



ENERGY SAVINGS WORKSHEET · PLANT MANAGER EDITION

AirSpace Compressor ROI Worksheet

High-Performance Industrial Air Compression Systems · Power On, Worry Off

ENGINEERING PEDIGREE

20-Year Engineering Excellence

4,000 m² manufacturing facility · Shanghai

DELIVERY COMMITMENT

Certified Lead-Time: 7-35 Days

Factory-direct · bypass port congestion

SECTION 01 The 3-Step Energy Audit

Before you can project savings, you need the right numbers from your floor. Follow these three steps to capture the data that drives every ROI figure in this worksheet.

01

Identify Current Load (HP/ kW) & Pressure (Bar)

Read the nameplate on your existing compressor for rated motor power (HP or kW) and the working pressure your process demands (Bar). These two figures set your baseline energy footprint.

YOUR LOAD

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YOUR PRESSURE

.....

02

Calculate Annual Operating Hours

Multiply daily running hours by the number of operating days per year. Two-shift and 24/7 plants carry the highest "energy weight" — and the biggest upside from variable-speed control.

HOURS / DAY

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DAYS / YEAR

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03

Factor in the "Unload Tax" (Idle Energy Waste)

Fixed-speed units still draw 40-70% of full-load power when unloaded. Estimate the share of running time spent idling — this is the hidden cost a PMV+VFD system eliminates.

% TIME UNLOADED

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IDLE POWER KW

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SECTION 02 ROI Comparison Table — The Gold Standard

A side-by-side of a standard fixed-speed compressor against the AirSpace PMV+VFD (Permanent Magnet

Variable-Frequency) system. The energy delta is the single biggest driver of total cost of ownership.

Metric	Standard Fixed-Speed Compressor	AirSpace PMV+VFD System
Energy Consumption	100% runs flat-out regardless of demand	65% matches motor output to real air demand
Annual Energy Cost	$\text{kWh} \times \text{hours} \times \text{rate}$ baseline — your current spend	$\text{kWh} \times \text{hours} \times \text{rate} \times 0.65$ subtract ~35% from baseline
Maintenance Costs	Baseline reference	~20% lower permanent-magnet motor, fewer wear items
Payback Period	N/A — no upgrade investment	12–18 months typical, energy-funded
Savings Delta	<div style="text-align: center;">35% Average Energy Delta</div> <p>AirSpace PMV+VFD vs. fixed-speed baseline — the number that funds your payback.</p>	

SECTION 03 The 7-Factor ROI Formula

Savings don't come from one feature — they compound across seven engineering advantages. Together they explain why the 35% energy delta is conservative for most plants.

01 Motor Efficiency (IE4/IE5)

Permanent-magnet synchronous motors hit ultra-premium IE4/IE5 efficiency — no rotor slip losses, part-load efficiency stays high.

02 "Unload Tax" Elimination

VFD control ramps down to near-zero draw when demand drops — the 40–70% idle bleed of fixed-speed units is gone for good.

03 Pressure Stabilization

Tight ± 0.1 bar holding means you can set the target lower — every 1 bar reduction saves roughly 7% in energy.

04 Leak Reduction (Lower System Pressure)

Running at a stabilized lower pressure cuts the volume lost through every leak, fitting and joint across the network.

05 Motor Soft-Start (No Peak Demand)

Smooth ramp-up avoids the inrush current spikes that trigger peak-demand penalties on your electricity tariff.

06 Extended Life Cycle (Precision Control)

Demand-matched running reduces mechanical stress, heat cycling and bearing wear — longer service intervals, more years of output.

07 Lower Maintenance (Permanent Magnet Tech)

No gearbox, fewer friction surfaces and direct-drive simplicity mean ~20% lower maintenance spend year over year.

Why it compounds

Each factor trims a different cost line — energy, demand charges, leaks, maintenance, replacement. Stack them and the 35% headline becomes a floor, not a ceiling.

SECTION 04 Workspace / Checklist

Use this workspace to capture your plant's specifics and confirm regulatory readiness before requesting a tailored audit.

Your Plant Specs

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Regulatory Compliance IE3+ READY

- CE** — Machinery & Low Voltage Directive conformity
- ISO 9001** — quality management system certified
- IE3+ Motor Mandate** — PMV motors exceed IE3 tier
- Pressure Equipment** — rated & documented

Ready for your personalized 1-page ROI Audit?

Send your site specs and we'll return a tailored savings projection within one business day.

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AIRSPACE MACHINERY CO., LTD. · POWER ON, WORRY OFF