

# Cutting mining costs with 3D printing

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Forward-thinking mining organisations are realising that industrial-scale 3D printing for the spare parts and components of machinery could reduce costs, downtime and provide greater control over the supply chain.



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The current methods of producing tooling and components are often time consuming, expensive, wasteful, and cede far too much reliance to third-party equipment manufacturers. Then there's also inventory, warehousing and storage costs, and the logistical costs of urgently transporting parts.

In fact, 3D printing sits perfectly at the nexus of information technology and operational technology – and as these two realms move closer to one another, some interesting opportunities emerge:

## Creating a digital twin

On sites across the world, miners must go to greater and greater depths to find seams of precious resources. So deep, in fact, that it's often not viable or safe to use humans. By using robotics and other machines kitted with sensors, we can create a digital representation (eg via hologram or on-screen display) of the equipment, to understand how it is performing and interacting with the environment – kilometres below the surface.

## Leveraging big data

Using these insights from sensory data we can start to predict when equipment may fail, or need servicing, or require new parts. This data can be fed into a 3D printing system, to ensure that the required components are produced (on the surface) and sent down, ready for when they're needed.

## Customisation

Different mining environments require different approaches and tools. The biggest advantage of 3D printing (over traditional mass-scale manufacturing) is that unique and customised items can be produced in a cost-effective manner, even in small quantities. For mine operators looking to tailor their approach to a specific site, 3D printing offers some exciting prospects.

Not only could 3D printing save costs and reduce the interruptions and waiting times for maintenance, but it can also be the catalyst for smarter operations more broadly, throughout a mine's operations.

Managers gain unprecedented vision into the future – understanding when equipment is likely to need servicing or re-tooling, building customised components before they're needed, and dynamically adjusting operations. Mines no longer need to come to a standstill for hours at a time, just because one piece of precision equipment is in need of replacements.

Everything from labour shift scheduling to truck dispatch timetables can be configured to best fit with the ebbs and flows of the mine's operations.

In the digital era, South African miners (just like their international peers) are looking to technology-led efficiency gains as the primary driver of growth over the coming years. And advancements in 3D printing could be a vital enabler.

## ABOUT THE AUTHOR

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