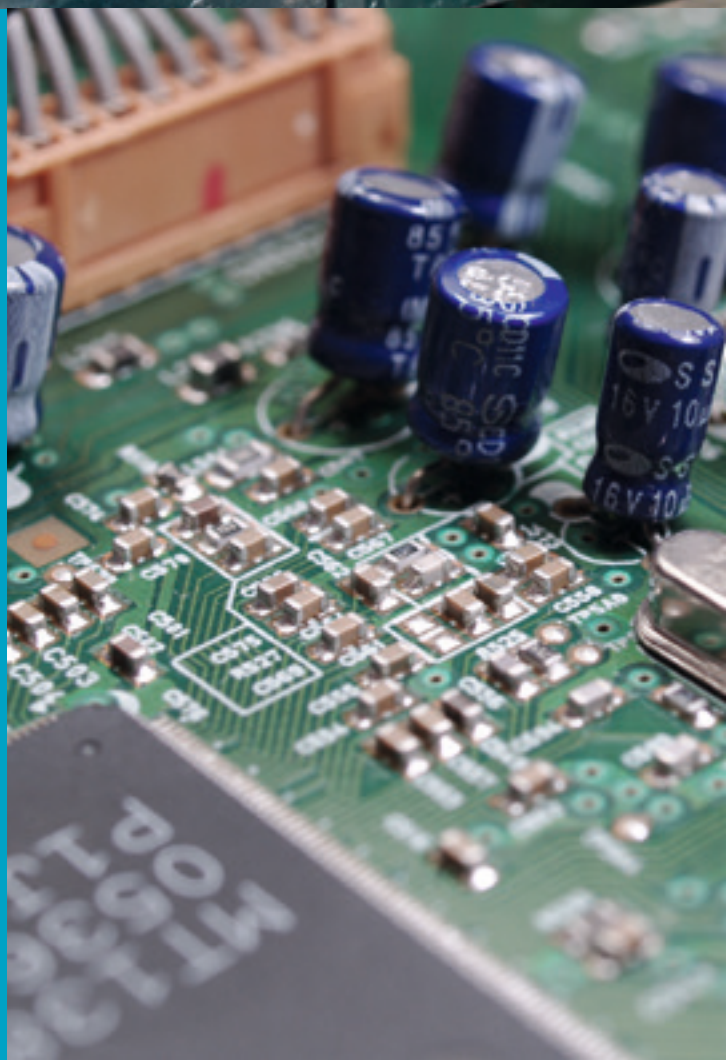
6. ACCESSORIES

Protection is key in designing vacuum installations. Atlas Copco can provide you with key components that can complement your vacuum pump system...Most of your attention will inevitably go to the inlet (or air intake) side of your vacuum pump. But you should not forget other steps in the process.

We recommend you to consider:

- Pipework should slope away from the pump inlet and outlet. Liquid running back into the pump's exhaust can damage it as much as when it is sucked into the inlet.
- Think about vacuum gauge location and measurement range. Put tappings where you want to monitor pressure and also rate of pressure rise (leak rate quantification).
- Fit inlet commissioning screens and/or filters.
- Fit liquid separators on the pump inlet as necessary.
- Do not forget to allow adequate maintenance access.

Last, a word of warning: try to avoid inadvertently designing-in excessive pressure drop by applying a belt and braces approach to protection, or having a tortuous pipe run.



6.1 Liquid separators

Atlas Copco's liquid separators provide protection from condensate, aerosols and liquid droplets on the suction side of vacuum pumps. Liquid ring separators will not remove condensate vapor from the gas stream when in the vapor phase. These separators are fitted with a demister insert and/or cyclonic separation mechanism, located above where the separated liquid is held. The vessel provides visual and/or electronic liquid level monitoring so that you can easily identify when the liquid needs draining off. Normally, vacuum systems must be stopped and vented to drain the liquid from the vessel. However, it is possible to configure separators so that the accumulated liquid can be drained without interrupting the process.

6.2 Cyclone separators

Cyclone separators are mechanical separators for extracting mist and droplets from the gas streams. They are placed upstream of the vacuum pump to prevent liquids finding their way into the pump. They have a level indicator and are optionally available with a connection for a level switch.

