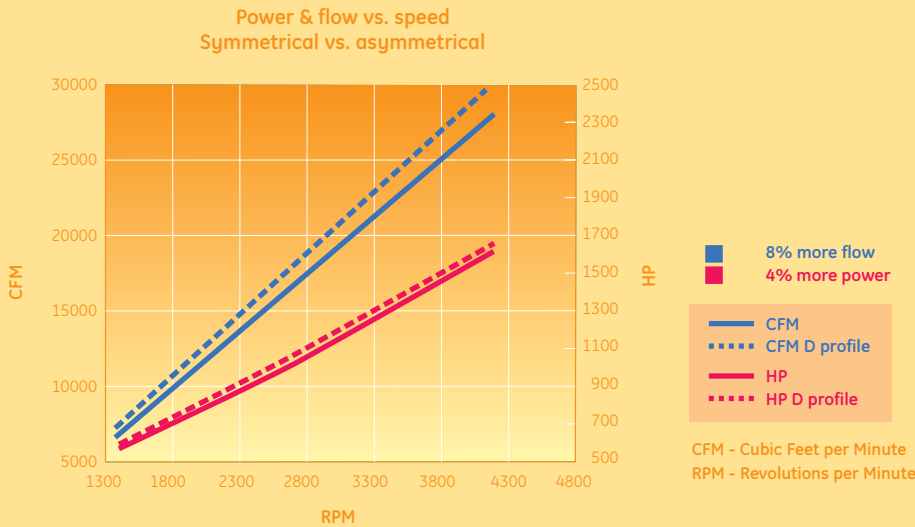


Performance Improvement and Uprate for Oil-Free Screw Compressor

Benefits

- ■ □ Increased production
- ■ □ Higher efficiency
- □ □ Compliance with environmental regulations
- □ □ Availability and Reliability
- ■ □ Life extension

This upgrade is your solution if you need a flow increase from your existing oil-free screw compressor, minimizing your investment and without equipment replacement. The solution requires only a minimal increase of power while optimizing the efficiency and capacity of your compressor.



What it is

We developed this upgrade for Oil-Free Screw Compressor rotors using state-of-the-art aerodynamic and manufacturing technology. Depending on the process and application, actual efficiency improvements will yield at least 8% more flow with only a 3%-4% increase in power. Actual results may be as much as 30% flow increase compared to current operating conditions.

Our successful experience includes:
Styrene Monomer Upgrade, USA

- Flow increase: 20%
- Scope of supply:
New rotating elements, casing upgrade, gear internals for speed increase, no modification required for existing steam turbine driver

Chemical Plant Upgrade, USA

- Flow increase: 8%
- Scope of supply:
New rotating elements, casing upgrade, no driver modification required

How it works

Rotating Elements

Compressor performance can be improved with no change in compressor speed. This is made possible by a change from the existing symmetrical rotor profile to the latest generation asymmetrical profile that provides more efficient gas compression and increased volumetric flow with each compressor revolution.

Casing

This upgrade requires only minor casing modifications the next time the rotors are replaced. Casing rotor bores are re-machined and enlarged to fit the new rotors. In the process, casings are restored to the proper design clearances with improved surface finish.

The key activities include:

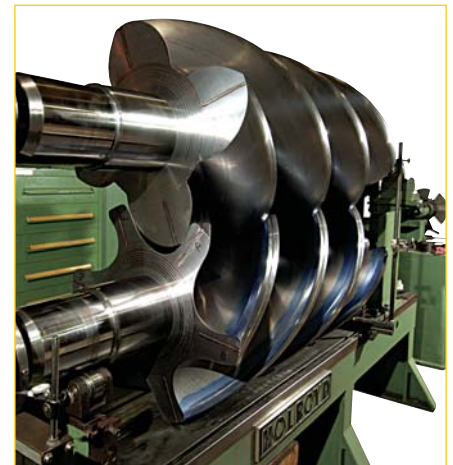
- Re-machined rotor bores
- Modified discharge porting
- Simplified pressure sensing
- Ready for premium rotors assembled in casing

As an alternative to modification, complete new casings may be provided. This approach is recommended for severe service

applications, compressors near the end of service life, or simply to minimize compressor downtime.

