





Products	dBa	Inovair HP*	Comparable PD HP
 Drop-In Replacement (DIR) Blower Re-use existing motor and frame	80-90 dBA	30-100 HP	40-125 HP
 Open Motor with Horizontal Frame Package (Inovair supplies motor & frame)	80-90 dBA	30-100 HP	40-125 HP
 Open Motor with Vertical Frame Package (space saving design)	80-90 dBA	30-100 HP	40-125 HP
 Enclosed Motor Package	75-85 dBA	40-75 HP	50-100 HP

* Due to higher efficiency, Inovair consumes less HP than PD blowers at same pressure/ flow spec

Temperature Advantage

	Inlet Temperature [°F]	Discharge Pressure [psig]*	Compressor Efficiency [%]	Discharge Temperature [°F]	Temperature Advantage [°F]
PD Blower	60	8	60	173	26
Inovair Turbo	60	8	78	147	
PD Blower	60	12	55	234	51
Inovair Turbo	60	12	78	183	

Compressor discharge temperature is a function of three variables:

1. How much the air is compressed (PR - aka - discharge pressure)
2. Inlet temperature
3. Efficiency of the compressor itself

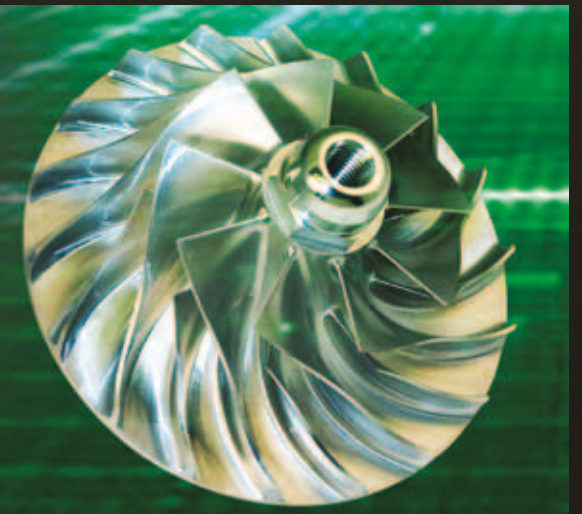


Most Cost Effective Turbo Blowers for Wastewater Plants (< 10 MGD)

“Turbo blowers are a significant area of innovation in blower design offering energy savings for the wastewater industry,” according to a recent EPA citing. Additionally, the EPA suggests “Equipment upgrades and operational modifications to reduce energy should not be one-time events, but should be incorporated into a comprehensive energy review and management strategy.” Not surprisingly, turbo blowers have gained rapid acceptance in the wastewater industry over the past 3-4 years at large plants, but have not been affordable for smaller plants.

Inovair Turbo Blower Advantages

- **Most Economical Turbo Blower**
 - Competitive Initial Cost | High Efficiency | 10 - 35% Energy Savings
- **Cooler Air Temperatures**
 - Can Eliminate Heat Exchanger | PVC/CPVC piping & membrane protection | Prolonged Diffuser Life
- **Industry Standard Components**
 - TEFC Motor | Allen Bradley Controls
- **Low Maintenance**
 - Annual Oil Changes | High Capacity Inlet Filters
- **Quiet Operation**



Typical Blower Efficiencies

Blower Type	Nominal Blower Efficiency (percent)
Positive Displacement (variable speed)	45 - 65
Single-Stage Centrifugal, Integrally Geared (with inlet guide vanes and variable diffuser vanes)	70 - 80
Single-Stage Centrifugal, Gearless (high speed turbo)	70 - 80

Note: values may vary with the application.

Source: Evaluation of Energy Conservation Measures EPA 832-R-10-005 September 2010



PD Blower Displacement

33% Decrease of Installed Horsepower Prevented Costly MCC Upgrades

A wastewater facility in southwest Missouri was having difficulty meeting state water discharge mandates. Over the past decade they had a significant increase in residential households that had pushed their facility beyond its rated capacity. They put a project together to add significantly more aeration to their digester tank. This was accomplished through the addition of fine bubble diffusers, along with an increase in delivered air flow.

The city had been quoted three 75 HP positive displacement blowers for this project. Inovair was able to meet their airflow needs with three 50 HP turbo blowers; a 33% decrease in installed horsepower. The reduction in motor horsepower allowed them to reuse their MCC equipment, avoiding costly MCC room upgrades in addition to long-term energy savings.

Another key benefit of selecting Inovair turbo blowers was noted at startup of the system. With the office building and control room located approximately 100 feet from the digester tank, the noise from the previous PD blowers could be heard pulsing through the building. There was concern that having larger PD blowers in this area would make the noise significantly worse. They were very pleased when the Inovair Turbo Blowers were started, as they could not hear them running from the office door, let alone inside the building.

Multistage Centrifugal Replacement

Replacing 125 HP Multistage Blowers with 60 HP Inovair Blowers

A wastewater facility designed for 7.5 MGD with current capacity of 2.5 MGD utilizes (3) multistage centrifugal blowers in their aeration basins. Plant personnel felt this current system was using excessive amounts of electricity. The plant personnel's objective was to identify a cost-effective, modern high efficient product offering to replace the aging multistage centrifugal blowers which meets the needs of today's flow rates, but also allows for future peak demands.

After a complete system evaluation, it was determined a compact, integrally geared turbo blower was the best solution to meet the plant's needs of 1200 SCFM at 7.5 PSI. A 75 HP Inovair Turbo Blower was sized to replace their existing 125 HP multistage centrifugal blower. The multistage blower was operating at roughly 92 HP. The Inovair turbo blower is sized at 68 HP, meeting the required operating conditions. This results in a savings of approximately 26%.

To minimize annual capital expenditures, plant management is replacing one blower this year and a second unit is budgeted next year. The plan is to use the more efficient Inovair turbo blower as the primary blower with the existing unit maintained as the mandated back-up unit. After the second blower is replaced with an Inovair turbo blower, the blowers will once again be alternated on a weekly basis.

