Achieve breakaway success
Case Study – 30% Improvement in Crushing Throughput

Tony Brand
About us
What we do
An offering for each member of the executive

Transformation
We support your organisation to achieve rapid value improvement by aligning strategy, operating model, structure and management processes. Our methodology supports entrenching a high-performance culture by engaging your leaders in the design and implementation of the future organisation model.

Strategic Human Resources
We partner with clients to ensure the HR system and supporting HR processes, enables the culture you want. With the right people, in the right place, with the right capability, doing the right work. Through this we support the redesign the role of HR in your organisation, the processes and capabilities to support your business strategy.

Operations
We enable the delivery of operating systems aligned with business objectives, systems that define accountability, allow for clear measurement of productivity and drive the right behaviours. We have specific competence in all aspects of operations including planning, execution, operational readiness, engineering and maintenance.

Finance & Supply Chain
We combine our operational and commercial experience to design and execute the right finance organisation and supply chain strategy for your organisation. Our capabilities include optimisation of working capital, external spend analysis and mapping, supplier performance management, support of outsourcing, business performance reporting and analysis, risk management and cost efficiency analysis.

Board Advisory
We provide organisations with integrated fit-for-purpose governance services, enabling the board and management to optimise business outcomes. Our focus is to ensure board and management structures and practices are effective and that individuals contributions can be optimised, through both Non-executive Directors and Executive teams being ‘board ready’.
Operations case study
30% improvement in crushing throughput
Situation

• Global miner with conventional crushing/grinding and flotation process producing zinc-lead concentrates

• Recently commissioned expansion project justified on significant increase in throughput capacity

• Ongoing performance was well below the monthly budget figures

• IG Partners was engaged to review operational and maintenance performance with a focus on;
  • Operational Stability
  • Maintenance Effectiveness
  • Reliability; and
  • Equipment
Rapid data analysis of operation and maintenance performance with an on-site and management sense check to build a clear imperative for change and identify high return improvement initiatives.

Deeper, targeted development of chartered interventions assembled into a manageable program to build a sustainable, lean operation delivering benefit to the bottom line.

Building momentum through quick wins and maintaining a sense of urgency in a structured, controlled roll out of the endorsed transformation strategy.

Sustaining transformation by embedding management systems, developing employee capability and leadership practices to foster an improvement mindset.

**Integrated Program Delivery** – our approach features disciplined processes and controls to ensure organisation-wide delivery of benefits.

**People and Leadership Transition** – a focus on embedding benefits by enabling leaders to drive new ways of working across their organisation.
Initial Analysis of the Current State

• Department is set up and behaves to react to crises
• Teams siloed by disciplines
• Lack of coordinated effort for maintenance and improvement
• No real “ownership” of equipment or work areas
• Limited understanding of equipment condition
• Poor housekeeping standards
• Unmanaged service providers
• Reliability improvement in its infancy
• Lack of quality documentation (Work Instructions)
• Lack of disciplined adherence to work management, shutdown planning processes
Deliverables

1. Shutdown

- Improved condition of critical plant, preventing breakdowns
- Eliminated weekly pit stops and ad-hoc shutdowns
- Planned & Executed 3 Shutdowns in processing plant
  - zero injuries

- Implemented proactive inspections every 3 weeks, previously reactive only on breakdown
- Planned 18 month calendar for Concentrator Shutdowns, reducing overall downtime
- Reorganisation of shutdown planning and execution has improved effectiveness
- Implemented >100 safe work instructions for offline and online inspections and associated corrective work
- Arranged the design and fabrication of a working platform for the cone crusher to improve the safety and effectiveness of maintenance work

30% Improvement in Crushing Throughput
Deliverables

2. Reliability & Capacity

- Completed cone crusher failure investigations, identification of legacy root causes
- Rebalanced circuit throughput, preventing failure of primary screen panels
- Deployed thermography to highlight pending failures, primarily on pipes
- Use of OT system to highlight downtime causes and put the spotlight on solutions
- Installed primary crusher anti-slabbing jaws to improve screen life
- Improved cone crusher mainframe liners to extend wear life
- Improved crushing throughput has resulted in more feed for the heavy media
- Attention to piping spool wear, improving the overall condition of the plant
- Provided input into heavy media debottlenecking project
- Drafted a repairable spares procedure
- Clarification of critical spares
- APL reviews

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Deliverables
3. Materials Handling

• **Technical expertise**
  • for conveyor belt improvements including belt splicing, belt tracking, belt cleaning, skirting and ploughs
  • for deck screens
• **Modifications drafted and planned**
  • for conveyor head chute
  • for grizzly feeder

• Investigated options for primary jaw liners and access door in primary crusher
Deliverables

4. Process Control

• **Process for shutdowns and maintenance planning & scheduling implemented**
• **Implemented weekly operating guidelines from technical team**
• Created an operation level hierarchy of maintenance documents, including **asset management plans**
• Drafted **accountability map** of the manager and superintendents to create role clarity

• Created Safe Work Instruction for calibrating primary crusher jaw gap setting
• Reviewed processing circuit current logic v functional descriptions and provided recommendations for improvement of plant stability
• Installed new scrapers on three conveyors to eliminate carry back
• Cone crusher SWI of metal to metal calibration with setting of gap target
• Redefine and clarify supply chain touch points in maintenance planning & scheduling
Results

30% Improvement in Crushing Throughput

132% of target 3 months on

October 2015
Summary

• Milestones Met, Targets exceeded
• Recommendations based on both capability and systems • addressing the difficult decisions
• Achieved a site 1st - crushing had to be slowed down to accommodate a full stockpile
• Documentation and systems created have potential for broader application across the organisation
• Strong site presence by senior IG Partners representatives collaborating directly with site management enabled comprehensive understanding of the issues and maintained an outcome focus to delivery
• Simple, pragmatic & proven approach
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