

PIP SPEAK

THE NEWSLETTER OF
Partners in Performance

Improving Excavator Productivity at an Open-Pit Mine

PIP work at a North American diamond mine shows that significant improvements can be achieved – and sustained – in core open-pit mining operations.

Context

Client input, pit observations and driver tree analysis all confirmed that improved Excavator performance – in terms of availability and productivity - was key to moving more tonnes.

In addition, high turnover and poor equipment reliability had contributed to low morale in the Mining department. The client wanted to see widespread involvement of crews in the BI process to drive a positive performance-focused culture.

Approach

Together the Mining Superintendent, Supervisors and BI team, implemented a 6-step process to quickly improve excavator productivity and effect a sustainable cultural change:

1. Confirm the right levers and our ability to report accurate data

Driver trees were quickly developed so key truck/excavator levers – and their impact – could be transparent to everyone. Data integrity was also tested to confirm that key measures (eg excavator cycle time) could be accurately reported. Where gaps were identified, work was prioritised to enable us to feedback correct and timely data to crews.

2. Engage all crews to get their input and implement “Just Do It” improvements to address their concerns

A commitment to involve ALL mine operators and maintainers in early idea generation was a key success factor. The investment in pulling people off equipment was worthwhile in terms of the ownership and involvement it fostered. Sessions with all crews allowed the Superintendent to explain the process and goals, address their questions and also focus on identifying quick changes that crews thought could make a difference. The team and Mining Department management focused on addressing the top 10 list of immediate crew concerns. Within a few weeks, almost all were addressed (eg truck parking at end of shift, replacement mirror on driver-side, improved road conditions) and fed back to crews to show our commitment to having them lead the improvement effort.

3. Involve Operators to re-do standard operating procedures (SOPs) for core excavator activities

Working together, small groups of operators and maintainers revisited the four to five SOPs relating to key drivers (eg Excavator Loading, Clean Up, and Pre-Start). They focused on creating visual aids because they felt these would be more effective than written SOPs alone. Diagrams were then circulated to oncoming crews for their input as to ‘best practise’ procedures.



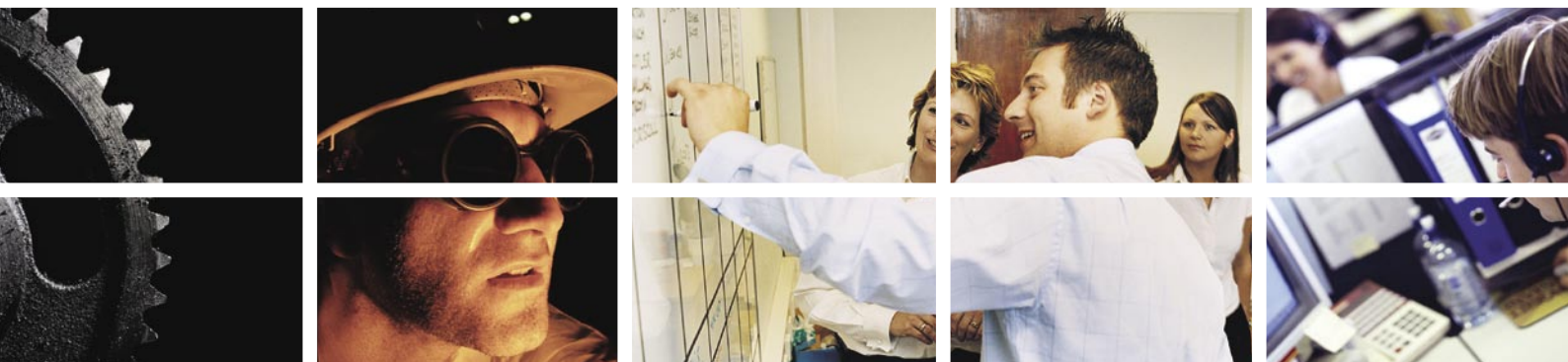
Partners in Performance

Partners in Performance is a firm that builds better businesses. We deliver rapid performance improvements in industrial, resource, manufacturing and service companies, using specialist teams and a hands-on approach to lower costs and increase revenues.

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4. Train all crews on SOP best practise

With new training tools developed, the effort moved to familiarizing all crews with the agreed “best practise” SOPs. Support was high because crews had already given input and felt that they ‘owned’ these SOPs. Experienced operators were rotated to provide hands-on coaching to new operators.

5. Agree shift targets and provide constant feedback to crews

Crews were asked to give input to targets for the key drivers and agree incremental improvement targets for their shift and swing. The focus was not on the size of the targets but on ensuring crews wholeheartedly endorsed the targets that were set. Superintendents and Supervisors were coached by the BI team to provide group feedback at start and end of shift and to follow up 1:1 with top and bottom performers.

