



# TURBO BLOWERS & COMPRESSORS

EFFICIENCY REDEFINED™



**Inovair**®  
Turbo Blowers

$\eta$  = Efficiency



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2200 Turbo Blower



## 10-35% Energy Savings

- Proven energy savings vs other blower technologies
- Energy costs can amount to 80% of blower life cycle costs
- Highest efficiency design for reduced environmental impact

## Quiet Operation

- As low as 75 dBA (Complete Blower System)
- No pulsations
- Improves worker health & safety
- Reduces noise abatement costs

## Powerful And Reliable

- Reliably produces 5-22 psi, with oil-free air
- Designed for minimum 10 year continuous duty (24/7) operation
- Proven performance, 2 year blower warranty
- Low maintenance

## Best in Class Efficiency

- Modern turbo/centrifugal design results in highest efficiency
- Substantially more efficient than positive displacement blowers
- Higher efficiency also produces cooler discharge air



**NEW**

Drop-In Replacement  
now available with  
compact vertical stand



**Complete Blower System**



**Drop-In Replacement Blower**  
Allows reuse of motor  
and frame

# Centrifugals/Turbos Are Substantially More Efficient

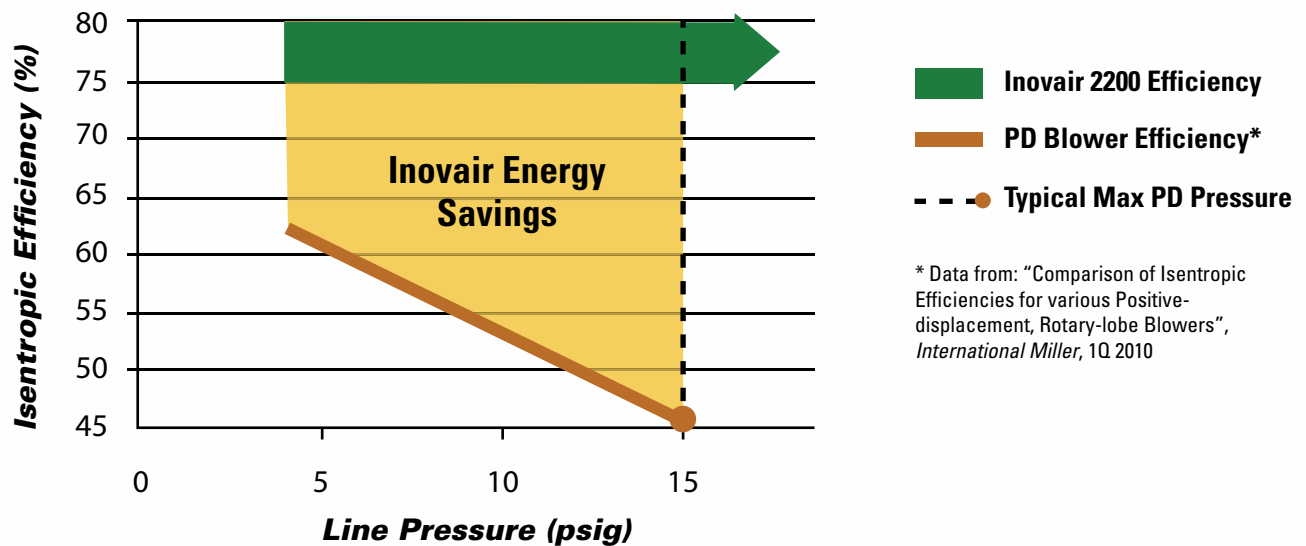
BLOWER TYPE	NOMINAL EFFICIENCY
Positive Displacement (variable speed)	45-65%
Single-Stage Centrifugal, Integrally Geared (with inlet guide vanes & variable diffuser vanes)	70-80%

Source: EPA 832-R-10-005, "Evaluation of Energy Conservation Measures," (September 2010).

Efficiency translates directly into energy savings; the higher the efficiency of the turbo blower, the larger amount of energy savings. According to a recent EPA report evaluating energy conservation measures, **"Turbo blowers are a significant area of innovation in offering energy savings."**<sup>1</sup> Additionally, **"single-stage centrifugal integrally geared blowers have the advantage of managing air flow and pressure independently,"**<sup>1</sup> allowing intelligent control and improved functionality, as well as energy savings.

**The Inovair® Advantage:** Leading the way in technology with best in class efficiency at substantially lower costs relative to other centrifugal technologies

## Efficiency Advantage Increases With Pressure



- Inovair operates at a much higher efficiency (75-80%) than PD blowers
- Efficiency of PD blowers declines as pressure increases, enhancing the Inovair Advantage
- Choosing Inovair typically results in 10 - 35% energy savings over PD blowers

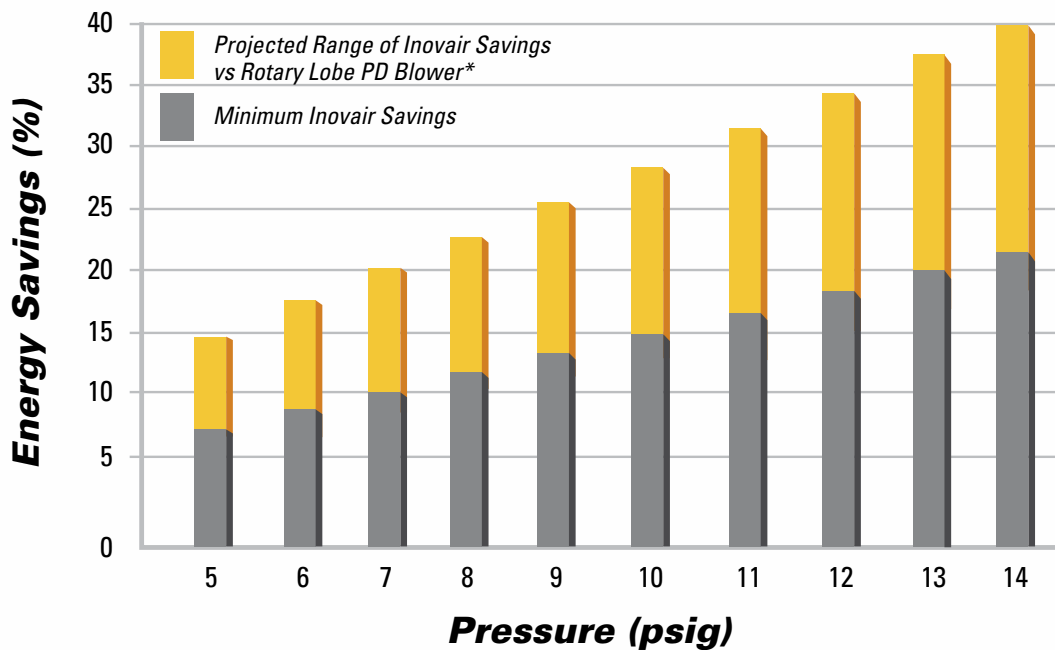
<sup>1</sup> EPA, Report 832-R-10-05, "Evaluation of Energy Conservation Measures," (September 2010).

# 10 - 35% Energy Savings

SAVINGS INCREASE WITH PRESSURE

Blower Model	Application	psi Line Pressure	KW (avg.)	Energy Savings
Inovair 2200 Multistage Cent.	Aeration	7.9	50.8	25.9%
		7.9	68.6	
Inovair 2200 PD Blower	Wheat Flour	11.4	32.7	24.8%
		11.4	43.5	
Inovair 2200 PD Blower	Aeration	6.8	28.3	15.7%
		6.8	33.6	
Inovair 2200 PD Blower	Sugar	10.0	49.3	27.1%
		10.0	67.6	
Inovair 2200 PD Blower	Mill Feed	9.3	30.4	16.7%
		9.3	36.5	
Inovair 2200 PD Blower	Oat Flour	12.0	52.4	30.1%
		12.0	75.0	
Inovair 2200 PD Blower	Plastic Pellets	7.6	19.2	24.7%
		7.0	25.5	
Inovair 2200 PD Blower	Aeration	8.4	40.4	21.7%
		8.4	51.6	
Inovair 2200 PD Blower	CaCo3 Filled Pellets	11.0	45.1	36.2%
		10.4	70.7	

