EUROPEAN TURBINE NETWORK

Gas Turbine Inlet Air Filtration

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Challenges

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AIR FILTRATION ISSUES

- GT degradation
  - Online washing doesn’t recover power
  - Offline washing recovers only 80% of loss
  - Production loss during offline washing
- GT component aging and fouling resulting in performance loss
- Hot corrosion due to Alkalis (sulphur/carbonates)

MAIN TARGETS FOR GAS TURBINE OPERATION IN O&G

- Target 64,000 operating hours in a single run, with minimum loss of performance
- Inlet system
  - Keeps gas turbine clean
  - Keeps salt out of the turbine
  - No precipitates or particulate matter ingress
- No offline/online washing

AIR FILTRATION TESTS AND STANDARDS

- Existing standards and tests (EN779 & EN1822)
  - Do not represent Power and Oil & Gas industry needs
  - Primary focus is dry dust
  - Arrestance and efficiency for single stage
- Actual conditions
  - Dry dust + humidity, fog, rain, salt, snow, hydrocarbon
  - Multilayer/multistage filtration
  - Correlation between Filtration class and filter performance (life, initial and mid-life performance) based user experience
- New standard must cover engineering, design and testing of inlet system for gas turbines in Power and Oil & Gas industry (ISO/TC 142)

VENDOR CHALLENGES

- Significant gap between proposed and actual performance (Focus - EPA)
- Proper understanding of the environmental/location challenges
- High dP across filters even with hydrophobic filters
- Selection of EPA filters for high velocity filters remains challenging
  - Filtration efficiency and life identified as major issues
  - Primarily a media design challenge/issue
- Vendor competition
  - Vendors needs to understand the business case of the User
  - Replacement of filter system upgrade with(out) replacement of filter house