



## Case Study - How Spare Motor kept in store can betray your hope of lesser Breakdown

Hello Friends / Sirs,

Today we are again going to present a Case of **Spare Motor**, which can happen in any Industries. Hence, we wanted to share the experience, so that the problem engineers faced in that plant must not be faced by others or can be avoided.

In a process plant, there were four identical **132 kW, 415 Volt, 955 RPM** process fans, each powering a critical process unit. Since there were no standby fans, any motor failure could lead to significant production losses of 60-70%.

After 5 years of operation, the maintenance team decided to replace one of the running motors with a spare that had been stored for four to five years and take the current motor for Overhauling during a planned shutdown of 2 weeks. Before the replacement, the spare motor underwent a series of tests in the workshop, including winding resistance, insulation resistance, no-load current, and vibration checks. Motor was found to be running smoothly and All tests yielded satisfactory results.

The spare motor was installed, team checked all the Alignment readings after installation, and found readings to be perfect.

Motor was coupled with Fan and Trial was taken with VFD for 1 hour in 40 - 50% loading conditions and everything was found to be normal.

As a standard practice, before the startup of plant after shutdown, trial of overhauled or replaced motors are to be taken.

The plant was started and took around 12-14 hours to come to load. During this period the said fan was not running as required from process side. The fan needs to be started when plants come to 50% load. This time when the fan started, it tripped in the earth fault. The team checked everything and yes, the motor was found to be earth. But the question was what happened in last 15-16 hours after trial of the same motor was taken for 16 hours. They replaced it with old motor again which was overhauled.

Now the time was for inspection of what happened to the spare motor who's all parameters like resistance, inductance and insulation resistance were ok. When the completely dismantled the motor removing the rotor from stator, they couldn't believe it.

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See the photos below



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### **OMG where all these come from and that too inside the motor?**

There was plastic wrappers (of Vimal, Rajshree, Panparag, etc) and a **dead small mouse** too. But still how it get inside and that too between the rotor and stator?

They went to the store again to check. Around 100+ spare Motor was kept in big store room. After seeing 3 motors we got our answers. The motor was packed but the sealing of cable gantry in the terminal box of some of the motors was not available. Now the maintenance team got their answers (the mouse went between stator and rotor through terminal box and must have taken some foreign material with it).

The maintenance Team themselves invited a very hectic work for the next 15 days to check all such motors by opening both end covers and looking at the condition of stator and rotor to prevent such breakdown / downtime.

First, They covered all such open sealing in the Motor terminal box and then complete motor TB was covered with polythene. Also, they asked store people to keep and spread Mouse / Rodent repellent across store where Spare motors was kept.

They got around 10 more motors which have become the House of Mouse, problem was rectified, overhauling were done of those motors and trial taken of each motor for a round 10-12 hours in the workshop. Still wishing such motors don't betray us again.



So, friends do know how the motors are kept in your store at least to reduce the downtime of breakdown. Every day offers new learning opportunities

We hope this information was helpful. Please share it with other electrical maintenance engineers you know.

We, as an Electrical asset consultant and service provider always suggest what is best to run your industries smoothly and without hiccups of maloperation and breakdown.

If you are looking for a dedicated agency that understands the direct link between your assets and your revenue, call/write to us, we will be happy to assist you.

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