Case Study
Phola Coal

Client Background

Phola Coal Processing Plant is situated two kilometres outside Ogies on the old road to the Kendal Power Station, next to Klipspruit Mine and 30 kilometres from Witbank, Mpumalanga. The plant is a 50:50 joint venture between BECSA (BHP Billiton Energy Corporation of South Africa) and ACSA (Anglo Coal SA). The plant is designed to beneficiate 16 million tons of ROM coal per annum. The coal is beneficiated through two dense medium separation circuits into 'Export', 'Middlings' and 'Discard' product streams.

Key Challenges

- Phola Coal has been experiencing a decline in TH filter press performance resulting in a reduced number of filter cake drops per cycle.
- Various contributing factors were identified and given special attention. Performance was measured after direct intervention was employed, and results proved restored capability of filter cake drops per cycle.
- The intervention was proven to be EPIC (Ease of implementation, Impact on current situation, Permanent solution, Cost effective) in nature and is to be deployed on similar assets over a one-month period.

"The combined effort of our maintenance team, with the facilitation of problem solving led by the Pragma AC Engineer and the tools and techniques employed, makes our defect elimination process effective in improving equipment performance."

Johan Britt, Phola Coal Plant Engineer

Pragma Intervention

- Defined the scope of work in collaboration with the client.
- Action items to address the problems were populated and tracked on Timeline Analysis Sheet (TLS).
- Took ownership of the TLS and coordinated the activities during the intervention.
- Coordinated the Santayana review (Close-out session) to ensure that lessons learned are transferred to similar interventions as and when required – "Those who cannot remember the past are condemned to repeat it".

Value Add

- Improved material volume flow to the filtration chamber achieved by increased feed volume flow rate and opening of more feed valves.
- Overhauled feed pump with its improved efficiency leading to an improvement in machine cycle time.
- Securing of loose feed pipes and additional clamping reduced vibration transfer from slurry feed pump, thus eliminating failures emanating from loose piping.
- Replacement of worn plate rollers and increased feed rate from the overhauled feed pump resulted in an improvement in filter cake discharge capacity.

This specific filter press ('TH 1') efficiency improved to rated design capability, thus creating redundancy which allows for more discard cake throughput and a reliable filtering system. The improvement from three to four cake discharges per hour at an average of 825min/cycle is a 31.5% improvement in cycle time. This filter press is now a benchmark on Phola Plant of how a Tecnicas Hidraulicas should perform.

Tools and Technology

- IDEF0
- Pareto Analysis
- On Key 5
- Microsoft Excel
- Brainstorming sessions
- Timeline Analysis Sheet (TLS)
- Santayana Review.

- Work Planning and Control
- Technical Information
- Information Management
- Focused Improvement.