Ovation™ Advanced Power Applications Selective Catalytic Reduction (SCR) Optimization

Features

- Quickly identifies the sources of poor SCR system performance
- Automatically adjusts SCR system parameters to optimize ammonia usage
- Uses a plant model built from accurate data collected from the plant to pinpoint areas for improvement

Benefits

- Improve SCR temperature profiles
- Improve reaction efficiency saving $200,000 in reagent utilization annually[1]
- Reduce and minimize ammonia slip[1]
- Extend SCR regeneration cycles saving $1M over the life of the catalyst bed[1]

[1]These benefits are based on case studies and target the industry average for a 500MW plant, 10,000 BTU/kwh, 84% capacity factor, $1.50/mmBTU, equipped with a multi-layer SCR.

Introduction

Selective catalytic reduction (SCR) technology is a proven and effective method to reduce nitrogen oxide produced by power plants.

Combustion gasses that contain nitrogen oxide (NOx) emissions pass through the SCR where a chemical reaction with a catalyst and ammonia occurs to convert the nitrogen oxide to harmless nitrogen and water.

As with any critical application, performance lapses with SCR technology can cause environmental or safety hazards.

An incomplete reaction of the catalyst can allow unused ammonia to exit the system. This problem, known as ammonia slip, can damage downstream equipment.

Goals

- Reduce ammonia slip
- Optimize installed SCR operation
- Lower operating costs
- Monitor SCR performance cost impact
- Evaluate the technical and economic impact of NOx reduction
- Manage and optimize SCR catalyst life

Challenges

- Protect plant equipment from ammonia slip and other hazardous conditions
- Determine the most cost effective strategy to reduce NOx emissions and meet environmental regulations
- Minimize catalyst costs while optimizing plant operations

Solution

Ovation SCR optimization, an advanced power application, improves existing SCR operations by controlling temperature, reducing ammonia usage and minimizing pressure loss.

The application uses system-specific models created with real plant data to monitor the SCR equipment. The monitored data is used to predict the ideal ammonia usage and flue gas composition resulting in recommended SCR settings for optimal performance.

Various plant operating scenarios are analyzed to determine the most effective performance strategy to meet plant or utility needs. For example, by carefully monitoring the injection temperature and determining the appropriate amount of ammonia required, the Ovation SCR optimization application can streamline the process and reduce the ammonia slip.

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