6.3 Inlet filters

Atlas Copco offers air intake filters for every application in the capacity and pressure range of our product portfolio. These filters protect your vacuum pump from product ingress. They are designed for the most efficient protection, maximum efficiency with a minimum loss of flow and maximum uptime.

Atlas Copco's inlet filters are specifically suitable for non-hazardous rough vacuum duties. They are intended for installation in vacuum lines, which often means directly at the pump inlet. The housing is vacuum tight and is matched to the filtration efficiency of the vacuum pump.

6.4 Filter cartridges

We offer filter cartridges for our inlet filters, designed to be suitable for a variety of applications in industrial vacuum technology. They will protect your vacuum pump from product ingress, thus reducing pump wear. This type of protection creates the conditions for optimum operational reliability and uptime of your vacuum pump.

Our vacuum rated cartridges deliver extremely high separation efficiency coupled with very low pressure drops. They are designed with this optimization in mind but also allowing for high volumetric flow rates at critical parts of the pressure range. Filter cartridges are made out of paper for "dry" applications and polyester for moisture-laden applications.

6.5 Pressure gauges

Atlas Copco's vacuum gauges allow accurate measurement of pressure ranges. Capsule dial vacuum gauges.
Atlas Copco's vacuum gauges accurately measure pressures below atmospheric pressure. We offer gauges with a reference pressure of atmospheric pressure or absolute pressure. These gauges are calibrated and available in different measuring ranges, both in rising and falling pressure conditions.

6.6 Digital vacuum gauge

Atlas Copco's electronic gauges provide accurate measurement of the ultimate pressures attained by Atlas Copco's range of oil-sealed vacuum pumps. This instrument is ideal to detect faults, because the ultimate pressure of oil-sealed pumps is a good indicator of the pump's condition and performance. Compare it to a blood pressure monitor for humans...

The digital vacuum gauge offers exact measurements of absolute pressure in the range of 0.1 mbar to 25 mbar and offers a higher accuracy in the region of 0.5 to 5 mbar than capsule dial vacuum gauges.

6.7 Other gauges

A pressure gauge between the element and the oil mist separator allows you to easily check the saturation level of the oil mist separation filters. It shows exactly when the discharge filters should be replaced. That means you do not waste money changing it too early and you have no risk of losing pump performance or premature wear by changing it too late.

6.8 Vacuum tanks

Vacuum tanks help to control the pressure changes in some applications. Depending on the applications, you may benefit from a vacuum tank. Vacuum tanks can provide buffer volume to control the rate of pressure changes and the extent to which pressure fluctuation are experienced at the point of use of vacuum on the process.

All Atlas Copco's vessels are made out of carbon steel with a protective paint finish to the outer surfaces. They are available in sizes from 500 to 5000 liters, both vertically and horizontally orientated.

6.9 Check valves and pump isolation valves

Valves can protect your pump or multi pump installations. Atlas Copco recommends an inlet isolation valve or non-return valve when you own:

