

QUARRY PRODUCTIVITY
THREE STEPS TO VALUE



CRUSHOLOGY AND YOUR BOTTOM LINE

However efficient your quarrying operation may be, there are almost certainly a number of opportunities for optimizing processes and boosting profitability.

It's not rocket science, but your best value-creation opportunities may not be where you expect them to be. When you look beyond the obvious with a systematic approach, you will find possibilities throughout your workflow.

Use this guide as a starting point for identifying your opportunities. The results can be dramatic!

1. KNOW YOUR POTENTIAL

You know what you want. And you know what you've got. But do you know what you are really capable of? An accurate assessment and comparison will point the way. Here are some actions to consider.

Benchmarking:

Look at how your production level compares to well-performing similar sites. This is a good first step to get a broad idea of performance.

Data collection:

A reliable assessment of actual performance vs potential demands as much data as possible. Make use of every potential source. That includes production and throughput data from crushers and screens, and data relating to transportation of materials.

Truck payload monitoring systems often record much more than weight, e.g. distances, as well as loading, unloading and waiting times. This data can show bottlenecks and inefficiencies that can be overlooked.

Modelling:

Process modelling software such as Sandvik's PlantDesigner can be a big help in determining your site's potential. This tool lets you test the impact of equipment changes and alterations to process flow and settings.

You can calculate what is possible with the resources available, and determine where best to make changes or investments. Loading and transport can also be modelled and optimized using simulation software.



2. KEEP EYES ON

Technology such as automation and remote monitoring is increasingly important for productivity, but there is still no substitute for eyes and feet. A walk around the site gives you insight you cannot get in the control room. Look out for these essentials. Getting them right can mean big productivity improvements for little or no cost.

Rock supply:

A plant will never achieve its output potential if it keeps running out of rock. Efficiency measures further down the line will never make up for an inconsistent supply. Is your supply consistent throughout the day?

Crusher feed:

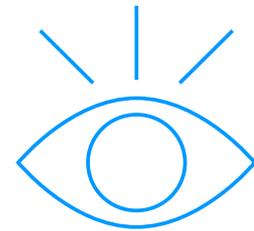
It is important to choke feed the crusher, keeping the crushing chamber at full capacity. Trickle feeding results in uneven wear and poor output. You also need a mix of large and small stones in the chamber; uniform size leads to wear and waste. To ensure good shape, feed a long fraction (5-32 mm) into the crusher to aid inter-particle breakage.

Screen feed:

Look out for flooding or uneven loading over the width of the screen, as well as feed segregation. These issues are usually solved by adjustments to the feeding arrangement. Is the stone distributed across the full width of the screen from the start? If not, you may have 15-20% of unused screen area. Change the distributor shape to get a better spread.

Conveyor load:

Are belts loaded evenly, or are some overloaded? Seeing how things look on each belt will help give a good picture of performance in relation to capacity. Check also for loss of material along the way due to poor fitting skirts or holes.



3. EXPLORE THE DARK SIDE

When a quarry wants to optimize, it's easy to concentrate on obvious value-creating events, such as crushing chamber performance. But these only account for about 5% of the entire quarry process.

The remaining 95% of activities do not create value – minimizing them gives you excellent potential to boost profitability.

Drilling and blasting:

The cheapest way to crush is in the blast. It pays to work on your blasting arrangement to secure the optimum stone size right from the start. Straight holes are key to blasting accuracy.

Loading:

Efficient loading can give big savings in both time and fuel costs. Minimize the distance trucks need to travel, and ensure piles are placed optimally for quick and easy loading motion, with minimal manoeuvring.

Hauling:

Check tyre pressures on all rolling equipment daily to reduce both wear and fuel consumption. Make sure roads are obstacle free and evenly surfaced. Don't waste time and resources by watering roads more than is needed or making tidy piles.