Inovair Energy Savings Increase With Pressure



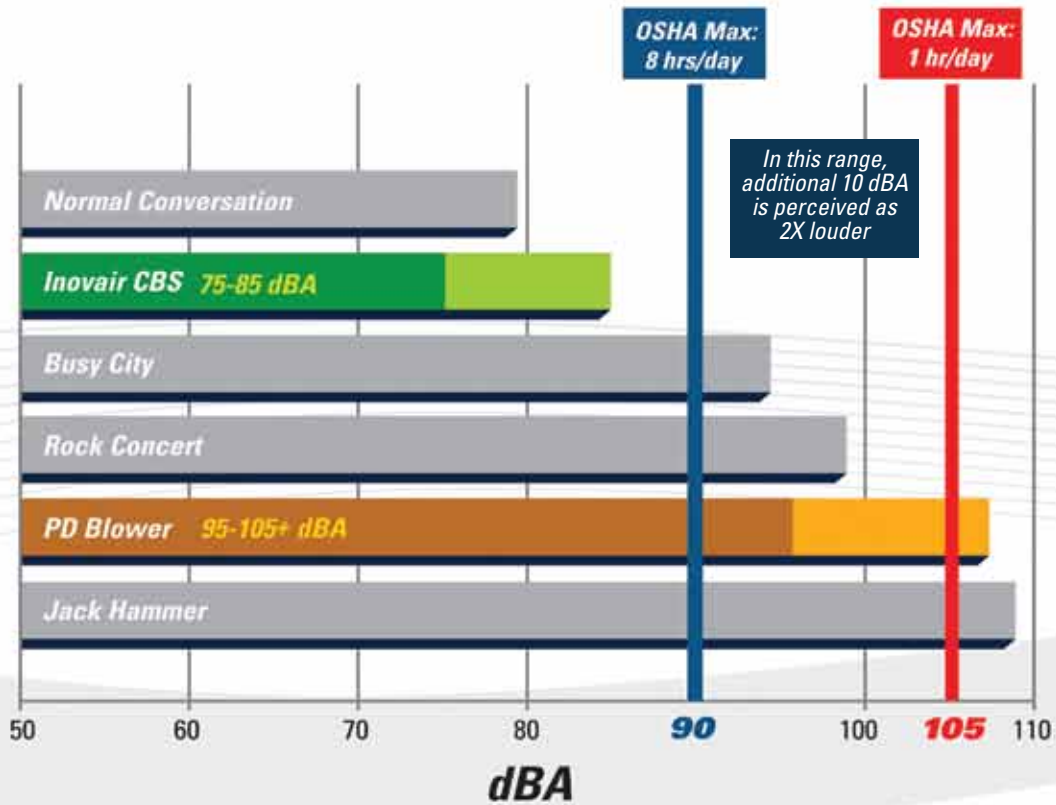
\* Actual savings dependent upon application and specifications

# Noise Levels Below OSHA & NIOSH Standards

Inovair Complete Blower System (CBS) packages, available for pneumatic conveying, wastewater and other applications, feature a low dBA pulsation free sound profile which addresses both OSHA and NIOSH\* health and safety standards, and improves the comfort and safety of employees. This advantage is also very helpful in reducing environmental noise for outdoor installations. While centrifugal technology is inherently quieter than PD blowers, Inovair provides further noise reduction via the hygienically designed CBS cabinet. At 12 psig and 800 icfm, a 50 HP Inovair CBS operates at 85 dBA. To ensure customer satisfaction, Inovair products are rated for a relatively high pressure and flow specification. \*\* At lower pressure and flow, CBS noise levels can be as low as 75 dBA.



With Inovair, communication near your blowers is no longer a challenge, nor a health and safety concern.



## Noise Reduction Technology

Inovair's lower dBA level eliminates noise abatement expenses frequently incurred with the use of blowers. With noise levels well below OSHA standards of 90 dBA per workday, there is no need for a separate building, room, or enclosure to house these blowers, saving you thousands of dollars. When installing Inovair low noise blowers outside, there is no worry of neighborhood noise complaints or citations typically associated with violating noise ordinances. Improved employee health and safety are another benefit, as well as a more maintenance friendly environment. This advantage allows placement of the turbo blowers next to the process to minimize tubing runs, reduces headloss and offers additional energy savings.



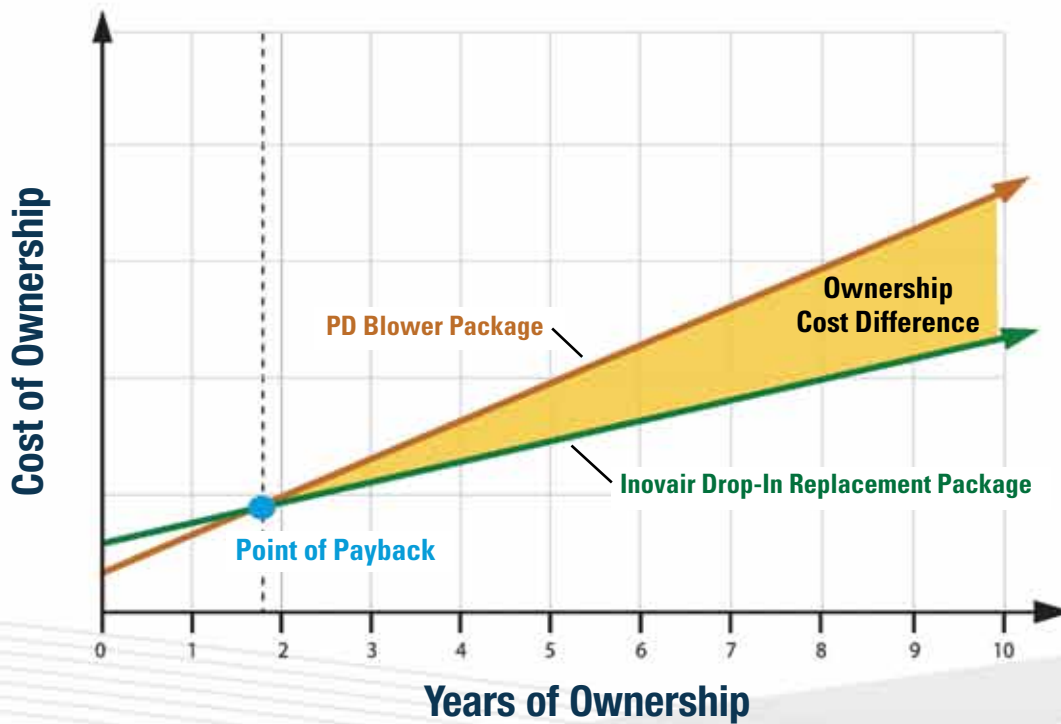
\* Sound standards obtained from OSHA 1910.95(b)(2) and NIOSH Publication 98-126 [85 dBA]

\*\* Free-field measurement, 3 ft; 800 icfm at 12 psig, 50 HP motor; dBA levels below 85 at lower pressure and flow

## Substantial Savings – A Clear Choice

The expense of blower ownership is comprised of equipment, installation, energy, and maintenance costs. Equipment and installation are a one-time expense, while energy and maintenance are continuous costs of ownership, with energy reaching up to 80% of total ownership cost.<sup>1,2</sup>

Third party reports state that rotary lobe PD blowers have the highest cost of ownership over time primarily because they are the “least energy efficient”.<sup>1,2</sup>



Nomial kW (hp)	OPERATING COST PER YEAR (8,000 hrs) AT COST PER kWh* (\$)				
	\$.06	\$.09	\$.12	\$.15	\$.18
23 (30)	\$11,040	\$16,560	\$22,080	\$27,600	\$33,120
30 (40)	\$14,400	\$21,600	\$28,800	\$36,000	\$43,200
38 (50)	\$18,240	\$27,360	\$36,480	\$45,600	\$54,720
45 (60)	\$21,600	\$32,400	\$43,200	\$54,000	\$64,800
56 (75)	\$26,880	\$40,320	\$53,760	\$67,200	\$80,640
75 (100)	\$36,000	\$54,000	\$72,000	\$90,000	\$108,000
94 (125)	\$45,120	\$67,680	\$90,240	\$112,800	\$135,360

\* Rates based upon published US Energy Information Administration 2010 actual rates

<sup>1</sup> EPA, Report 832-R-10-05, “Evaluation of Energy Conservation Measures”, (September 2010).

<sup>2</sup> Gass, J. 2009. Scoping the Energy Savings Opportunities in Municipal Wastewater Aeration. BC Hydro/BCWWA Conference. May 5, 2010.

# Inovair® Leadership

Inovair is the industrial products division of Accessible Technologies, Inc. The company was founded in 1994 to expand the application of high efficiency turbo/centrifugal blower technology within forced induction and industrial applications. Inovair is the worldwide leader in forced air aircraft deicing, and the first company to create turbo blower packages designed specifically for pneumatic conveying. Inovair is also the first to offer compact, economical, integrally geared blower packages for wastewater. Highly efficient blower design, transmission design and space utilization are just a few hallmarks of the Inovair line of turbo blowers and centrifugal compressors. Efficiency is in everything we do – in fact, it's part of our name.

## $\eta$ = Efficiency®

Historically, engineers worldwide have utilized the Greek letter "Eta" ( $\eta$ ) as the symbol for efficiency. Today, Inovair brings this focus on efficiency to pneumatic conveying, wastewater and other applications with a line of innovative and affordable turbo blowers and compressors.

Thanks to an 18+ year history of turbomachinery leadership, the Inovair line of turbo blowers provides both significant energy savings as well as durability and peace of mind - all in a modern, compact package. These innovative products all feature cutting edge technology, including proprietary aerodynamic, transmission, air control and cabinet designs.



