



## Issue 9: Bud's Take on EASA Accreditation and Bearing Analysis II

The EASA Accreditation Program was written with a specific focus on the best practices in electric motor repair. It is estimated by the IEEE that over 50% of motors fail due to bearing related issues. This naturally led to the requirement to visually inspect bearings for failure mode.

This task can't be taken lightly. If the failure mode is ignored the failure will occur again. This is an extremely difficult task. In many cases the obvious damage is secondary and masks the root cause.



Picture 1: Worn and broken cage.

In the field, when a motor or bearing appears to be failing bad steps are taken to try and prolong the bearing life. This practice often assists in the masking of the root cause. In a factory with multiple motors, if an issue is found and appears to be resolved by this process it might not be noted.



Picture 2: Bronze material embedded in raceway.

In time the bearing will fail because this process is only a temporary correction and not addressing the root cause. Many times these temporary actions are not noted in the background and end users conclude the issue was a bad bearing.

A quick example of this situation: I recently reviewed two 7219B angular contact ball bearings with bronze cage. The motor tested good in the motor shop prior to being shipped to the customer. The bearings were being used in a 75hp vertical motor running in oil. The bearings failed in two hours! The cages were fractured; bronze material was pressed into the raceways and coated the rolling elements. Strangely the oil sample was relatively clean?



Picture 3: Relatively clean oil sample.

I concluded that the bearings failed due to inadequate lubrication. The lubrication did not provide sufficient Elastohydrodynamic (EHD) oil film thickness resulting in severe rubbing and sliding friction.

The true root cause was that after the test the motor was drained, and then ran without lubrication. As it got hot, the first step was to add oil.

It is critical to look beyond the bearing and ask the right questions to discover the root cause. I have spent more than 15 years reviewing and performing bearing failure analysis and believe the required communication is the most difficult or tricky task.



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