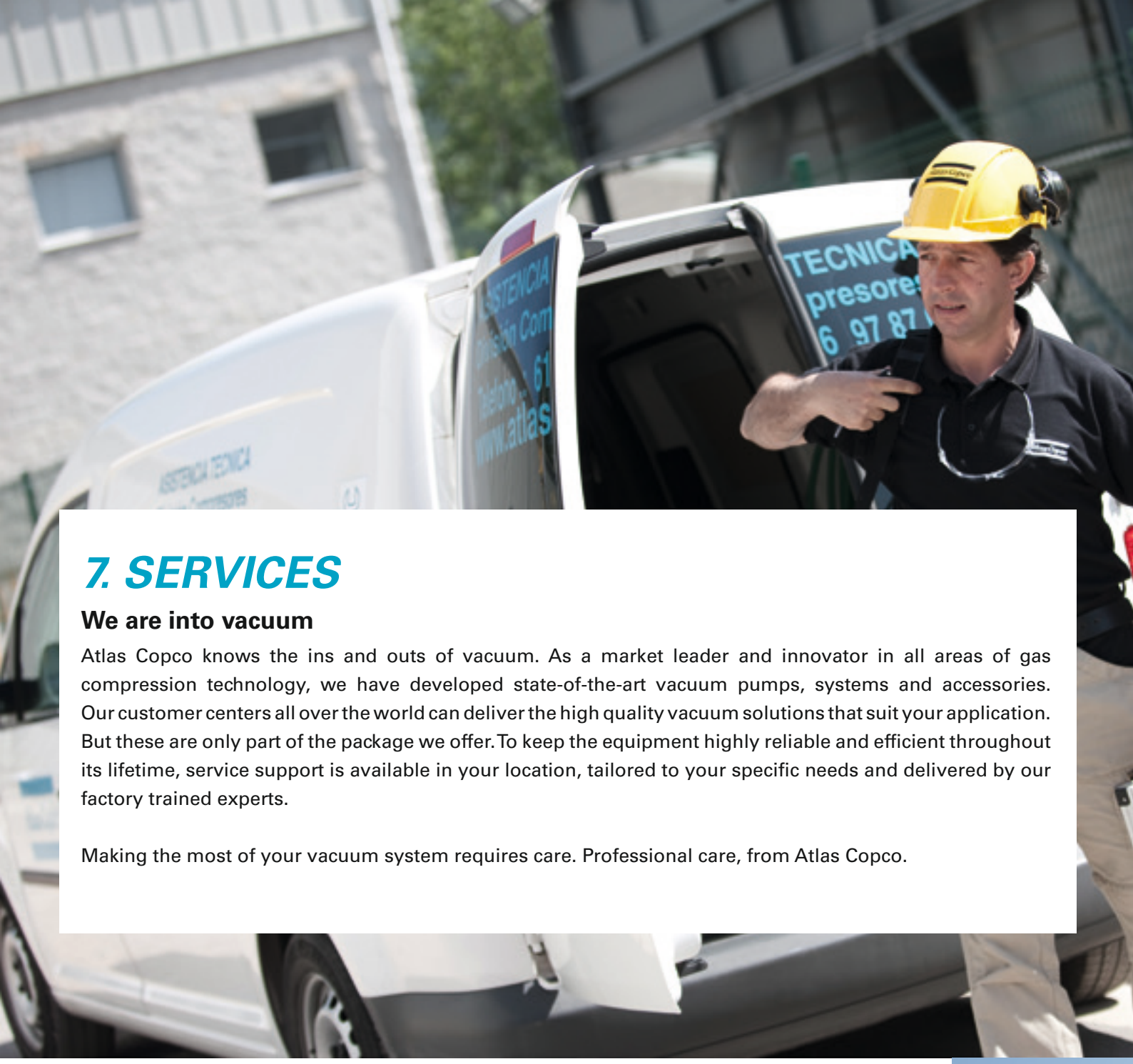
- A multiple pump installation.
- A configuration in which a volume of process plant/pipe work remains vacuum tight when the pump stops.

Such valves isolate the non-running vacuum pump from the reservoir of vacuum, to prevent counter rotation.

Our engineers will assist you in the best configuration of components and vacuum sources in these circumstances.

6.10 Multiple pump controllers Elektronikon®

Controllers increase the efficiency of your (multiple pump) installation. The GV 630-4800 comes with a pre-installed controller that monitors the performance of you pump. But these controllers can also monitor multiple machines. Our well-known Elektronikon controllers are installed on the tank-mounted GVS systems and the new GHS VSD+ rotary screw pump. The Elektronikon offers a range of control and monitor functions, for a variety of input/output configurations.



7. SERVICES

We are into vacuum

Atlas Copco knows the ins and outs of vacuum. As a market leader and innovator in all areas of gas compression technology, we have developed state-of-the-art vacuum pumps, systems and accessories. Our customer centers all over the world can deliver the high quality vacuum solutions that suit your application. But these are only part of the package we offer. To keep the equipment highly reliable and efficient throughout its lifetime, service support is available in your location, tailored to your specific needs and delivered by our factory trained experts.

Making the most of your vacuum system requires care. Professional care, from Atlas Copco.

