



# 2009 TRAINING SCHEDULE

*The Best Hydraulic, Pneumatic, Automation and Lubrication Training For Plant Maintenance*

**LEARN FROM THE EXPERTS!**



**TRAINING CLASSES HELD AT OUR SCHOOL OR AT YOUR FACILITY**

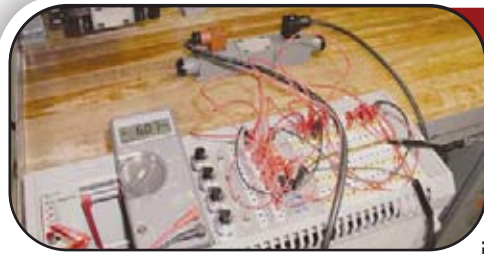
 **Livingston & Haven**  
*DRIVING EFFICIENCY*

Livingston & Haven, 11616 Wilmar Blvd.,  
P.O. Box 7207, Charlotte, NC 28241  
704-588-3670 800-825-4969  
Fax 704-588-5622  
institute@lhtech.com



**FULL GUARANTEE IF NOT SATISFIED WITH THE TRAINING**

## **2009 TRAINING SCHEDULE**



### **Understanding Proportional Valves (UPV)**

**5 DAY SEMINAR OFFERED TWO TIMES DURING THE YEAR -  
May 11-15, Oct. 19-23**

Almost every hydraulic system designed and built today uses electro-proportional hydraulic valves. How do these valves work? How do the electronic amplifiers work that control these valves? What is the difference between open control loop and closed control loop?

The Understanding Proportional Valves class will teach students the answers to these questions and more! Plus, students will learn how proportional valves are used to control pressure and flow, as well as direction and speed. Extensive lab exercises teach students how proportional valves work and how to test them for proper operation. This class is an appropriate seminar for both electrical and mechanical maintenance personnel.

3.2 C.E.U.'s Prerequisite: PIH or consent of the instructor.

\$1500.00 includes tuition, text book, student handouts, lunch and refreshments

**Appropriate for: maintenance mechanics & technicians, maintenance electricians, supervisors**

REXROTH &  
BOSCH VALVES



### **Press Hydraulic Systems (PHS)**

**4 DAY SEMINAR OFFERED ONE TIME DURING THE YEAR -  
Nov. 10-13**

Press equipment and other high flow hydraulic systems use logic cartridge valves and circuits, proportional valves and open or closed loop pump systems. During the Press Hydraulic Systems class students become familiar with the typical hydraulic valves and circuits used on press equipment, and how to read and interpret press

equipment hydraulic schematics. Students learn all about pumps and controls, regen circuits, press ram circuits with prefill valves, decompression circuits and counterbalance/lock circuits. After completion of this class students will better understand hydraulic circuits used on press equipment and will be better prepared to maintain and troubleshoot equipment in their facility. Students are encouraged to discuss their actual equipment and to bring schematics to the seminar. *Press equipment maintenance techs. only - please.*

2.6 C.E.U.'s Prerequisite: PIH & UPV or consent of the instructor.

\$1200.00 tuition includes workbook, student handouts, lunch and refreshments

**Appropriate for: advanced maintenance technicians, plant engineering personnel, supervisors**



### **Industrial Lubrication Systems (ILS)**

**3 DAY SEMINAR OFFERED FOUR TIMES DURING THE YEAR  
Jan. 26-28, March 9-11, June 15-17, Sept. 14-16**

Preventative maintenance and proper equipment lubrication is critical for the prevention of breakdowns. We offer training that will cover operation and maintenance of all types of manual and automatic lubrication systems. Upon request, we can develop a training program

based on the specific system(s) at your facility.

\$1000.00 includes tuition, student workbook and handouts, lunch and refreshments

**Appropriate for: maintenance mechanics, millwrights, technicians, supervisors, plant engineering personnel**

# 2009 TRAINING SCHEDULE

ALL SEMINARS TAUGHT BY MOTION CONTROL PROFESSIONALS



## Principles of Industrial Hydraulics (PIH)

**5 DAY SEMINAR OFFERED SEVEN TIMES DURING THE YEAR-**  
Feb. 2-5, March 23-27, April 27-May 1, Aug. 24-28,  
Sept. 28-Oct. 2, Oct. 26-30, Nov. 30-Dec. 4

The Principles of Hydraulics class consists of first level training for maintenance personnel who have not had formal training in industrial hydraulics. Participants will have the benefit of learning fluid principles, standard control valves, pumps, hydraulic valve symbols and that's not all!

