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GREASING ELECTRIC MOTOR BEARINGS

Over the past years, I have been researching the problem of grease and electric motor bearings. The major problems are the type of grease, the proper application of the grease, and the frequency of application. Let me say that this paper is the result of my own research involving grease manufacturers, bearing manufacturers, motor manufacturers, our industry's technical association - EASA, and our own experience as a certified electric motor repair facility. Hopefully, this will help achieve longer motor life in your facility.

Probably the most misunderstood part of the problem is the grease itself. Without going into great detail, grease is approximately ninety percent oil and ten percent thickener. The oil does the lubricating, while the thickener keeps the oil in place. The problem arises when you mix greases which have different thickeners. The most common thickener, or base, used in the bearings of new electric motors is a polyurea base. The most common base used by maintenance departments is lithium. If you mix the highest quality polyurea based grease and the highest quality lithium based grease, the result can be a severe reduction in the effectiveness of the base. The result is that your grease can become pure oil and flow into the motor, leaving you with no bearing lubrication. This explains why we sometimes see motors which are full of oil, the bearings have failed, and the customer says there is no oil anywhere near that motor.

RESULTS OF GREASE INCOMPATIBILITY STUDY

	1	2	3	4	5	6	7	8	9	10
(1) Aluminum Complex	X	I	I	C	I	I	I	I	C	I
(2) Barium	I	X	I	C	I	I	I	I	I	I
(3) Calcium	I	I	X	C	I	C	C	B	C	I
(4) Calcium 12-hydroxy	C	C	C	X	B	C	C	C	C	I
(5) Calcium Complex	I	I	I	B	X	I	I	I	C	C
(6) Clay (Bentone)	I	I	C	C	I	X	I	I	I	I
(7) Lithium	I	I	C	C	I	I	X	C	C	I
(8) Lithium 12-hydroxy	I	I	B	C	I	I	C	X	C	I
(9) Lithium Complex	C	I	C	C	C	I	C	C	X	I
(10) Polyurea	I	I	I	I	C	I	I	I	I	X

B = Borderline Compatibility
C = Compatible
I = Incompatible

Trying to get grease information from the bearing manufacturers is sometimes very difficult. Most manufacturers build their bearings in many plants around the world. Some have codes which tell us what grease is in the bearings. But some manufacturers keep these codes from us. We have developed a knowledge of manufacturers and their codes so we can tell what grease is in a particular bearing. We are now specifying polyurea based grease in all the bearings we use when we rebuild your motors. This brings us in line with the motor manufacturers so that your new and rebuilt motors will have the same grease. The most readily available versions of polyurea grease are Shell Dolium BRB, Exxon Polyrex, Chevron SRI, and Rykon Premium #2. You just need to make sure your grease supplier is aware of this grease and assures you that your grease is polyurea based. Or, we can supply this grease to you if you would prefer to buy it that way.

Many customers ask me how and when to grease the bearings. There is no true general answer to this question. Each application is different.

The proper way to grease motor bearings is: When the motor is running, remove the grease relief plug, clean the grease fitting, pump new grease in until clean grease comes out of the relief plug, leave the plug out for a while - usually about half an hour- until the grease stops coming out of the relief plug. Then reinstall the plug and your bearings will have the proper amount of clean grease in them. More motors fail from over greasing than under greasing. "A couple of shots a week" is not a good maintenance policy, especially if the relief plug is never removed.

So, how often should you grease your motor bearings? This is where the wide range of answers comes in. I have seen bearing manufacturers that say never to grease a shielded, the most common, motor bearing. Other bearing and motor manufacturers give different recommended intervals. Some take duty cycle into consideration, others don't. Even though this may not be the answer you want to hear, I believe each application has it's own timetable. My suggestion is to develop a schedule based on the condition of the grease when you grease the bearings properly, as stated above. If the first bit of grease to come out of the relief plug is as good as the grease going in, you are too early. Extend the time a little before regreasing. If a solid glob of old grease has to be worked out of the relief plug with a screwdriver/knife, you have waited way too long. Shorten your interval and try again. This may, depending on the number of motor applications in your plant, result in a chart with greasing intervals that vary from motor to motor.

In today's world, we see a lot more repairing than maintaining of equipment, including motors. But, I believe that this approach can save you a lot of down time and cut down on the repair costs.

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