



TRAINING PROGRAM ON

Dynamic Balancing & Precision Shaft Alignment



ABOUT ARRELIC TRAINING INSTITUTE

Arrelic Institute is focused to equip both industry professionals and college graduates with the skills and knowledge required for bridging the desire state of workforce which industry needs to compete globally.

Arrelic Institute provides over 75 different type of customized training programs in the field of Reliability Engineering, Asset Management, Best Practice, Operation & Maintenance, Predictive Maintenance, NDT, Predictive Analytics, Quality, Risk & Safety.

Arrelic Institute conducts public trainings and workshops in 38 locations across India and 10+ International locations. We are working for large corporate house from 15 different types of industries ranging from Airlines, Automobiles, Cement, Defence Manufacturing, FMCG, Glass, Marine, Metals, Mining, Oil & Gas, Power, Pulp & Paper, Facility Management and Fertilizer.

ARRELIC INSTITUTE: AT A GLANCE



www.arrelic.com/offerings/training-and-development

ARRELIC AWARDS & RECOGNITIONS

NASSCOM[®]

TOP5

Won the Top 5 Startups in eastern India in Thieve 30 by NASSCOM



GLOBAL ENTREPRENEURSHIP SUMMIT
INDIA 2017

Selected for GES – 2017, Hyderabad and showcased among top 100 Start-ups from India.



SMART FIFTY

50 Solutions to Transform India

TOP50

Emerged as one of the top 40 startups in '#Smartfifty' – a search for solutions to transform India



Top 24 Start-ups selected over 1850 startups across India By CNBC.



Selected for NPC – Bangalore and NPC – Kolkata for Product showcase.



Product showcased in TIECON – 2017 and selected through Govt. Of Odisha.

#startupindia

Startup India Recognize



STARTUP ODISHA recognised.



birac
Ignite Innovate Incubate

BIRAC finalist in SPARCH - 2017

web summit

LISBON, NOVEMBER 6-9, 2017

Selected for Web summit - Lisbon



hello tomorrow

Selected for Hello tomorrow, Paris Summit.



Selected and presented in 1000 open startups.



ABOUT THE TRAINING COURSE

Dynamic Balancing & Precision Shaft Alignment

In today's competitive market, companies are under increasing pressure to produce higher quality goods and services at lower production costs. A key component of the overall cost of manufacturing is maintenance and the key role of maintenance is to guarantee the reliability of the production plant. The crucial element for ensuring that maintenance is cost effectively delivered is the planning and scheduling of maintenance tasks. *The foundation of excellence and achieving cost-effective equipment reliability starts with Maintenance Planning and Scheduling.*

The role of Maintenance Planner has changed dramatically over the last two decades years with the introduction of complex CMMS and ERP systems that promise to make life easier. While the introduction of these new and improved systems has increased our ability to gather and disseminate information, most planners and maintenance managers are starting to understand that their lives have become anything but easier. The quality of the outputs from these systems is reliant on the quality of the inputs and these can only be assured if we have a robust management system to support maintenance, engineering and operations. More and more the maintenance planner is seen as the champion of "The System" but what has been done to improve his or her understanding of the intricacies of asset management in this new technological age?

The answer is often very little. To break the cycle of "garbage in, garbage out" of the CMMS we must develop the personnel in this key role and turn them into asset management planning champions. To do this they must have an understanding of asset management fundamentals and where maintenance fits into the mix.

If organisations are to move toward an asset management environment with a focus on maximising equipment life, then the planner must be seen more as a whole of life Asset Management Planner rather than the Maintenance Planner of old. This course is the starting point for that transition.





LEARNING OBJECTIVES & KEY BENEFITS OF ATTENDING THE WORKSHOP

By attending this technical training on “Dynamic Balancing & Precision Shaft Alignment” delegates will be able learn and deliver the following things.

- ✓ What is unbalance
- ✓ Balancing procedure for single plane balancing
- ✓ Understanding the causes of unbalance and misalignment
- ✓ Understanding the effect of unbalance and shaft misalignment on the performance and life of the machine
- ✓ To know how vibration is generated due to unbalance and shaft misalignment
- ✓ How to perform dynamic Balancing and what are the machines and tools used
- ✓ How to perform shaft alignment and what tools are required
- ✓ How to apply standards and acceptable limits for balancing and shaft alignment
- ✓ How to process vibration signal and extract unbalance signal
- ✓ What is field Balance and how to apply it successfully?
- ✓ What is Signal Processing?
- ✓ Alignment methods

WHO SHOULD ATTEND ?