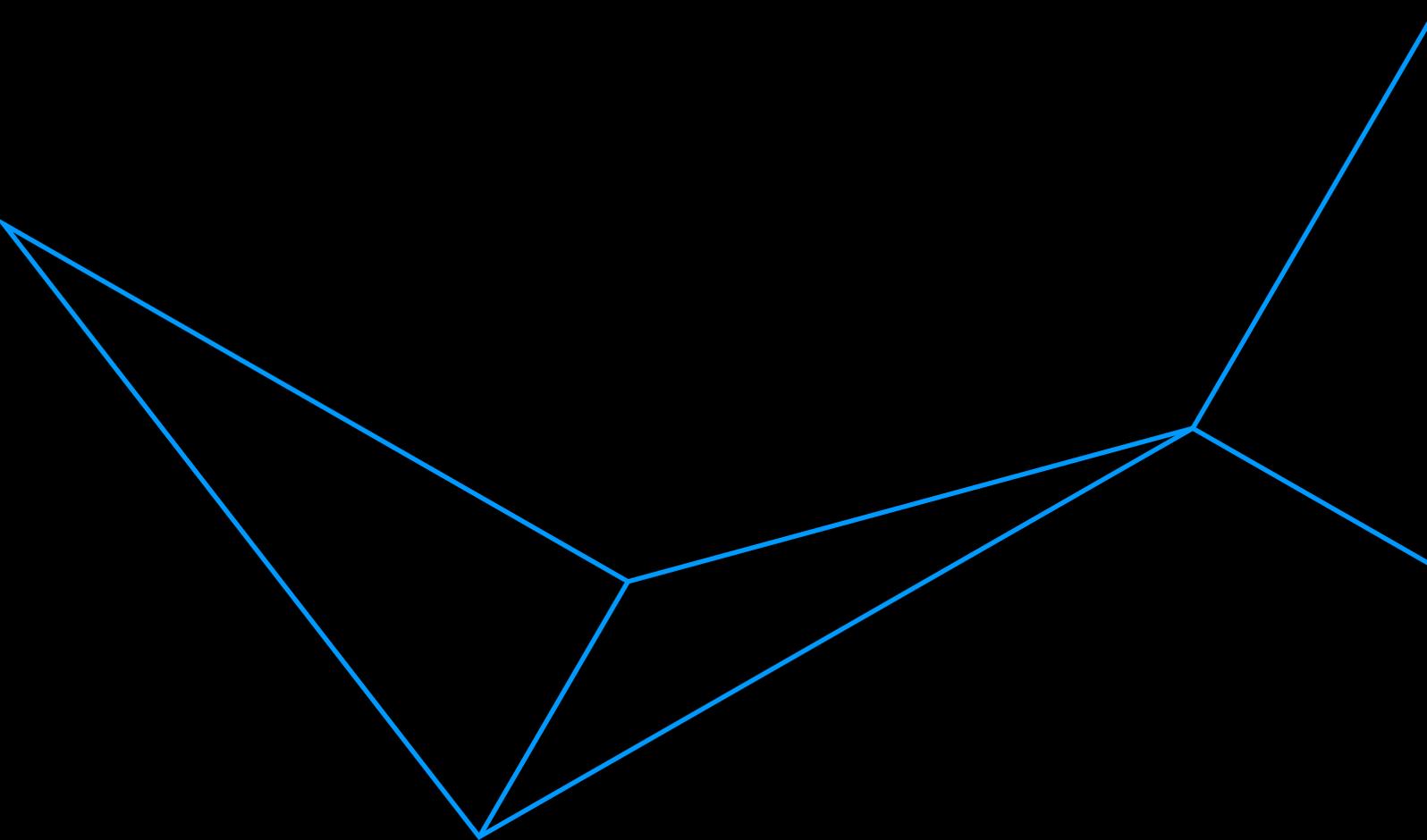
Communication:

People are key to quarry performance, and communication is key to people performance. Make sure operators know the goals, routines and expectations. Don't assume people know – keep up the dialogue.

Workflow:

Each step in the process affects the next step. You can gain a lot by harmonizing the output from one stage should be in harmony with the input needs of the next stage. Underproduction or overproduction at any stage can have a significant impact on the process as a whole.





For more information on how to improve your operations, contact your local Sandvik team or call our global head office on +46 (0) 8 456 11 00.

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