

Case Study

The importance of on-site support

Project Challenge:

New Horus, a small contractor that works in Poderosa Mine in Peru, was moving away from conventional operation to a trackless loading and hauling system. They needed a total solution, including technicians and procedures, necessary to improve their efficiency and one that capitalized on the flexibility of the equipment, with a goal of increasing productivity by 25% while reducing costs 15%.

Solution design:

Poderosa Mine is a gold mine located 920 km (572 miles) northeast of Lima, Peru, in the Pataz Province, La Libertad Region, with an altitude between 1,250 and 3,000 m (.78 – 1.86 miles).

New Horus has been working on development and exploration since 2009 and they made the shift to a trackless loading and hauling system. They practiced conventional mining methods and were more focused on meeting monthly tonnage targets than on the total cost of the operation.

Their fleet was made up of older, second-hand equipment, which included a 3.5-tonnes loader and a 15-tonnes haul truck. They were looking to replace their fleet and requested a 4-tonnes loader. They were most concerned with improving mechanical availability and fuel consumption and we offered them a 4LD loader, whose efficiency would allow them to improve their current production. Along with the loader, we offered them a total solution package that would allow them to gain better control of their operations and optimize their efficiency, reliability and safety.

The 4LD was commissioned in May 2017. As part of the total solution, our technicians began to conduct studies to better understand customer challenges and identify solutions. The technicians studied current maintenance practices and worked with the customer to create a preventative and corrective maintenance plan to improve cost and mechanical availability. Soon after the mine began to expand their operations and due to 4LD's performance, New Horus decided to purchase a second 4LD loader which was commissioned in November 2017, and a third which was commissioned in May 2018.

The solution:

After review of the operations, our team offered a total solution that involved equipment with high mechanical availability, good on-site technical support and the best logistic solution. We helped support the customer with technicians, an operator trainer and field engineers to ensure the achievement of their targets and developed a three-stage plan:

“The support that we received from Komatsu Mining Corp. has helped us to achieve a good standard in our operations. Definitely we recommend their integrated service.”

Edgardo Huarcaya
General Manager New Horus

1. Stage one: Review and measure logistics, technical support needs, tools, infrastructure and safety standards.

This review took place over three months and was conducted by a technician, a trainer, an account manager and a service engineer.

2. Stage two: Implement solutions in safety, logistics, tools, technical support and infrastructure.

Implementation of solutions have been progressive over the course of 6 months, which began after initial studies were conducted on the first 4LD. Continual improvement takes place, to date. The customer has two service contracts with us that allow for two technicians to be on site seven days a week, providing the operator ongoing support.

Logistics processes were improved with the control of the life of spare parts and safety procedures are in constant evolution. Feedback from technicians can help to achieve better safety standards on this operation.

3. Stage three: Commission equipment; operators' training; execution of a maintenance schedule; follow-up of safety conditions; and targeted data collection, including hours, costs, operator schedule, and productivity.

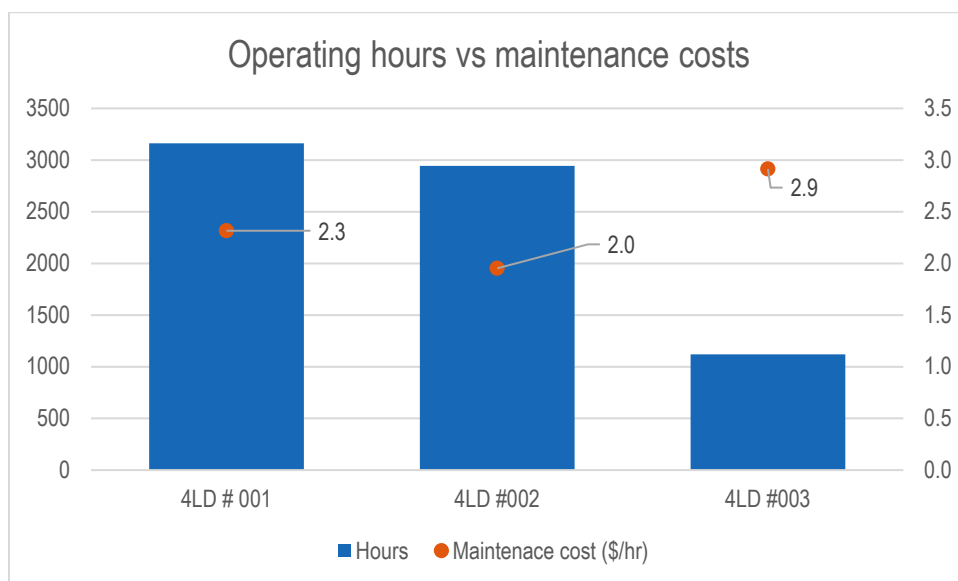
The first 4LD was commissioned in May 2017 and since June 2017, we have provided the customer with a monthly report that allows New Horus to better handle their productivity rate for the mine. The monthly report includes the following information for each unit: mechanical availability, fuel consumption, distribution of costs (preventative or corrective), total cost of spare parts for maintenance, record of life of spare parts, fulfillment of the programmed, and a preventative maintenance plan.

The plan was followed up by engineers and supervisors from our teams in Peru and Canada, who will periodically visit the operation to ensure optimum service.

With the data collected, on-site technicians can give more feedback about how operators are working, in order to prevent premature failures and adjust the maintenance plan according with the conditions of the mine.

