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MINING

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Can you explain how the deep cryogenic process makes mining equipment last longer?

The actual process works by placing new items in a specially designed insulated tank, where they are slowly cooled from ambient temperature down to -196 degree celsius. They are kept in that cold environment for about two days, and then slowly brought up in temperature. We can treat many parts at the same time, weighing up to 5,000 pounds each. The process is environmentally green, infinitely renewable and infinitely recyclable as it only uses liquid nitrogen. When the nitrogen goes from a liquid back to gas at -196 °C, it returns into air. Our testing has found the deep cryogenic process increases the wear life of an item on average between 20 to 40%, which equates to a significant amount of increased uptime, increased safety and reduced costs.

What type of items is DCI's technology best suited to?

DCI's technology is agnostic and is not focused towards specific OEMs, but it works best in abrasive, high wear environments like mining and road construction. Items include ground engagement tools such as bucket teeth, slurry pumps, or steel cone crushers.

What cost benefits could a company expect to make by utilizing this technology?

As a general rule, 10% of the actual cost of the item is what it costs to treat the item, providing an increase in life of 20% to 40%. Items that last longer allow for greater uptime and product output at lower production cost. There are also logistical benefits, as less warehouse space is needed to store items, resulting in less items having to be ordered or replaced. The investment is best on high-wear, short-wear life items, especially for small items that are buried deep within a piece of equipment.

How has DCI dealt with the pandemic, and how has the R&D arm of the business developed in this time?

DCI's start up in 2019 was phenomenal. We had a tremendous half a year with a lot of market recognition, making progress such as being put on the global suppliers list for Newmont, working with Atlantic Gold, and talking with OEMs about sub-components. Then Covid struck. To some degree we were lucky: having gone through the turbulence of the dot-com crisis in the early 2000s and having run a large machine shop back then, I made sure to pay for everything in cash when starting up DCI. This included our R&D facility – the only deep cryogenic lab in the world.

Because a big part of what DCI does is R&D, we were able to continue these efforts without missing a beat. We focused on low-grade steels and specifically on high-wear environments and items that fail in mines that cost companies a lot of money. This included focusing on the technology for manganese alloys, cast irons and chrome moly steel, which comprise about 95% of all of the items in every mine, whether they are used for hauling, vehicles, carts, crunching or transporting.

The implementation of new innovations has accelerated in 2020, but mining companies have a lot of technology to choose from. Why do you think DCI is worth their time and investment?

Very often innovation is focused on a specific improvement for a specific problem, such as drones for inspection, software for inventory management or electric haul vehicles to offset environmental impact. Cryogenic improvement of items spans almost all the assets at a mine that wear. The investment in DC means that everyone who touches a part that wears out benefits from this technology's implementation. This involves front line workers, purchasing and mill managers but also senior management, mine owners and shareholders.