*All company operations are housed on a state-of-the-art campus in Kansas City*

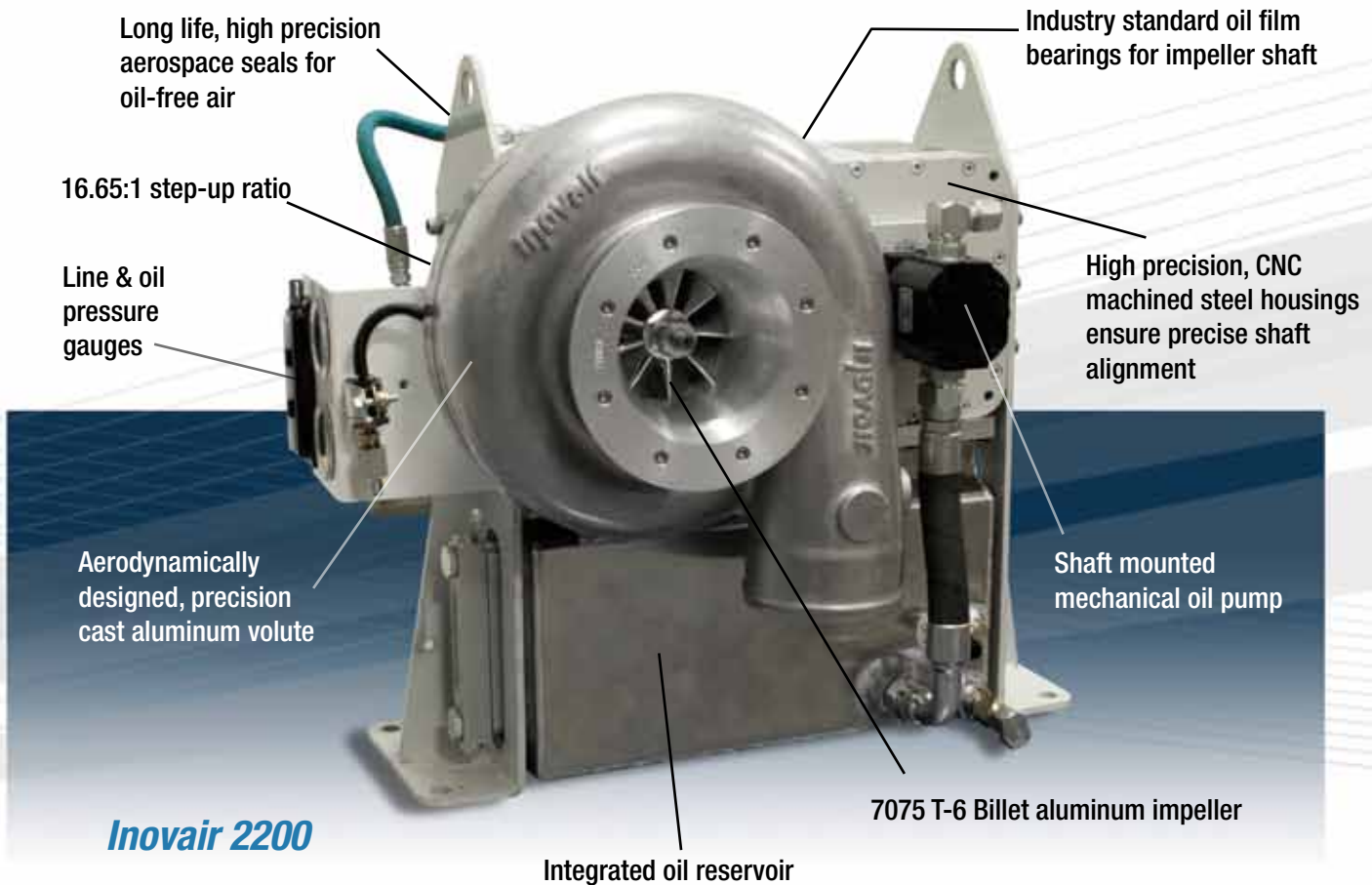
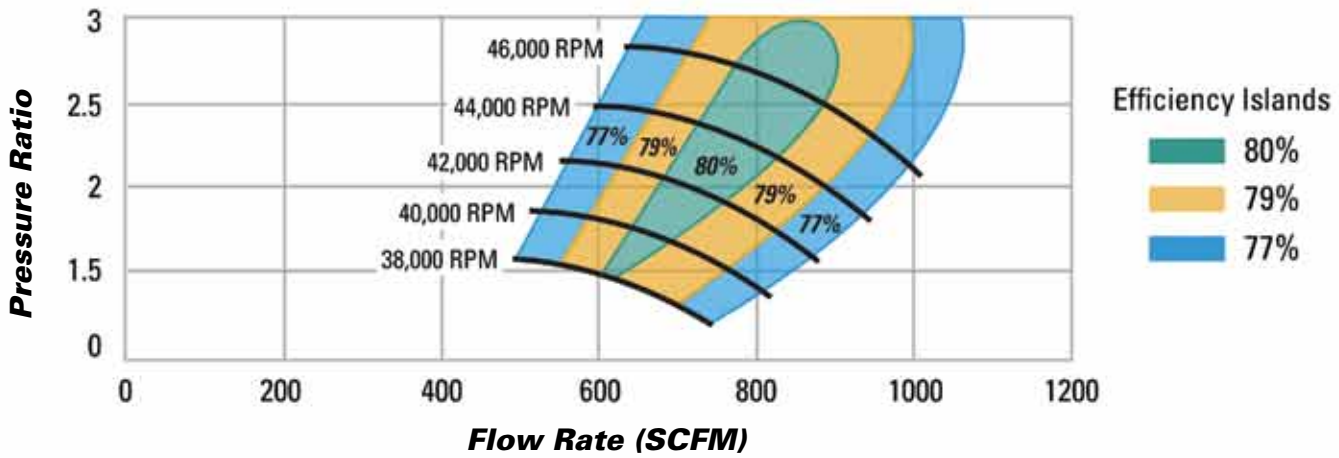




# Industry Standard

Centrifugal technology is inherently more efficient and longer lasting than positive displacement designs. For applications where efficiency and durability are most important, such as aerospace, municipal wastewater, petroleum exploration, and natural gas compression, centrifugal/turbo compressors are the industry standard. The efficiency islands on the chart below represent actual Inovair turbo blower performance.

### Centrifugal Operating Map



**Inovair 2200**

# Drop-In Replacement (DIR)

30-100 HP (Replaces PD Blowers up to 150 HP)

## Industry-Exclusive Design

The DIR model can utilize your existing inventory of motors and blower stands, an industry first for turbo blowers. If space is an issue, this innovative high efficiency blower can also be mounted on an Inovair-supplied vertical stand, providing a compact footprint. Combine these design features with the DIR's proven 10-35% energy savings, and you have a unit that provides a high ROI and rapid payback. This blower also provides the long life and high pressure capability that is typical of turbo designs.

## Simple installation, retains existing hardware investments

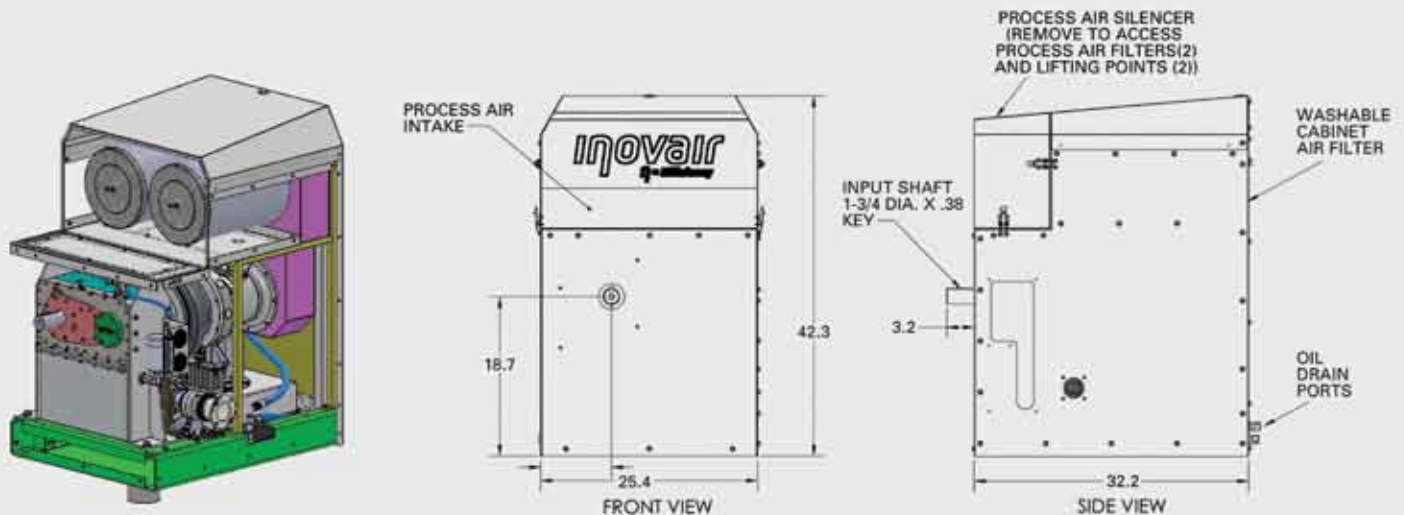
The Inovair Drop-In Replacement is the only turbo/centrifugal blower to allow reuse of your existing motor and stand. This innovative blower delivers the lowest cost per cfm, and meets a wide range of airflow demands for pneumatic conveying, wastewater and other applications.

