

# MACHINERY COUPLINGS AND SHAFT ALIGNMENT

BY ANIBAL R. ARIAS – SEMTEC / FLEXWARE

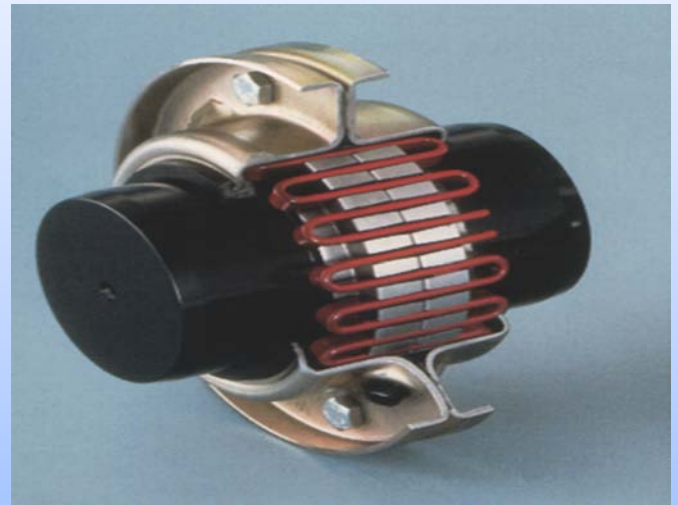


## Course Objective:

This training course is intended to meet the learning needs of end-user/contractor personnel who are working in process industries, using rotating equipment fitted with power transmission couplings.

## Key objectives of the course :

1. Understand the fundamental principles of power transmission couplings, used in rotating equipment such as centrifugal pumps
2. Provide opportunities for hands-on experience with shaft alignment
3. Be able to adopt safe working practices at all times when working with power transmission couplings
4. Understand and be able to identify typical failure modes for couplings.



## Who Should Attend :

This course is directly relevant to those working in process plants using rotating equipment fitted with power transmission couplings-particularly including industries such as oil and gas, petrochemical, power generation, pharmaceutical, and waste and water treatment.

The course is aimed at end-user plant personnel responsible for the installation, operation, maintenance and reliability of rotating equipment, including those working in management, engineering, operations and technician roles.



## Course Outline

### Chapter 1: **SHAFT ALIGNMENT FUNDAMENTAL CONCEPTS.**

The meaning of shaft alignment.

The need for proper alignment.

### Chapter 2: **MACHINERY CHECKS TO BE DONE PRIOR TO ALIGN THE SHAFTS.**

Piping flexibility.

Piping supports.

Machinery foundations. Baseplates and soleplates. Machinery feet.

### Chapter 3: **SHAFT COUPLINGS.**

The coupling purposes.

Type of couplings.

Coupling selection and specification.

Coupling installation.

Coupling lubrication.

Coupling failure modes.

### Chapter 4: **CHECKS TO BE DONE TO ALIGNMENT FIXTURES AND INSTRUMENTS.**

Types of alignment brackets.

Measuring bracket sag.

Measuring shaft or coupling hub runout.

Dial indicators. Working principle. Correct mounting of dial indicators. How to make good alignment readings.

Shims.



### Chapter 5: **SHAFT MISALIGNMENT MEASUREMENT TECHNIQUES.**

Rudimentary alignment methods.

Rim and face dial indicator method.

Reverse indicator method.

Laser alignment method.

### Chapter 6: **DETERMINING THE PROPER MACHINERY MOVES.**

Planes of movement.

