

International Measurements & Physical Principles For Fluid Power & Mechanical Technology

2 Day Seminar



DESCRIPTION:

Physics is a science based upon exact measurement of physical quantities that are dependant upon three fundamental dimensions.

These three fundamental or primary dimensions are mass, length and time. Fundamental units must be understood in order to lay the foundation for the many concepts and principles as applied to Fluid Power and Mechanical Technologies.

This two day class will present fundamental ideas about flow and pressure, force and torque, work, power and energy, its definition, how it is determined and some basic concepts of measurements. Emphasis in this class will also be placed on the understanding of SI units (metric) and the conversion between commonly used US units to SI units.

To understand the principles is fundamental to understand, maintain and troubleshoot mechanical and automated machineries and an appreciation of process measurement and control. This course provides the tools to facilitate one of the most difficult tasks in the field of measurements, the correct selection of measurement equipment- in many cases, an activity not well understood.

The lecture will be supported by demonstration and animation of the physical principles. The class is directed to everyone who works with measurements and controls on a regular basis but it is also an excellent source of information for non measurement and control personnel such as project managers, process engineers and mechanical engineers.

Each student receives:

- 1 180 page textbook: "International Measurements & Physical Principles for Fluid Power & Mechanical Technology"
- 2 Course Certificate
- 3 Unit Conversion Software
- 4 Fluid Power Symbol Reference Poster

For registration or more information call **303.838.7396**
or e-mail armin@deltaparadigm.com

design
engineering
leadership
training
analysis

COURSE OUTLINE:

International Measurements & Physical Principles for Fluid Power & Mechanical Technology

2 Day Seminar

FUNDAMENTAL DIMENSIONS

- ▣ Mass
- ▣ Length
- ▣ Time

MASS, FORCE, TORQUE, WORK, POWER, ENERGY

- ▣ Introduction
- ▣ What is mass
- ▣ What is force
- ▣ What is Torque
- ▣ Torque comparison
- ▣ Rotational force
- ▣ What is work
- ▣ What is power
- ▣ Measuring power
- ▣ What is energy
 - Kinetic
 - Potential
 - Heat
- ▣ Heat Transfer
- ▣ Affinity Laws

BASICS OF PRESSURE

- ▣ Pressure
- ▣ Temperature
- ▣ Flow
- ▣ Pressure Measurement
- ▣ Water/Mercury
- ▣ Specific Gravity
- ▣ Gauge pressure
- ▣ Vacuum Pressure
- ▣ Absolute Pressure

SUMMARY AND APPLICATION OF FLUIDS AND PRESSURE

- ▣ Fluids
- ▣ Pressure
- ▣ Pressure conversion
- ▣ Atmospheric pressure
- ▣ Vacuum
- ▣ Gauge and absolute pressure
- ▣ Common Application
- ▣ Gauge Tester
- ▣ Fluid Density
- ▣ Expansion and compression of fluids
- ▣ Densities of gases
- ▣ Pascal's vases
- ▣ Specific gravity
- ▣ Surface tension
- ▣ Capillary action
- ▣ Viscosity
- ▣ Pressure measurement

CAVITATIONS

- ▣ Inertial cavitations
- ▣ Non inertial cavitations
- ▣ Cavitation damage
- ▣ Chemical engineering application
- ▣ Biomedical application
- ▣ Cleaning application
- ▣ Pumps and Propellers
- ▣ Cavitation in engines
- ▣ Vascular plants

- ▣ Marine life
- ▣ Coastal erosion

BASICS OF FLUID FLOW

- ▣ Bernoulli's principle
- ▣ Bernoulli's equation
- ▣ Principles of flow
- ▣ Fluids
- ▣ Flow rate and velocity
- ▣ Energy of flowing liquid
- ▣ Laminar flow vs. turbulent flow
- ▣ Fluid velocities

FLUIDS IN MOTION

- ▣ Introduction
- ▣ Fluid velocity
- ▣ Flow rate
- ▣ Pipes and conduits
- ▣ Pressure and flow
- ▣ Fluid friction
- ▣ Flow measurement
- ▣ Flow instruments

VACUUM

- ▣ Suction
- ▣ Pumps
- ▣ Vacuum
- ▣ Vacuum Measurement
- ▣ Standard air and free air
- ▣ Diffusion and dispersion
- ▣ Vacuum/Pressure units
- ▣ Humidity of air

- ▣ Mercury U-tube
- ▣ McLeod gauge
- ▣ Bourdon gauge
- ▣ Mechanical vacuum pumps
- ▣ Compressed air driven vacuum pumps

HEAT AND HEAT EXCHANGERS

- ▣ Overview
- ▣ Thermal energy
- ▣ Heat transfer
- ▣ Convection
- ▣ Radiation
- ▣ Heat dissipation
- ▣ Heat exchanger
- ▣ Types of heat exchangers
- ▣ HVAC air coils
- ▣ Fouling
- ▣ Heat exchangers in Industry

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