

**Bearing & Power  
Transmission**  
World Meetings

ALL DAY WORKSHOP  
**BEARING ROOT CAUSE FAILURE ANALYSIS**  
*WITH TEST & BEARINGXPERT DIPLOMA*



Presented by  
**Per Arnold Elgqvist**

*11 June 2024*  
ISTANBUL

[bearing-power.com](http://bearing-power.com)

# Reduce Critical Bearing Failures by up to 80%

## Unlock the Secrets of Bearing Durability and Performance: A Root Cause Analysis Workshop.

Join us for an enlightening one-day workshop at the esteemed Bearing & Power Transmission World Meetings on June 11, 2024, dedicated to mastering the intricacies of bearing failure and root cause analysis. This exclusive event, specially designed for professionals in the steel, cement, and heavy industries, promises to elevate your understanding and troubleshooting skills to new heights.

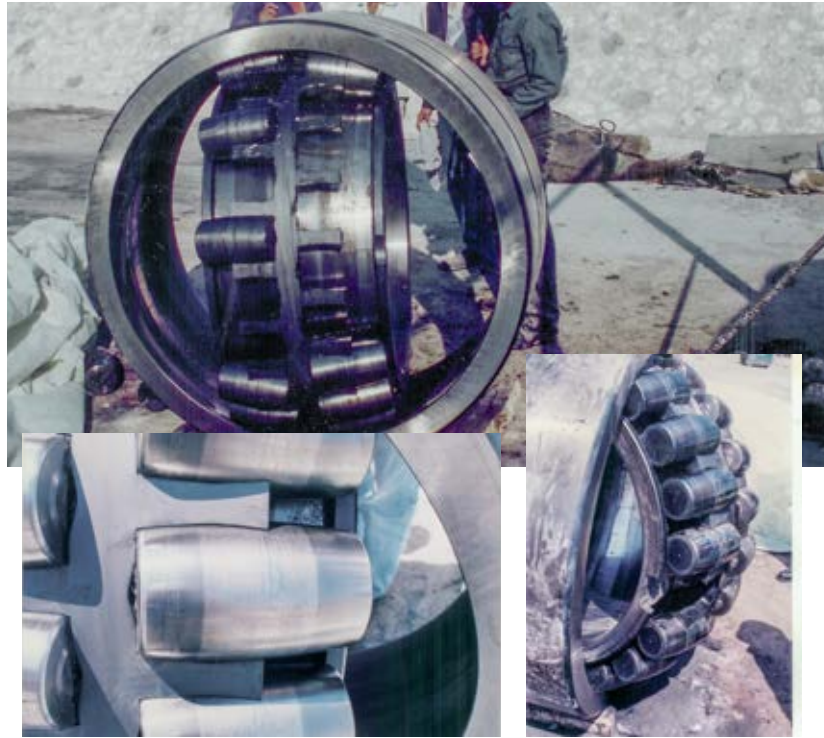
Presented by the renowned Per Arnold Elqvist, affectionately known in the industry as the "Bearing Doctor," this workshop combines theory with practical insights drawn from decades of experience. Mr. Elqvist's unique approach to diagnosing and solving bearing failures have saved countless industries from the brink of operational inefficiency, making him the go-to expert in the field.

Attendees will dive deep into the world of bearings, exploring common and complex failure modes and the underlying reasons behind them. Through a series of interactive sessions, case studies, and real-world scenarios, you will learn how to identify the signs of bearing failure, perform detailed analyses, and implement effective solutions.

This workshop is not just about learning; it's about proving your expertise. Participants who successfully answer 75% of the cases correctly will be awarded the prestigious BearingXpert Diploma, a testament to their skill and knowledge in bearing failure analysis.

Whether you're a maintenance engineer, reliability specialist, or involved in the operation and maintenance of heavy machinery, this workshop is your gateway to becoming a certified expert in bearing failure root cause analysis. Don't miss this opportunity to enhance your capabilities and contribute to the success and reliability of your industry.

Reserve your spot today and take the first step towards mastering the art of bearing failure analysis with the Bearing Doctor.



