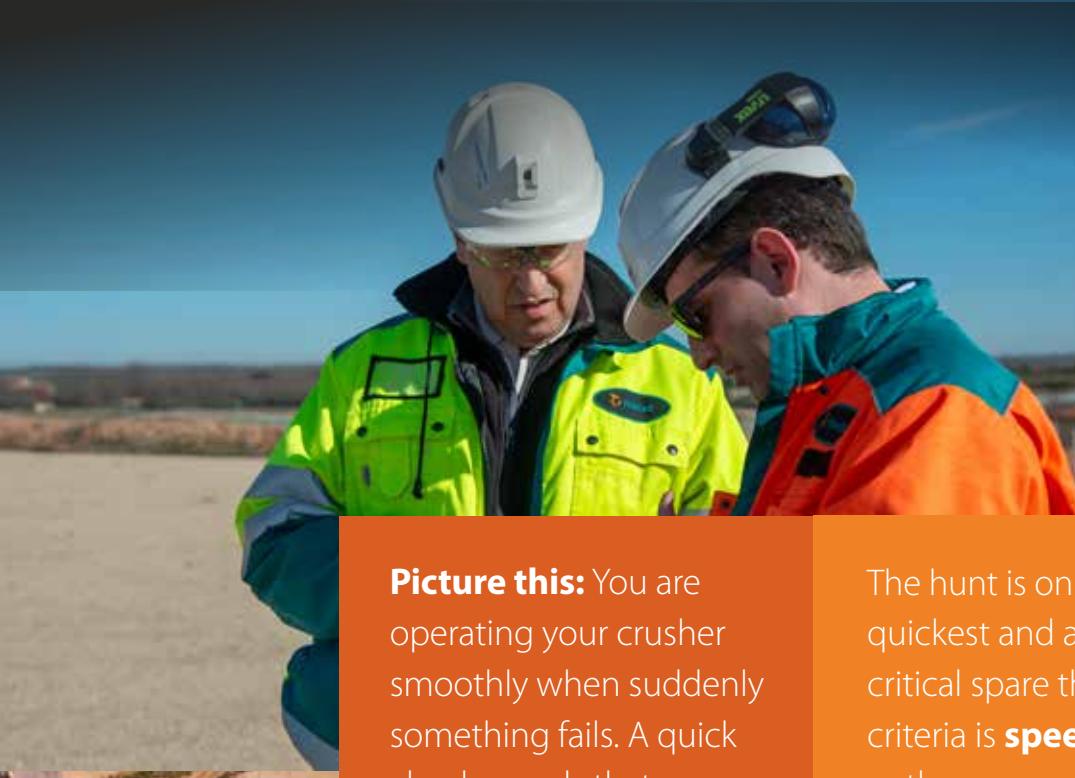




# All parts are not created equal

**7 factors to consider  
when buying spares**





**Picture this:** You are operating your crusher smoothly when suddenly something fails. A quick check reveals that you need a new spare part to get you back up and running.



The hunt is on to find the spare part which can be delivered quickest and at **the most competitive price**. If it is a critical spare that's not in your inventory, then the main criteria is **speed**. If you have backup parts on the shelf or the component is not critical, then the focus shifts to looking at costs – finding the right part at the right price. Outside of price and delivery, **what else should you be looking at?**

# Not all parts are created equal

Although parts may look the same from the outside, they may actually be very different in terms of quality and materials. The results of using an incorrect part that does not perform as planned can be very costly – equipment can be damaged, the part's lifetime may be considerably shortened or the equipment could fail catastrophically putting the safety of workers at risk.

**This eBook looks at the 7 key factors you should consider when buying spare parts to help you make the right decision.**

- 1.** Does it fit?
- 2.** Is it made of the right material?
- 3.** What about support?
- 4.** Is the design correct?
- 5.** Do I have the latest design of the spare part?
- 6.** What about warranty?
- 7.** Are they a sustainable supplier?

# 1. Does it fit?

To the human eye it may look like the right fit but has it been made to the right tolerances? Fractions of a millimetre can make the difference between a correct and an incorrect fit, and between optimal machine performance and equipment failing due to a wrongly sized component.

If a part is too big it may experience forces it was not designed to support causing it to fail unexpectedly. A part that is too small might not properly support its share of the mechanical forces and instead cause other components to fail. Ensuring that replacement parts are made exactly to the specified dimensions is a big part of maintaining your equipment.

