Pump ED 101

Seminars & Training - - Centrifugal Pump Training

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Title: Elementary Mechanics & Hydraulics

Level: Introductory – A general awareness of pump usage and application is required. Elementary algebra is useful but not required.

Technique: Power Point presentation with animation & Excel examples. Live demonstrations by the instructor. Personal interaction with the audience.

Duration: One Half Day (4 hours with two 10 minute breaks)

Topics: Pump Classification, Displacement Pumps, Centrifugal Pump Dynamics, Bernoulli Effect, The Performance Curve, The Affinity Laws, Series & Parallel Operation, Liquid Characteristics (Static Pressure, Pascal Effect, Specific Gravity, Friction, Vapor Pressure), Suction Conditions, Total Pump Head

Result: This seminar will allow students, new to the pump environment, to gain a firm foundation in basic centrifugal pump dynamics and the relationship of flow, pressure, and velocity. They will learn to interpret pump characteristic and family curves and how to apply the affinity laws to those curves when changes in pump speed and impeller diameter occur. Finally, they will gain an understanding of some of the properties of water and their effect on the dynamics of centrifugal pump operation. Upon completion, they will be better prepared to enter the realm of centrifugal pump applications.

Title: Intermediate Mechanics & Hydraulics

Level: Intermediate – An understanding of elementary mechanics and hydraulics is required. A reasonable knowledge of typical centrifugal pump applications is also necessary. Hands on application experience is useful but not required. Elementary algebra is useful but not required.

Technique: Power Point presentation with animation & Excel examples. Live demonstrations by the instructor. Personal interaction with the audience.

Duration: One Half or Full Day depending upon content (4 hours with two 10 minute breaks or 8 hours with a one hour lunch break and three 10 minute breaks) The topics included in the Half Day seminar are shown in red below.

Topics: Centrifugal Pump Design (Impeller Types, Specific Speed), Pump Efficiency, Combined Efficiency, Radial & Axial Forces, Abrasive Forces, Cavitation, Waterhammer, Pump Priming, Bernoulli Effects, Special Effect Pumps

Result: Upon completion of the half day seminar, students will be familiar with the destructive forces that can arise in a centrifugal pump application and how to mitigate their onset or effects. They will also gain an understanding of centrifugal pump priming techniques and when and where they should be used. The full day seminar will provide additional knowledge about application specific, pump design and the importance (or lack there of) of pump and total machine efficiency. They will also become familiar with the inner workings and the application of eductors and several special effect pumps.