Enhancing crusher value

Doug Sublett, TerraSource Global, USA, discusses how a holistic evaluation of wear parts is key to optimising crusher value.

In their ongoing efforts to optimise long-term profitability in a competitive marketplace, coal-focused producers and energy suppliers know they must continually look for innovative ways to improve their cost structures and operational efficiencies. Because so much of the long-term financials for these companies hinge on improving the value equation around major CAPEX, it is no mystery that a great deal of attention needs to be paid to enhancing and prolonging the peak capabilities of high dollar crushing, processing and feeding machines.

At the centre of this equation is the accessibility to the precision heavy usage/high impact wear parts that extend the working life of business-critical production equipment. However, the ability of companies to make informed decisions about correct wear parts can become confusing due to the conflicting value propositions proposed by two types of vendors vying for that parts business: the OEM vendor and the third party parts manufacturer.

Typically, the argument between the two has been portrayed as third party vendors being able to provide better upfront pricing than the OEMs, whereas many OEMs make the case that their replacement parts offer better long-term value and performance by being made exactly to original machine specifications. The shortcoming of both these arguments is that they focus the worth of the part primarily on the part itself rather than on how that specific part operates as a vital component of a larger, unique and interconnected system.

The concept of 'wear' needs be re-evaluated within this context in terms of how a specific part's performance impacts overall processes, especially with regards to how long optimal performance can be maintained and the repercussions that a worn or malfunctioning part can have across the broader operation, beyond just the machine in which it is located.

Figure 1. OEM in-house expertise can offer one-to-one advice on proper wear parts for specific applications.

Figure 2. Bad things happen when wear part materials are inconsistent with broader application needs.

Broader customer benefits to using OEM wear parts

If structured properly, the broader the portfolio of an OEM, the better positioned it is to be able to support its customers. The combination of strong brands and a smart company structure means that technical resources are continually allocated to problem solving, supported and focused by deep experience across a broad range of products and industries. When a capable OEM connects with a customer, what makes that connection click is an enduring commitment to the overall performance of that customer's operations. This commitment is fuelled by a faith in the embedded value of an OEM's accumulated expertise and success in optimising yields, diminishing fines, increasing capacity and minimising overall downtime.

The resources an OEM dedicates to analysing customer problems and developing appropriate, integrated solutions to solve those problems are far more expansive than those available to the foundry or small fabrication shop, whose focus is generally limited to the price of composite materials that make up the parts they produce for certain types of machines. For most third party parts vendors, their product focus is on replacement parts for machines currently in use, with no involvement in the initial application or sale of those machines. As such, these vendors' ability to offer customers meaningful recommendations about improving the efficiency and longevity of a specific machine is limited to suggestions about using a new or different metal in a particular wear part.

Most OEMs can offer this type of material alteration as well, while also being able to assess and recommend related solutions that could also enhance the overall performance of a wear part. Common examples include an OEM's ability to explain the benefits of adding an upstream screen to account for any changes in material feed, the advantages to adjusting the angle and spread of material entering the machine, or even the potential value of replacing the whole unit with a different type of machine. OEMs, such as TerraSource Global, can then validate these recommendations with data from lab tests, which help provide valuable insights to support business decisions on ways to improve processes. When capable OEMs are engaged by customers to address their wear parts needs, discussions, root cause analyses and potential solutions are holistic and insightful, and offer greater overall value to the end user over the long-term.

Although it may seem obvious that a holistic view of wear parts is one of the most significant areas to which an OEM can bring value to customers, it is often a resource that customers do not fully utilise. TerraSource Global

puts a premium on ensuring no disconnect exists between fulfilling the immediate customer need for a wear part and making sure that the customer also has full awareness of additional resources that can bolster the overall value of that part: helping to look for ways to optimise machine performance, reviewing any changing conditions that could impact proper sizing (lab testing), recommending maintenance or helping retrain new maintenance or line personnel. Most third party vendors are not positioned to offer this array of benefits, and OEM vendors not capitalising on this reality are missing real opportunities to stay connected and useful to customers.

Replacement speed, durability and contextual knowledge

When all is taken into account, the value offered by OEM wear parts comes down to replacement speed (due to proper design of the part and its alignment to the accessibility features of the original machine), overall durability and contextual knowledge to ensure the best parts fit within the broader application.

Speed

In terms of speed, the number of times a machine is serviced is certainly a common consideration, but another key factor is the time it takes to actually install the part and get the machine up and running. Both figure prominently in the wear parts equation, as they both heavily influence any improvements in operational efficiency that allow companies to run longer and more efficiently. Maximising the speed of parts installation and frequency assumes the exact right parts (in terms of size, weight and material), and the exact right part positively impacts operational performance during both normal conditions and upset conditions.

In addition, the impact of worn part replacement on downtime and/or the efficiency of other machines in a process is heavily dependent on machine accessibility. This consideration is an extension of forward-looking machine design that complements precision components by allowing quick access to properly fitting OEM wear parts, so that the machine can be put back into expected levels of operation as quickly as possible.

Figure 3. OEM precision wear parts individually tailored for fast installation and long performance.

Durability

Too often, TerraSource Global customers share stories about how they have been burned by third party vendors who have furnished wear parts, such as hammers, with the promise that these components are built with harder materials that increase the life of the product. However, hardness does not solve all problems, especially in applications that contain a dirty feed.

These customers experienced issues with parts breaking, unplanned outages and additional costs associated with trying to quickly find replacement solutions. TerraSource Global has been able to win back this business as its customers continue to gain more insights into the comprehensive, long-term benefits of a holistic OEM solution to their wear parts requirements.

Contextual knowledge

When all of these factors are viewed in the context of the end to end design and process knowledge an OEM has about each of its customer's unique crushing needs and processes, OEM wear parts again make the more compelling case. Knowing the exact right part means understanding all of the issues influencing wear on a particular machine, such as:

- Type of material being processed.
- Speed of the machine.
- Infeed design.
- Drop height.
- Corrosive wear.
- How the type of material being used to construct the wear parts matches the probability and density of uncrushable materials (metal/tramp iron) in the specific process.

Conclusion

For TerraSource Global, the commitment continues for developing innovative ways to support the industry by providing highly efficient machines that routinely produce the desired product. Innovation in this context entails the right wear parts to use, the accessibility of the machine in which that part will be installed, knowledge sharing about installation best practices, training on maintenance issues and process changes, and so on. The concern is not about merely selling customers a part. Any quality OEM is determined to provide the right 'big picture' solution and then ensure an enduring customer relationship through support for the equipment life, which is often greater than 30 years. As the industry changes through the retirement of devoted, highly experienced personnel, customers will become even more reliant on OEMs who can provide value beyond the wear part and into the whole system that drives their productivity and success.