## Example Industry applications: Steel, Cement, Gearbox, Machinery, Food, Oil & Gas and Paper industries

The above large size spherical roller bearing 241/900 with an outer diameter of 1.4 meter and a weight of 3.3 tons in a cement mill failed catastrophically as you can see in the above pictures after only 4 (four) days in service!

Completely unnecessary enormously costly failure!

**Failure cause:** Wrong lubrication!

Unfortunately very little importance is given to the lubrication of bearings. This explains the above failure. This bearing should have lasted for at least 2 years and due to a wrong lubrication it only lasted for 4 days! Is the lubrication important for the reliability of bearings? The above example answers this question!

This workshop will indicate the possibilities to reduce the failures of critical bearings by up to 80% by attacking the main failure causes:

According to the below statistic published by the bearing manufacturer FAG:

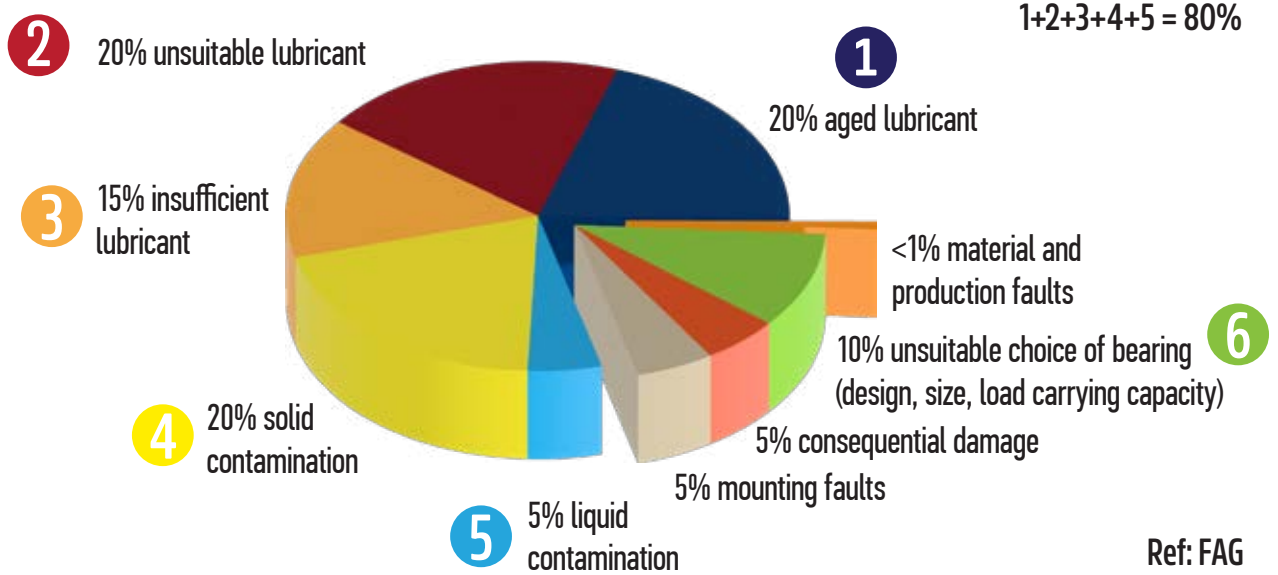
### INCORRECT LUBRICATION (55%)

1. Aged lubricant (20%).
2. Unsuitable lubricant (20%).
3. Insufficient lubricant (15%).

### CONTAMINATION (25%):

4. Solid contamination (20%).
5. Liquid contamination (5%).

# Statistic of Bearing Failures by different causes:



## INCORRECT LUBRICATION (55%):

The participants in this Workshop will understand how to avoid bearing failures caused by the above failure causes by learning:

### Selection of the correct lubrication:

- The correct lubricant.
- The correct quantity of lubricant.
- The correct lubrication system.
- Lubrication at the correct time.
- Lubrication in the correct point.
- The correct people to perform the lubrication.

