

# GenAir

## Benefits of Renting Electric vs. Diesel Air Compressors by Industry Application



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## Introduction

When choosing between electric and diesel air compressors, understanding the differences in cost, convenience, emissions, and reliability is essential. This guide outlines where each type fits best and why more industries are transitioning toward cleaner, electric-powered air.

## How Air Compressors Work

Air compressors take in atmospheric air and compress it into a smaller volume, increasing pressure. This pressurised air is then used to power tools, machinery, and industrial processes. Compressors are typically powered by either electric motors or diesel engines and vary by size and airflow (measured in CFM – cubic feet per minute).



## Electric vs. Diesel Compressors: Key Differences

Feature	Electric Compressors	Diesel Compressors
Power Source	Mains or generator	Onboard engine
Emissions	Zero at point of use	CO <sub>2</sub> , NO <sub>x</sub> , particulates
Noise	Quiet	Louder
Maintenance	Lower (no fuel or oil filters)	Higher (engine and exhaust systems)
Setup	Needs power supply	Fully self-contained
Best for	Indoor, clean, long-term use	Remote or temporary outdoor use

## Environmental & Operational Benefits of Electric

Electric compressors offer clear advantages:

- **Lower emissions:** Ideal for low-carbon or net-zero operations
- **Quiet operation:** Important for urban sites or enclosed environments
- **Lower maintenance:** No diesel fuel, oil changes, or exhaust systems
- **Better for air quality:** No fumes around staff, products, or processes
- **Lower running costs:** mains electricity is significantly cheaper than diesel fuel

Electric units are particularly attractive where sustainability and compliance are priorities – especially when grid power or renewable energy is available.

## Why Diesel Still Has a Role

Despite its environmental downsides, diesel power offers flexibility and independence:

- **Ideal for remote sites** without access to grid power
- **Fast deployment:** No need for electrical setup
- **Rugged performance** in demanding or mobile construction environments
- **Drop in Fuels:** diesel fuel alternatives that offer sustainability benefits are now available

Diesel compressors remain common in infrastructure, roadworks, and marine sectors where mobility and autonomy are critical.



## Drop in Fuels

# HVO a cleaner diesel alternative

There are cleaner drop in fuel alternatives to diesel, typically biodiesels. HVO (or Hydrotreated Vegetable Oil) is a type of biodiesel. HVO fuel is considered a sustainable alternative to the more commonly used fossil fuels. HVO fuel is produced through the hydro-processing of vegetable oils and fats. Free from oxygen, Sulphur and aromatics, HVO biodiesel is classed as a greener substitute to FAME (Fatty Acid Methyl Esters), due to lower NOx emissions and improved storage stability

- **HVO can be used as a direct diesel replacement**, and 'dropped in' to any of our diesel compressors
- **Maintenance:** No special filters required, in fact as HVO is a cleaner fuel it may help lower service & maintenance costs
- **HVO drop-in fuel is cleaner burning** than standard diesel
  - reduce NOx emissions by circa 25%
  - reduce particulate matter by circa 40%
  - reduce carbon dioxide (CO<sub>2</sub>) emissions by up to 80%
  - reduce carbon monoxide (CO) emissions by circa 25%

However, HVO is circa 20% more expensive than diesel, meaning that the running costs are substantially higher when compared to an electric machine. In the circumstance where an electric compressor is not suitable (no power source available) then we would recommend considering HVO as a greener fuel alternative with your diesel compressor.

## Industry-by-Industry Breakdown



### Aquaculture

**Application:** Onshore Bubble curtains (for noise control or fish containment)

**Best Fit:** Electric (clean, low noise); 120CFM typically sufficient

**Diesel?** Avoided due to emissions risk in marine settings

**Application:** Offshore Bubble curtains (protecting marine life during construction)

**Best Fit:** Diesel (1600CFM Oil Free), especially on offshore support vessels

**Electric?** No power source available, unless ship power can be utilised, deck space limitations mean power from diesel generators challenging (and renting more assets)



### Construction (General & Infrastructure)

**Applications:** Air-powered tools (jackhammers, nail guns, drills), General tool operation in remote sites, Breathing apparatus (confined spaces), shot blasting, Paint spraying and coating, concrete spraying, drilling or piling

**Best Fit:** Diesel remains dominant (260–850CFM), especially on remote sites

**Electric?** Gaining traction in urban or indoor projects, and within the London Low Emissions Zone



### Data Centers

**Applications:** Positive pressure systems, dust control, cooling & ventilation systems

**Best Fit:** Electric compressors (120–260CFM); quiet and zero-emission is essential



### Film & TV

**Applications:** Special effects, Pneumatic scene equipment, Quiet air supply on set, and air tools

**Best Fit:** Electric (low-noise essential on set), or large diesel (940CFM) for outdoor special effects



## Food & Beverage

**Applications:** Bottling and capping, Packaging (form-fill-seal machines), Ingredient mixing and drying, Conveying and air knives, clean air for product contact, Production peaks, critical resilience, emergency or unplanned maintenance, planned maintenance or capital replacement projects, turnarounds, slowdowns or shutdowns, new products or trials

**Best Fit:** Electric, oil-free compressors (especially 832–1680CFM)

**Diesel?** Not recommended due to contamination risk

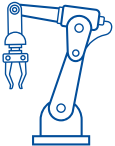


## OEM & General Manufacturing

**Applications:** Tool and machinery operation, Conveyor and robotic system powering, Assembly line pneumatic tools, Paint spraying, Pressing, cutting, and shaping materials, Seasonal air demand, critical resilience, emergency or unplanned maintenance, planned maintenance or capital replacement projects, turnarounds, slowdowns or shutdowns, new products or trials

