

VibSolutions
Machinery Diagnostics and Solutions

**Dynamic Head Pumps
Course Brochure**



VibSolutions is one of lead companies specialized in presenting services and training in condition monitoring techniques of rotating equipment based on advanced instruments, precision tools, and qualified personnel

DHP

COURSE OVERVIEW

THE COURSE IS DESIGNED TO TAKE YOU FROM ZERO TO HERO CONCERNING CENTRIFUGAL PUMP KNOWLEDGE.

EVEN IF YOU ALREADY HAVE SOME BACKGROUND KNOWLEDGE, THIS COURSE WILL SERVE AS AN EFFICIENT REFRESHER. WHATEVER YOUR LEVEL OF UNDERSTANDING, OR ENGINEERING BACKGROUND (HVAC, FIRE SAFETY, OIL AND GAS, MECHANICAL ENGINEERING, REFRIGERATION, CHEMICAL ENGINEERING, POWER ENGINEERING ETC.), WE CAN GUARANTEE YOU WILL HAVE NEVER TAKEN AN ENGINEERING COURSE LIKE THIS ONE (UNLESS YOU HAVE TAKEN ONE OF OUR OTHER COURSES).



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COURSE OVERVIEW

AT THE END OF THIS SEMINAR, PARTICIPANTS WILL HAVE:

- UNDERSTAND THE OPERATION OF A CENTRIFUGAL PUMP.
- FAMILIARIZE YOURSELF WITH THE PRIMARY COMPONENTS OF CENTRIFUGAL PUMPS.
- EXPLORE VARIOUS IMPELLER AND CENTRIFUGAL PUMP DESIGNS.
- LEARN TO INTERPRET A PUMP PERFORMANCE CURVE.
- RECOGNIZE AND DIAGNOSE PUMP MALFUNCTIONS.
- OPTIMIZE THE EFFICIENCY OF OPERATION OF PUMPING SYSTEMS.
- ANALYZE THE PROBLEMS IN OPERATION RELATED TO SEALS, BEARINGS, AND FLOW CONTROL.
- USE THE ROOT CAUSE ANALYSIS IN DETECTING PROBLEMS OF PUMPING SYSTEM & PIPING.
- APPLY THE BEST PRACTICES FOR MAINTENANCE, PROBLEM SOLVING & TROUBLESHOOTING.
- AND MUCH MORE...










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WHO SHOULD ATTEND

Suitable for

-  Mechanical Engineers
-  Chemical Engineers
-  HVAC Engineers
-  Firefighting Engineers
-  Power Engineers
-  Operators
-  Maintenance Engineers



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SYLLABUS

1- BASICS OF DYNAMIC HEAD PUMPS (DHP): -

- INTRODUCTION.
- BASICS.
- FLUID CHARACTERISTICS.
- FLOW CHARACTERISTICS.
- SYSTEM CURVE.
- DHP CLASSIFICATION.
- DHP PERFORMANCE.
- CENTRIFUGAL PUMPS.
- SINGLE AND MULTI-STAGE DHP.
- HOW TO DRIVE AND CONTROL THE DHP.
- NET POSITIVE SUCTION HEAD (NPSH).