6. Cascade KPI Scorecards in the Department to lock in the change

To sustain the early results and formalize roles in the process, KPIs were incorporated into department scorecards for Manager, Superintendent, Supervisors, Trainers and Crews. These one-page scorecards were populated with available data and used to review performance monthly, bi-weekly, daily and per shift. Scorecard measures focused on locking in the inputs (behavioural changes) that would drive improved outputs (productivity).

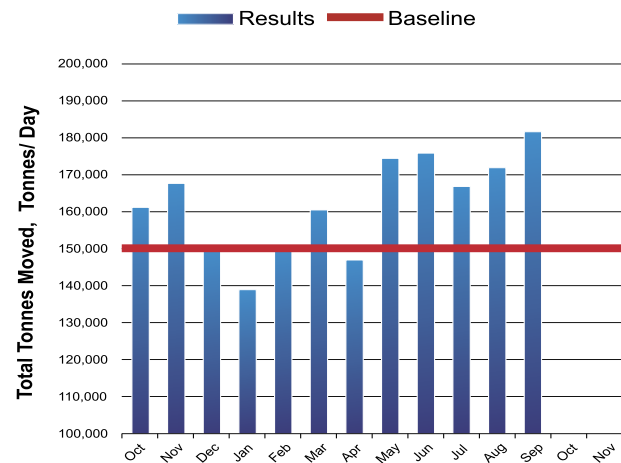
Impact and Results

As the chart below shows, the impact on Excavator Productivity was rapid and substantial.

Within 3 months, productivity (tonnes/hour) was up by 10%, within 9 months an improvement of 20% was being sustained. As important, variability across crews and excavators had narrowed tremendously as everyone adopted the ‘best practise’ techniques in their day-to-day work.

Since the end of PIP’s involvement in the BI effort, even further improvements in excavator productivity have been achieved. By focusing on the basics – ownership for incremental targets, adherence to ‘best practise’ SOPs, and timely and accurate feedback – the mine has achieved its goal of an effective performance-focused culture.

MINE OPS TOTAL TONNES MOVED PER DAY



PRIORITISATION OF IMPROVEMENT IDEAS

Improvements Ideas Currently Under Evaluation

- Increase the Asian Metal1 price by \$30.00 t and see market reaction ↑ (\$5m)
- Target southern China market battery segment (\$2m)
- Secure additional acid volume from Supplier2 & back haul white acid to the CityX Industrial market and avoid shipping from Site3 (\$1.4m)
- PPP Project - Produce and sell higher net margin Metal2 products from Site2 (\$990k)
- Supply Site3 surplus acid into Customer4 plant to reduce freight costs (\$800k)
- Reduce discount to Customer12 at end of Sept by US\$10/t for 2000 tonne/month for general business & reduced Product4 discounts across all other HK/China customers US\$20 to US\$10 (\$500k)
- Sell Product4 to smaller customers by setting up an existing customer (C5) as an agent and they in turn on selling giving payment terms (\$480k)
- Implement a late payment surcharge (printed on T&C's) for invoices not paid on the due date (\$430k)
- 2nd increase of service fees by US \$1.50 on all tonnage going via the off-shore warehouses (\$400k)
- 2nd increase price on all Australian based Product2 customers by \$10/t on 1 July 01 & introduction of stepped pricing (\$400k)
- Implement alternative reusable handling equipment in place of the disposable metal lifting straps used to load break bulk metal on Type3 vessels at Site1&2 (\$400k)
- Export Chinese Metal or Alloy from China to qualify for lower import duty on Product 3 imports (\$390k)
- 2nd increase Metal price on all non-contracted Australian products by \$US10.00 on 1 Oct 01 (\$300k)
- Sell 2000 - 3000 additional soft metal to CustomerY above existing contract maximum (\$300k)
- Establish a managed warehouse in Thailand (\$200k)
- Start charging a non-metro & remote (WA) surcharge in Australia (190k)
- Increase Product2 Sales in Malaysia by a regular 100 TPM (\$180k)
- Implement volume based step pricing for all Australian Metal customers on 1 Nov 01 (\$100k)
- Relocate the the Jakarta warehouse to XXX (or more cost effective position) (\$100k)
- Turn all Technical representatives into Commercial salespeople/Projects or eliminate the positions (\$100 - 700k)
- Sell a packaged product offering which leverages off a specialized pre-alloy grade to EBC.
- Review the Jakarta Office Lease to secure cheaper accommodation
- Instruct Westpac to put an interest surcharge on documents against presentation not being signed within 2 bank days of notification (\$30k)
- Secure all Customerx group alloy 5 business ex China
- Expand Agent4 into an agent for 3rd Parties (consolidated alloy retailer) (\$0 - \$200k)

