

GE Energy

# Roots\* Turbo Blower

Innovation that will blow you away



imagination at work

## **New generation technology from a company with a proven history**

GE Energy provides innovative technology for air and gas handling solutions for industry. Since 1929, we have manufactured Roots centrifugal compressors; this deep experience enables us to offer technology-with low total cost of ownership and high performance integrity.

Today we are proud to apply that heritage to a turbo blower, with innovative air-foil bearing design and efficient high speed motor technology. Our new technology is proven in a power range of 600 kW (800HP) down to 22.5kW (30HP).

We performance test every package to ensure years of operational savings, low maintenance and total cost of ownership.

## A Reputation for Dependable Performance

In 1854, the Roots brothers discovered the positive displacement blower technology. Since then, customers have depended on Roots technology for blower and compressor innovation and performance.

## Efficiency and Reliable Operation

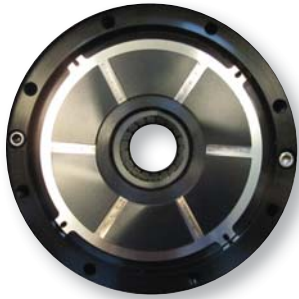
The Roots Turbo Blower is a fully integrated blower package that features three key technologies: a high speed, Permanent Magnet Synchronous Motor (PMSM), field-proven bump-type air foil bearing design and an integral air-end. The PMSM allows for high efficiency characteristics at design speeds and turndown speeds as compared to a traditional induction motor. The bump-type air foil bearing delivers added stability over the other leaf-type air foil bearings, and the aerodynamically designed air-end has been optimized for efficiency over a wide turndown.

## GE Energy Delivers Reliability

- Fully integrated system air cooled up to 112.5kW (150HP) and closed loop liquid cooled from 600kW (800HP) to 150kW (200HP)
- Extensive factory cycle testing for proven reliability
- Rated for duty at 55°C (130°F) ambient air conditions
- Package noise containment to 75 dBA (free field) with virtually no package vibration
- Self contained package design allows easy installation
- Replacement air filter elements are the only regular maintenance items



# Roots Turbo Blower - Innovation that



## Field proven, bump type Air Foil Bearing

Featuring a next generation, bump-type air foil bearing design, the Roots Turbo blower delivers greater stability and load bearing capacity compared to leaf-type air foil bearings.

- Simple and proven design requires no lubrication or oil
- Non-contacting elements during normal operation
- Extensive factory cycle testing for proven reliability



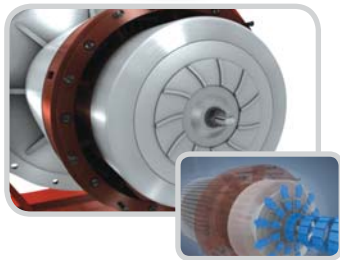
## Permanent Magnet Synchronous Motor

The Roots Turbo Blower features a PMSM that delivers greater efficiency through a wider turndown range.

- All packages are coupled with an integral Variable Frequency Drive (VFD) for controllability and system optimization
- Increased efficiency at off-design points compared to traditional equipment
- PMSM supplied with full product family, from 600kW (800HP) down to 22.5kW (30HP)



# What will blow you away



## Integral Drive Train

The turbo blower features an integral air-end to eliminate losses in the transfer of power from the PMSM to the air-end.

- Turndown capabilities from 100% to 40%, while holding constant pressure
- Backward-leaning blades increase efficiency and turndown capabilities of the package
- High surge margin and wide flow range allow for greater surge stability
- 5-Axis CNC-milled impeller originating from a single aluminum forging

## Package Cooling

The Roots Turbo Blower features integral cooling systems: both air and liquid, to allow for greater heat dissipation and a more compact design.

- Air cooling: 112.5kW (150HP) or lower
- Patented motor cooling fan, integral to the motor rotor, directs air over the motor stator and rotor cooling the unit
- Air and liquid cooling: 600kW (800HP) to 150kW (200HP)
- Patented motor cooling fan and self-circulating closed loop system that directs air and liquid through the motor stator and rotor cooling the unit

