

# Training Schedule - 2011

- Hydraulic Training
- Custom Training
- Product Training
- Seminars & Events



# Training at CMA/Flodyne/Hydradyne



## Hydraulic Training

CMA/Flodyne/Hydradyne offers economical four day hydraulic training classes in **Basic and Advanced Hydraulics**. These classes are scheduled throughout the year and held at our training room in Hanover Park, IL.

Additional classes are available based on demand: these classes include Hydraulic System Design and Understanding Proportional Valves. Please contact us to inquire about scheduling one of these classes.

## Product Training

We currently offer scheduled product training on the Bosch Rexroth Drive and Control systems and the IAI Robo Cylinder. Additional classes may be added throughout the year as needed. Please contact us to request training on a product that is not listed.



## Custom Training

For training on a specific machine or subject, we offer custom training held at our facility or yours. Our instructors provide training based on your schematics and machine manuals; we can train your employees on start-up procedures, component function and analysis, programming, troubleshooting and overall system operation. Please contact your sales representative or email [training@cmaf.com](mailto:training@cmaf.com) for a quote.



## Seminars

Seminars at CMAFH are your opportunity to learn about new technologies and applications from our suppliers. We offer 1/2 and full day classes on current topics such as Machine Safety, Lean Manufacturing, Robotics and more. Please visit our website for the most up to date schedule as new seminars or events may be added throughout the year.

## How to register

Register for seminars and scheduled training classes Monday-Friday by calling our Training Department at (630) 563-3600 or emailing [training@cmaf.com](mailto:training@cmaf.com). If you are registering to attend a for-fee training or seminar, please provide a purchase order or arrange for alternate payment at the time of registration. Registrants will receive a confirmation via email or fax.

To cancel your registration please call with your cancellation request no later than two weeks before the training date to receive a full refund. Your cancellation and refund status will be confirmed via email or fax.

**For more information:** Please call: (630) 563-3600 or email [training@cmaf.com](mailto:training@cmaf.com)

# Hydraulic Training

## Basic Hydraulic Training

**March 7-10, 2011 • September 12-15, 2011**

This is a level one training for equipment maintenance personnel who have had no formal training in industrial hydraulics and are new to hydraulically powered and controlled machines and equipment. This course is also recommended for plant engineering personnel and mobile equipment engineering personnel who are tasked with hydraulic system improvement, system modification and system design.

Basic Hydraulic Training was developed with the idea that hydraulic systems are best maintained by those who understand the physical principles that apply to industrial hydraulics. Learn the principles of industrial hydraulic technology in a small class environment utilizing real world examples, components for inspection and disassembly, and a hands on lab.

Approximately 50% of the course involves hands-on lab training and attendees will receive a certificate upon successful completion of the course.

### Topics Include:

- Standard hydraulic valve functions
- Basic setup and trouble-shooting
- Principles of fluid flow and pressure, work, power, actuator speed for hydraulic systems
- Hydraulic component symbols for reading and interpreting schematics
- The 10-12 basic hydraulic circuits used in most hydraulic systems
- Fixed displacement and variable displacement pumps
- Pressure type pump controls commonly used in open loop industrial systems
- Principles of fluid pressure and fluid flow, hydraulic power, heat generation
- Throttle valve speed control
- Hydraulic shock and how to limit its destructive effects
- Introduction to electro-proportional hydraulic valves
- Components for Inspection and/or Disassembly

### Basic Hydraulic Training Schedule

7:30 a.m. - 8:00 a.m.	Continental Breakfast Provided
8:00 a.m. - 12:00 noon	Training Class
12:00 noon - 12:45 p.m.	Lunch Provided
12:45 p.m. - 5:00 p.m.	Training Class



### Training Dates

**March 7-10, 2011**

**September 12-15, 2011**

### Training Location

1000 Muirfield Drive  
Hanover Park, IL 60133

### Tuition

\$650 per person

\$525 for two or more

Tuition includes

- seminar fee
- all student materials
- textbook
- custom workbook
- continental breakfast
- lunch

