



Case Study - What could go wrong during Lubrication of HT / LT Motor

Hello Friends / Sir,

Today we are going to present a Case of **Induction Motor**, which might be rare in Industries. We hope sharing this experience will prevent others from encountering similar issues.

In a plant, there was a **3300 KW, 6.6 kV & 988 RPM HT Slip Ring Induction Motor**. The motor was commissioned in 2011 and was running well till the maintenance team found out some issues.

After running for 1+ year, approx. 2000 hours (1.5 years), it was time to do re-lubrication of bearings of both DE and NDE Side. The technician went for it and started greasing the motors from greasing inlet on Both DE & NDE Side. On NDE Side they lubricated with 8 pumps of grease gun. But when they started greasing on DE side, after 2 pump grease started coming back out of greasing inlet.

So, When informed, their superior went and checked again what was happening. they tried forcefully, but the grease was coming back out of the inlet. But as the plant was operational, couldn't do anything more. They looked for possibility, if the greasing inlet was left open or inlet cover got missed and some foreign materials might have gone inside the inlet as the greasing inlet was found not covered during checking.

Due to production demands, nothing could be done for the next 4 months despite monitoring the DE Side bearing temperature closely.

After 4 months comes a 6-day planned shutdown. So, during this 6-day, planning was to check what is the exact issue in the DE Side greasing inlet.

Shutdown started, and on the 3rd day of shutdown team got to check motor DE side after it was decoupled. It was known greasing is not going into bearing through greasing inlet. So it was obvious that some foreign material had entered the Greasing inlet, as the greasing inlet was not covered.

So, team started removing unwanted material from greasing inlet through fine stick and tools which they had. But after removing what could have been visible, greasing was started again, but the problem persists.

Now the team brought drill machine to remove the foreign particles, which had become the Headache in last 12 hours. When the drill bit went inside and started drilling, to the maintenance team surprise drill bit got damaged and broken. Now everyone was surprised. What can be inside which can break the drill bit? We removed that broken drill bit.

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Now soft hammering was started on the outer side of the End cover near greasing inlet, so that the foreign particles move out or change its position (Soft hammering to avoid damage to end cover of HT Motor) after trying it for 4 hours nothing happened. One very senior maintenance with 17-18 yrs of experience took the End cover and hit it with the ground with greasing inlet down (Hit was more than soft and less than hard). And what comes out of the greasing inlet surprises everyone.

“It was a broken piece of Drill Bit” not the one which was broken by maintenance team during this process.

Now they checked whether the greasing hole is through or not, and yes it was not through.

It's possible that during the manufacturing process, a drill bit broke while creating a greasing hole in the end cover. Instead of reporting to his superiors and to conceal the damage, the worker may have filled the area with excess grease, assuming it would mask the issue and allow the motor to operate for a few years.

The worker might have reasoned that the greasing hole wouldn't be inspected before commissioning and that the motor, normally, in projects is kept packed at the site for 6-8 months and then would be greased only after the initial 2000 hours of operation and commissioning. By that time around 2 to 2.5 years of motors have passed at site.

Now the problem was identified and cleared. Team made the inlet grease through, so that grease can go to bearing. Fixed the motor, coupled it, trial taken, and greasing done. **(Sigh of relief at 3 AM Midnight)**

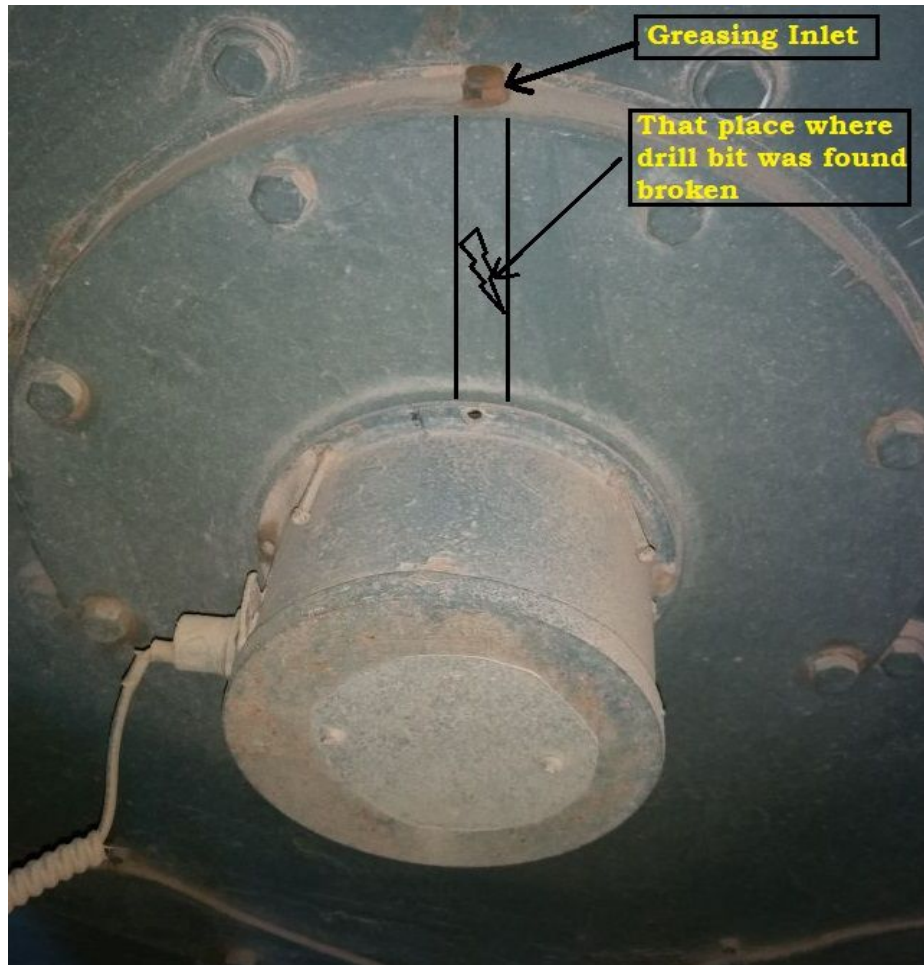
We expected maintenance teams to take proactive steps to identify and address similar potential issues in other motors, ensuring optimal performance and reliability.

Maintenance teams often assume that OEMs adhere strictly to design standards. While OEMs strive for perfection, occasional errors can still happen. As this case demonstrates, human error can occur at any stage of the manufacturing process. This underscores the importance of vigilant maintenance practices. Maintenance engineers play a crucial role in identifying and rectifying such issues, ensuring optimal equipment performance.

Also, we must make a maintenance practice to cover Motor grease inlet to avoid entering of foreign materials into grease inlet.



Below is the **Pictorial Representation of HT Motor for Better understanding.**



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