KNOW YOUR COST

When buying vacuum equipment, your immediate focus is on the investment cost. Required performance and capacity are weighed against the purchase price. But this is not the biggest cost.

Next comes a cost to install and connect the vacuum system. Once it is up and running, there will be maintenance costs to consider. And most importantly, your equipment will consume energy. The costs over the entire lifecycle of your vacuum equipment are what we call the Total Cost of Ownership.

Looking at the Total Cost of Ownership is the first step towards saving a lot of money.

SAVE ENERGY

Energy costs are up to 50% of the Total Cost of Ownership of your vacuum equipment. In most industrial plants, electric motor systems such as vacuum pumps account for about 70% of the electricity consumption. So reducing energy consumption means big savings.

Saving energy is the main focus of our innovation. Efficient motors and new technologies such as variable speed drives enable us to offer improved economy. With on-time maintenance, this high level of efficiency remains intact. This reduces your energy bill as well as your carbon footprint.

To avoid wasting energy, it is important to look at the complete vacuum installation. Pay attention to leakages, as they remain one of the main causes of efficiency loss.

AVOID INTERRRUPTIONS

Vacuum is likely to be a critical component in your production process. A breakdown could lead to a production standstill, with big financial consequences: lost revenue, labor costs, and possibly even penalties or lost contracts.

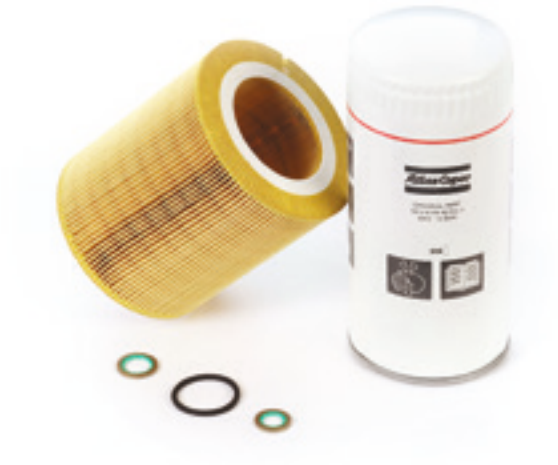
On the other hand, vacuum pumps are subject to rough treatment. Any substance or contaminant within the process will end up in the vacuum system.

That's why correct and timely service is vital to reduce the risk of failure. A tailor-made maintenance program adapted to the specifics of your installation offers real value, as it ensures maximum uptime.

WE HAVE THE ANSWER

Atlas Copco offers the service solutions to meet your key requirements: minimizing running costs while maintaining maximum uptime and performance. Thanks to our global service organization, we can provide local support anywhere in the world. All our maintenance and service solutions meet the same high quality standards.

7.1 Spare parts



7.1.1 Genuine parts

Genuine Atlas Copco spare parts are manufactured to meet the same exacting standards as the vacuum pump. They have passed the same endurance tests and have been proven to provide the best protection of the investment. Genuine Atlas Copco parts offer the best value. Guaranteed!

7.1.2 Vacuum oils

Oil is a vital component of your vacuum pump. Its quality, performance and lifetime can significantly impact the lifetime service cost and compromise the reliability of other vacuum pump components. That is why Atlas Copco has designed, tested and approved a complete range of oils to fulfil our pump lubricating requirements under varying operating conditions.

Vacuum Fluids: Original lubricant for your Atlas Copco screw vacuum pump

- Vacuum Fluid Basic: Mineral oil
- Vacuum Fluid : Synthetic oil (PAO/POE)
- Vacuum Fluid Plus : Synthetic oil (PAG/POE) for hot and humid environments
- Vacuum Fluid FD : Synthetic food grade oil (PAO) which is NSF approved

Vacuum Vane Fluids: Original Lubricant for your Atlas Copco Vane vacuum pump

- Vacuum Vane Fluid : Mineral vane oil available in 3 viscosity grades (32/68/100)
- Vacuum Vane Fluid Plus : Synthetic vane oil available in 3 viscosity grades (32/68/100)

7.1.3 Service kits

The parts you need, when you need them! Using service kits allows planning of vacuum pump services in advance, avoiding surprises that can affect the end user's budget. Considering the time and cost savings from not having to order and install individual spare parts, Service Kits are without doubt the most cost-effective maintenance solution.

