

MEDIA RELEASE

The negative implications of using replicator spare parts on slurry pumps

Replicating spare parts for slurry pumps is a serious issue in the mining industry, for both solution providers and the mine operators who utilise them.

As commodity prices continue to drop, mining operators are under intense pressure to minimise operational costs. As a result, initial costs are often more important than total ownership costs, making non-OEM (Original Equipment Manufacturer) spare parts more appealing.

“During these tough economic times, it is understandable that operators need to reduce their maintenance costs, but they must also focus on maintaining their productivity. These cost savings are often at the expense of productivity,” says John Otten, Global Product Manager for pumps at Weir Minerals.

It is widely recognised within the industry that replicator parts host significant limitations, and can often cause more harm to slurry pumps than benefit.

Non-OEM parts are notorious for their unreliability, and often decrease plant productivity, but why do they have this reputation? To answer this question, it is important for end-users to truly understand how replicators operate and their processes.

Reverse Engineering

Most replicators produce their spare parts through the process of ‘reverse engineering’. They will often purchase or obtain a genuine spare part and take measurements to reconstruct a component drawing from which tooling, moulds, patterns and so forth, will be made.

There are three significant deficiencies in this process: the absence of knowledge of optimum tolerances, material properties and methods of manufacture.

“Our engineering experts at Weir Minerals understand our Warman slurry pumps and possess superior technical knowledge on how they operate. We utilise this in-depth knowledge to deliver spare parts that ensure our slurry pumps achieve their maximum performance and deliver the customer optimal productivity,” says John Otten.

Defining Materials

The next challenging task replicators face is creating the right materials for the slurry pump.

Slurry pump wear parts are made from a range of materials, specially developed for the application. Replicating slurry pump materials, from just a sample of materials, is very difficult. A material’s resistance to slurry wear, corrosion and impact resistance is a fine

balance of a combination of factors including: chemical composition and methods of manufacture.

“If replicators use the wrong materials the parts could erode quickly, resulting in greater frequency of repair and loss of production,” states Mr Otten.

Tolerances

Tolerance is defined as the amount a dimension or feature of a component is allowed to deviate from the nominal. When replicators produce non-OEM parts the control of the finished product dimensions is very tight to ensure interchangeability of parts.

Slight deviations in the dimensions of the part can have a detrimental effect on the wear life of the pump and its performance, bringing higher maintenance costs and production losses.

“The complexities behind reverse engineering leave little chance of replicators producing an exact replica required for a successful fit-up, satisfactory hydraulic performance and acceptable wear life,” says Mr Otten.

Manufacturing Methods

The manufacturing methods and processes used by OEMs have been developed over many years using expert engineering solutions. OEMs know their products inside out; they know what works and continuously make advancements to improve their technology.

“We have access to plant, operational and performance data to continually track and analyse trends. We spend the time to understand our customers’ needs, gain feedback and make developments based upon that feedback to make them more productive,” John Otten continues.

Production facilities that manufacture genuine spare parts using state-of-the-art materials are highly sophisticated and usually employ very expensive machinery. It is unlikely that replicators would have the equipment or the knowledge to satisfactorily machine these specialist materials.

Taking into account the necessity to match; optimum tolerance, the correct material properties, method of manufacture and the high cost of good quality tooling, the likelihood of achieving anything like the overall performance of the OEM part is minute.

Optimisation

A replicator may recreate the spare part but they often fail to optimise it. It is not always as simple as just replacing the worn part; first the operator must understand the nature of the problem.

“At Weir Minerals, we often take samples of the worn parts and send this to our experts in the materials laboratory to analyse. Proper examination of the worn parts’ physical characteristics, by the people who know the design and manufacturing process of the slurry pump, can reveal the root cause of the wearing, and allows us to engineer the correct solutions specific to the application,” says John Otten.

There are many implications with replicating genuine spare parts, presenting an array of consequences to mine sites across the globe.

Operators considering a non-OEM spare part for their slurry pump should think through the risk to maintenance costs, down-time, the effect on slurry system performance and energy costs, before making their final decision.

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