With proven durability, best in class efficiency, advanced airflow controls and other patented and patent-pending design elements, the Inovair Drop-In Replacement blower can improve operational performance while also significantly reducing operating costs.



## Standard Specifications

- 2200 Inovair compressor, with aero packages capable of up to 1700 ICFM
- Allen Bradley® PLC for intelligent control
- Proportional by-pass relief valve
- Internal lubrication system with integrated cooling
- Dual high capacity inlet filters with silencing
- Oil and discharge pressure gauges
- Ethernet communication enabled
- White powder coated enclosure
- Information window with light bar for operating status
- Belt guard
- High efficiency synchronous drive system
- Yearly oil changes at 24/7 operation



# Mounting Options

## Horizontal or Vertical

### Easy Installation

Because the DIR-H does not require removal of your existing motor and frame, and utilizes your existing electrical wiring, installation is similar to replacing a PD blower.

### Drop-In Replacement Benefits

- Low cost investment with quick payback – accelerated by reusing motor & frame (DIR-H)
- Highest efficiency, with 10-35% energy savings over PD blowers
- Intelligent air flow management
- No need for external silencers, no pulsations
- Oil-free air, sanitary cabinet design
- Low discharge air temperatures
- Rugged design, capable of 5-22 psig

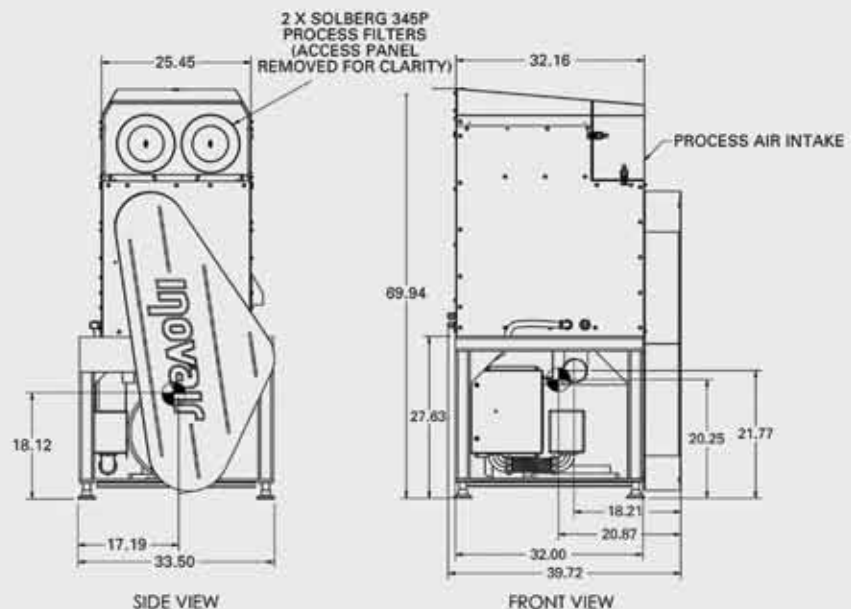
### Vertical Mounting (DIR-V)

- Compact footprint (34" X 40")
- Able to reuse your electric motor
- Also available as complete package from Inovair, with DIR blower and motor installed on stand for you
- High ROI, rapid payback
- Powerful & reliable, producing 5-22 psig



### Optional Features

- Powder coated support frame
  - Vertical frame with tensioning assembly
  - Horizontal frame
  - White or gray finish
- 1800 or 3600 RPM premium efficiency motor
- Acoustical noise reduction package
- V-Belt drive system (DIR-H)
- Inlet adapter for conditioned inlet air supply
- Built-in 110V transformer for easy installation



# Complete Blower System (CBS-75)

40-75 HP (Replaces PD Blowers up to 125 HP)

## Quiet Operation

With an innovative design and hygienic system packaging, the CBS operates at 75-85 dBA\*, meeting current NIOSH guidelines and surpassing those from OSHA. Due to the very nature of this technology, centrifugal compression also eliminates the annoying “pulsations” associated with traditional positive displacement blowers, further improving worker health and safety.

## Energy Savings

Thanks to its advanced, high-efficiency turbo design, an Inovair Complete Blower System can provide energy savings of 10 to 35% relative to positive displacement blowers.

## Complete Blower System Benefits (CBS-75)

- Sanitary cabinet design
- Intelligent air flow management
- Oil-free air supply
- Ease of access and service
- Ability to reuse existing electric motor
- Heavy duty design, capable of 5-22 psig

## Optional Features

- 1800 or 3600 RPM premium efficiency motor
- Inlet adapter for conditioned inlet air supply
- Built-in 110V transformer for easy installation

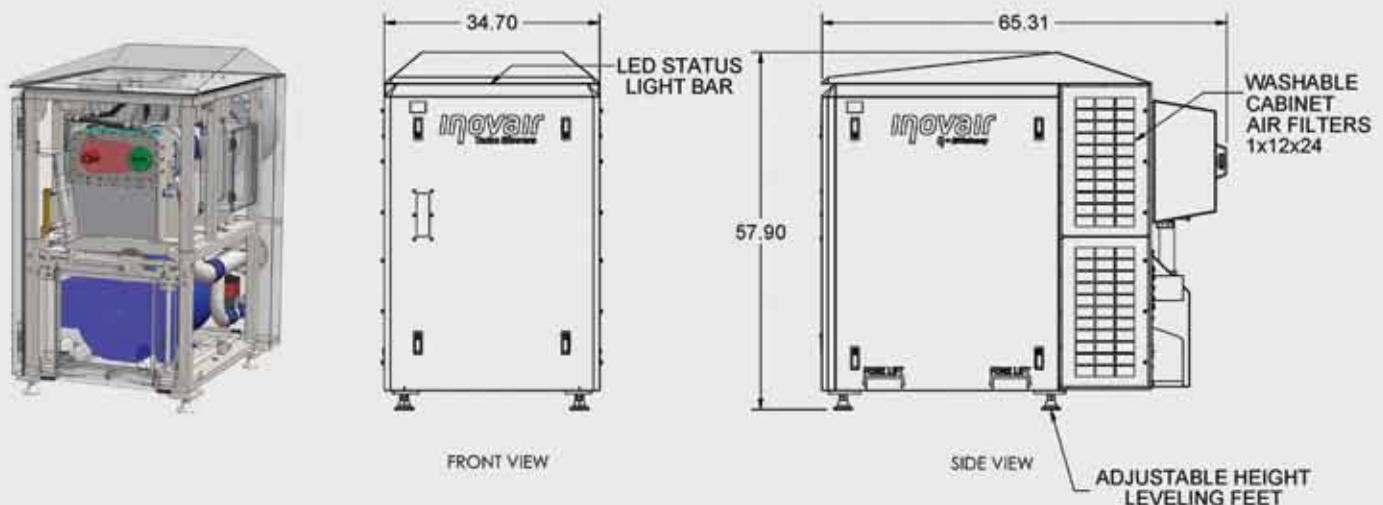
\* Free-field measurement, 3 ft; 800 cfm at 12 psi, 50 HP motor; dBA levels below 85 at lower pressure and flow



## CBS-75 Standard Specifications

- 2200 Inovair compressor, with aero packages capable of up to 1200 ICFM
- Allen Bradley® PLC for intelligent control
- Proportional by-pass relief valve
- Internal lubrication system with integrated cooling
- Motor and cabinet cooling system
- High capacity inlet filter and silencing
- Ethernet communication enabled
- Acoustically treated lockable exterior panels
- Powder coated frame and sheet metal
- High efficiency synchronous drive system
- Oil and discharge pressure gauges
- Light bar for operating information
- Yearly oil changes at 24/7 operation

### CBS-75



# Complete Blower System (CBS-125)

75-125 HP (Replaces PD Blowers up to 200 HP)

## 10-35% Energy Savings

Thanks to its advanced, high-efficiency turbo design, an Inovair Complete Blower System can provide energy savings of 10 to 35% relative to positive displacement blowers.

## Low Noise, 75-85 dBA

With an innovative design and hygienic system packaging, the CBS operates at 75-85 dBA\*, meeting current NIOSH guidelines and surpassing those from OSHA. Due to the very nature of this technology, centrifugal compression also eliminates the annoying “pulsations” associated with traditional positive displacement blowers, further improving worker health and safety.