Results

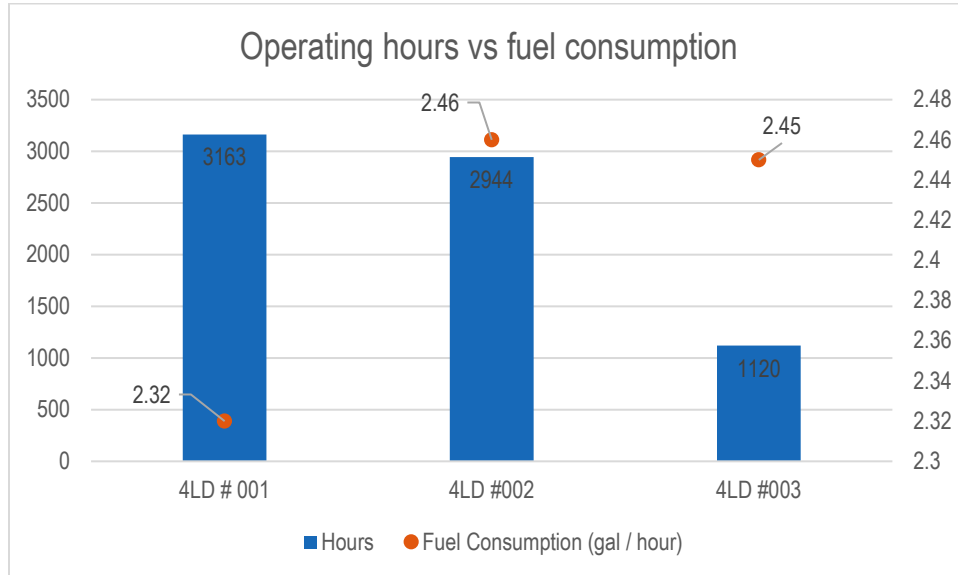
At the end of the study, the 4LD loaders allowed New Horus to surpass its targets of increasing productivity by 25% and reducing maintenance costs by 15%. After the commissioning of the 4LD units, New Horus increased the tons produced per month by 35% from an average of 2,560 tons/ month to an average of 3,456 tons/month. Additionally, they now have better control over their costs, and have reduced their maintenance costs by 25% from \$3.2/hr to \$2.4/hr.



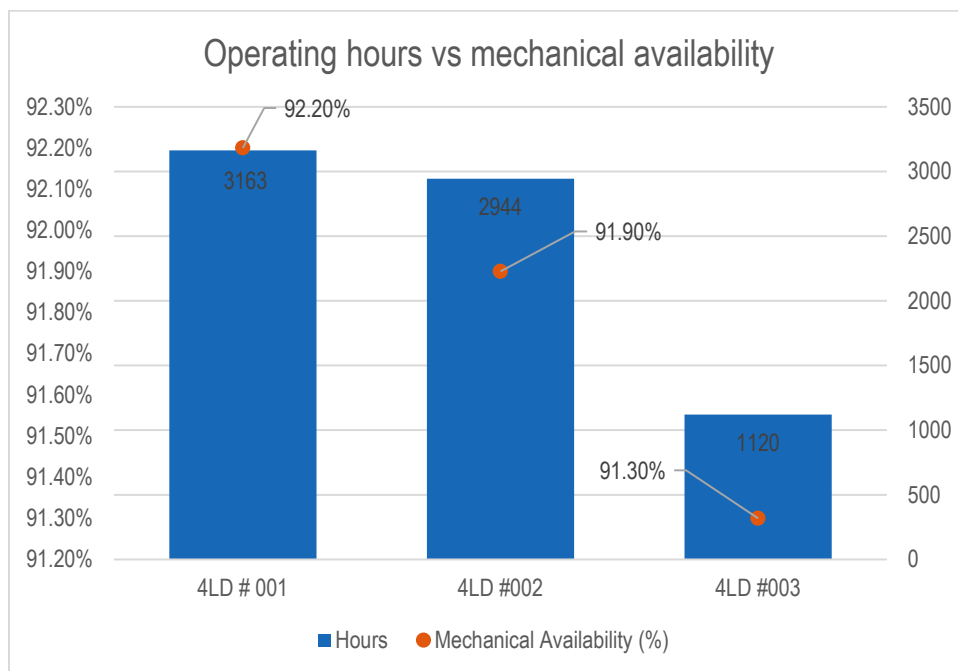
Operating hours vs maintenance costs for the three 4LD loaders.

Moreover, the average mechanical availability increased from 50% for competitor equipment onsite to more than 90% for the three 4LD units. Onsite support by Komatsu technicians was key to this mechanical availability increase.

The increase in mechanical availability increased the monthly development meters and material moved by 40%, with an additional value of \$64,000.



The 4LD loaders averaged 2.41 gallons per hour.



Mechanical availability of the three 4LD loaders averaged 91.8%.

The two charts above contain data gathered from June 2017 to August 2018 showing the total operating hours, average mechanical availability and fuel consumption. The units resulted in an average 2.41 gallons per hour and an average mechanical availability of 91.8%.

The excellent performance of the 4LDs and the high level of service and on-site support provided by our teams helped secure the sale of two 16TD trucks that were commissioned in September 2018, replacing their existing haul truck. New

Horus referred us to two other contractors operating at Poderosa Mine, who purchased two LT-270 hard rock loaders by one and a 4LD loader by the other. These contractors also have on-site Komatsu technicians to improve their operations.

For more information, contact:

Mario Lara, Sr. Product Manager - Loaders and Trucks- mario.lara@mining.komatsu, +1-705-692-3661