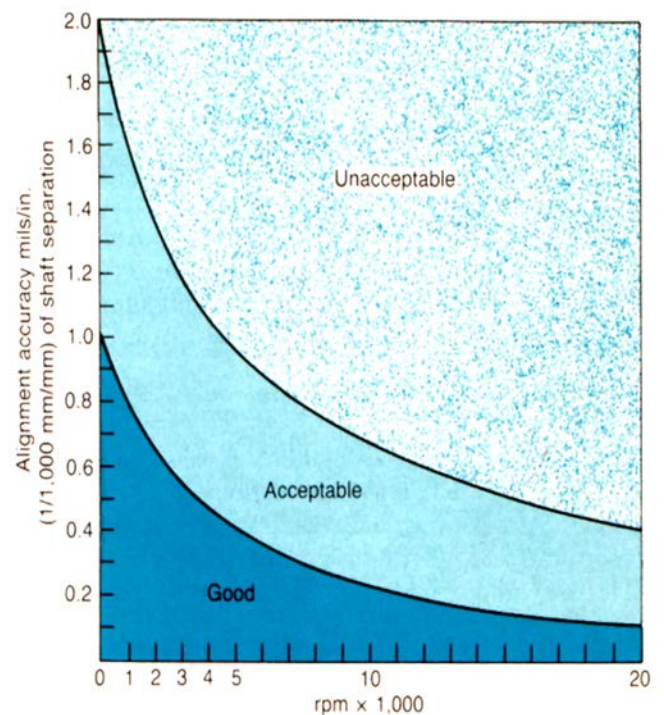
Correct understanding of dial indicator readings.

Machinery thermal expansion:

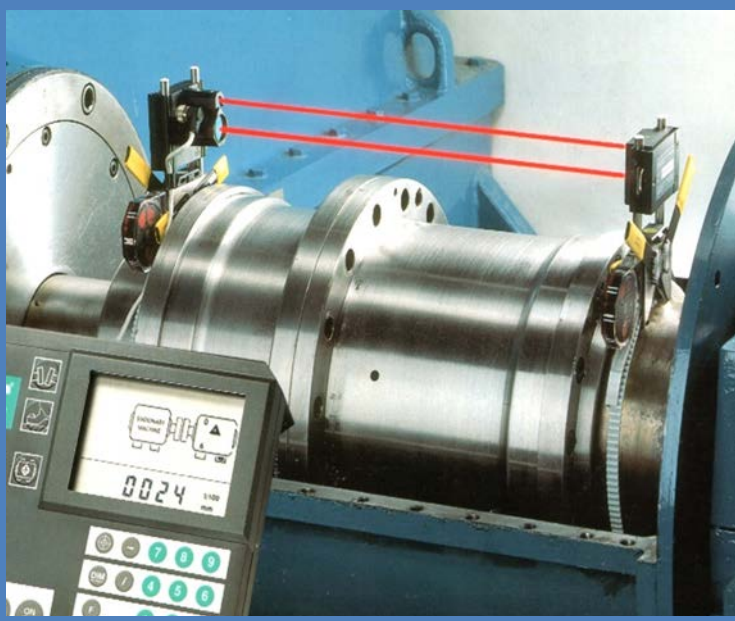
- Mathematical calculation.
- Field measurements: different methods.

Graphical shaft alignment procedures.

Machinery shaft alignment by means of computer programs.







### **About Instructor**

**Anibal R. Arias** is President and Technical Director of SEMTEC, a company specialized in Turbomachinery and its Associated Systems. Mr. Arias has worked 19 years for Petroquímica Bahía Blanca, an ethylene producer located in Argentina. During this time he was responsible for Preventive and Predictive Maintenance of Rotating Machinery; Maintenance Engineering and before resigning from the petrochemical company he was Mechanical Maintenance Manager.

In his past professional experience from 1975 to 2001, Mr. Arias taught engineering courses in Universidad Nacional del Sur. Before resigning from this position, he was Adjunct Professor of Machine Elements course. In 1990 he founded SEMTEC. Since then he has conducted numerous seminars and workshops on technical and maintenance organization matters in Argentina and around the world including "Compressor Performance Seminar".

Mr. Arias has a Mechanical Engineering Degree from Universidad Nacional del Sur and has extensive hands-on technical training in the USA with Davy-Mc Kee Corporation and Elliott Company. He is a member of ASME, The Vibration Institute and the Society of Tribologist and Lubrication Engineers.

**For further Information regarding this course please contact:**

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