

Pump Fundamentals

A practical and interactive two day seminar



KASA Redberg
Engineers & Technical Trainers

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Pump Fundamentals

Introduction

Pumps are found in all industries and come in all shapes and sizes. Decision makers operating in areas such as water treatment, minerals processing, oil and gas, utilities, metals processing, food and beverage and many more employ billions of dollars worth of pumping equipment to help achieve their objectives.

To ensure that you are achieving maximum performance from your pumping equipment, it is essential that you know the fundamentals. "Pump Fundamentals" is an intensive, practical and interactive two day seminar which focuses on the common types of pumps and how to select, install, troubleshoot and maintain them.

Who Should Attend?

Process, Design, Project and Consulting Engineers; Line Managers and Supervisors; Maintenance Technicians; Pump Sales Representatives; or anyone who needs to select, specify, commission, install and/or maintain pumping equipment.

Delegate Pre-Requisites

It is a requirement that each delegate has an understanding of mechanical components. A basic understanding (trade level) engineering maths would also be advantageous.

Seminar Objectives

At the completion of this seminar, each delegate should be able to:

- Identify common pump types and their components
- Understand pump, associated component, hydraulics and slurry terminology
- Select the most appropriate pump type, make and model for an application
- Be competent in reading and using pump performance curves
- Understand cavitation and how to prevent it from occurring
- Specify the correct installation configuration for a particular pump type
- Install, commission, operate and maintain common pump types
- Troubleshoot pump problems

Training Seminar Materials

All delegates receive:

- The **"Pump Fundamentals" Training Manual** – a reference manual comprising theory, worked example problems, tables, charts and illustrations etc based on the seminar outline. This manual has been designed to be a valuable future resource for the office, workshop, factory or plant.
- **Certificate of Attendance** – which states the number of hours of training and serves as documentary proof of attendance.

Higher Level Training

"Pump Fundamentals" is the first in a series of three pump and hydraulics training seminars. It provides a practical introduction to the world of pumps and their applications. The two companion seminars to "Pump Fundamentals" deal with higher level pumping equipment and system issues.

Please contact KASA Redberg for more information on this series of seminars as well as others on offer.

Email: info@kasa.com.au

Public and In-House Training Venues

KASA regularly holds this and related seminars in high quality hotel conference facilities across Australia and the rest of world. Our seminars can also be presented at your place of work and can even be customised to suit your specific training needs.





Seminar Synopsis

DAY 1

BACKGROUND INFORMATION

- Terms and Definitions
- Fluid Properties (Viscosity, Density, Temperature etc)
- Pressure-Head Relationships
- Cavitation
- Basic Hydraulics Theory and Calculations
- Friction Losses in Pipes and Fittings
- Pump Classifications and Examples
- Pump Selection Guidelines

CENTRIFUGAL PUMPS

- Components, Types and Examples
- Affinity Laws and Characteristic Curves
- Matching the System to the Pump
- System Curve Calculations
- Viscosity Effects
- Parallel and Series Pumping Circuits
- Cavitation – Causes, Remedies and Calculations
- Troubleshooting
- Practical Tutorial

INTRODUCTION TO CENTRIFUGAL SLURRY PUMPS

- Slurry Classifications and Rheology
- Slurry Characteristics – Abrasion, Erosion and Corrosion
- Effects of Slurry Solids Content and Settling Velocities
- Typical Pump Components and Assemblies
- Characteristic Curves
- Pump Selection Criteria
- Practical Tutorial

POSITIVE DISPLACEMENT (PD) PUMPS

- PD Pump Theory

DAY 2

POSITIVE DISPLACEMENT (PD) PUMPS (CONTINUED)

- Typical System Curves
- Comparison to Centrifugal Pumps
- A Detailed Analysis of Common PD Pumps – (Gear, Lobe, Progressive Cavity, Piston, Diaphragm, Peristaltic)
- Troubleshooting
- Practical Tutorial

EDUCTORS (JET PUMPS)

- Principle of Operation
- Applications

SEALS AND PACKING

- General Overview
- Components and Types
- Applications and Selection
- Installation, Maintenance and Troubleshooting
- Practical Tutorial

PUMP DRIVES

- General Overview
- Close Coupled, Direct Driven, Canned and Magnetic Set-ups
- Belt Drives, Gearboxes, Variators
- Electric Motors and Inverters
- Engines and Hydraulic Motors
- Practical Tutorial

INSTALLATION & MAINTENANCE

FOUNDATIONS AND BASES

- Alignment
- Process Connections
- Recommended Piping Configurations
- Condition Monitoring and Preventative Maintenance

About KASA Redberg

KASA Redberg is a technical training and engineering consulting group.

Our engineers have core competencies in pumping systems and fluid centric processes and equipment. Our portfolio of services includes:

- Tank and vessel design
- Pumping and piping systems design
- Chemicals plant design
- Water treatment plant design
- Project management
- On-site troubleshooting
- Plant cost analysis
- Feasibility studies
- Operator training seminars

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UNITED KINGDOM

Office Opening in March 2007



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