Optional improvements

- Seal upgrades are available to fit the unique needs of oil-free screw compressors in demanding applications. Dry Gas Seals are available along with customized carbon ring or segmented ring seals to fit existing seal cavities
- Speed increase is possible for applications requiring more than 8% flow increase
- Compressors may be mechanical and performance tested after assembly in our manufacturing facility in Oshkosh, Wisconsin, USA to prove design and manufacturing quality
- Pulsation dampeners may be replaced using current technology for minimized piping pulsations and noise
- Coupling upgrade to dry, flexible type
- Condition monitoring may be added and / or upgraded to meet the requirements of American Petroleum Institute (API) standard 670
- Controls and auxiliary systems may be upgraded or replaced



New asymmetrical rotors in checking fixtures

How it works

Applications

In addition to GE Oil & Gas' screw compressors, any existing oil-free screw compressors older than 1996 may be upgraded:

- Beloit Power Systems
- Fairbanks Morse
- Louis Allis
- A-C Compressor

Specifications

Inlet Volume:

500 to 35,000 ACFM
(850 to 59,500 m³/h)

Casing Differential Pressure:

10 to 250 psi
(0.7 to 17 bar)

Internal Pressure Ratio:

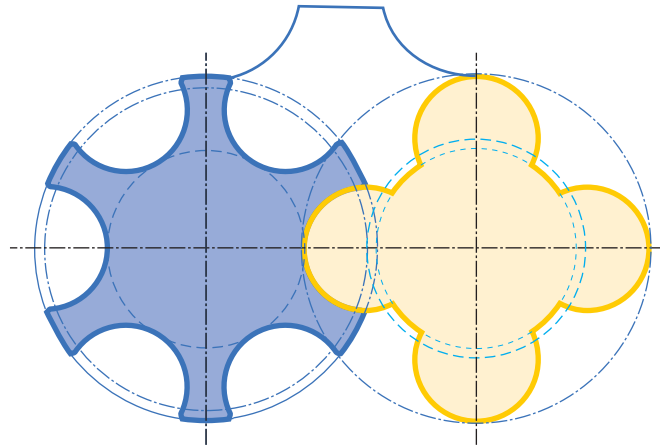
1.5 to 5

Discharge Temperature:

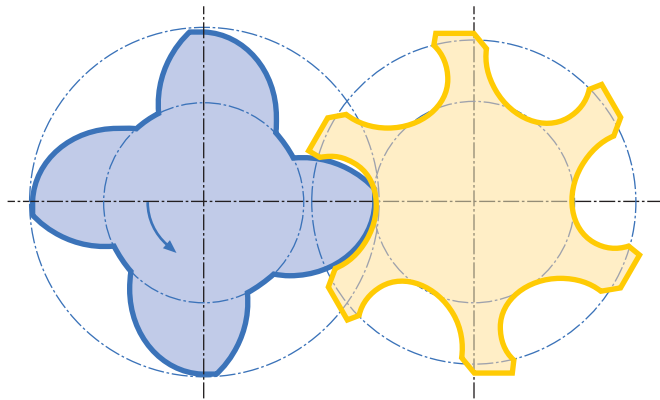
550° F (288° C)

Rotor Tip Speed:

150 to 500 fps
(45 to 152 m/s)



Symmetrical rotors - cross section (original design)



Asymmetrical rotors - cross section (improved design)



GE imagination at work

GE Oil & Gas
via F. Matteucci, 2
50127 Florence - Italy
T +39 055 4272500
F +39 055 4232800

Nuovo Pignone S.p.A.

E customer.service.center@ge.com
www.ge.com/oilandgas

COMK/MARK 839/II - Designed by: Studio Tre Fasi
Printed by: Sagraf - 1-2008
©2008 Nuovo Pignone S.p.A. all rights reserved