Learn basic setup techniques and how to troubleshoot hydraulic circuits. Learn how pump controls work and how they are setup. Participants will also be taught the ten fundamental circuits used in most hydraulic systems and an introduction to proportional controls. This is the best foundation training for hydraulics, anywhere - with proven results!

3.2 C.E.U.'s

\$1425.00 includes tuition, workbook, student handouts, lunch and refreshments

**Appropriate for: maintenance mechanics, millwrights, technicians, supervisors, plant engineering personnel**



## Principles of Mobile Hydraulics (PMH)

**5 DAY SEMINAR OFFERED ONE TIME DURING THE YEAR-**  
July 27-31

This is a first level training seminar specifically developed for maintenance and service technicians with mobile hydraulic equipment responsibility. Students will learn about the principles of hydraulics as these principles relate to the operation, maintenance and

troubleshooting of mobile hydraulic equipment. Students learn to read and interpret mobile hydraulic valve symbols. Students learn about variable displacement pumps and pump controls used with hydraulic systems

3.2 C.E.U.'s

\$1425.00 tuition includes textbook, student handouts, lunch and refreshments

**Appropriate for: mobile maintenance mechanics and technicians, supervisors**



## Hydraulic System Maintenance (HSM)

**5 DAY SEMINAR OFFERED FOUR TIMES DURING THE YEAR -**  
March 30-April 3, July 13-17, Oct. 5-9, Dec. 7-11

Second level industrial hydraulic seminar for maintenance personnel who already have a good understanding of hydraulic principles. Learn about proper fluid requirements for modern hydraulic systems, how systems are setup for improved efficiency and improved reliability.

In-depth study of component operation and use in hydraulic circuits. Students will elevate their hydraulic schematic reading ability and their troubleshooting ability. Students disassemble, evaluate and assemble standard hydraulic components, putting these components into hydraulic circuits for testing. More than 50% hands-on lab.

3.2 C.E.U.'s

Prerequisite: PIH or consent of the instructor.

\$1425.00 includes tuition, workbook, student handouts, lunch and refreshments

**Appropriate for: maintenance mechanics, millwrights, technicians, supervisors**



LEARN FROM THE INDUSTRIAL EXPERTS

2009 TRAINING SCHEDULE



## Precision Lubrication Practices [PLP]

**3 DAY SEMINAR OFFERED THREE TIMES DURING THE YEAR  
April 21-24, August 11-14, November 17-20**

In the modern hyper-competitive manufacturing environment even highly efficient organizations must figure out how to do more work in less time. With the current, and escalating labor shortfall, the struggle to cover all of the bases will intensify. One obvious option is to limit the size and scope of machine care, but accomplishing this without sacrificing reliability requires both advanced knowledge and practical expertise. A better option is to improve machine health by implementing Precision Lubrication Practices. In this course, maintenance personnel will consider the impact that high quality lubrication practices can have on machine health and reliability. Managers, Engineers and Technicians will see why machine lubrication activities should move from 'something that must be done' to 'The Leading Edge of Machine Reliability', and will begin to understand how to transform the existing lubrication program from modest and reactive to thorough, accurate and proactive.

\$1200.00 includes tuition, student handbook, lunch and refreshments

**Appropriate for: maintenance mechanics, millwrights, technicians, supervisors, plant engineering personnel**

## Available Certification



The above **PRECISION LUBRICATION PRACTICES** should prepare you to take the **ICML** certification test and meet the **16 hours of formal training requirement**. We suggest that you take the **MLT1** certification test on Friday morning.

The International Council for Machinery Lubrication (ICML) will conduct Level 1 Machine Lubrication Technician (MLT1) certification testing the morning following the Precision Lubrication Practices training course from 8:00am - 11:00am. ICML requires a minimum of two years past secondary education or on-the-job training, plus at least 16 hours of formal training in machinery lubrication in order to test for

MLT1. Qualified candidates interested in testing for certification should contact ICML directly at 918.259.2950 or visit their website at [www.lubecouncil.org](http://www.lubecouncil.org) for more information or to register for testing and payment of examination fee. Cost to take exam is \$200.