### The correct relubrication of grease:

- The correct relubrication interval.
- The correct relubrication grease quantity.

Use ULTRASOUND TECHNOLOGY to determine the precise quantity of Grease!

The Ultrasound is the perfect technology to determine the point when bearings have the exact sufficient quantity of grease.

The technology of the two market leaders in Ultrasound for this purpose will be described. But this technology can also be used to verify if the grease is suitable for the corresponding applications by means of the friction level and the resulting relubrication interval. Ultrasonic sensors that control the relubrication automatically based on the trend in sound are now also available for the most critical bearings.

## CONTAMINATION (25%):

Contamination is the second most important failure cause according to the various statistics. Thus this will also be discussed during this workshop:

- The effects of particle contamination on bearing life according to the ISO 281:2007. This ISO Standard indicates how to Calculate the enormous effect this contamination measured according to the ISO 4406:2017.
- Selection of the most suitable seals by design and material.
- Grease as media to assist the sealing, to keep out both particle and liquid contamination

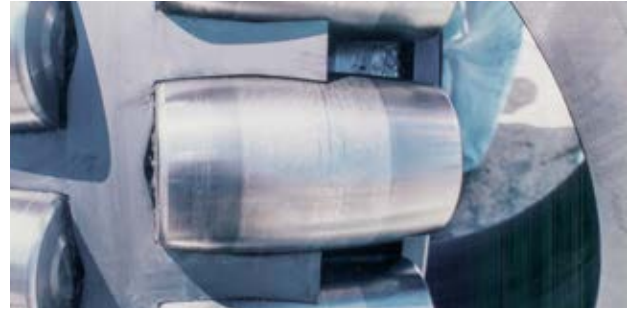
# BEARING FAILURE ANALYSIS

Bearing Failure Analysis will be discussed according to the ISO 15243:2017: This ISO Standard classifies different modes of failure occurring in service for rolling bearings made of standard bearing steels. For each failure mode, it defines and describes the characteristics, appearance and possible root causes of failure. It will assist in the identification of failure modes based on appearance.

In this Workshop the above will be applied on bearing failures caused by wrong lubrication and contamination. Examples from the ISO Standard and cases from the Instructor will be discussed:



Ref.: ISO 15243:2017



Ref.: ISO 15243:2017



Ref.: BearingXpert

## ADDITIONAL 10% FAILURE REDUCTION:

Besides the free consultation on Lubrication and Contamination via email to the Instructor that all the Participants in this Workshop will be granted, they will also have access to consulting on failures caused by UNSUITABLE BEARINGS. According to the personal experience of the Instructor, this is the second major cause of bearing failures, all due to the lack of knowledge in the bearing designations and their importance.

## TRAINING:

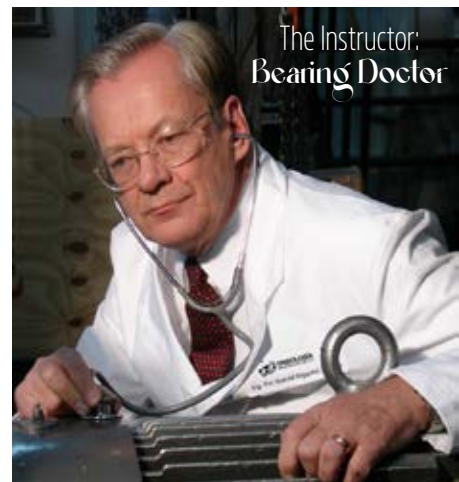
Several training sessions will take place during the workshop covering:

- Selection of the required base oil viscosity.
- Selection of the suitable lubricants (oil/grease) for some typical applications.
- Selection of some relubrication intervals for grease.
- Analysis of some failure cases.

## BEARINGXPERT DIPLOMA:

For those who are interested there will be the opportunity at the end of the Workshop to realize a test that includes similar selections and failure analysis as the training sessions.

Diploma will be awarded those who reach a result of at least 75%.



Register today as there are only 50 seats available.



**LIKA DUMBADZE**  
WORKSHOP REGISTRATION

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