**Best Fit:** Both electric and diesel depending on location; 260–900CFM range

**Electric?** Preferred for indoor or long-term installations

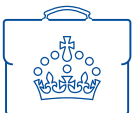


## Ultra-Clean Manufacturing

**Applications:** Precision processes, Optics and electronics manufacturing, cleanrooms, Sterile air for sensitive production, Tablet and capsule processing, Production peaks, critical resilience, emergency or unplanned maintenance, planned maintenance or capital replacement projects, turnarounds, slowdowns or shutdowns, new products or trials

**Best Fit:** Electric, oil-free only

**Diesel?** Not recommended due to contamination risk



## Government & Defence

**Applications:** Breathing air systems, Field tool operation, Emergency air, critical resilience, emergency or unplanned maintenance, planned maintenance or capital replacement projects, turnarounds, slowdowns or shutdowns

**Best Fit:** Mix of diesel (for field work) and electric (for fixed sites)

**OFA?** Yes, for breathing or clean-air applications



## Petrochemical & Refining

**Applications:** Instrument air systems (valves and actuators), Turnarounds, Tool operation during maintenance, emergency air, critical systems, Production peaks, critical resilience, emergency or unplanned maintenance, planned maintenance or capital replacement projects, slowdowns or shutdowns, new products or trials

**Best Fit:** Oil-free electric units for purity (900–1680CFM), diesel for heavy maintenance

**Hybrid?** Increasingly used to bridge both needs



## Pharmaceutical

**Applications:** Tablet pressing and coating, Packaging under sterile conditions, Manufacturing, R&D, Precision processes, Cleanroom air, Critical air for regulated processes, Production peaks, critical resilience, emergency or unplanned maintenance, planned maintenance or capital replacement projects, turnarounds, slowdowns or shutdowns, new products or trials

**Best Fit:** Electric oil-free compressors (832–1680CFM)

**Diesel?** Generally avoided due to contamination and emissions



## Rail

**Applications:** Rail infrastructure maintenance and refurbishment, Air tool operation in yards and depots, Breathing air systems, critical resilience, emergency or unplanned maintenance, planned maintenance or capital replacement projects

**Best Fit:** Diesel for trackside use, electric for depots and facilities

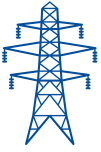


## Ship Building

**Applications:** Shot blasting, paint coating, Air tool use, breathing apparatus, Fabrication and outfitting

**Best Fit:** Diesel for heavy-duty outdoor work; electric for indoor and paint operations

**OFA?** Required for breathing systems and coatings

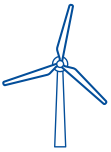


## Utilities

**Applications:** Turbine cooling, vessel entry, Anaerobic digestion and biogas systems, Waste-to-energy plant support, emergency or unplanned maintenance, planned maintenance or capital replacement projects

**Best Fit:** Electric oil-free compressors for environmental safety

**Diesel?** Used during outages or when no grid supply is available



## Renewables & Windfarms

**Applications:** Blade manufacturing, Clean air in turbine factories, offshore bubble curtains, solar piling

**Best Fit:** Oil-free electric for manufacturing; diesel for remote piling jobs



## Electric vs. Diesel Compressors: Cost Analysis

Feature	400CFM Electric	400CFM Diesel
Diesel (l/hr)	n/a	23
Diesel (£/litre)	n/a	£1.44
Carbon (CO <sub>2</sub> Kg/Hr)	0Kg	57.7
Electric (KW)	75	n/a
Electricity Cost (£/KWh)	£0.24	n/a
HVO (£/litre)	n/a	£1.73
<b>Electric vs Diesel Cost Analysis (50-hour week)</b>		
Cost for 50-hour week	£915	£1,656
CO <sub>2</sub> for 50-hour week	0Kg	2887Kg
<b>Electric vs Diesel (running on HVO) Cost Analysis</b>		
Cost for 50-hour week	£915	£1,990
CO <sub>2</sub> for 50-hour week	0Kg	577Kg
<b>Electric vs Diesel Cost Analysis (unlimited running)</b>		
Cost for 168-hour week	£3,074	£5,564
CO <sub>2</sub> for 168-hour week	0Kg	9699Kg
<b>Electric vs Diesel (running on HVO) Cost Analysis</b>		
Cost for 168-hour week	£3,074	£6,685
CO <sub>2</sub> for 168-hour week	0Kg	1940Kg

As you can see from the table above, the operational cost savings from running on mains electricity compared to diesel fuel are quite substantial: **£741 per week saving (and nearly 3tonne of carbon) on 50-hour running**, and **£2,490 per week saving (and nearly 10 tonnes of carbon) on unlimited running**.

You can also see the carbon benefits of choosing to run on HVO fuel rather than diesel fuel, when an electric compressor is not a suitable option.

## Final Thoughts

Electric compressors are fast becoming the go-to option in sectors prioritising clean air, quiet operation, and sustainability. Diesel models still provide unmatched flexibility and ease of deployment on remote or temporary sites, when a diesel compressor is the option of choice consider HVO as a drop in fuel alternative for the sustainability benefits.

GenAir UK are technology and fuel agnostic and offer a wide range of both diesel and electric air compressors—including hybrid and oil-free models—to support every sector's unique demands.

Use the product selector to find the right compressor for you:

<https://compressor-rental.co.uk/resources/calculators/product-sector-lookup/>

Use the savings calculator to calculate the savings for electric compressors:

<https://compressor-rental.co.uk/resources/calculators/diesel-vs-electric-costs-calculator/>



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