Pre-rotation Drive Upgrade

Reduce energy consumption on “S-type” compressors

Energy savings between 6 - 15% are not uncommon when upgrading an S-type HV-Turbo compressor with a variable inlet guide vane system (type SV).

The achievable savings depend on local conditions and individual plant structures, however under these operating conditions you will benefit mostly from an upgrade:

- Where you have variation in the inlet air temperature
- Where you have variation in the required outlet air pressure
- Where you have variation in the required air flow

Key advantages

- Potential for substantial energy savings
- Return on investment can be as low as 1 to 2 years
- Process improvements through new optimized regulation system
- High degree of automation is possible reducing the need for operator intervention

All of the above is of highest interest in a market with ever rising energy prices and environmental interest and awareness.

How is it possible?

Your existing S-type HV-Turbo compressor was designed for operation under one set of ideally specified conditions, that is one optimal design point. Under real life conditions however, all S-type compressors operate away from the ideal design point, and the further away from the design point you operate, the larger savings can be achieved with the SV upgrade kit.

The SV upgraded compressor is capable of self adjustment to different operating conditions and will therefore operate with high efficiency in a much broader temperature, pressure and flow range.

Plant analysis

In order to estimate the savings potential at your particular site we offer a cost & efficiency analysis to be performed by our skilled engineers. Following the cost & efficiency analysis we will give our recommendation to conclude whether an upgrade would be beneficial for your plant.

If you can profit from an upgrade, we will work out an individual offer for you adapting to your specific needs.

The variable inlet

The variable inlet guide vane system makes it possible to control the airflow into the impeller by adjusting nonsymmetrical airfoils that are located radially in the compressor inlet.

Adjusting the angle of the airfoils creates pre-rotation in the air flow into the impeller. This boosts the efficiency throughout the regulating range, with only insignificant throttling losses.
The upgrade
A typical upgrade will comprise of:
- The variable inlet guide vane unit
- A new local control panel
- The latest software version for the local control panel
- A documented performance- and QA test prior to shipping proving theoretical calculated performance values
- One set of user documentation

Other beneficial offerings when upgrading
As your compressor would be upgraded and tested in our works, it could be beneficial to consider the following additional options:
- Complete inspection & service of the compressor
- Refurbishment of your compressor according to individual needs

The savings (exemplified)

The curves are based on the following performance data:
- Mass flow: 13,000 Nm³/hour
- Discharge pressure: 1.7 bar
- Operating hours: 8,400 h/year

Under the preconditions given in this example, the result will be:

Potential saving ~ 243,000 kWh/year

To learn more about the energy savings potential for your “S-type” compressor, please contact our Customer Service or your local Siemens representative.

At Siemens Turbomachinery Solutions, we strive to provide the best service to our customers.

Therefore, you will always get solutions and service products designed to suit your individual needs.

We can assist you with everything from spare parts and training to refurbishment and upgrades of old equipment and maintenance of existing installations. You can choose between a wide range of service solutions:
- On-site or off-site training programmes
- Process optimization consultancy
- Refurbishment of existing equipment
- Service contracts relating to equipment

For more information please contact:
Siemens A/S
Turbomachinery Solutions
Allegade 4
DK-3000 Helsingør
Denmark
Phone: +45 49 21 14 00
Fax: +45 49 21 52 25