7.2 Aftermarket services

At Atlas Copco we can offer any number of solutions for planned maintenance. What you need is a solution to keep your production optimal at all times and preferably at the lowest cost. Our specialist aftermarket advisors will visit your production facilities and assess your specific needs. This allows us to propose the most cost-effective customer support plan for you.

With the aim of finding a solution that fits your specific needs, you can take various approaches that demand less to more involvement from our part. Evidently you can step up to a higher level and adjust and customize the proposed plan at any time depending on your needs.

7.2.1 Parts & inspection plan

We leave it in your hands! We check your vacuum installation on a regular basis and identify the necessary actions. The necessary spare parts are delivered but we leave the actual maintenance up to you.

7.2.2 Preventive maintenance plan

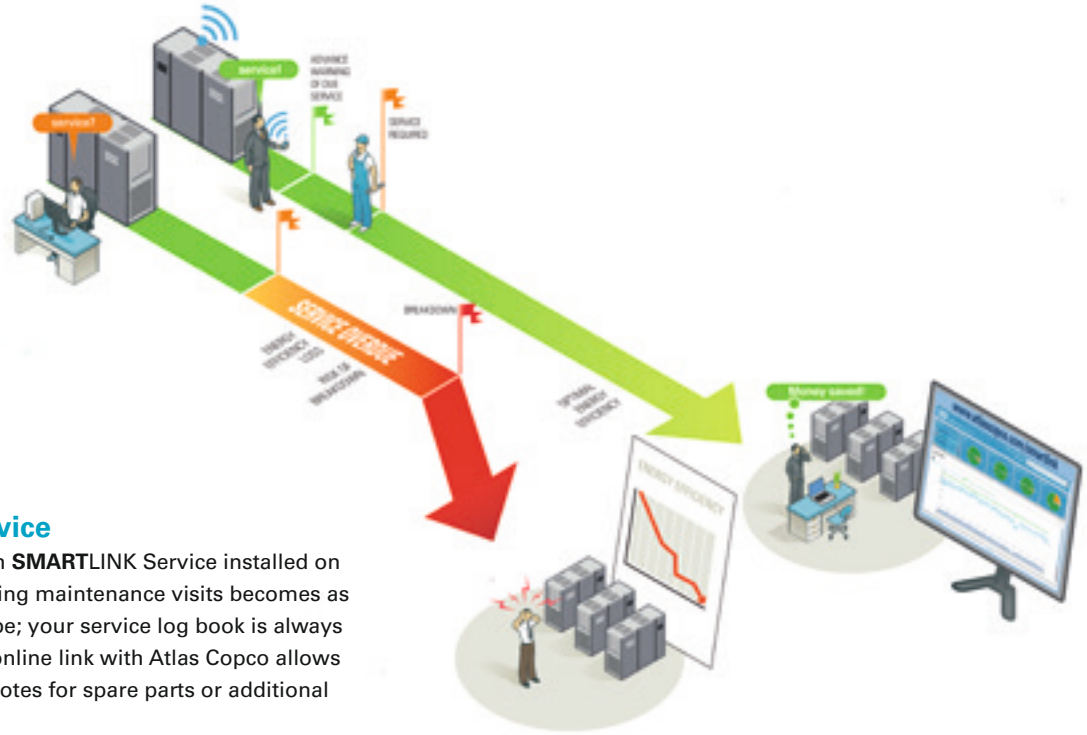
We give you a hand! This service plan covers all Atlas Copco recommended service activities at the correct intervals in a pro-active manner. With a fixed annual maintenance cost, we can give our customers peace of mind in their cost forecasts.

7.3 AIRnet: Fast, easy and reliable

Installing a piping system is no longer time consuming, thanks to AIRnet. It consists of aluminum and polymers suitable for compressed air as well as for vacuum (0.0.13 - 16 bar absolute). AIRnet is resistant to corrosion, mechanical shocks, outdoor weather conditions and the leak-resistant connection offer superior sealing.