## Pneumatic Technology Training [PTT]

**OFFERED ONE TIME DURING THE YEAR**

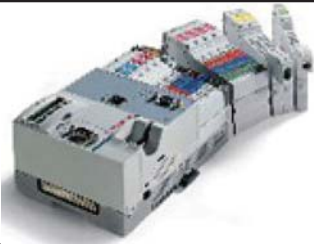
**June 1-4**

Basic Pneumatic Technology-2 days: This course covers fundamental principals of pneumatics, standard component types, operation, and schematic symbols. Hands on lab exercises are a major part of this course

Advanced Pneumatic Technology-2days: This course covers further understanding of the gas laws, fundamental sizing calculations and sequence controls and concepts. Hands on lab exercises are a major part of this course.

\$1300.00 for both classes (4 days) Basic Pneumatic Technology-2 days: \$700.00 includes class tuition, student workbook, lunch and refreshments

**Appropriate for: maintenance mechanics, millwrights, technicians, supervisors, plant engineering personnel**



### PLC Automation Featuring The Bosch Rexroth L Series PLC

**3 DAY SEMINAR OFFERED TWO TIMES DURING THE YEAR-FEBRUARY 24-26, SEPTEMBER 1-3**

This course is designed to provide a comprehensive primer for PLC technology and programming. Day one will provide an understanding of basic PLC technology. Day two and three cover the implementation of the Bosch Rexroth IndraControl L PLC, including communication, target settings, PLC configuration, task configuration and variable configuration. Several languages will be covered, including structured text, ladder, and function block diagram programming. This class will provide "hands on" examples of PLC circuitry and basic programming.

Students should bring their own computer with a licensed copy of IndraWorks software pre-installed.

\$1200.00 includes tuition, workbook, student handouts, lunch and refreshments

**Appropriate as a first course for anyone involved in the application of PLCs.**



### Indradrive Basic Servo Drive

**2 DAY COURSE OFFERED TWO TIMES DURING THE YEAR-MAY 5-6, NOVEMBER 3-4**

This two day course is a first level course for servo drive knowledge. Installation connections, on-board I/O, operating modes as well as use of the DriveTop/IndraWorks software to commission a servo drive.

\$800.00 includes tuition, workbook, student handouts, lunch and refreshments

**Appropriate as a first level course for anyone involved in a first time servo drive application.**

## NEW COURSES

### FREE VENDOR WORKSHOPS ON MACHINE GUARDING SAFETY

Everyone involved in plant and machine safety will benefit from attending these free seminars. Space in these two seminars is limited, a reservation is required for attendance. Please call or email for a confirmation letter, directions to the location of the seminars and local hotel information.

### SAFETY DEVICES

**3 DAY SEMINAR OFFERED TWO TIMES DURING THE YEAR-JANUARY 13-15, JUNE 9-11**

This seminar will introduce you to components and techniques to achieve machine guarding. ANSI, OSHA, CE Marking, and the European Machine Directive guidelines will be discussed to allow you to do risk assessment and reduction.

### SAFETY ON-BOARD FEATURE OF THE BOSCH REXROTH SERVO DRIVES

**2 DAY SEMINAR OFFERED TWO TIMES DURING THE YEAR-APRIL 7-8, AUGUST 4-5**

This seminar will introduce the on-board safety technology that comes in the Bosch Rexroth digital servo drives.

# ONSITE TRAINING

On-Site Training Seminars: Not only do we offer training classes in our facility, we also offer training classes in your facility! That's right! We will bring our customized fluid power and lubrication training programs to your company. We offer system specific training on your company's equipment, as well as training in a classroom environment to increase your general understanding. This training is individually tailored to each company so that your maintenance personnel will understand how your equipment works and how it needs to be maintained. Whether it's a single training seminar on your company's equipment or a complete long-term training program, our experts are ready to assist you. Contact us today to discuss your technology training needs!

Call: 800-825-4969 or 704-588-3670 ext. 7231

Fax: 704-588-5622 email: [wcg@lhtech.com](mailto:wcg@lhtech.com)

Mail: The Livingston and Haven Institute, PO Box 7207 Charlotte, NC 28241

**Registration Information:** Enrollment for each class is limited to insure maximum student participation. Enroll early to insure your place in the training seminar of your choice. **Payment may be made by check (payable to Livingston & Haven), by major credit card or with your company's purchase order (from which Livingston & Haven will invoice).**

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