### Register

Online at [www.cmafth.com](http://www.cmafth.com)

E-mail [Training@cmafth.com](mailto:Training@cmafth.com)

Telephone 630-563-3600

# Hydraulic Training

## Advanced Hydraulic Training

**December 5-8, 2011**

Advanced Hydraulic is a level two training for equipment maintenance personnel who have attended Basic Hydraulic Training or have equivalent knowledge/experience in Hydraulics. This course is also recommended for plant engineering personnel who are tasked with hydraulic system improvement, system modification and system design.

Learn the principles of industrial hydraulic technology in a small class environment utilizing real world examples, components for inspection and disassembly, and a hands on lab. This is a four day training held once during 2011. Maximum class size is 18, please register early to guarantee seating.

\*\*Completion of Basic Hydraulic Training is required before taking this course. If you have equivalent knowledge and would like to bypass Basic Hydraulic Training, please call 630-563-3600.

### Topics Include:

- Logical schematic reading and interpreting
- Proper fluid requirements
- In depth study of component operation
- System setup for improved efficiency and reliability
- Why hydraulic systems get hot and what to do about excessive heat
- Hydraulic fluid cleanliness and condition standards
- Understanding relief valves—disassembly, inspection, assembly, and testing
- Understanding reducing valves—disassembly, inspection, assembly, testing
- Understanding directional control valves—disassembly, inspection, assembly
- The use and set up of pilot chokes for pilot operated controls
- Controlling pilot pressure with pilot operated directional controls
- Troubleshooting exercises to develop troubleshooting skills
- Understanding variable displacement pumps, basic pressure regulating controls, setup and commissioning
- Review fundamental circuits used in many industrial systems and learn to setup
- Knowledge reinforcement with hands on lab exercises
- Components for Inspection and/or Disassembly

### Advanced Hydraulic Training Schedule

7:30 a.m. - 8:00 a.m.	Continental Breakfast Provided
8:00 a.m. - 12:00 noon	Training Class
12:00 noon - 12:45 p.m.	Lunch Provided
12:45 p.m. - 5:00 p.m.	Training Class



### Training Date

**December 5-8, 2011**

### Training Location

1000 Muirfield Drive  
Hanover Park, IL 60133

### Tuition

\$650 per person or  
\$525 for groups of two or more.

Tuition includes:

- seminar fee
- student materials
- custom workbook
- Textbook \*new students only
- Returning students please bring your textbook, *Using Industrial Hydraulics*
- continental breakfast
- lunch

### Register

Online at [www.cmafh.com](http://www.cmafh.com)  
E-mail [training@cmafh.com](mailto:training@cmafh.com)  
Telephone 630-563-3600

# Product Training

## ROBO Expo

**April 5, 2011** Receive one free ROBO Cylinder, valued at up to \$1500!\*

**What is the ROBO Expo?** ROBO Expo is a half-day training on why, when and how to use the electric actuator. If you have no experience with electric actuators, you may be surprised to learn that they are an energy efficient, economical alternative to pneumatic cylinders. At the end of the session, you will understand the benefits of electric actuators, and you will be able to install and program the ROBO cylinder for use in your factory.

**\*Promotion/Gift:** One representative per company will receive a free Actuator/ Controller from our promotional Sample List worth up to \$1500. Choose from the ERC2, RCP2, or RCA Series ROBO Cylinder. Cable not included. Companies who currently use IAI ROBO Cylinders are not eligible for this promotion.

**Who should attend?** This course is suitable for maintenance technicians, engineers and programmers or non-programmers who work with cylinders or specifying cylinders for use. Designed with the non-programmer in mind, ROBO Cylinders are easy to use but with high levels of capability.