> CASE

## Choosing components with incorrect fit

A customer ran into issues after the failure and replacement of an eccentric bushing in their crusher. The client chose to use a bushing with an incorrect fit, with a different stroke and dimensions than what was required. Using a part that did not have the proper fit resulted in cracks developing in the main shaft and head. Eventually the issue caused the main shaft to break into two pieces. Ultimately, the initial perceived savings led to large financial losses and affected the client's production commitments.



## ② Is it made of the right material?

The proportions of different metals in an alloy determine its characteristics. Different alloys, with combinations of iron and other elements, may look the same but the forces they can withstand before they fail can be dramatically different. The manner in which they fail can also change depending on the material makeup of the component. For example, instead of snapping, a part made from a different alloy might deform and depending upon the application, could cause more damage than a simple failure.

This is why you should always make sure that replacement parts have the same metallurgical properties as the original part or that their performance has been validated. Be prepared to test parts to ensure they comply and ensure you purchase from a reputable vendor that has taken the metallurgical properties into consideration.

> CASE

Incorrect materials cause excessive wear and extra downtime

A customer's maintenance team had been using a 3<sup>rd</sup> party main shaft protection bushing that was not composed of the correct materials. The bushing wore down much more rapidly than the original component made of the correct materials. The customer needed to change the bushing sooner than the crushers mantles and that caused additional maintenance breaks. The additional service breaks and downtime led to considerable production losses, far outweighing the cost of the individual component.



## 3. What about support?

When things are going smoothly, things like local inventory or technical expertise are not always top of mind but when a failure strikes, you have to consider who has your back.

Does your supplier have a local presence and are they able to react quickly? Beyond their local footprint, do they have a global presence or access to a larger pool of inventory? When critical components fail, it is important to know that your supplier likely has stock ready and available. For parts that do not fail often, your supplier should also be able to access the needed components quickly whether it is close at hand or can be pulled from a larger base of stock.

If a part fails, can your supplier provide technical assistance? Companies that take an OEM approach often have a deep understanding of the crushing and screening process and can understand exactly why a part has failed. They can also recommend ways to avoid a similar failure in the future, saving you problems that can come from repeat component failures and equipment stoppages.

It is important keep the size, reputation and years of experience of your supplier in mind. Always consider if a company has the resources and competences to support you.

> CASE

### Excessive consumption of crusher spare parts

A customer was experiencing an extremely high consumption of spare parts and excessive maintenance costs. They also needed to improve the maintenance and reliability of key machines within their crushing and related process areas.

Metso was asked for recommendations on ways to help get these cost areas under control. The first step involved inspections of the equipment in order to identify and quantify the areas of most frequent concern. A systematic and focused approach and evaluation of historical trends identified the key problem areas that needed to be addressed.

With the new recommendations in place, including parts stocking guidelines and weekly maintenance inspections, immediate results were achieved. The customer was able to more accurately forecast parts expenditures and equipment reliability, resulting in a drop in maintenance costs.



## ④ Is the design correct?

In any given part, there are sometimes small features that seem to be irrelevant or add additional complexity. In most cases, those features are there to ensure the correct operation of the part. Removing those features may prevent the equipment the part is in from functioning correctly or even cause it to fail. In extreme cases, those missing features may be safety features, so it is important to remember that equipment safety can be compromised by using the wrong part. If this happens a plant

owner or those responsible for safety can be criminally as well as financially liable for any injuries or deaths that occur.

Always look to see if the part has been "simplified". Sometimes these "simplified" parts do bring functional or operational improvements, but always make sure you are purchasing from a reputable supplier and always determine exactly what has been modified. Small changes can make a big difference in how a part performs.

> CASE

### Incorrect pinion shaft sleeve leads to unforeseen breakdown

A customer's Gyratory crusher was in need of a new pinion shaft housing sleeve. Rather than sending the pinion shaft to a certified repair facility for repairs, the customer opted to have the fabrication of the part and the repair done at another facility. An incorrect design was used for the manufactured part and OEM procedures were also not followed, resulting in an unforeseen part failure. In the end, the pinion shaft housing itself was damaged and rendered unrepairable leading to further delays and costs that far outweighed the cost for the required protective sleeve.

## 5. Do I have the latest design of the spare part?

Equipment and part designs are not static but are continuously refined over time to improve equipment performance and safety. This can result in upgrade kits or revised part designs becoming available that can help you get more from your existing equipment.

Talk to your supplier about whether the equipment design has changed over time and whether they can offer upgrade kits to improve performance. It is also important to ask whether the design they are providing is the latest from a safety perspective.



