MAGNETIC LEVITATION BLOWERS

GA-PC range · 37 – 350 kW · 50, 70 and 90 kPa

GREEN AIR
COMPRESSOR

THE IMPELLER FLOATS

A magnetic bearing holds the shaft in the air. There is no metal touching metal anywhere in the rotating assembly, which means no bearing oil, no bearing wear and no bearing replacement for the life of the machine.

It also means the shaft can turn very fast, and a blower that turns fast can drive the impeller directly with no gearbox in between. Between the gearbox that is not there and the bearings that are not there, a magnetic levitation blower typically uses twenty to thirty per cent less energy than the multi stage blower it replaces.

Twenty to thirty per cent less energy

No gearbox losses, no bearing losses, and a direct drive high speed motor. Measured against the roots blower it usually replaces.

No oil at all

No lubrication system, no oil changes, no oil to leak into a process or a treatment tank.

Turndown to about 45 per cent

Speed control across a wide range without the surge problems a geared machine has at low flow.

Around 80 dB(A)

Substantially quieter than a roots blower, and without its characteristic pulsation.

WHAT IS NOT IN THE MACHINE

No gearbox. A conventional high speed blower needs one to get from motor speed to impeller speed, and it costs three to five per cent of the power plus an oil system to maintain.

No bearings in the conventional sense. Magnetic bearings hold the shaft centred using position sensors and electromagnets, correcting thousands of times a second. There is no contact, so there is nothing to wear out and nothing to lubricate.

No oil system at all, which in wastewater treatment and in food plants removes an entire contamination risk along with its maintenance. The practical result is that the routine service on these machines is an air filter and a check of the control system.

- Direct drive, no gearbox
- Speed control from about 45 to 100 per cent
- Magnetic bearings, no contact and no wear
- Around 80 dB(A)
- No lubrication system anywhere
- Service is an air filter and a controls check
- Touchdown bearings for safe coast down
- 37 to 350 kW

WHERE THEY WORK

Wastewater treatment aeration

The largest single electricity consumer in most treatment works, and the duty these machines were built for.

Fish farming and aquaculture

Oxygen into the water with no risk of oil reaching it.

Pneumatic conveying

Moving powder and granulate through pipe, where a steady non-pulsating flow matters.

Flue gas desulphurisation

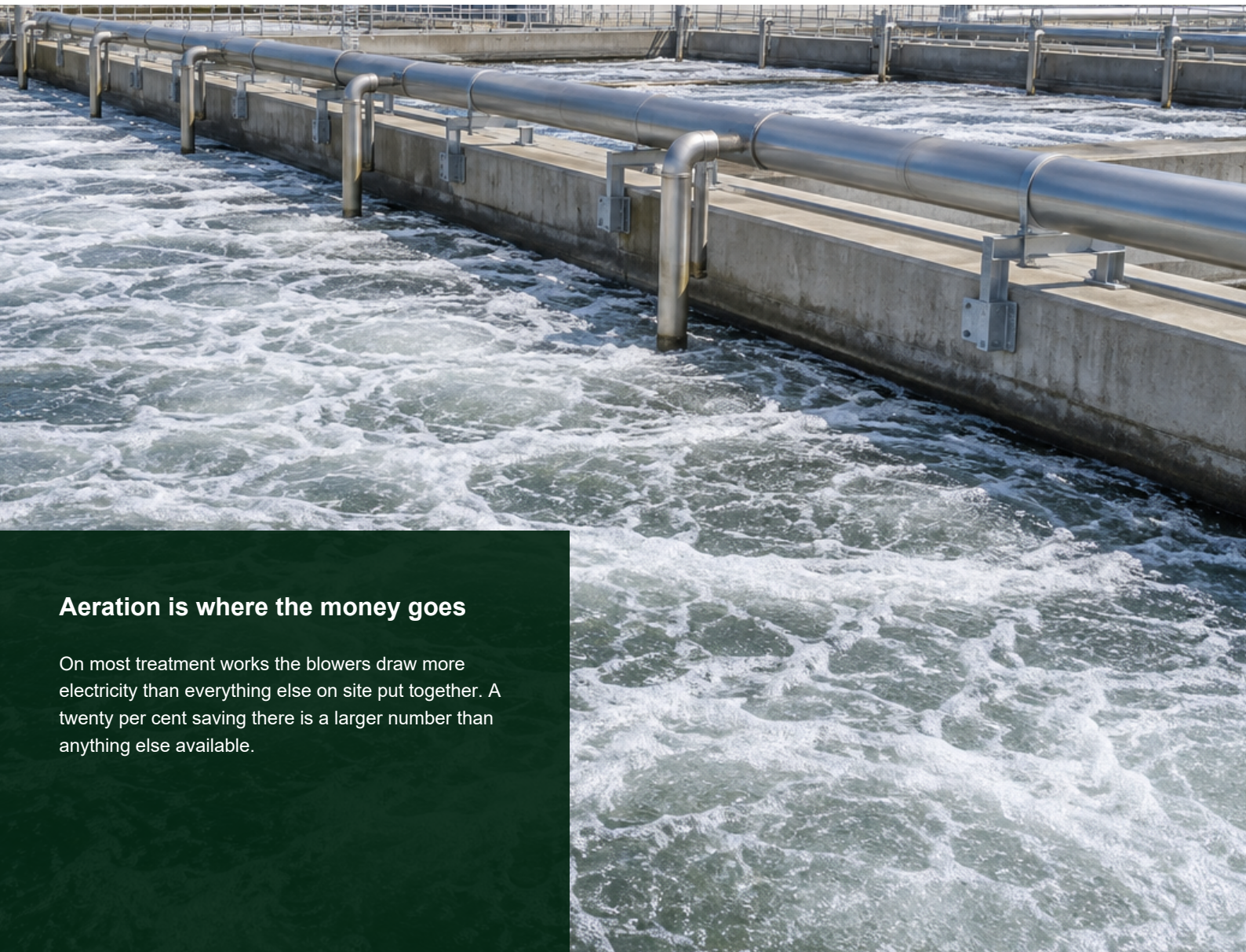
Combustion and scrubbing air on plant that runs continuously.

