

Troubleshooting Through Reverse Engineering

Certified Bearing Specialist (CBS) Takes on Hot Asphalt Conveyor Line

Michael Odom, certified bearing specialist and customer sales and service at Applied Industrial Technologies, explains how he used his bearing expertise to save a customer both money and downtime.

An asphalt plant and new customer was having constant bearing failure on the hot asphalt conveyor line. They were going through one bearing every month. They had brought in the conveyor company to look at the situation, but they could not recommend anything at that time to determine why it was failing. One day I made a cold call to the plant and the plant manager happened to be onsite. I started introducing myself and handed him my business card. On the back of the card my Certified Bearing Specialist credentials were printed. His eyes lit up as soon as he saw that. He began telling me of the constant trouble they were having with this one application. We

nance guys and we started disassembling the bearing. The shaft was $5\frac{15}{16}$ " and they were using taper roller bearing household units. First thing that I saw was that the grease inside the bearings was completely "cooked out."

After fully disassembling the entire bearing, I was shocked at everything I was seeing. First thing I observed was the scoring and peeling of the roller elements and also the inner and outer races. After completely cleaning all pieces of the bearing, I also saw geometric stress concentration spalling and excessive preload. My first thought was that the lubrication was causing some of the problems, but the excessive preload wear had me baffled a little. I knew I was going to have to actually see about reverse engineering to try to get to the true root of the problem.

I went back and started doing a documentation of everything that I saw and also took detailed pictures. I

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went out to look at the conveyor they were having problems with. I informed him to please save me one of the pillow blocks next time they had a failure and changed them out.

A couple of weeks later they had a bearing for me. I went to the customer and got help from one of the mainte-

knew that the material conveying was of some concern due to the high temperatures. I gathered everything I had and set up a meeting with the plant manager and all the maintenance guys in the facility. We looked over the situation and noted that it wasn't the normal nature of the beast, per say.

After looking over the application, running temperature readings, load readings, runout on the shaft and also looking at what I saw in the evaluation of the bearing, I determined they had heavy radial loads, expansion on the shafts from the high temperatures of the material being conveyed, and also really bad misalignment of the shafts.

I suggested, after weighing the options, to put in place SAF-style housings with spherical roller bearings, putting auto lubrication units, switching to high-temperature grease and also converting the conveyor over so that the bearings would be mounted externally and farther away from the material and high temperatures. He agreed to give it a try. We got everything together and I returned to the customer to help with the installation. I set the internal clearance to allow for the thermal expansion and also set the bearings up with expansion and also no expansion to allow for the thermal growth of the shaft. We mounted and installed the lubrication unit and also did the machine work that needed to be done to mount the bearings externally and finally got the alignment set right on the shaft.

After the first month the customer was amazed. Six months later, he is still in disbelief that the bearings are still running. I saved him over \$100,000, not including downtime. I have made a customer for life with them. Being a Certified Bearing Specialist made all the difference in the world. It opened up so many doors that could have been closed without it. I would recommend it to anyone looking to broaden their horizon in the industrial world." **PTE**

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Michael Odom has held multiple positions in the industrial sector for 18 years and has completed many achievements throughout his career. He is currently in customer sales and service at Applied Industrial Technologies.