> CASE

### New design of conveyor impact cradles improves maintenance and safety

A customer in Sweden was experiencing issues with their conveyor belts. High impact from material coming onto the conveyor was causing material spillage and extra maintenance times, resulting in safety concerns for the plants service crews.

The plant had not been aware of a new upgrade to the conveyors impact cradles and bars. With the new components, the impact on the belt was lessened and maintenance times were reduced due to features that allowed for quicker service change outs. The end result was less material spillage and the plants service teams were able to shift their attention to other areas.

## ⑥ What about warranty?

Most new equipment from reputable suppliers is provided with a warranty that promises to repair or replace equipment if it becomes faulty within a certain period of time as a result of manufacturing errors. For new equipment which is properly maintained and serviced this is the most likely form of failure and therefore a warranty offers purchasers significant peace of mind. However, most warranties contain clauses that explicitly invalidate the warranty if during the warranty period, incorrect components are used. Most reputable equipment manufacturers will investigate in detail any significant failures

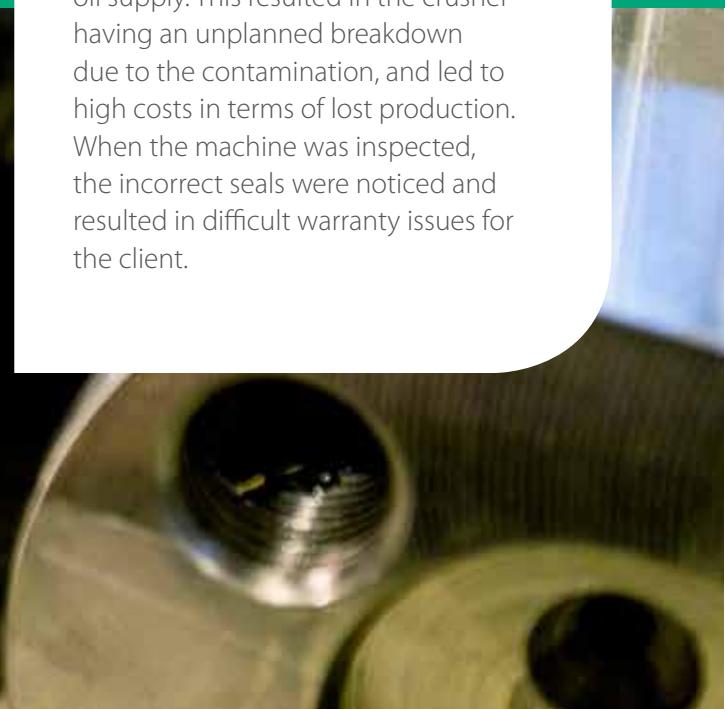
to understand why the failure occurred. During this process they are likely to quickly identify substandard parts that have been used. When this occurs, warranties will often be invalidated.

Always check your equipment warranty before buying replacement parts to ensure you are not invalidating the manufacturer's policy. If you have to replace the part, check if the part supplier provides a suitable replacement warranty. Making the effort to check this can take time but can save you a lot of money down the road if things go wrong.

> CASE

### Improper seal results in warranty issues

A customer was looking to save on costs and purchased dust seals for their crusher from a supplier without OEM crushing experience. The dust seals chosen were not a perfect fit but the client went ahead with their use. Dust was able to enter the equipment causing damage to the seal surface as well as contamination to the machine's oil supply. This resulted in the crusher having an unplanned breakdown due to the contamination, and led to high costs in terms of lost production. When the machine was inspected, the incorrect seals were noticed and resulted in difficult warranty issues for the client.



## 7. Are they a sustainable supplier?

The wellbeing of people and our natural environment are important to all of us. Do you know enough about your supplier and the practices they use? How would you feel if it was suddenly revealed that your supplier used child labour, had non-existent safety practices or was polluting local water sources? What reputational damage would be done if your company was linked to such a supplier?

These are concerns that reputable companies face every day. They work hard to be

sustainable themselves and to ensure they have sustainable suppliers. They do this by having in-depth knowledge of their suppliers, following quality systems and by auditing their suppliers. They look to minimize the use of resources in production and they look to support recycling wherever possible.

Ask your supplier what they are doing to make production more sustainable and whether they can prove that their parts and equipment are made in a sustainable way.

