



**Transmission  
& Bearing Corp.**

## **Technical Notes by Dr. Mel**

**March 2018**

**Dr. Mel asks:**

**Why don't you**

**FIX IT?**

### **Typical Answers Are:**

**Because we had a spare** bearing of the same design, so we shut the Turbine (or other piece of equipment) down, installed the spare over the weekend, and restarted. However, after time, the bearing failed again.

**Because we had a different mechanical contractor** repeat the installation with a spare bearing of the same design. But again after time, that bearing failed the same way. Maybe it's not the contractor, and maybe it's not even a maintenance issue. Instead it might be an issue with the OEM equipment design as used currently.

**Because a seemingly perpetual warranty** arrangement exists with the OEM, and the OEM provides spares when we need them. Consequently, we are in a quandary because we lose production income and we cannot go out to get a specialist who could solve the problem.

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**Because a competing OEM claims** that a complete replacement of our expensive equipment is the answer.

**Because if the OEM can't solve the problem,** we doubt anyone else could solve the problem.

**Because we use a competitive bidding process.** A local shop with the lowest cost always gets the award. While we are not happy with the results, we have no choice but to get a cheap refurbishment of the original (failed) bearing and to use it until it fails again.

**Because our standard solution tree has not yielded a long term solution.** Our committee meetings use a solution tree with many branches. Unfortunately, our attempts to fix the problem have not worked.

If any or all of these reasons seem familiar, you might try another route.

**Sound familiar?**

**Try another route.**

**Call TRI.**

**Call TRI.** TRI is a very experienced and capable engineering and manufacturing company. TRI performs detailed evaluations of the design of the rotor-bearing system with the objective of permanently solving the problem. Typically, TRI's solution process results in an identification and explanation of the

problem and the solution, described in plain language and sketches for all to understand. With the customer's approval of the solution, TRI will complete a specific design of upgraded bearings or other hardware to resolve the problem for consideration by the customer. With approval, TRI will then manufacture the products in TRI's highly capable shops. TRI will subsequently provide direction for installation and will monitor start-up.

For decades, TRI has been solving design problems for all types of rotating machinery - Steam Turbine-Generators from 5 to 1350 MW, pumps- horizontal

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and vertical, compressors, motors, variable speed fluid drives, gear boxes, and more. In most cases, for a range of reasons, OEMs or others would not or could not solve the issues at hand. TRI fixes rotating machinery with long-term solutions.

TRI's primary methodology is to use TRI's proprietary simulation modeling computer programs and other commercial modeling computer programs to evaluate the bearings and rotors to create the basic design features of the solution. Then TRI uses CAD to complete the design for TRI's shops to manufacture.

Today, TRI has upgraded journal bearings installed and operating in over 55,000 MW of power generation in America and internationally. In summary, TRI has developed numerous upgraded designs of journal bearings, lube oil systems, and a variety of new equipment such as high-powered variable speed fluid drives for pumps and fans.

These are shown on our website:  
[www.turboresearch.com](http://www.turboresearch.com).

Incidentally, in recognition of TRI's innovative abilities to solve a wide range of rotating machinery problems with new solutions, TRI has received over 20 US and European patents, the latest being U.S. Patent No. 9,841,055 for **Vertical Guide Bearing Improvements**.

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TRI is supporting spring 2018 outages and preparing for fall 2018 and spring 2019 outages. Please call TRI if we may support your outage with refurbished or new components.

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TRI product & service information is available at [www.turboresearch.com](http://www.turboresearch.com)

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This Technical Note was written by Dr. Melbourne F. Giberson, P.E., President of TRI Transmission & Bearing Corp., Turbo Research, Inc. The objectives of Technical Notes are to disseminate information and experience on understanding problems and how to solve them. We attempt to send this Technical Note only to those people for whom the information might be useful. Over the years, many people have asked to be added to the distribution list (see our website). Occasionally, a few individuals inform us that they do not wish to receive the information. Should you desire not to receive future Technical Notes, please advise TRI by [info@turboresearch.com](mailto:info@turboresearch.com) or click visit the removal page on the TRI web site MFG 03/2018

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