



Holroyd Instruments MHC Proves its Metal on the Shop-Floor

- Shop-floor assessment of roll bearings in a steel mill.
- In back to back trials, MHC-Memo outperformed in-house VA sensors.
- MHC-Memo preferred as lower cost, easier to use and simpler to interpret.

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In 1992 British Steel Sections Plates & Commercial Steels invested in new mill stands at its Universal Beam Mill. These new stands could accommodate a wider product range and offered quick roll-change times allowing greater responsiveness to customer requirements. However a number of unexpected roll bearing failures threatened to dent the improvement in customer service and profitability. The search was on for an easy to use Condition Monitoring (CM) instrument which could detect faults in roll bearings at an early stage.

The benefits to be gained from the early detection of faults by Condition Monitoring are as follows :



- Allows maintenance and spares holdings to be better planned.
- Maximises plant availability and minimises unplanned shutdowns.
- Enables product quality to be kept to the highest standards.
- Allows secondary damage to be averted.

The problem for British Steel engineers was which Condition Monitoring instrument to specify for this task. To resolve this a test programme was initiated in which three CM instruments were thoroughly evaluated on the shop floor. These instruments were as follows :

- MHC instrument (loaned from Holroyd Instruments).
- Kurtosis based vibration instrument (already owned by British Steel).
- FFT based high frequency demodulation instrument (already owned by British Steel).

The test programme evaluated these three instruments on 14 different rolls. These rolls were tested in turn by mounting them on the turntable of a vertical borer and rotating at 60 rpm. Sensors were mounted directly onto the bearing during the measurement.

From these measurements 3 of the rolls were identified as having possible damage, due to high distress levels as shown in fig 1. When these rolls were stripped each was found to have extensive spalling on the inner race. When (after continued service) those rolls that showed no evidence of damage were stripped for visual inspection their bearings were found to have no signs of damage.

The MHC and the FFT based high frequency demodulation instrument gave substantially similar findings whilst the instrument measuring kurtosis was found to be a less reliable indicator.

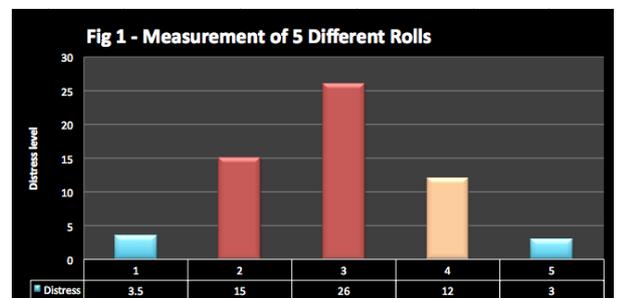


At the conclusion of this trial the workshop based craftsmen were equipped with an MHC instrument which they now use on a day to day basis. Not only was the MHC found to be equally as effective as the FFT based high frequency demodulation instrument in detecting faults but it had the additional benefits :

- Less than one quarter of the price
- Considerably easier to use
- Much simpler to interpret
- Much less time to carry out the inspection

Not surprisingly the MHC is now used as the front line instrument to instantly categorise rolls as being in good or bad condition. For those rolls which are borderline a skilled operator is brought in to offer a second opinion by performing an analysis using the FFT based high frequency demodulation instrument. Since the adoption of this approach there have been no further in-service failures.

Some examples of more recent measurements using the MHC are shown in Fig 1. Its not difficult to spot which of these rolls have problems.



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To find out more about how the MHC-Memo can transform your maintenance strategy contact :



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