> CASE

### Measuring sustainability

Does your supplier have a program in place to measure their sustainability? Do they also have a plan in place to take corrective actions and measure improvements? The checklist below can serve as a starting point to determine what type of program your supplier has in place:

#### Supplier sustainability checklist

- Health
- Safety and environment
- Product safety
- Labor and human rights
- Supply chain practices



# How Metso helps give you peace of mind



**We always make sure that parts meet the specifications** – that they are the correct size, made from the correct materials and that all safety features are present. Everything we make for our own equipment and for other 3<sup>rd</sup> party machines is designed and manufactured with an OEM approach, using processes which make us the leading supplier of equipment for the mining and aggregate industries.



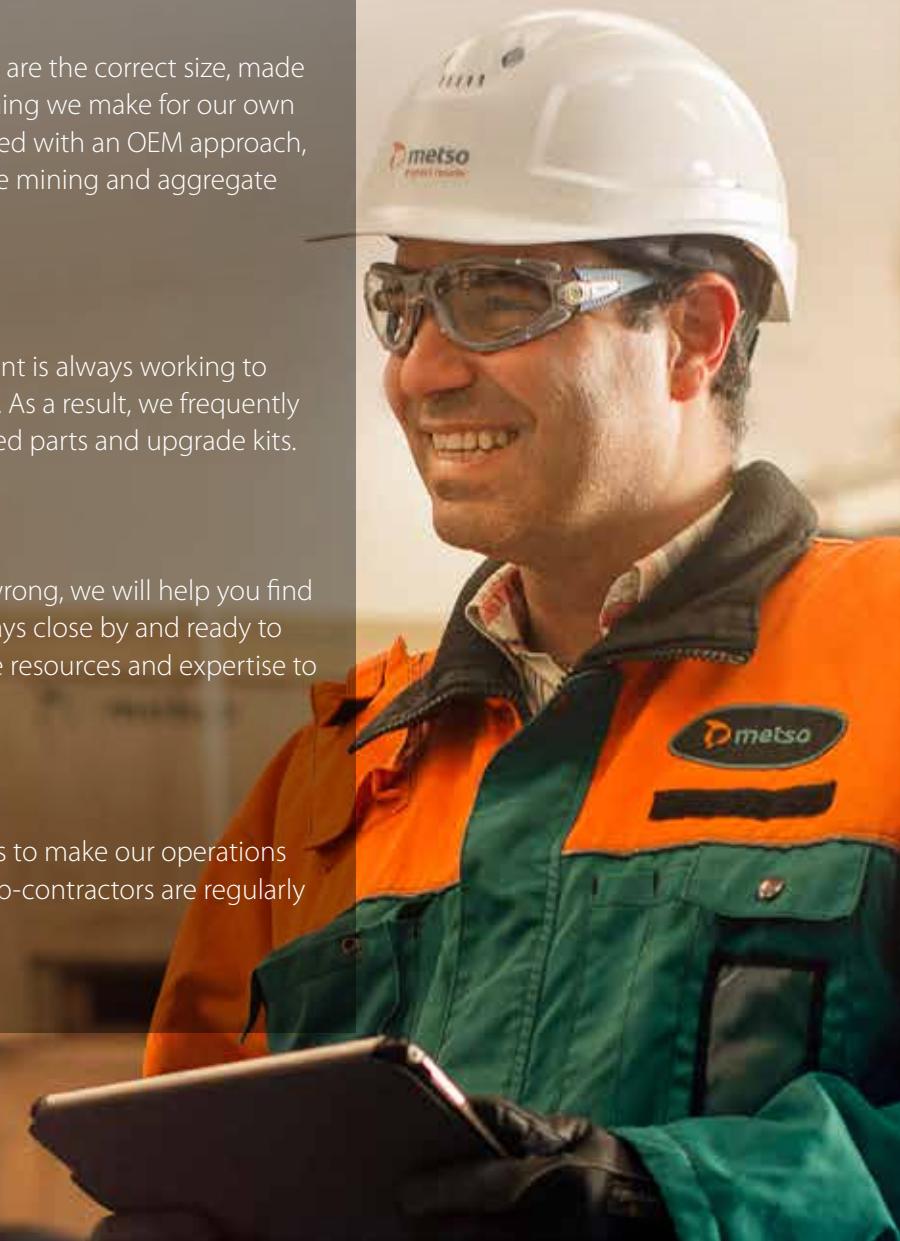
**We invest in research and development** – our engineering department is always working to see if we can make equipment and parts perform better and more safely. As a result, we frequently update our equipment designs, resulting in the introduction of redesigned parts and upgrade kits.

