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All That Glitters: Why making a quick saving in the cost of spare parts may cost you more than you think

Saving money on spares may seem like sound business sense but using non-original spares can cause more harm than good. Having saved just a few dollars, replacing precision engineered components with parts that don't have the same tolerances can have a serious detrimental effect on equipment performance and even cause damage that runs into the thousands. Bruce Hanke, Aftermarket Manager US and Canada for SPX FLOW Inc., discusses some of the issues of non-OEM components used in premium pump installations.

It is so often true in life that you get what you pay for. Whether a work of art or a performance car, copies can be a disappointment. When it comes to pump maintenance and repair, spares that offer a close copy to the original can cause more damage than many realize. Spares may look the same, have similar specifications and be reported as a 'good fit alternative', but differences in materials and fine tolerances may end up costing much more than the few dollars saved in not using the original part.

So why can non-original parts cause so many issues? Components used within high performance pumps are precisely engineered and tested with tight tolerances so that customers can realize maximum efficiency and reliability. Shafts with even the smallest amount of play can damage the pump housing or inferior quality shafts may twist or bend in more arduous applications. The original part is engineered to an exact fit and manufactured from a material that matches the application needs.

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Original pump rotors are manufactured to tolerances that can be as little as +/- 0.001" with designs that reduce pump slippage and lower the risk of products becoming lodged inside the pump. Several different materials are used depending upon application needs. These include the Waukesha 88 non-galling alloy that is specifically used to ensure minimum slippage and optimum performance in challenging or critical applications.

Bearings are another part where apparent savings in replacements can end up costing a great deal more. A lower cost bearing may not have the same metal hardness of the bearing races as the original and can wear more quickly than expected. Alongside requiring more frequent replacement their use can, in turn, lead to premature pump failure, loss of production and damage to more costly components in the machine. The tapered roller bearings used in Waukesha Cherry-Burrell (WCB) Universal pumps, for example, are designed to prolong pump life. They are matched assemblies that give a specified internal clearance and are essential to the correct operation of the pump. If bearings are used with different internal clearances than the original design, a number of different detrimental effects may arise. If the internal clearance of the bearing is too small, this will generate a level of heat that exceeds specified operating temperatures and will likely lead to premature failure. If the clearance is too large, loads will not be evenly distributed and bearing life will be shortened; negating any initial savings in cost. Greater axial or radial clearance in the bearing will also allow more play on the pump shaft which may result in damage to the shaft, rotor, pump body or cover – all of which will incur significant repair costs.

Lower cost, non-original spares *can* cause a great deal of problems but what is the real risk? Are these issues common place or just infrequent occurrences? Sometimes it is simply the pump performance that suffers. Indeed, pumps that have had new ‘alternate’ rotors fitted have subsequently shown worse performance than with the worn out original parts. Of course this then means more downtime and maintenance cost while the parts are swapped out again. Other issues may be found in metering pumps where loss of accuracy due to

slippage causes significant decrease in quality control resulting in more re-work or production waste.

Even if potential problems are spotted before any catastrophic failures, saving a few dollars on lower cost spares may delay planned maintenance and increase process shutdowns. This was seen at a major beverage manufacturer when new bearings were being installed into a Waukesha Universal 2 Series pump. Non-OEM bearings had been ordered that appeared to be a suitable replacement. The engineer fitted the new bearings and accurately re-assembled the pump. Upon realizing the new bearings created over 0.005" of end play in the unit where there should have been none, the pump was not put back into service. The savvy engineer had avoided a potentially catastrophic failure but the time taken to confirm the bearings were the cause of the issue and fit the correct parts delayed critical start-up and validation processes for the customer.

Pump seals can be another area where using non-OEM parts can cause operational issues. One example includes a candy manufacturer that had over 70 PD pumps installed that had worked reliably for many years when they suddenly started to experience significant increases in leaks from mechanical seals. In line with continuing strategies to reduce production costs, it transpired that the purchasing department had selected alternative suppliers for seals, shaft bearings and O-rings. The problems had arisen because the O-rings were not made from an elastomer that was suitable for the temperature of the process. Also, instead of being carefully packed and shipped in individual packaging, seals were loosely packed together. This meant that seal faces were being damaged before they were even being installed. The lower price bearings were not matched sets and were further identified as a false cost saving as they would fail much sooner than original parts. The initial saving in the cost of spares ended up costing much more in lost production and equipment failure. The plant immediately switched back to OEM spare parts which resolved the problems they had been experiencing.

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Although original spare parts can cost more than replicates, they are designed to protect the pump, the process, other parts of the installation, and to actually *reduce* the total cost of ownership over the lifetime of the equipment.

Quality, performance and reliability are all factors in selecting the correct technology to ensure profitable production. To maintain this and protect a plant's performance, spare parts must also be selected for these purposes. A quick saving may look appealing, but be careful; all that glitters may certainly not be gold when it comes to spares!

About SPX FLOW, Inc.:

Based in Charlotte, North Carolina, SPX FLOW, Inc. (NYSE:FLOW) is a leading global supplier of highly engineered flow components, process equipment and turn-key systems, along with the related aftermarket parts. The company serves the food and beverage, power and energy and industrial end markets with approximately $2.5 billion in annual revenue, operations in more than 35 countries, sales in over 150 countries and 8,000 employees. For more information, including details about the spin-off from SPX Corporation, please visit www.spxflow.com.