## Complete Blower System Benefits (CBS-125)

- Sanitary cabinet design
- Ease of access and service
- Intelligent air flow management
- Oil-free air supply
- Ability to reuse existing electric motor
- Heavy duty design, capable of 5-22 psig

## Optional Features

- 1800 or 3600 RPM premium efficiency motor
- Inlet adapter for conditioned inlet air supply
- Built-in 110V transformer for easy installation



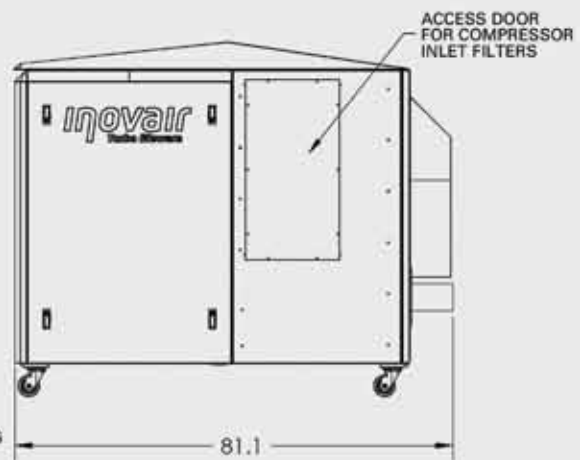
## CBS-125 Standard Specifications

- 2200/R Inovair compressor, with aero packages capable of up to 2200 ICFM
- Allen Bradley® PLC for intelligent control
- Proportional by-pass relief valve
- Internal lubrication system with integrated cooling
- Motor and cabinet cooling system
- Dual high capacity inlet filters and silencing
- Ethernet communication enabled
- Acoustically treated lockable exterior panels
- Powder coated frame and sheet metal
- High efficiency synchronous drive system
- Oil and discharge pressure gauges
- Light bar for operating information
- Yearly oil changes at 24/7 operation

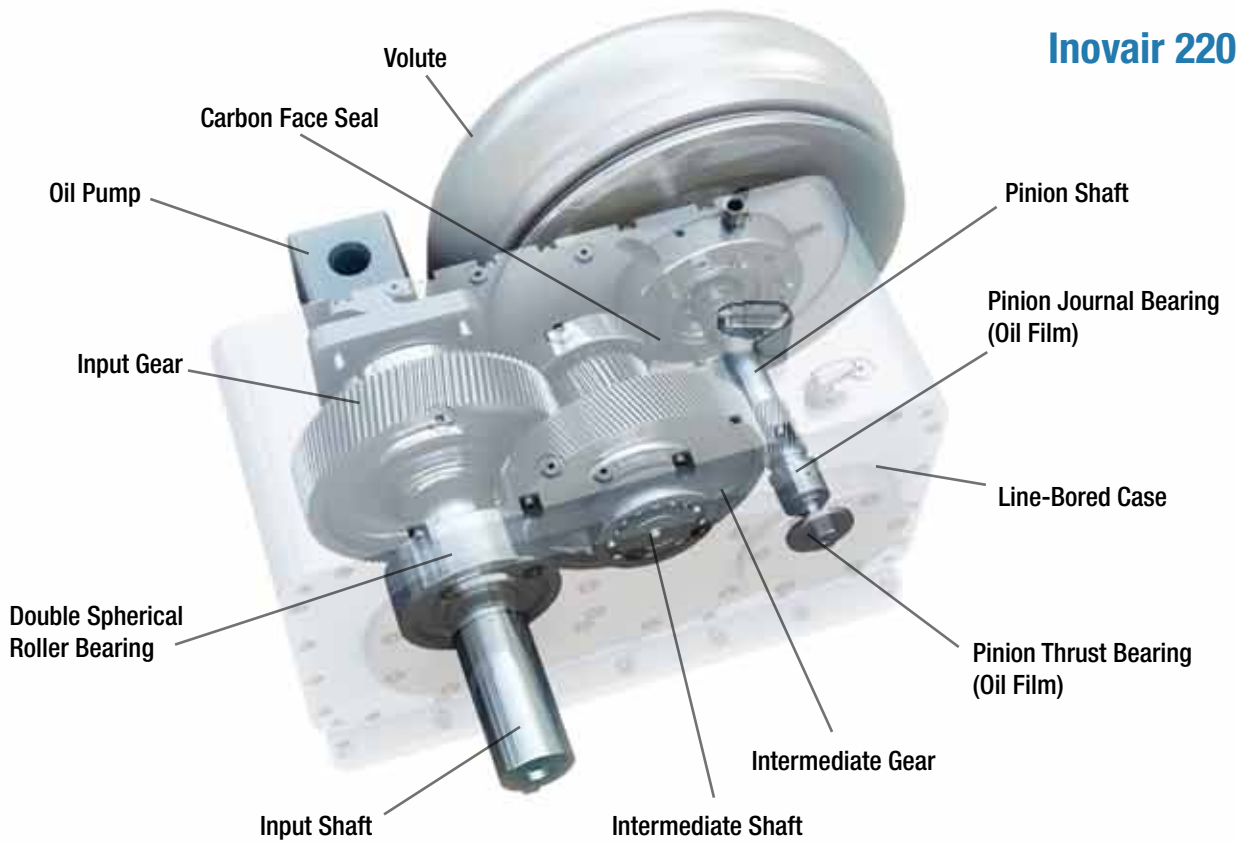
### CBS-125



FRONT VIEW

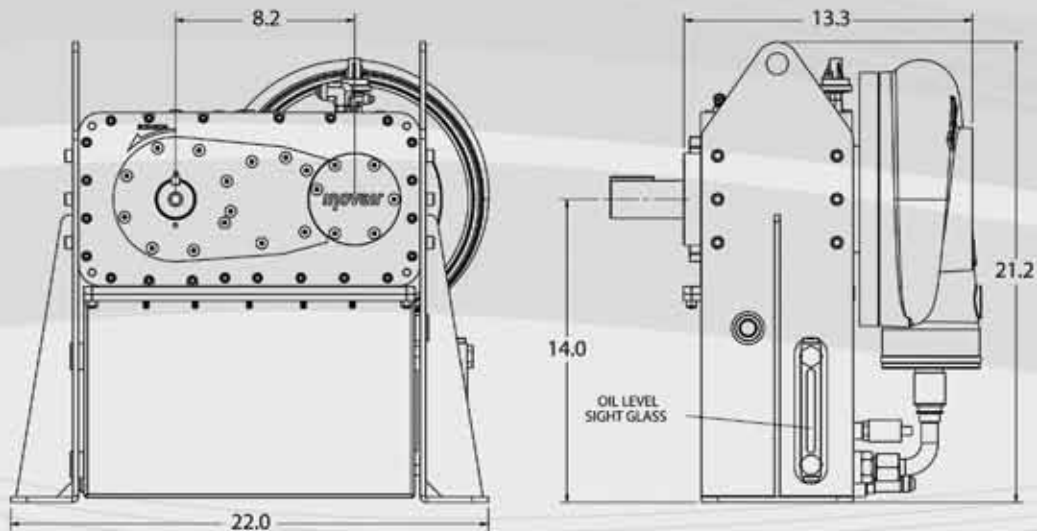


SIDE VIEW



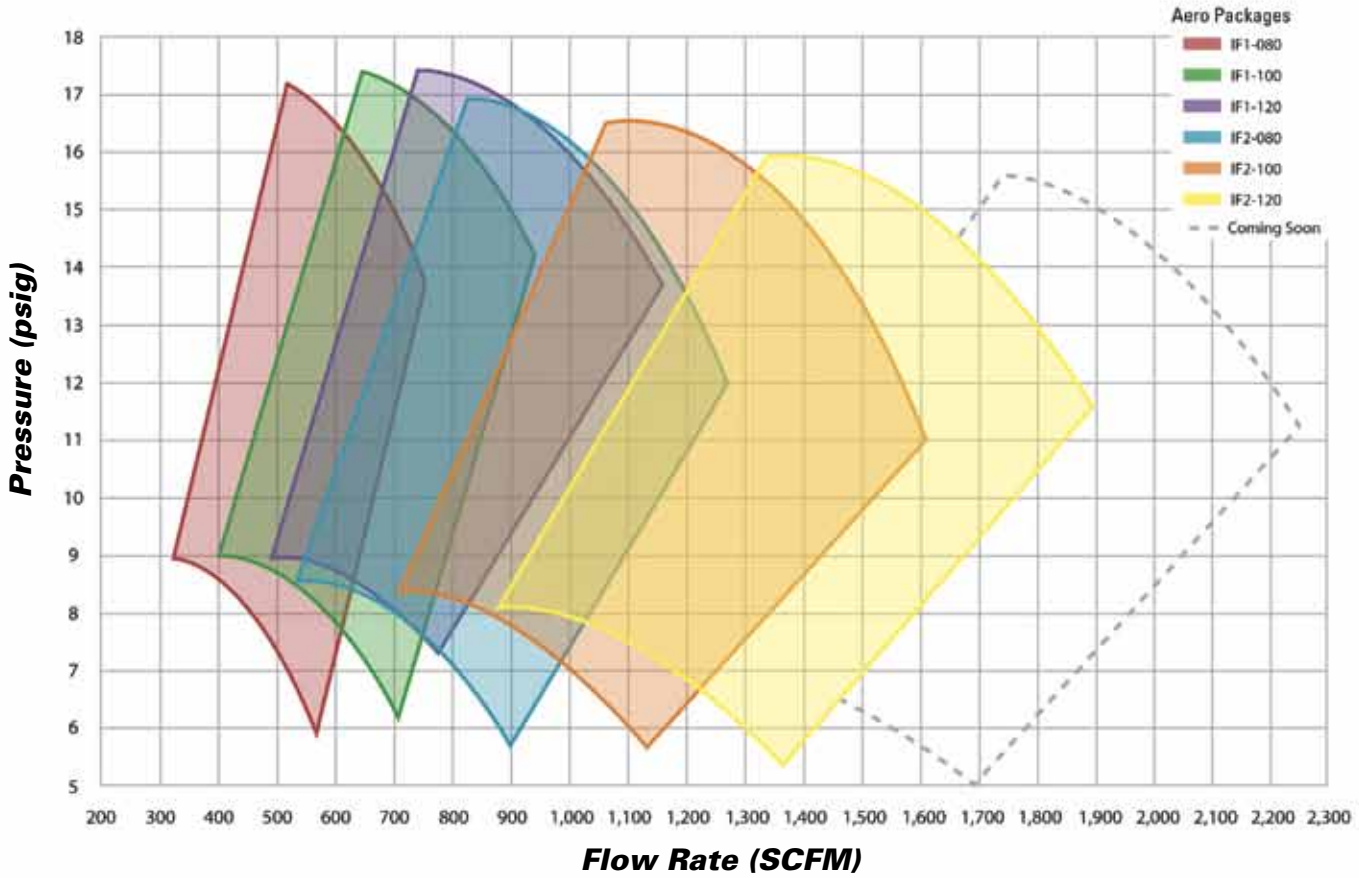
### Proven Technology for Demanding Applications

