

Profile mill fingerprint

Identify opportunities for mill performance improvement

Profile rolling mill fingerprint establishes current process and control performance levels and provides a basis for evaluating and identifying further improvement opportunities.

The ensuing implementation plan provides improvement recommendations and associated estimated “return on investment” (ROI).

Service description

Profile mill fingerprint is an audit service from ABB for its profile rolling mill customers. It includes a complete life cycle audit for installed equipment coupled with detailed process audit, analysis of process performance, finding the gaps with respect to benchmarks, and recommendation for improvements. It is an offline service that can be applied to any long product rolling mill such as bar mill or wire rod mill. The fingerprint study consists of life-cycle audit of motors, drives, automation platform, level 2 and technology. The study report identifies opportunities for better life cycle management that forms the basis of modernization plans in short term and long term.

Apart from this life-cycle audit, it provides detailed technical audit. The technical analysis utilizes state-of-the-art statistical algorithms to evaluate the current performance of the mill. The analysis evaluates the performance of drive control, loop control, mill pacing time, shear, pinch rolls, water box control etc. The analysis of individual sections in turn generates the key performance measures for overall mill indicating current performance and the gaps to improve in terms of energy, productivity, quality, yield and mill availability.



Features

- Life-cycle assessment of drive and automation equipment
- Detailed quantitative assessment of control and process performance for different sections of the mill
- Process performance benchmarking with industry best practices
- Detailed improvement plan with potential impact on mill energy consumption, productivity, yield, and availability.

Benefits

- Improvement plan provides clear path to quickly resolve the performance gaps highlighting potential quantitative benefits
- Facilitates management decision process by focusing on high impact opportunities for improvement
- Provides a solid foundation for life cycle management for various equipment & systems in profile mills

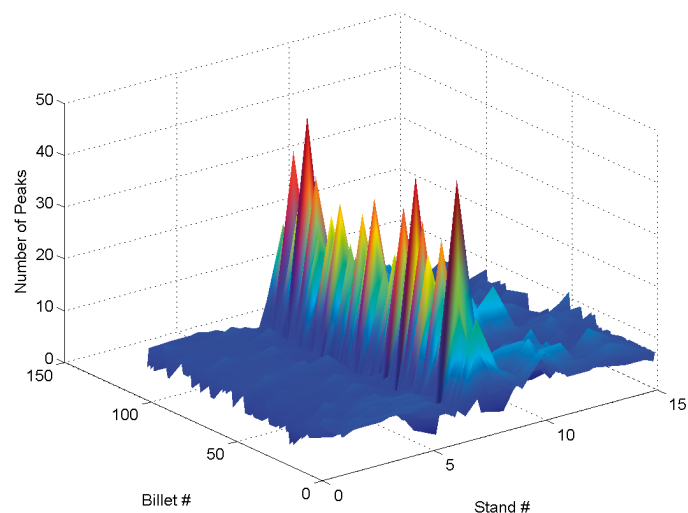
Implementation modules

Technical audit for mill control and process performance includes entire mill from the exit of reheat furnace to downstream equipment. Entire audit is divided into various implementation modules – reheat furnace, torque and tension control, looper control, pinch roll, shear performance, motors & drives, mill speed analysis, HMD and water box control. Each module analyzes the long term trends and statistics from the historical data and derive key performance indices (KPIs) for the module. e.g., motors and drives module analyses the set point tracking and impact drop response of the drives and looper module identifies the fast or sluggish control response, lead or lag in looper arm initiation etc. All the KPIs of the individual modules are then translated into quantitative and qualitative measures of the overall mill in terms of energy consumption, productivity, yield, mill availability and quality.



A real mill example

Profile mill fingerprint technical audit was performed for tension control, motors and drives, productivity analysis and looper control. Process data was collected from IBA recordings for four days for carrying out a detailed analysis. The analysis of motor & drive module found abnormal noise in torque profile of one particular stand as depicted in the figure, the root cause of which was identified as some issues with the mechanicals. Another results include potential improvement of mill pace time, looper tuning etc.



Methodology

Upon receipt of order, ABB will visit the site to collect all inputs that is required to execute the life cycle assessment and technical audit of the mill. At ABB premises, the implementation modules are configured and executed as per the inputs collected. Final visit to customer site will be made to present the findings. As this is an offline service offering, source of data can be any kind of reliable data loggers and readings from the mill floor and mill automation system.

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