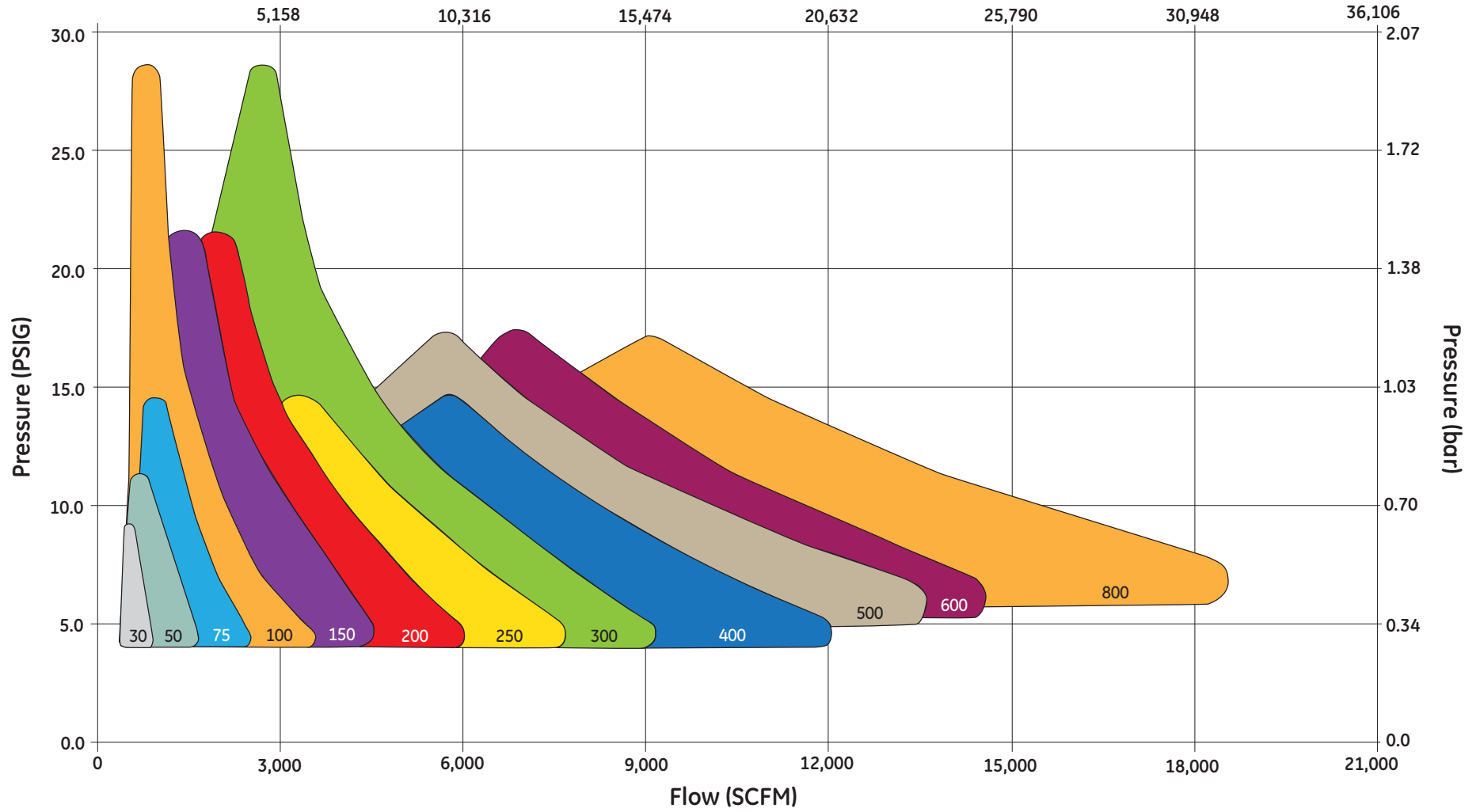
## User Interface and Local Package Controller for Health Monitoring

The turbo blower package features a proprietary Human Machine Interface (HMI), containing package health monitoring and protection provisions.

- Supports MODBUS communications protocol and hard wiring for remote control and monitoring through a DCS or SCADA system
- Controls to protect against a surge event
- 16-bit micro-processor with select built in logging for data collection
- Built-in control modes of constant flow, power, speed and pressure or proportional mode

### Performance Map

## Roots Turbo Blower Performance Map



## Dimensions

Frame Sizes	Weight lbs (kg)	BOV Flange in (mm)	Disch. Flange in (mm)	Width in (mm)	Length in (mm)	Height in (mm)
RH-030	551 (250)	4 (100)	6 (150)	29.5 (750)	41.3 (1050)	41.3 (1050)
RH-050	551 (250)	4 (100)	6 (150)	29.5 (750)	41.3 (1050)	41.3 (1050)
RH-075	915 (415)	5 (125)	8 (200)	33.5 (850)	47.2 (1200)	53.1 (1350)
RH-100	1213 (550)	5 (125)	8 (200)	33.5 (850)	51.2 (1300)	63.0 (1600)
RH-150	1653 (750)	5 (125)	10 (250)	33.5 (850)	70.9 (1800)	63.0 (1600)
RH-200	1984 (900)	5 (125)	12 (300)	35.4 (900)	72.8 (1850)	66.9 (1700)
RH-250	2425 (1100)	6 (150)	16 (400)	35.4 (900)	70.9 (1800)	80.7 (2050)
RH-300	2645 (1200)	6 (150)	16 (400)	49.2 (1250)	72.8 (1850)	78.7 (2000)
RH-400	2976 (1350)	6 (150)	16 (400)	49.2 (1250)	72.8 (1850)	78.7 (2000)
RH-500	6450 (2930)	(2) 6 (150)	(2) 16 (400)	47.2 (1200)	78.7 (2000)	78.7 (2000)
RH-600	7040 (3200)	(2) 6 (150)	(2) 16 (400)	72.8 (1850)	98.4 (2500)	86.6 (2200)
RH-800	7920 (3600)	(2) 6 (150)	(2) 16 (400)	75.6 (1920)	98.4 (2500)	86.6 (2200)



**GE Energy**

Houston, Texas | U.S. Toll Free Phone: 877.363.7668 | Direct Phone: +1.832.590.2600

Connersville, Indiana Operations | Direct Phone: +1.765.827.9200

European Operations | Phone: +44.0.1695.52600

USA/Canada Sales | Phone: +1.773.444.3360

Houston, Texas Factory Service | Phone: +1.713.896.4810

Mexico City Sales and Factory Service | Phone: +52.55.5889.5811

Dubai Sales and Factory Service | Phone: +971.4.8855.5811

Malaysia Sales | Phone: +60.3.2267.2600

Visit us online at: [www.ge.com/energy](http://www.ge.com/energy)

© 2012 General Electric Company

All Rights Reserved

\*Denotes trademark of General Electric Company