- Inovair's 2200 blower is an integrally-gear centrifugal blower; a 2-stage gearbox is integrated into the blower unit providing the necessary impeller speed
- 2200 gearbox is rated up to 75 HP; 2200R gearbox is rated up to 125 HP
- L10 bearing specification, minimum 10 year life at 24/7 operation
- High precision gears manufactured to AGMA 11 standards
- Assemblies balanced to G2.5 balancing standard
- Lighter weight and more compact than equivalent PD's as well as more efficient and reliable
- Traditionally used in applications where efficiency and reliability are paramount, such as gas turbines (aircraft and stationary), pipeline and oil field compressors, air-conditioning and refrigeration
- Tolerates media ingestion better than PD blowers

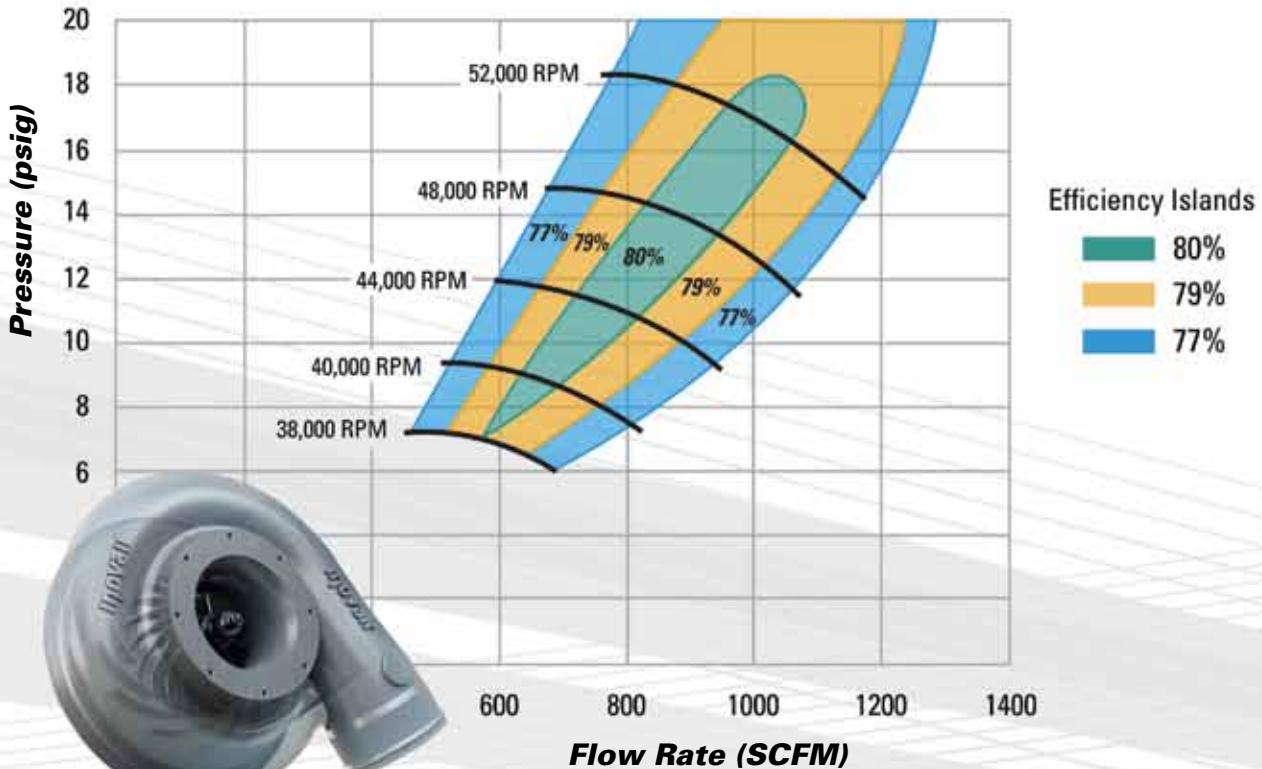


## Inovair 2200/R Operating Range

38,000 - 52,000 RPM



## Inovair Aero Package IF1-120 Performance



For additional information visit [Inovair.com](http://Inovair.com)

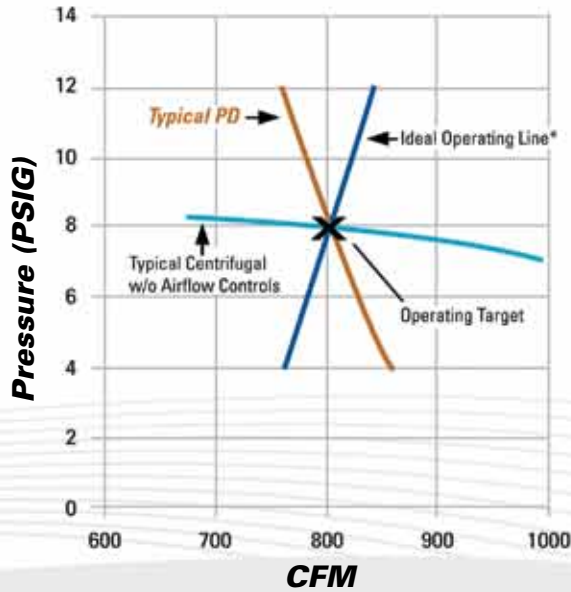
# Intelligent Conveying

## Ideal Operation

Inovair is the first to design high-efficiency turbo packages specifically for pneumatic conveying applications, covering a wide range of airflow demands. Inovair's intelligent control system maintains a consistent mass air flow providing additional benefits of reduced exposure to system plugs during pressure surges and maintaining product integrity created by variances in velocity. Additionally, unlike turbo packages not designed for conveying, Inovair's airflow system responds rapidly and effectively to changes in line conditions.

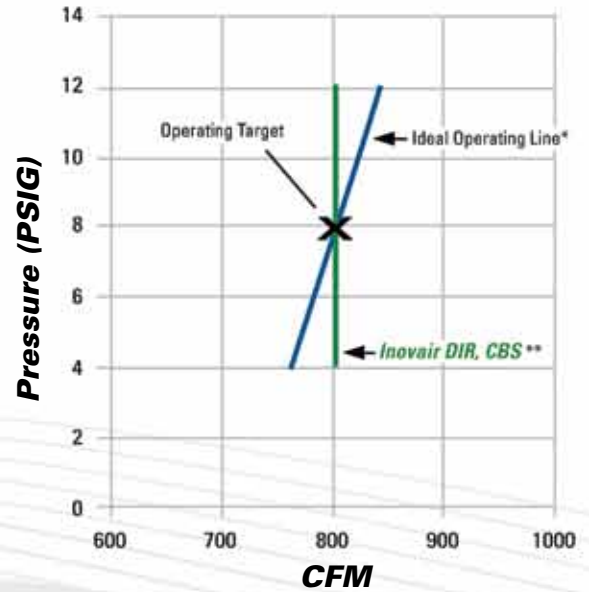
### Legacy Technology

- PD blower airflow decreases as line pressure increases, reducing velocity in conveying system
- Typical centrifugal alone is not ideal match; airflow controls are required for pneumatic conveying



### Inovair Technology

- Ideal operating line for pneumatic conveying requires increase in airflow as line pressure increases\*
- Inovair pneumatic conveying technology is closest match to ideal operating line and can be customized to meet specific customer needs



\* Source: David Mills, *Pneumatic Conveying Design Guide* (Levy & Kalman, 2004), 183-210.  
 \*\* Certain turndown ratios may require variable speed

## Pneumatic Conveying Example Quiet and Energy - Saving Load Out Line

Loading trucks and railcars can be a stressful operation. A loud blower only adds to the stress, making it more difficult to communicate with fellow workers and equipment operators. Loud blowers also potentially limit operational hours of a plant, especially if a plant has residential properties encroaching or citations associated with violating noise ordinances. Additionally, if the load out operation is time sensitive, it is important that a blower can reliably operate at higher pressure levels, to improve throughput and productivity.