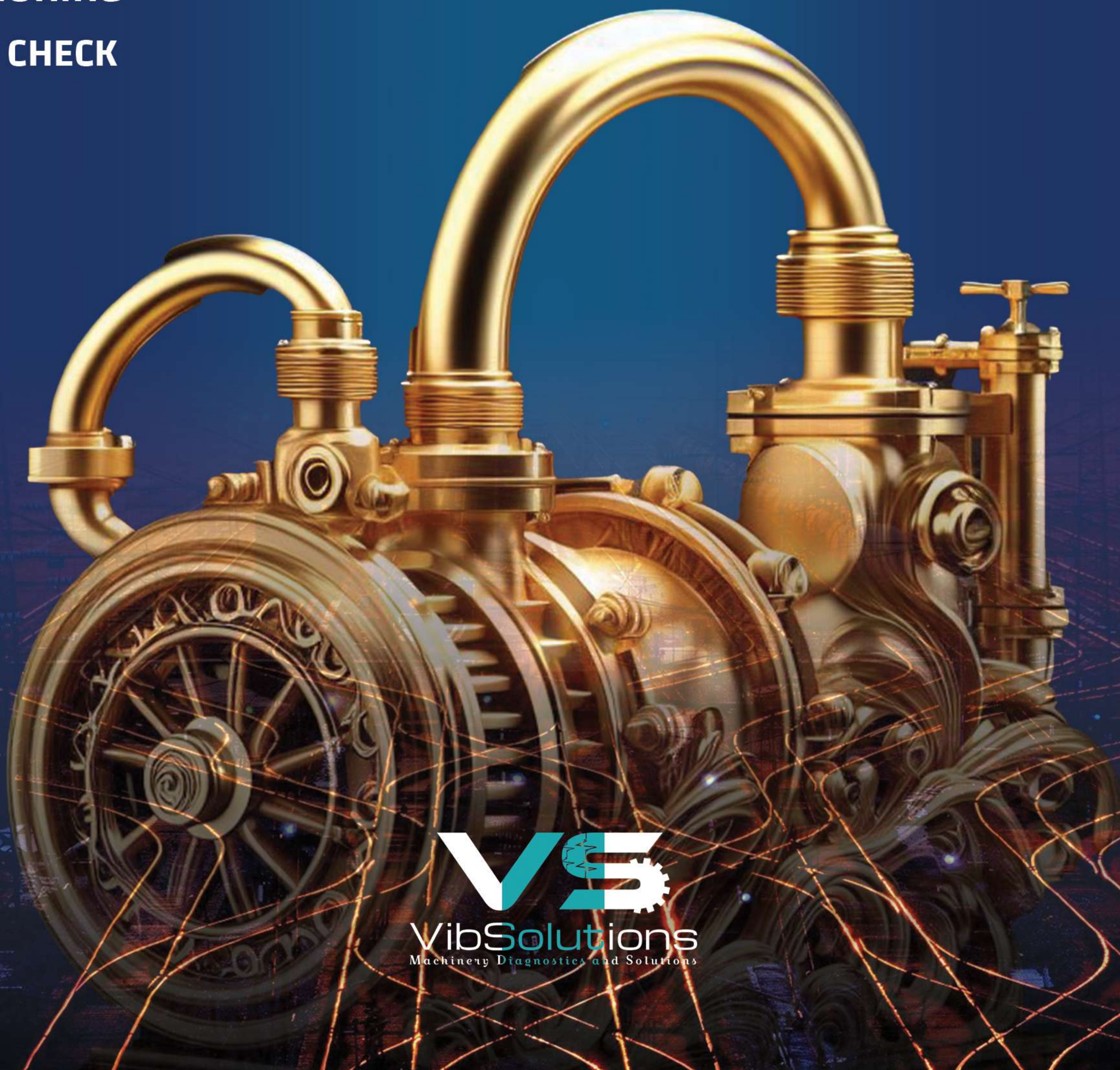


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SYLLABUS

2- INSTALLATION AND COMMISSIONING: -

- CONSTRUCTION DRAWING REVIEW.
- PACKING AND TRANSFER TO THE SITE.
- HOUSEKEEPING PADS
- BASE PLATE SELECTION
- FOUNDATION PREPARATION
- BASE PLATE INSTALLATION
- GROUTING
- PUMP AND MOTOR INSTALLATION
- PIPE INSTALLATION
- PIPE STRAIN
- COMMISSIONING
- START-UP CHECK



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SYLLABUS

3- OPERATION AND MAINTENANCE: -

OPERATION: -

- PRIMING OF CENTRIFUGAL PUMPS.
- WHY IS IT IMPORTANT TO OPERATE THE CENTRIFUGAL PUMP PROPERLY?
- NOTES BEFORE OPERATING CENTRIFUGAL PUMP.
- CENTRIFUGAL PUMP OPERATION PROCESS.
- SOME IMPORTANT NOTES IN CENTRIFUGAL PUMP OPERATION.
- STEPS TO STOP CENTRIFUGAL PUMP OPERATION.
- IMPORTANT NOTES WHEN STOPPING CENTRIFUGAL PUMP OPERATION.
- CENTRIFUGAL PUMP INSPECTION AND MAINTENANCE.
- 6 PARAMETERS TO REGULARLY MONITOR ON A CENTRIFUGAL PUMP.
- ISSUES THAT NEED TO BE CHECKED ON A DAILY BASIS.
- ISSUES THAT NEED TO BE CHECKED EVERY 3 MONTHS.
- PROBLEMS THAT NEED ANNUAL INSPECTION ON CENTRIFUGAL PUMPS.
- EPILOGUE.



