

# Total Pump Training

## TRAINING OUTLINE

### INTRODUCTION

Basic Definitions of Pumps  
Pressure & Head  
Classification of Pumps

### POSITIVE DISPLACEMENT PUMPS

Introduction to Positive Displacement (P.D.) Pumps  
Selection Criteria for P.D. Pumps

### HYDRAULICS, SELECTION & CURVES

Pump Capacity  
Head - Explanation of Elements Of System Head  
Performance Curves - How to Read & Understand Them  
Horsepower & Efficiency  
How to Size Motors  
NPSH & Cavitation

### ADVANCED HYDRAULIC CONSIDERATIONS

Specific Speed & Suction Specific Speed  
Affinity Laws  
System Head Curves  
Parallel & Series Operation  
Performance Optimization  
Over-Sizing Pumps  
Pumping Viscous Liquids  
Piping Layout  
Field Testing Pumps

### ENERGY CONSERVATION IN PUMP SELECTION

Selecting Pumps To Minimize Energy  
Life Cycle Pump Costs

### SEALING SYSTEMS

Stuffing Box/Packing Assembly  
Mechanical Seals  
Sealless Pumps - Magnetic Drive & Canned Motor

### OTHER TOPICS

Impellers  
Wear Rings  
Thrust & Thrust Balance  
Pump Configuration Types  
ANSI & API Pump Standards  
Minimum Flow  
Suction Recirculation  
Pump Installation & Startup  
Maintenance  
Trouble Shooting  
Root Cause Failure Analysis  
Pump Repair