**Requirements:** Each attendee must bring a laptop running 32 bit Microsoft XP/ Vista/7. ROBO Cylinder software will not function on a 64 bit system. Attendees will be provided with a ROBO Cylinder ERC2 Demo Kit (controller/adaptor) to be used during the ROBO Expo.

### Topics include:

- Compare benefits of electric vs air
- Software programming and capabilities
- Why green technology
- Available options
- Apply knowledge with hands on demonstrations

### ROBO Expo Schedule:

8:00 -- 8:30 a.m.	Doors open, Continental Breakfast
8:30 -- 9:00 a.m.	Software Installation
9:00 -- 12:00 noon	Training
12:00 -- 1:00 p.m.	Lunch provided
1:00 -- 2:00 p.m.	Q&A



### Training Date

April 5, 2011

### Training Location

1000 Muirfield Drive  
Hanover Park, IL 60133

### Cost

\$130 flat fee per company

### Tuition includes

- seminar fee
- student materials
- one free product per company
- continental breakfast & lunch

### Register

Online at [www.cmafz.com](http://www.cmafz.com)  
E-mail [training@cmafz.com](mailto:training@cmafz.com)  
Telephone 630-563-3600

# Product Training

## Introduction to Machine Drive & Control

**September 19-20, 2011**

This is a two day introductory course on how to create and operate a fully functional machine control platform using the Bosch Rexroth IndraDrive with IndraLogic software.

You will become familiar with the Drive Connections, functions, on-board I/O and basic Operating Modes of the IndraDrive. This course will also cover the use of DriveTop with regards to parameterization of drives, system and fault information and system recognition of components.

The Control portion of this course is designed for the new IndraLogic user. Subjects covered include communication, target settings, PLC configuration for different targets, task configuration and variable configuration. Several languages will be covered including structured text, ladder, function block diagram and sequential function chart programming.

### Topics Include:

- PLC fundamentals such as hardware, numbering and how a PLC works
- Basic functions: latching circuit, series and parallel circuits, how to use timers, counters and advanced functions.
- Communication
- PLC, task and variable configuration
- Troubleshoot and correct problems
- How to apply knowledge with hands on demonstrations

### Learning & Training Materials

- Each attendee will receive a workbook and handouts (as needed)
- Please bring your laptop with a licensed copy of IndraWorks software installed
- Lunch will be provided

### Daily Schedule:

8:00 -- 8:30 a.m.	Doors open, Continental Breakfast
8:30 -- 12:00 noon	Training
12:00 -- 1:00 p.m.	Lunch provided
1:00 -- 5:00 p.m.	Training



### Training Date

September 19-20, 2011

### Training Location

1000 Muirfield Drive  
Hanover Park, IL 60133

### Cost

\$650 per person  
\$525 for groups of two or more.

Tuition includes

- seminar fee
- all student materials
- workbook
- continental breakfast
- lunch

### Register

Online at [www.cmafh.com](http://www.cmafh.com)  
E-mail [training@cmafh.com](mailto:training@cmafh.com)  
Telephone 630-563-3600

# Seminars and Events

## Machine Safety Practices

Free, one-half day seminar • May 24, 2011

**Why Machine Safety?** Safety is an issue of major concern as today's automated workplace is potentially more hazardous than ever before, and studies have shown that most manufacturers are not in compliance with current safety legislation.

OSHA's Office of Regulatory Affairs estimates that for every one dollar invested in workplace safety, four to six dollars are saved. Although it is difficult to estimate financial costs in advance of an injury, the direct and indirect costs of having an employee injured on the job are staggering and can be easily prevented.

Learn why, when and how to implement proper machine safeguarding to make your plant safe and productive. Reduce liability and risk, conform to OSHA, ANSI, and European Safety Standards, and reach your objective: an injury free environment.

**Who should attend?** EH&S personnel, plant maintenance, plant engineering, production managers, all managers concerned with safety of plant personnel.

