

Fundamentals of Pumping Seminar

Course Outline

Introduction

- Origin of pumps
- Many uses for pumps

Centrifugal Pump Basics

- Anatomy and functionality of a centrifugal pump componentry
- Popular types of centrifugal pumps including; standard centrifugal, self-priming, prime-assisted, and submersible
- Exploring terminology used in fluid hydraulics
- How to change the performance of a centrifugal pump
- Understanding pump performance curves
- Hydraulic Analysis (Calculating TDH)
- Two methods of calculating total dynamic head (TDH)
- What is TDH; Static Head and Friction Head
- Perform TDH calculation (3) Examples; Self-Priming, Flooded Suction, & Submersible

System Hydraulics

- What is system hydraulics and the items that effect it
- What is a system head curve
- Review - How to change a given pump's performance

Multiple Pump Operation

- Parallel pump operation
- Series pump operation
- Benefits of a pumping system that could do both parallel/series modes

Net Positive Suction Head (NPSH)

- What is NPSH; including NPSHa and NPSHr & effects on centrifugal pumps
- Five deduction for an NPSH calculation
- Perform a NPSH calculation example

Pump Safety

- Review general pump safety along with other potential hazards often found around pumping systems

Pump Forensics (Troubleshooting)

- Low Performance – Reduction in flow, pressure or no flow
- Priming Challenges – Loss of prime, slow to prime, failure to prime
- Air Bound
- Noisy Operation – Mechanical/Hydraulic Causes
- Shaft Failures & Corrosion and abrasion damage

Sustainable Efficiencies

Suggested Checklists

- Troubleshooting Guides
- Preventative Maintenance Guides