

On-line Extruder Monitoring Justification

Reliability and maintenance professionals agree that their ability to deliver machine availability to production depends on having accurate and timely information concerning asset condition.

With such information in hand they are able to effectively schedule maintenance in such a way as to avoid catastrophic failures and minimize machine downtime.

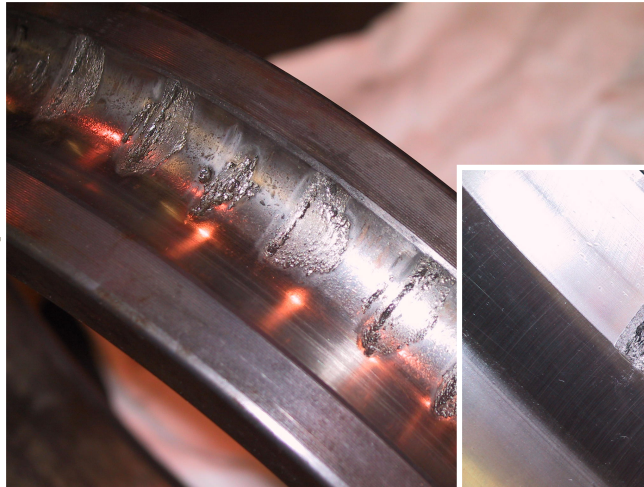
Having the right spare parts, personnel and maintenance plans in place allows outages to be shortened. And since catastrophic failures often cause collateral damage, being able to plan shutdowns in advance of these events dramatically reduces the scope of work (and cost) involved in repairing equipment.

Everybody agrees that having accurate and timely information is a good thing, but agreeing on this point is not enough.

The issue that many struggle with is how to justify the capital expense of the tools or systems needed to generate this information.

The approach to justifying any expenditure depends largely on the asset in question; its impact on overall production, the commercial climate into which the product is being sold, and the failure mechanisms known to affect it.

In a strong market (one in which all product can be sold profitably) the risk of lost production tends to represent the strongest argument for efforts to maximize machine availability. What you cannot manufacture you cannot sell, so every minute of lost product is a loss to



the bottom line. Putting this into financial terms is a simple matter of accounting – knowing the production rate and the profitability allows the calculation of an approximate cost per unit of downtime.

However, if the asset in question is not a production bottleneck, or if it is not possible to sell all that could be produced, this approach is somewhat weakened.

In that case, it is necessary to also consider the cost of repair. A machine that fails catastrophically will generally sustain much more damage (to many more components) than a machine that is taken out of service before the damage is propagated. Calculating this cost is slightly more difficult as it relies on assumptions regarding what would or would not need to be replaced in each scenario.

Consider the situation in which a single bearing shows signs of damage, but the remainder of the components are unaffected. A repair in this case might involve opening only a portion of the gearbox and replacing the bearings on only one shaft. This might represent an outage of only a few days and the cost of two or three bearings, plus labor.

If, on the other hand, the bearing is allowed to continue in its deterioration (because nobody knew it was in distress), then the lost metal would infiltrate the lubrication system (causing damage to begin on other bearings) and, if allowed to fail completely, lead to damage of one or more gear sets. Now one is facing a shutdown of several weeks and perhaps the replacement of the majority of components in the gearbox.

Finally, the argument is sometimes put forth that catastrophic failures rarely occur because, long before that point is reached, there are obvious indications (noise, heat, debris in the oil, etc.).

Sometimes this is true – an observant employee notices something and escalates his concern to management so that action is taken. But more often, by the time the signs are that obvious, collateral damage has already occurred. How comfortable are you with relying on luck to manage your business?

“MTC’s track record has been very impressive and their value to our manufacturing sites has been extremely beneficial . . . the experience brought to the table by MTC will be hard to match.”

Nathan Little, ExxonMobil Chemical, Core Engineering.

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