### Topics include:

- Overview and update of current legislation and safety codes
- Identifying OSHA requirements and insights to compliance
- Listing key points of ANSI machine tool standards
- Hazard and risk assessment
- Hard guarding device technology and applications
- Soft guarding device technology and applications
- Safe PLC and integrated drive technology and applications.
- Overview of control reliability and safety circuit performance

### Seminar Schedule

7:30 -- 8:00 a.m.	Doors open, Continental Breakfast
8:00 -- 12:00 noon	Seminar
12:00 -- 1:00 p.m.	Lunch provided
1:00 -- 2:00 p.m.	Q&A session, plant tour



### Seminar Date

May 24, 2011

### Seminar Location

1000 Muirfield Drive  
Hanover Park, IL 60133

### Cost

Free Seminar  
Lunch Included

### Register

Online at [www.cmafz.com](http://www.cmafz.com)  
E-mail [training@cmafz.com](mailto:training@cmafz.com)  
Telephone 630-563-3600

# Seminars and Events

## Hydraulic Fluid Service Seminar

Free, one-half day seminar • October 20, 2011

Our most popular annual seminar, now in it's 12th year: the Hydraulic Fluid Service Seminar is a preventative maintenance & cost savings educational seminar designed to help you understand the causes and effects of hydraulic fluid contamination.

**Who should attend?** Do you have questions about ISO codes and beta ratios, hydraulic fluid monitoring, dirt holding capacity, or how hydraulic fluid cleanliness affects your components? Would you would like to reduce costly equipment breakdown and learn how to extend the life of your fluids? If you answered yes to any of these questions, this seminar is for you.

**Get the dirt from those who want to get the dirt out!** Hosted by representatives from the hydraulic filtration, OEM component, and oil supplier industries, this seminar will present a thorough analysis of contamination issues from all perspectives.

### What you will learn

- Learn methods to **extend fluid life**
- Learn methods to **reduce machine downtime**
- Learn by demonstration how to immediately **control contamination**
- Learn methods to achieve maximum **cost efficiency**

### Hydraulic Fluid Service Seminar Schedule

7:00 a.m. — 8:00 a.m.	Continental Breakfast and Product Demos
8:00 a.m. — 9:00 a.m.	Causes and Effects of Fluid Contamination
9:00 a.m. — 9:45 a.m.	The Oil Supplier's Perspective on Contamination
10:00 a.m. — 11:00 a.m.	Design Considerations for Filtration
11:00 a.m. — 12:00 p.m.	Rating Systems for Oil and Filters
12:00 p.m. — 1:00 p.m.	Lunch Provided, Live demonstrations
1:00 p.m. — 2:00 p.m.	Panel Discussion & Question and Answer

### Industries currently served by this program are:

Power Generation  
Steel Mills  
Injection Molding  
Die Casters

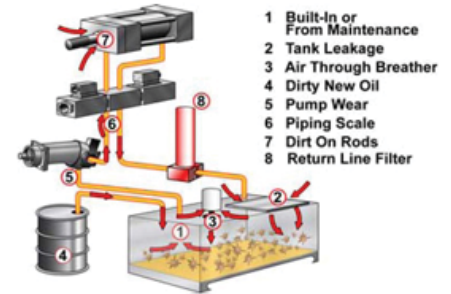
Clamping Systems  
Test Machines  
Construction Equipment  
Paper Making Machines

Agricultural Equipment  
Coal Crushers  
Wind Turbines  
Solar Energy Plants

Chemical Processing Plants  
Welding Robots  
Elevating Platforms  
Heavy Duty Vehicle

Aviation  
Mining  
Railroads  
Forging

### Sources of Contamination



### Seminar Date

October 20, 2011

### Seminar Location

1000 Muirfield Drive  
Hanover Park, IL 60133

### Cost

Free Seminar!  
Lunch Included

### Register

Online at [www.cmafth.com](http://www.cmafth.com)  
E-mail [Training@cmafth.com](mailto:Training@cmafth.com)  
Telephone 630-563-3600