Cement and lime processing

Kiln and silo air in a dusty environment where a service visit is expensive.

20–30%

less energy than the multi stage blower it usually replaces



Aeration is where the money goes

On most treatment works the blowers draw more electricity than everything else on site put together. A twenty per cent saving there is a larger number than anything else available.

INSIDE THE MACHINE

Ten parts, and three of the things a conventional blower is built around — the gearbox, the bearings and the oil system — are simply not here.

1 Inlet filter

A flat panel element. On most installations this is the only routine service item on the machine.

2 Impeller

Mounted directly on the motor shaft. No gearbox between them, so nothing between the motor and the air but the impeller itself.

3 Volute

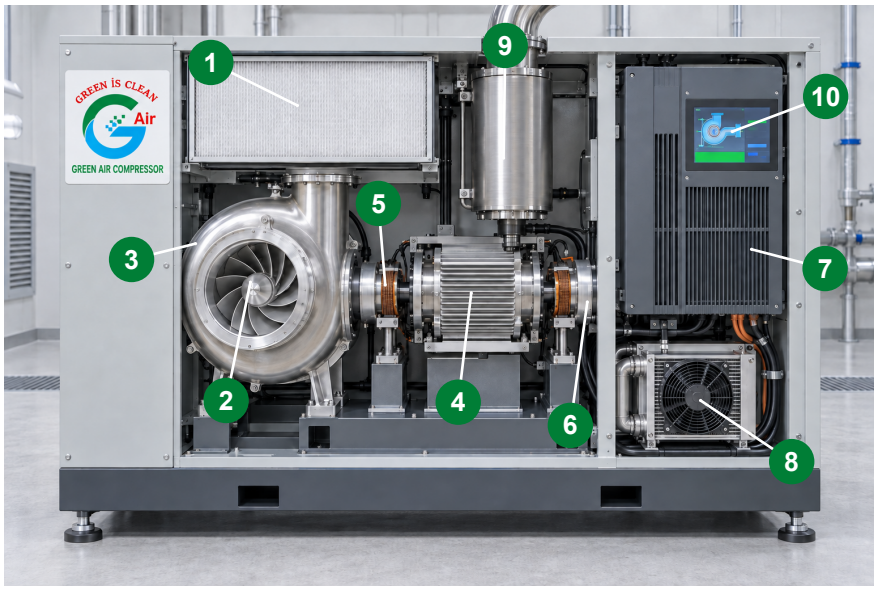
Turns the velocity the impeller adds into pressure.

4 High speed motor

Turns fast enough to drive the impeller directly, which is only possible because nothing is touching the shaft.

5 Magnetic bearings

Electromagnets and position sensors hold the shaft centred, correcting thousands of times a second. No contact, no wear, no lubrication.



