

Halo™ Seal Technology

Maintenance Solutions for Siemens Turbocompressors (STC)

Technical Description

The Halo™ seal is a dynamic, pressure-activated, and non-contacting stationary seal designed to provide optimum performance with a tight sealing clearance.

In addition to reducing recirculation losses and saving power the dynamic nature of the Halo™ seal allows it to be tolerant of rotor seal offset, rotor run out, and eccentricity.

Introducing Halo™ - The most advanced seal available for internal seal locations.

For as long as turbomachinery has been built, there has been an ongoing search for better seals.

Internally to rotating equipment where there is a rotating element and a stationary component, there will be a seal. On centrifugal compressors the internal seals are located at the impeller-eye, inter stage, end-seal, balance piston and division wall locations (pictured) and are typically aluminum labyrinth seals.

These seals leak gas that recirculates back through the impellers and get recompressed. This is a waste of power. The more recirculation the less through put the compressor can produce.

Many types of seals have been designed, many materials have been developed and a myriad of options exist on the market today.

Categorically, the traditional seals available eventually contact the rotating element, wear, and recirculation increases over time until it is so bad that the unit must be overhauled with new seals. Operators are in constant search for ways to lengthen this cycle.



Halo™ seals maintain design clearance throughout the operational life cycle of the machine.

This drastically reduces hydraulic performance degradation between scheduled maintenance, maintaining efficiency, maximizing production and reducing maintenance costs.

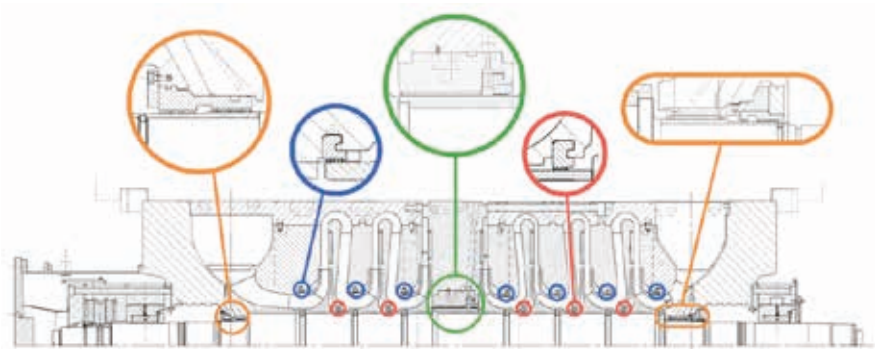


Fig 1: Halo cross section



Providing proven maintenance solutions.

Features & Benefits

- **Large installation clearance:** Eliminates the need for lengthy alignment checks
- **Pressure activation:** Allows operation through the first critical at start-up without contact or wear of the seals
- **Tighter running clearance:** Reduces recirculation and improves unit efficiency
- **Dynamic seal pad movement:** Accommodates rotor sag, runout, eccentricity and vibration
- **Non-contacting (pads to rotor):** Maintains as-new hydraulic performance throughout entire run cycle
- **Inconel material:** Resistant to most corrosive environments
- **Single active labyrinth tooth:** Low cross-coupled stiffness low reducing aerodynamic forces on the rotor improving rotor stability
- **Customizable housing:** Can be applied to any unit without modification

Support Services and Implementation

The seal can replace any straight-land, stationary, aluminum or polymer, labyrinth-tooth seal without alteration to the current stationary components

Optional Services

- Incorporating Halo seals into a revamp project can optimize the compressor performance for current process and production needs while saving money by sharing some of the same engineering disciplines.
- For back-to-back configurations the division wall leakage can have a major influence over surge margins and overall efficiency, making that clearance essential to be maintained. It is even more important when a damper seal is required for rotor stability. Using Halo in a hybrid arrangement with a damper seal (pictured) will allow optimization of the leakage flow while providing the needed damping and stiffness and better ensure constant performance throughout unit lifecycle.



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Siemens Energy, Inc.
4400 Alafaya Trail
Orlando, FL 32826-2399

For more information, please contact our Customer Support Center

Phone: 978-391-7040
Fax: 978-772-3019

Power Generation Services
Freyerslebenstraße 1
91058 Erlangen, Germany

For more information, please contact our Customer Support Center

Phone: +49 180 524 70 00
Fax: +49 180 524 24 71
(charges depending on provider)
Email support.energy@siemens.com
siemens.com/energy