A flour mill put the Inovair Complete Blower System to work loading flour into trucks and railcars. The Inovair blower replaced an existing PD blower which was located outside under a rain cover. Given this outside setting, reducing blower noise to less than 85 dBA was a major advancement for the facility - meeting current NIOSH guidelines while surpassing those from OSHA. Additionally, the Inovair blower showed an immediate 20%+ energy savings (at 8-9 psi) when compared to the previous PD blower.





## Cereal Manufacturing Example - Railcar Unloading Replaced 75 HP PD Blower with 50 HP Inovair

A cereal manufacturer utilizing rice flour for their extrusion process needed to increase system capacity and was looking for options. The rice flour is delivered to the plant in pressure differential rail cars, and due to increased product demand, the customer had to look at alternatives to increase the rail car unloading system's capacity. The goal was to limit the amount of work required, and retain as many components as possible, including convey line, product receivers, and process controls. The existing PD blower's reserve had been exhausted, and would need to be replaced for the capacity demand. After weighing the options, the customer invested in an Inovair Complete Blower System (CBS) as the preferred option to resolve their plant's demands.

The 50 HP Inovair blower was installed in place of the existing 75 HP PD blower, and now allows the plant to operate their rail car unload system reliably at 12-13 psi providing the system capacity requested without requiring further modifications to the existing unload system. On top of the energy savings and increased system capacity, the substantial dBA reduction has also eliminated noise complaints from residential neighbors.



## High Pressure Dilute Conveying Example 30% Energy Savings and Reduced Downtime

For dilute phase pneumatic conveying lines running above 12 psi problems can arise with rotary PD blowers, as this is near the upper end of their operating range. At these pressure levels, PD blowers may have less ability than desired to achieve the necessary pressure rise to overcome the formation of plugs. Furthermore, PD blower longevity may be compromised at levels above 12 psi and high duty cycles. Inovair blowers on the other hand, with much higher pressure capabilities, are able to achieve the desired rise to overcome potential plugs at high psi levels, and remain extremely durable.



Facility downtime is expensive, whether caused by a plugged line or a failing blower. A facility experiencing downtime created by shorter than expected PD blower life and recurring plugged lines, as well as seeking energy reduction opportunities, installed an Inovair Complete Blower System (CBS). The Inovair blower has not only generated energy savings approaching 30%, it has also shown the ability to generate a larger pressure rise than the PD blower it replaced, reducing the exposure to plugs. Additionally, the noise levels from PD blowers running at high pressure can become unacceptable, requiring additional investment in silencers and/or noise isolation. With the quiet design of the Inovair CBS, the unit was placed outside the blower room freeing up space in a very crowded environment.

## 24/7 Production Line - Drop-In Replacement Replaced 60 HP PD Blower with 40 HP Inovair

With energy costs increasing throughout the country many manufacturers are looking for ways to contain these increases. A Midwest flour milling customer identified an opportunity on a patent flour to storage line in their facility. This line is fed from a dump scale and runs at 7.5 psi with peaks above 10 psi. With plenty of space in the blower room, the customer elected to replace the unit in its current location and selected an Inovair Drop-In Replacement model as they did not need the low dBA benefits from an Inovair Complete Blower System. An Inovair 40 HP Drop-In Replacement blower replaced an existing 60 HP PD blower, with energy savings measured on this line at 21%. With this production line running 6 to 7 days a week 24 hours a day, payback for this system was well below two years, with ongoing energy savings.



## Wastewater - Aeration

The energy demand for the water and wastewater industry is approximately 75 billion kilowatt hours per year, or about 3 percent of the electricity consumed in the US.<sup>1</sup> Specifically, the aeration process at most wastewater treatment plants account for the largest amount of energy consumption, and is as much as 40-60% of the plant's total energy usage. "Turbo blowers are a significant area of innovation in blower design offering energy savings for the wastewater industry,"<sup>2</sup> according to a recent EPA citing which also reported, "increases in energy costs for the wastewater industry." 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 offers solutions for the smaller plants to significantly cut plant energy usage, offer improved functionality and intelligent controls which results in thousands of dollar savings in operating costs.

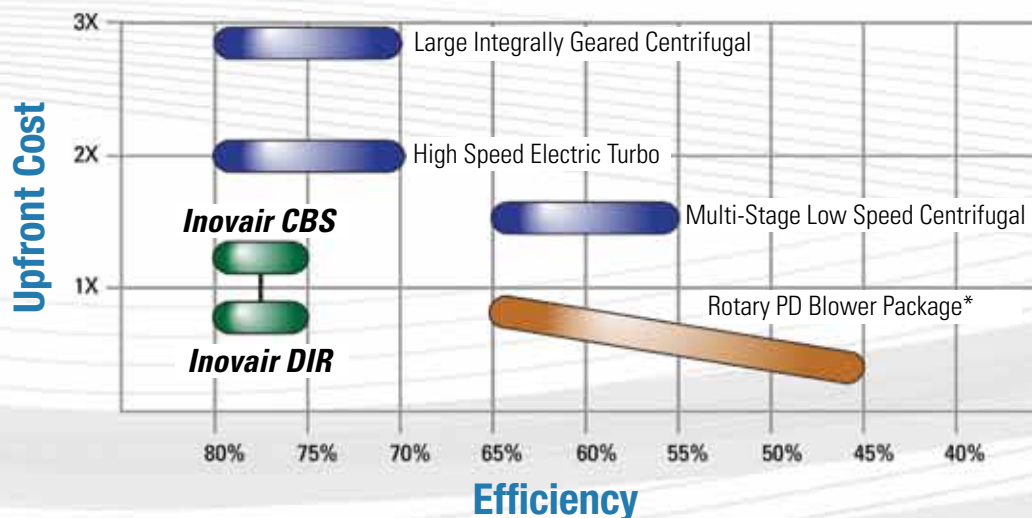


## The Inovair Advantage

Inovair's line of Turbo Blowers offer 10-35% energy savings and a significant increase in efficiency over the traditionally used multi-stage centrifugal or positive displacement equipment within the wastewater industry. Relative to other modern single stage centrifugal/turbo technologies, Inovair offers comparable or better efficiency at a more economical price.

With Complete Blower System (CBS) and Drop-In Replacement (DIR) models, Inovair delivers an affordable solution which substantially reduces a wastewater plant's total energy costs. The DIR offers the lowest cost per cfm with reuse of the existing PD blower frame and motor (and sound enclosure if applicable). The CBS is the solution for noise reduction by maintaining operating levels of 75-85 dBA. Both models have a compact footprint and offer a wide range of airflow demands with a broad turn-down for various aeration requirements. Intermittent duty blowers for flush water and back-washing are also available, see Intermittent Duty Applications (bottom of page 17).

## Inovair Has Winning Combination of Efficiency and Value



\* Rotary PD efficiency is dependent on psi (see page 2), design and other factors

<sup>1</sup> Electric Power Research Institute, Report CR106941, (September 1996).

<sup>2</sup> EPA, Report 832-R-10-005, "Evaluation of Energy Conservation Measures," (September 2010).

# Inovair®

Turbo Blowers

$\eta$  = Efficiency®

## Low Noise Levels

Inovair Turbo Blower Packages, available for wastewater, pneumatic conveying and other applications, feature a pulsation-free sound profile along with being inherently quieter than PD blowers. At 9 psig and 500 scfm, a 40 HP Inovair DIR operates at 87 dBA, below the 90 dBA OSHA standard. At lower pressures and/or with the addition of noise reduction options, noise levels below 85 dBA can be achieved with a DIR.

## Low Discharge Temperatures

Additional savings are generated through lower discharge temperatures. A 20-40 degree reduction over PD blowers offers membrane protection in wastewater and media protection in conveying.

## The Inovair Advantage

During side-by-side testing and evaluation, Inovair's advanced technology has demonstrated significant energy savings, 10 to 35% when compared with typical positive displacement blowers. With our Drop-In Replacement (DIR) models available, we are proud to offer an economical solution for your energy conservation needs. Also unlike other turbo blowers, Inovair features industry standard, Allen-Bradley® controls for ease of integration.