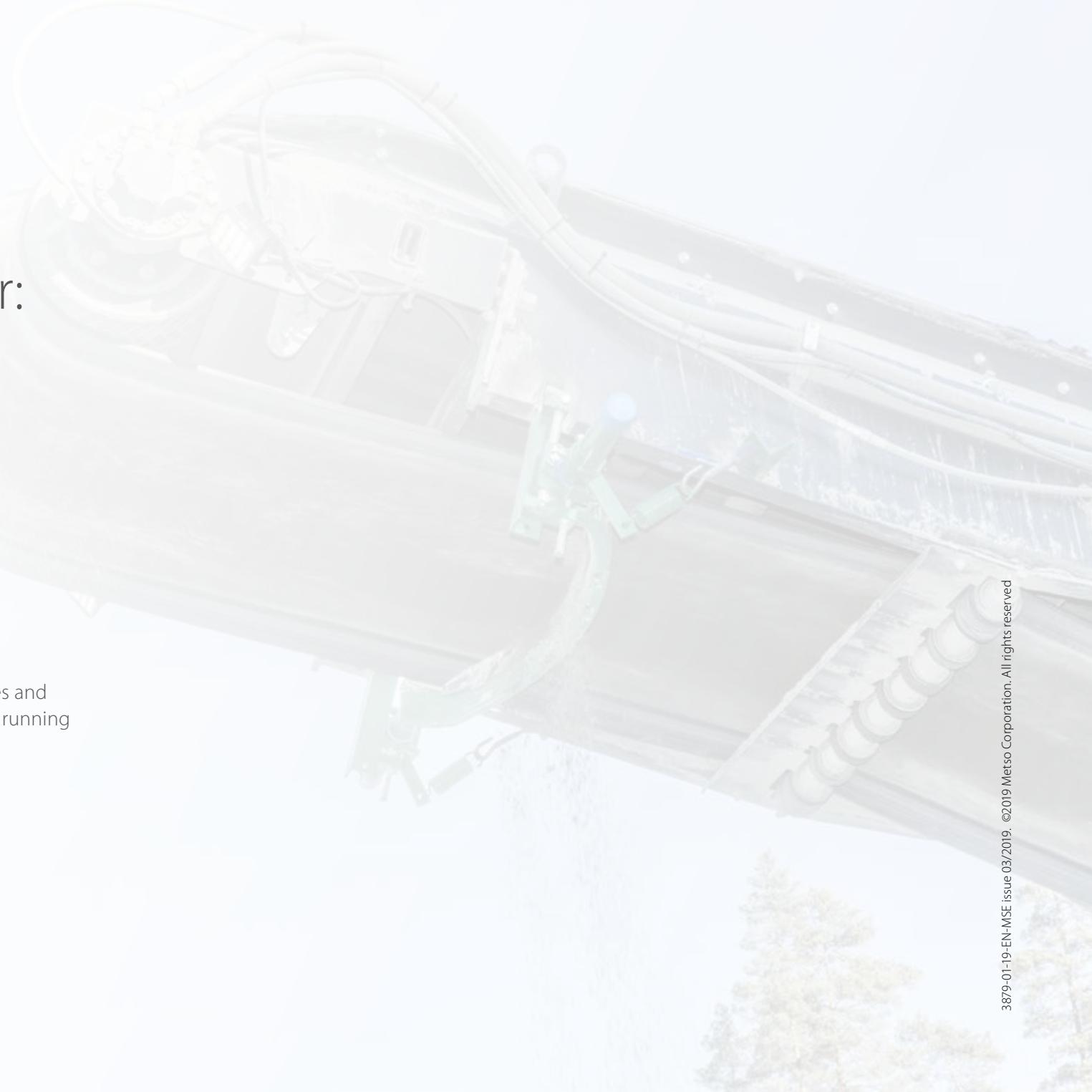


**We provide warranties for all parts we supply** – if something goes wrong, we will help you find out why and help make things right. With 12,000 employees, we are always close by and ready to work with you to find out why things have gone wrong, and we have the resources and expertise to put things right.



**Sustainability is important to us** – we are constantly investing in ways to make our operations more sustainable and to support the communities we operate in. Our sub-contractors are regularly audited to ensure their operations are also sustainable and ethical.





# When buying spare parts, be sure to consider:

-  **Fit**
-  **Materials and alloys**
-  **Support**
-  **Design**
-  **Innovations**
-  **Warranties**
-  **Sustainability**

Metso can provide standard or "made to specification" parts, maintenance services and specialized tools to keep your machines running smoothly and safely.



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