Advanced Compressor Cleaning System for Siemens Gas Turbines

With combined-cycle power plants repeatedly targeting higher performance, more efficiency, lower emissions and operational flexibility, Siemens Energy is continually researching and developing innovative solutions to help you improve the performance of your gas turbine and your operating plant. One of these solutions is the Siemens Advanced Compressor Cleaning System (ACCSpro) upgrade.

Our product

Some power plant operators may believe that losing power due to dirty compressor blades is inevitable. We do provide air filter systems as part of our new equipment. Long chain hydrocarbon compounds not only can cling to the blades, but also help dirt and grime adhere to them.

The consequences of dirt and grime on compressor blades can include rougher surfaces, higher turbulence levels, deteriorating flow patterns, reduced cross section of flow, higher compressor outlet temperatures and lower compressor outlet pressures. All this can quickly add up to 2–4 % loss of power. For a 270 MW compressor, this can mean up to 11 MW less output and associated reduction of potential earnings from loss of power sales.

The Siemens ACCSpro upgrade is designed to minimize the fouling of the compressor blades and vanes. While the cleaning effect of many conventional cleaning systems can last but a few days, our spraying systems, cleaning solutions and a well-balanced combination of off-line and on-line washing processes can help reduce new fouling. A longer-lasting cleaning effect is intended to provide a more stable power gain and a shorter payback time. Including a compressor wash prediction analysis module can further enhance the effectiveness of ACCSpro.

The Siemens ACCSpro upgrade is a further advancement of the proven Advanced Compressor Cleaning System. This conventional cleaning system already has provided excellent cleaning results with many thousands of accumulated operating hours in a number of plants under the toughest of day-to-day operating conditions.

Air intake inner cone with nozzles – on-line washing

Customer benefits

The Siemens ACCSpro upgrade can be a cost-effective means to help you improve the overall performance of your gas turbine plant.
Benefits may include:

- avoidance of power loss of up to 2–4 % of maximum performance
- avoidance of efficiency loss due to fouling
- fuel savings due to increased compressor efficiency
- lower water and detergent consumption
- increased reliability of your gas turbine to deliver maximum power at base load
- reduction of gas turbine outage times for off-line cleaning
- optimized cleaning cycles by implementation of the Compressor Wash Prediction (COWAP) analysis module.

The cleaning effect can be even further enhanced with the Siemens Advanced Compressor Coating upgrade where a special coating is applied, providing a smoother blade surface finish on the compressor blades and vanes.

The ACCSpro upgrade is applicable for the gas turbine frame types SGT5-4000F (V94.3A), SGT6-4000F (V84.3A) and SGT6-2000E (V84.2).

Scope of supply

The ACCSpro from Siemens Energy is just one of the many innovative modernization packages available.
The scope of this upgrade includes:

- computational fluid dynamics (CFD) optimized droplet number and size for improved cleaning effect
- frame-specific nozzle arrangement
- on-line and off-line washing sequences
- automatic skid with interconnection to the instrumentation and control system
- interconnection piping from the skid to the nozzle system
- optional: Compressor Wash Prediction (COWAP) analysis module for cleaning cycle optimization.

Inner cone distribution system

ACCSpro skid

We recommend that the installation of this upgrade be typically performed at a minor inspection. The skid and the interconnection piping installation can be completed before the outage. We offer a full range of field service capabilities to help you manage your maintenance and outage schedules.

References

Siemens Energy successfully implemented the Advanced Compressor Cleaning System (ACCSpro) in Austria in 2008.

More than 20 units with the proven frame-specific Advanced Compressor Cleaning System are in operation worldwide.*)

*) As of July 2011

For more information please contact your local Siemens sales representative.

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