## Drop-In Replacement Design

Offering the lowest cost per cfm, the industry exclusive Inovair Drop-In Replacement Blower utilizes your existing inventory of motors and blower stands, an industry first for turbo blowers. If space is an issue, this innovative high efficiency blower can also be mounted on an Inovair-supplied vertical stand, providing a compact footprint. Combine these design features with the DIR's proven 10-35% energy savings, and you have a unit that provides a high ROI and rapid payback. This blower also provides the long life and high pressure capability that is typical of turbo designs.



Wastewater Aeration



Railcar Unloading



Horizontal Package  
Reuse Motor & Frame







Compact Vertical Package

14801 W. 114th Terrace • Lenexa, KS 66215  
913-469-7244 or 855-INOVAIR



## Products

	dBA	Inovair HP*	Comparable PD HP
 <p><b>Drop-In Replacement (DIR) Blower</b> Re-use existing motor and frame</p>	80-90 dBA	30-100 HP	40-125 HP
 <p><b>DIR-H Package</b> (Inovair supplies motor &amp; frame)</p>	80-90 dBA	30-100 HP	40-125 HP
 <p><b>DIR-V Package</b> (space saving design)</p>	80-90 dBA	30-100 HP	40-125 HP
 <p><b>Complete Blower System (CBS)</b></p>	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

## Typical Blower Efficiencies

BLOWER TYPE	NORMAL BLOWER EFFICIENCY (percent)
Positive Displacement (Variable Speed)	45-65
Single-Stage Centrifugal, Integrally Geared (with inlet guide vanes & 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



## Aircraft Deicing Example: Worldwide Leadership

This aircraft deicing application forces pressurized air through a patented rubber nozzle and moves approximately 1,300 cfm at over 700 mph. Impeller speeds exceed 40,000 rpm in intermittent duty usage. The air stream is so powerful that it literally “lifts” snow and ice from the exposed surfaces. This results in faster deicing of aircraft, and reduces consumption of deicing fluid by nearly 80%. This reduction in the use of deicing fluid (glycol) delivers a significant reduction in operating cost and major environmental benefits. Glycol usage is regulated by the EPA, and has mandatory and expensive remediation requirements.

End users include the US Air Force, Royal Canadian Air Force, commercial airlines and cargo airlines. Inovair is the worldwide leader in this segment since 1999 and has become the preferred supplier for all domestic manufacturers of forced air deicing equipment.



## High Heat Drying Solution

A “recycled products manufacturer” had searched world wide for an industrial blower capable of standing up to their unique and challenging manufacturing process: forcing air heated to 350° F into an oven to rapidly dry the product before it could be removed from the mold. Traditional positive-displacement blowers simply “melted down” under the high-heat, 24/7 duty cycles required by the equipment and process developer. In 2009, this company’s world wide search led them to Inovair and a blower technology capable of meeting their demanding needs.



Utilizing the compact and durable Inovair 2200 blower, this technology has proven to be more than capable of standing up to the 350° F inlet air temperatures. Operating at 5-7 psi and providing a constant 1,400 cfm of heated airflow, the automated manufacturing process also carries a 24/7 duty cycle for maximum productivity.

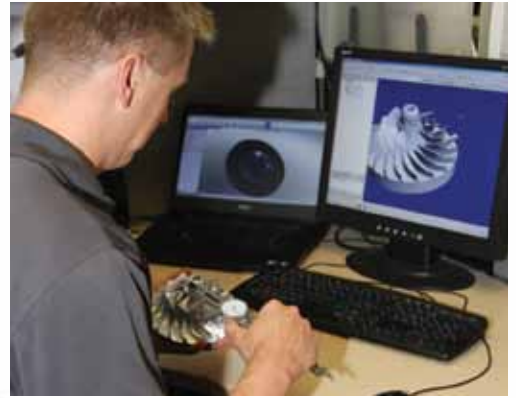
## Intermittent Duty Applications

Inovair offers a line of intermittent duty blowers that are designed for systems that operate less than 3-4 hours at a time and a maximum of 10-12 hours a day. These economical units are ideal for limited duty applications requiring a light weight compact air source capable of delivering 200 to 2000 ICFM at pressures from 4 to 15 psi. Areas of application for these blowers include aircraft deicing, bin aeration, high pressure spraying, drying, filter backwash, bulk truck unloading and many other applications.



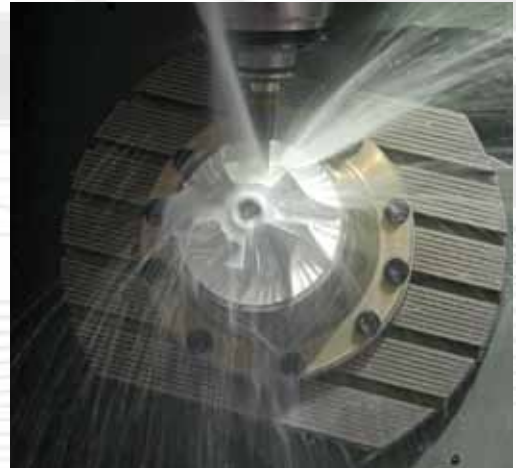
## Innovation Delivered

Inovair blowers are subjected to extensive lab and field testing, **ensuring your process needs are met**. Headquartered in Kansas City, our company and engineering team have produced numerous innovations and have been awarded over 25 patents in the past 18 years. Inovair has led the application of centrifugal products to new markets previously utilizing older, less efficient technology. Driven to understand applications and customer needs, Inovair has become the market leader for use of centrifugal compressors and blowers in aircraft deicing and pneumatic conveying applications.



## State-of-the-Art Manufacturing

We **strive to provide you a competitive edge** by integrating progressive technology into your process. Our engineering staff makes use of state-of-the-art design programs to bring these concepts to reality. Inovair machinists faithfully reproduce these designs out of precision grade materials for tremendous strength and performance. All impellers utilize aircraft-grade 7075 T6 aluminum allowing for larger impellers free of flaws typical in cast impellers. These structurally sound impellers are capable of high speed, which produce a reliable and efficient source of air.



## Quality Assurance

Inovair is **dedicated to the success of your business** through the quality and durability of your process blower. Our Quality Assurance is founded on prevention and sustained through live, continuous monitoring of the manufacturing, assembly and performance verification processes. While Quality Control is centrally organized by a fully equipped and staffed department, it is engrained within the culture at every level of the organization.



## Warranty and Service

**Our mission is to support you** with highly skilled and responsive support teams that know the meaning of reliability 24/7/365. Our support covers everything from equipment startup, to providing rapid response for replacement parts. This support is backed by a full line of inventoried parts supporting all Inovair product lines. Whatever the situation, factory-trained personnel are ready to assist you, and can be reached at 855-Inovair (855-466-8247).



# Temperature Advantage

Higher efficiency also delivers a reduction in conveying air temperature. For milling and mixing, this reduces the loss in moisture content and weight. For confectionary and plastics, this helps reduce product degradation.

## Compressor Discharge Temperature is a Function of Three Variables:

- 1) Pressure Ratio; how much the air is being compressed (AKA "Discharge Pressure")
- 2) Inlet temperature
- 3) Isentropic efficiency of the compressor itself

Blower Model	Inlet Temperature [°F]	Discharge Pressure [psig]*	Compressor Efficiency [%]	Discharge Temperature [°F]	Temperature Advantage [°F]
Inovair 2200	60	8	78	147	26
PD	60	8	60	173	
Inovair 2200	60	12	78	183	51
PD	60	12	55	234	
Inovair 2200	60	15	78	207	61
PD	60	15	50	268	

\* Discharge pressures listed were used with an inlet pressure of 14.7 psia to calculate the compressor pressure ratio

# Design Advantage

## Maintenance

- Annual oil changes
- Periodic belt and filter inspections
- Off the shelf belts and filters
- Easy access to all major components
- Electric motor installation and/or service cradle (CBS)

## Sanitation

- Filtered cabinet
- Powder coated exterior finish
- Can be elevated 8" above floor level
- Surfaces angled/sloped for ease of cleaning

## Compact

Modern single stage turbo blower packages are inherently more compact than PD blower packages. In addition to the compact footprint found within Inovair blowers, they are also comparatively lightweight. A 75-100 HP Inovair DIR-V replaces a PD blower up to 150 HP, with a compact footprint 34" X 40". A 75-125 HP Inovair CBS frequently replaces 150 HP to 200 HP PD package, also with a much smaller footprint.



Inovair is the industrial products division of Accessible Technologies Inc (ATI). The company was founded in 1994 to expand the application of high efficiency centrifugal blower/compressor technology for forced induction and industrial applications. ATI initially focused on the automotive and marine performance aftermarket via the ProCharger® brand, and quickly became the market leader for high performance supercharger systems. ATI expanded into industrial markets in 1998, and in early 2010 consolidated its industrial product line under the Inovair brand.

ProCharger is the premier aftermarket supercharger manufacturer and is acknowledged as the leader for the largest, most reliable power gains and championship performance. The company's history of innovation and performance is unmatched. ProCharger has been awarded the most patents in its industry, and in the past 10 years, its customers have won more championships than all competing centrifugal supercharger brands combined. ProCharger also features the industry's broadest product offering for cars, trucks, boats, motorcycles and UTV's.



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