9 Blow-off silencer

Vents to atmosphere on start and stop so the machine never has to start against system pressure.

10 Controller

Pressure, flow, speed, temperature and hours, with the fault history kept so a stoppage can be diagnosed rather than guessed.

7 Inverter

Sets the speed, and with it the flow. This is what gives the turndown to about 45 per cent.

6 Touchdown bearings

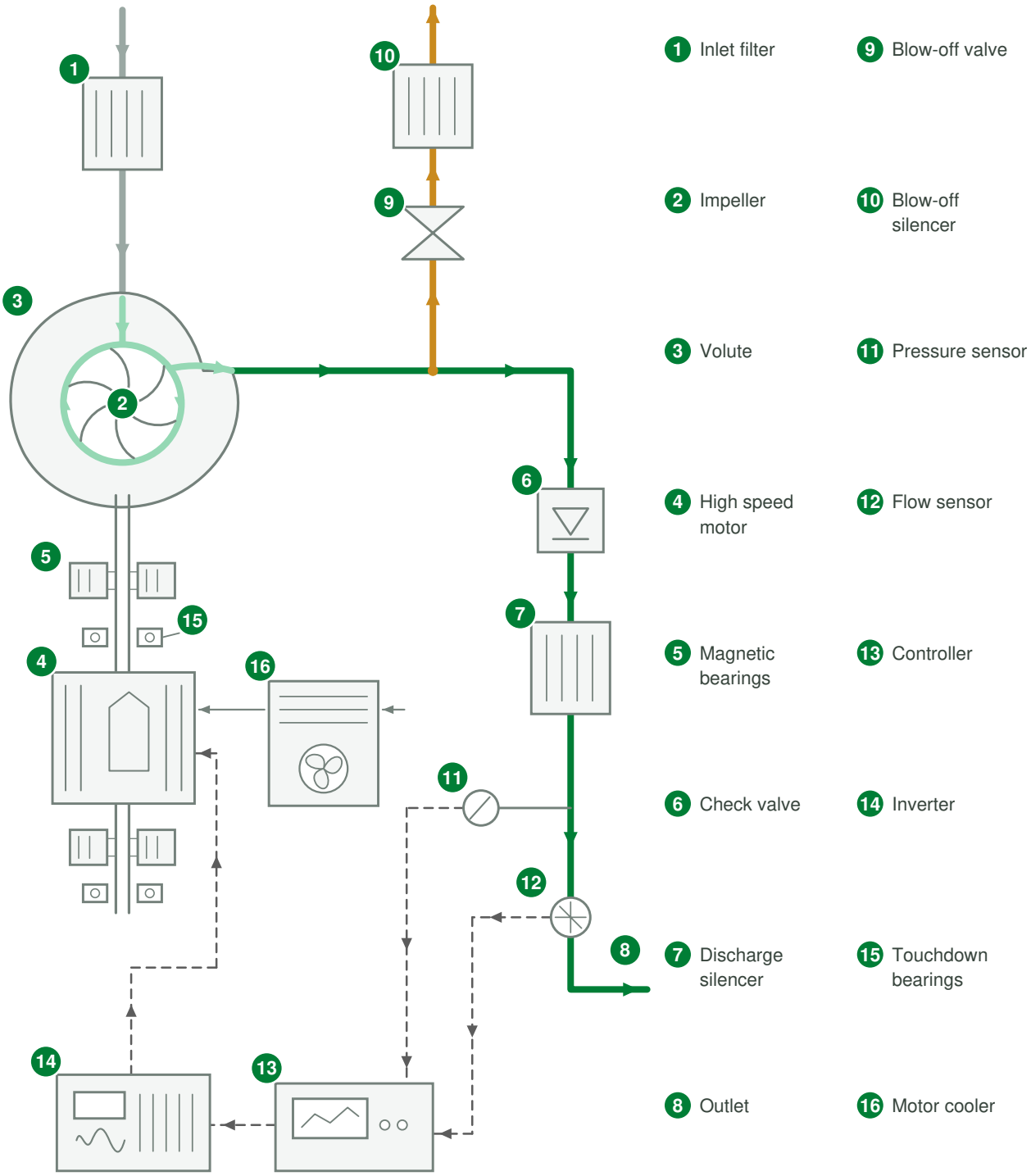
Mechanical bearings that never touch in normal running. They exist so that a power failure ends in a safe coast down.

8 Motor cooler

A small air-to-air cooler for the motor and the drive.

Component arrangement varies across the range. The photograph shows a representative machine.

