



Blowing Away Other CM Techniques

- Blower house application with intense and variable noise & vibration.
- MHC-Memo found to provide the only suitable means for Condition Monitoring.
- Early detection of a range of faults including dust build up on lobes.

Blower Application Blows Away Other CM Techniques




Blower application blows away other cm techniques

The Corus (formerly British Steel) site at Shap Fell Quarry includes 4 kilns for which air is provided by 4 blower houses, each containing a number of (twin lobe) blowers. The blower houses are built as soundproof enclosures in order to minimise environmental impact since the works is situated adjacent to the Lake District National Park.



"After trying various techniques the MHC-Memo gives us the best indication of the blowers condition." **Ian Taylor PCM Inspector**

One of the blower houses contains newer blowers and all spares are readily available for this design. However three of the blower houses contain only older blowers for which spares are becoming increasingly unavailable. Experience has shown that the blower units most commonly develop the following fault conditions :

-  Oil breakdown.
-  Dust build-up on lobes.
-  Weakened framework mountings.

It was clear that Condition Monitoring was required to detect these fault conditions at an early stage but initial attempts with FFT based vibration based instruments were unsuccessful. This was because of the high levels of background vibration and the fact that each blower has a variable duty cycle and it is not possible to know what the duty will be at the time of any particular measurement.



In 1998 the Condition Monitoring experts based at the Redcar site started to evaluate the use of AE for this demanding application. An initial 1 day trial was sufficiently positive that an MHC-Memo was purchased. Since then the MHC-Memo has been used on a monthly basis on all the blowers and has successfully detected all of the above fault types.

One general observation was that in one of the blower houses the Distress[®] readings on the non-driven end of all the blowers was variable but tending to increasing month after month. The lubrication came immediately under suspicion and changing the oil gave an immediate improvement the condition of these blowers (ie lowering of the Distress[®] reading). An example is presented in Figure 1 (black line) and this can be compared with an equivalent reading from a blower in a different blower house in which the oil had already been changed (blue line).

FIG 1 - Effect of oil change

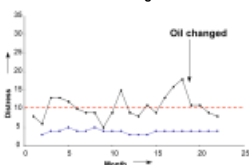


FIG 2 - Effect of lime dust build-up on rotor lobes

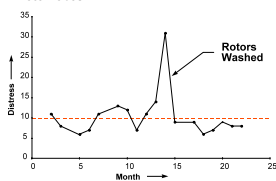
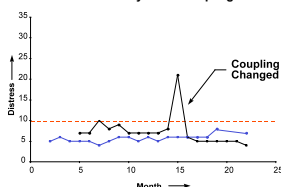


FIG 3 - Effect of faulty motor coupling



Lime build up on the rotating lobes is another concern since it can cause the rotors to touch and if severe enough, will cause irreparable damage to the blower. However if lime build up can be detected at an early stage then it is possible to carry out a washing procedure to remove it and this restores the pump to its original condition. Prior to the use of the MHC-Memo, the problem was to detect the lime build up at a sufficiently early stage. However this is now easily revealed with Distress[®] readings taken on the blower casing as shown in Figure 2 for one in which build up occurred. As soon as the problem was detected, this blower was stripped and washed which immediately cured the problem and prevented any permanent damage to the lobes.

To illustrate an additional fault condition to those described above Figure 3 (blue line) shows the Distress[®] values of the Drive End of one of the blower motors for Kiln 4. Distress[®] values are consistently low (6 or less). This can be contrasted with equivalent readings for the drive end of a blower motor for Kiln 2 (black line) which clearly shows a problem to suddenly arise leading to a rapid increase in the Distress[®] reading to 20. The problem was found to be in the coupling between the motor and the blower. This coupling had been changed by the time of the next reading and the Distress[®] readings were then back to normal.

Ian Taylor and Richard Martin the PCM inspectors who have carried out the Condition Monitoring at Shap Fell Quarry, are very impressed with the way the MHC-Memo can automatically compensate its analysis to allow for the variable duty in the operation of the blowers. The MHC-Memo has also proven to be quick and easy to use with little chance of errors arising during the taking of measurements and this is a very important consideration when taking CM readings in hot, noisy, dusty and confined areas.

Distress[®] is a registered trademark of Kittiwake Holroyd.

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



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