This course will provide practical understanding as well as techniques for dynamic balancing & Precision Shaft Alignment of the various types of industrial rotors in-place in the plant. People in the following roles should participate in this training:

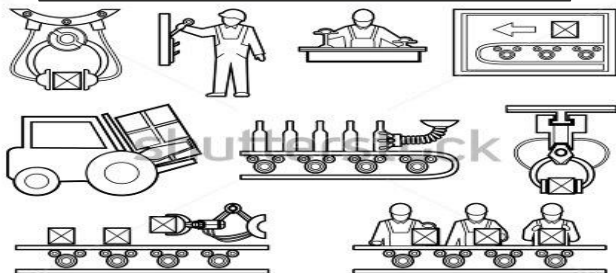
- ✓ Plant Managers/ General / VP
- ✓ Manager - Maintenance / Process/ Quality/Technical/Reliability
- ✓ Engineer - Maintenance / Process/ Quality/ Technical/Reliability
- ✓ Supervisor - Maintenance / Process/ Quality/Technical/Reliability
- ✓ Front-line Leaders
- ✓ Managers - Business Essentials such as HR, Supply chain, Purchase, Finance etc.





INDUSTRIES THAT CONCERN ABOUT

LOW PRODUCTIVITY



Conventional use of time-based approach for maintenance does not take into consideration the way assets are being utilized, their current condition and real world operating conditions.

HIGH DOWNTIME



Failure to curb unplanned downtime and lack of control over value chain processes lead to high costs, inefficiencies and poor compliance. These severely impacts the profit and industrial growth.

INADEQUATE ASSESS CONTROL



Industries lack the ability to interpret assets data and because of unavailability of proper predictive methods they are unable to predict equipment failures which leads to unplanned downtime.

HIGH MAINTENANCE COST



Increased competition, pressure to grow revenue & profit, tighter regulations, scarcity of raw material, fluctuation demand and obsolete technologies have impacted the way industries are being operated.



COURSE OUTLINE

DAY - 1

MACHINE BALANCING BASICS

- ✓ Purpose
- ✓ Mass unbalance force and causes
- ✓ Rotor classification, techniques
- ✓ Equipment
- ✓ Pre-balancing checks
- ✓ Critical speeds
- ✓ Trial weight selection/placement
- ✓ Pitfalls

SINGLE PLANE BALANCING TECHNIQUES

- ✓ Vector and four run method - weight addition and removal
- ✓ Balance sensitivity and phase lag
- ✓ Weight splitting and consolidation
- ✓ Residual unbalance and acceptable vibrations

TWO PLANE BALANCING

- ✓ Influence coefficient and static/couple methods
- ✓ Calculator and graphical methods
- ✓ One-shot balancing-two plane

REVIEW & Q/A

DAY - 2

SHAFT ALIGNMENT FUNDAMENTALS

- ✓ Introduction to Shaft Alignment
- ✓ Benefits of Shaft Alignment
- ✓ Pre-Alignment Procedures
- ✓ Rough Alignment Procedures
- ✓ Conducting Horizontal Shaft Alignment - Dial Indicator Method

INTRODUCTION TO LASER SHAFT ALIGNMENT SYSTEMS

- ✓ OVERVIEW - Conducting Horizontal Shaft Alignment - Laser Method
- ✓ PRACTICAL SESSION - Conducting Horizontal Shaft Alignment - Laser Method
- ✓ Practical Test - Conducting Horizontal Shaft Alignment - Laser Method
- ✓ OVERVIEW - Conducting Vertical Shaft Alignment - Laser Method

OVERVIEW - CONDUCTING MACHINE TRAIN SHAFT ALIGNMENT - LASER METHOD

- ✓ PRACTICAL SESSION - Conducting Machine Train Shaft Alignment - Laser Method
- ✓ OVERVIEW - Conducting Offset Shaft Alignment - Laser Method
- ✓ PRACTICAL SESSION - Conducting Offset Shaft Alignment - Laser Method

POST ASSESSMENT

PROGRAM SCHEDULE

09:00 - 10:30	Morning Session 1	13:30 - 15:00	Afternoon Session 1
10:30 - 11:00	Refreshments & Networking Break	15:00 - 15:30	Refreshments & Networking Break
11:00 - 12:30	Morning Session 2	15:30 - 17:00	Afternoon Session 2
12:30 - 13:30	Lunch	17:00 - 17:30	Day review & Q/A