HOW IT WORKS



There is no oil in this diagram because there is none in the machine. What the controller adjusts is the speed of the shaft, and nothing else needs to move.

TECHNICAL SPECIFICATIONS

Blowers are selected on boost rather than on pressure ratio, so the table gives flow against boost at each installed power. Most aeration duties sit between 50 and 80 kPa.

Model	Motor power		Pressure rise			Flow	
	kW	hp	kPa	mbar	psi	m³/min	cfm
GA-PC-37	37	50	50	500	7.3	41	1,448
GA-PC-37	37	50	70	700	10.2	31	1,095
GA-PC-37	37	50	90	900	13.1	25	883
GA-PC-45	45	60	50	500	7.3	50	1,766
GA-PC-45	45	60	70	700	10.2	37	1,307
GA-PC-45	45	60	90	900	13.1	30	1,059
GA-PC-55	55	75	50	500	7.3	61	2,154
GA-PC-55	55	75	70	700	10.2	46	1,624
GA-PC-55	55	75	90	900	13.1	37	1,307
GA-PC-75	75	100	50	500	7.3	83	2,931
GA-PC-75	75	100	70	700	10.2	62	2,190
GA-PC-75	75	100	90	900	13.1	51	1,801
GA-PC-90	90	125	50	500	7.3	100	3,531
GA-PC-90	90	125	70	700	10.2	75	2,649
GA-PC-90	90	125	90	900	13.1	61	2,154
GA-PC-110	110	150	50	500	7.3	122	4,308
GA-PC-110	110	150	70	700	10.2	91	3,214
GA-PC-110	110	150	90	900	13.1	74	2,613
GA-PC-132	132	175	50	500	7.3	146	5,156
GA-PC-132	132	175	70	700	10.2	110	3,885
GA-PC-132	132	175	90	900	13.1	89	3,143
GA-PC-160	160	215	50	500	7.3	177	6,251
GA-PC-160	160	215	70	700	10.2	133	4,697
GA-PC-160	160	215	90	900	13.1	108	3,814
GA-PC-185	185	250	50	500	7.3	205	7,240
GA-PC-185	185	250	70	700	10.2	154	5,438
GA-PC-185	185	250	90	900	13.1	125	4,414
GA-PC-200	200	270	50	500	7.3	222	7,840
GA-PC-200	200	270	70	700	10.2	166	5,862
GA-PC-200	200	270	90	900	13.1	135	4,767
GA-PC-220	220	300	50	500	7.3	244	8,617
GA-PC-220	220	300	70	700	10.2	183	6,463
GA-PC-220	220	300	90	900	13.1	149	5,262
GA-PC-250	250	340	50	500	7.3	277	9,782
GA-PC-250	250	340	70	700	10.2	208	7,345
GA-PC-250	250	340	90	900	13.1	169	5,968
GA-PC-280	280	375	50	500	7.3	310	10,948
GA-PC-280	280	375	70	700	10.2	233	8,228
GA-PC-280	280	375	90	900	13.1	189	6,674
GA-PC-300	300	400	50	500	7.3	333	11,760
GA-PC-300	300	400	70	700	10.2	249	8,793
GA-PC-300	300	400	90	900	13.1	203	7,169
GA-PC-315	315	425	50	500	7.3	349	12,325
GA-PC-315	315	425	70	700	10.2	261	9,217
GA-PC-315	315	425	90	900	13.1	213	7,522
GA-PC-350	350	470	50	500	7.3	388	13,702
GA-PC-350	350	470	70	700	10.2	291	10,277
GA-PC-350	350	470	90	900	13.1	237	8,370

Flows are given at one atmosphere and 20 °C. At the ambient temperature and altitude of a real site the mass flow differs, and we correct for your site conditions when we size rather than quoting the table figure. Imperial figures are converted from the metric values and rounded. Weights, dimensions and noise levels for this range are available on request. If your duty is not on the table it is almost certainly still available — the published points are the common ones, not the limits of the range.

Options

- Inlet silencer
- Discharge silencer
- Weatherproof enclosure
- High ambient package
- Remote monitoring
- Master controller for multiple machines
- Pressure and flow transmitters
- Spare filter elements

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TELL US THE DUTY, NOT THE MODEL

A blower is sized on the air it has to deliver and the depth it has to push it to, at the temperature and altitude of your site. Send us those and you get a written recommendation back that names the machine, gives its figures at your conditions rather than at the table conditions, and states delivery, installation and what the warranty covers. It costs nothing and carries no obligation.

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