7.4 **SMART**LINK

SMARTLINK is Atlas Copco's equipment monitoring program. It offers your company a complete insight into your vacuum installation. It helps you predict potential problems - and thus anticipate them; it shows how and where the production can be optimized and where energy can be saved.



7.4.1 **SMART**LINK **Service**

Rule out all uncertainties. With **SMART**LINK Service installed on your vacuum pumps, scheduling maintenance visits becomes as simple and easy as it should be; your service log book is always just one click away and your online link with Atlas Copco allows you to request and receive quotes for spare parts or additional services very fast.

7.4.2 **SMART**LINK **Energy**

Safeguard the performance of your equipment. With **SMART**LINK Energy, Atlas Copco enables you to continuously monitor and analyze the energy efficiency of your utility room. You decide on the performance indicators, you define the benchmarks. **SMART**LINK analyzes and reports. You can make accurate and immediate improvements when needed. The results can be used for energy monitoring according to ISO50001.

7.4.3 **SMART**LINK **Uptime**

Keep your vacuum pumps up and running. By e-mail and/or text, you receive all relevant machine indicators (warnings and shutdowns) in advance. Based on this information, you can then take all necessary actions and measures to avoid the risk of a breakdown.

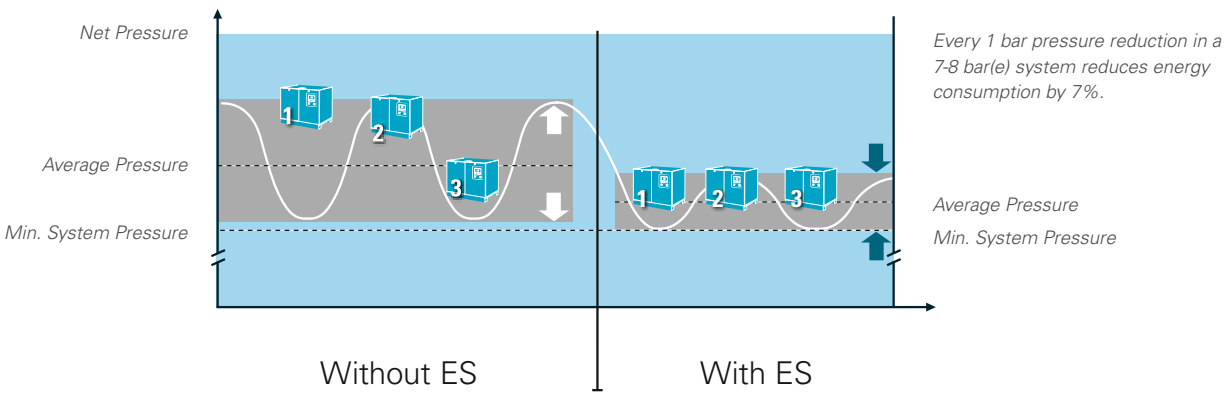
7.5 Optimization

7.5.1 AIRScan

Vacuum is not cheap. Most of the money spent on a vacuum pump during its lifetime goes to energy. That is why our Atlas Copco energy consultants can help you to define possible areas of improvement in order to minimize your operational running cost. Services includes leakage detections or energy measurement programs.

7.5.2 AIROptimizer

AIROptimizer is an energy saving service through which Atlas Copco helps you reduce energy consumption by installing a central control system that can handle up to 6 vacuum pumps. A properly managed central vacuum network will save energy, reduce maintenance, decrease downtime, increase production and improve product quality.
Atlas Copco's ES central controllers are the most efficient way to monitor multiple vacuum pumps simultaneously. An ES controller offers one central point of control for your whole vacuum network, ensuring all vacuum pumps provide optimum performance for your process. The result is a completely dependable and energy efficient network, giving you peace of mind and keeping your costs to a minimum.



COMMITTED TO SUSTAINABLE PRODUCTIVITY

We stand by our responsibilities towards our customers, towards the environment and the people around us. We make performance stand the test of time. This is what we call – Sustainable Productivity.

LLOYD'S REGISTER · LRQA
ISO 9001 • ISO 14001
OHSAS 18001

www.atlascopco.com

Atlas Copco