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SYLLABUS

3- OPERATION AND MAINTENANCE: -

MAINTENANCE: -

- **LEARN THE IMPORTANCE AND METHODS OF PUMP MAINTENANCE.**
- **DISCUSS THE EFFECT OF CAVITATIONS IN PUMPS.**
- **BE FAMILIAR WITH THE RIGHT PROCEDURE FOR PINPOINTING & ELIMINATING PUMP PROBLEMS.**
- **HAVE AN OVERVIEW AND CHECKLIST OF PUMP PROBLEMS.**
- **TO ENABLE THE ATTENDEES TO GRASP THE ADVANCED INFORMATION IN PREVENTIVE AS WELL AS PREDICTIVE MAINTENANCE OF ROTATING EQUIPMENT.**
- **TO PRESENT THE ADVANCED CONDITION MONITORING TECHNOLOGIES STRESSING ON VIBRATION AND OIL ANALYSIS.**
- **CHECKING BEARING RELATED END PLAY AND RUN OUT.**
- **CHECKING SHAFT RELATED RUN OUT.**
- **LUBRICATION**
- **THE IMPORTANCE OF PLANT INSPECTION**



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SYLLABUS

4- OVERHAULING AND TROUBLESHOOTING: -

OVERHAULING: -

- **PRELIMINARY STEPS PREPARATION; CASING REMOVAL; PRELIMINARY INSPECTION**
- **GENERAL PREPARATIONS FOR A CENTRIFUGAL PUMP OVERHAUL.**
- **SAFETY PRECAUTIONS THAT SHOULD BE TAKEN AS PART OF PREPARING TO WORK ON A CENTRIFUGAL PUMP.**
- **A PROCEDURE FOR REMOVING THE UPPER HALF OF A HORIZONTALLY SPLIT CENTRIFUGAL PUMP CASING.**
- **A PROCEDURE FOR PRELIMINARY INSPECTION OF THE INTERNAL PARTS OF A CENTRIFUGAL PUMP.**
- **DISASSEMBLY AND ASSEMBLY DISASSEMBLY; INSPECTION; WEARING RING MEASUREMENTS & SHAFT TESTS.**
- **A PROCEDURE FOR DISASSEMBLING THE INTERNAL PARTS OF A CENTRIFUGAL PUMP.**
- **IDENTIFY THE PARTS OF A CENTRIFUGAL PUMP TO BE INSPECTED AND STATE WHAT TO LOOK FOR IN EACH PART.**
- **HOW TO MEASURE THE CLEARANCE BETWEEN A CASING WEARING RING AND AN IMPELLER.**
- **EXPLAIN HOW TO DETERMINE IF CASING WEARING RINGS ARE ROUND.**
- **THE PROCEDURE FOR PERFORMING A SHAFT RUNOUT TEST.**
- **REASSEMBLY REINSTALLING THE IMPELLER; REASSEMBLING AND REINSTALLING THE ROTOR;**
- REASSEMBLING THE CASING**
- **LIST STEPS THAT ARE COMMONLY TAKEN.**



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4- OVERHAULING AND TROUBLESHOOTING: -

TROUBLESHOOTING: -

- **GENERAL CONSIDERATIONS ASSOCIATED WITH TROUBLESHOOTING A CENTRIFUGAL PUMP.**
- **SYMPTOMS OF A CENTRIFUGAL PUMPS PROBLEMS THAT CAN BE HEARD AND LIST THE PROBABLE CAUSES OF THOSE SYMPTOMS.**
- **THE CAUSES AND EFFECTS OF CAVITATION AND EXPLAIN HOW IT CAN BE ELIMINATED.**



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ADVANTAGES

 Case Studies

 Interactive

 Practical info

 from Experts

 24 Study hours

 Certificate



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