

PROPOSED IN-HOUSE TRAINING

# PRACTICAL INDUSTRIAL HYDRAULIC - MAINTENANCE & TROUBLESHOOTING



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# ABOUT US

We offer training solutions to various organizations, matching their requirement in technical segments since 1994. We always strive to guarantee overall customer satisfaction and place utmost importance to customer feed back. Over the years we have trained more than 500 organizations and over two thousand participants in all our training modules. We have also expanded our services to cover technical training institutions and institutions of higher learning providing extensive knowledge sharing for all levels and fields of expertise in the workplace.

## INTRODUCTION

This training is to provide participants with a sound understanding of the general concepts, advantages and limitations associated with Industrial Hydraulic systems used in the manufacturing industries today. It offers a practical approach to hydraulic principles, including a general understanding of basic physics, components, circuit diagram. It also provides a closer look at numerous industries and their specific applications for electro-pneumatic systems as well as troubleshooting and safety regulation guidelines.

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# COURSE OBJECTIVES

By the end of this course, participants will be able to :

- design and select suitable components in hydraulic system
- Read and understand hydraulic circuitry
- Understand the fundamentals of how to build circuit diagrams with these components
- Troubleshoot problems in a simple hydraulic system
- Use simple calculation for cylinder size used with certain air pressure for an application in a system with safety in mind
- Consolidate the acquired knowledge, with the numerous practical hands-on exercises
- Keep up with information on the principles, operation and maintenance of hydraulic systems

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# COURSE CONTENT

Module 1 :Safety requirement when using hydraulics

Module 2 : Introduction to hydraulics

- i. What is hydraulic
- ii. Applications of hydraulic
- iii. Advantages of hydraulic
- iv. Limitations of hydraulic

Module 3 : Basic components of a hydraulic system

Module 4 : Pressure

- i. How is Pressure measured
- ii. Types of pressure; Absolute vs Gauge pressure
- iii. Relationship between Pressure & Load Force

Module 5 : Flow

- i. How is flow measured
- ii. Fluid flow and *Delta p* ( $\Delta p$ )
- iii. How fluid flow at the suction line of the pump

Module 6 : Components of a hydraulic power unit

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# COURSE CONTENT

## Module 7 : Hydraulic Pumps

- i. Operation of fixed displacement pumps
- ii. Types of industrial fixed displacement pumps
- iii. Operation of fixed displacement pumps

## Module 8 : Hydraulic components; construction, functions and applications

- i. Pressure Relief Valve
- ii. Hydraulic Cylinders
- iii. Hydraulic Motors
- iv. Directional Control Valves (DCV)
- v. Pressure Reducing Valve
- vi. Pressure Sequence Valve
- vii. Check Valve
- viii. Flow Control Valves (one-way and two-way)

## Module 9 : Basic hydraulic circuits; Meter-in & Meter-out

## Module 10 : Simulation exercises using *Webtrainer* software

## Module 11 : Maintenance and Troubleshooting

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# WHO SHOULD ATTEND

- All staff involving the maintenance of hydraulic and electro-hydraulic control systems
- Executives
- Managers
- Support employees

## METHODOLOGY

The workshop is interactive & participative with a mixture of:

- Self assessment
- Videos and activities
- Circuit simulations
- Group discussions & case studies
- Interactive lectures

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# TRAINER'S PROFILE

Mr. Henry Choong has more than 30 years of solid experience in the field of industrial automation (PLC, Pneumatics, Hydraulics, Electrical, Vacuum, Sensors & DAQ etc). He is an accredited trainer by Human Resource Development Corporation (HRDCorp), and also by AB Mecman, Stockholm, Sweden.

During his employment with Jebsen & Jessen (M) Sdn Bhd and Allen Automation & Pneumatics Sdn Bhd, he had numerous project experiences in the automation industries in handling PLCs, pneumatics, hydraulics systems as well as sensor technology, both hardware and software for system integration.

Beside his practical engineering experiences, he is also actively involved in training and consultancy. Some of the organizations and institutions which he had trained and collaborated, includes SKF Bearings Industries (M) Sdn Bhd, Petronas Refinery, Malacca Industrial Skills Development Centre (MISDEC), Selangor Human Resource Development Centre (SHRDC) etc.

In addition, he constantly presents seminars updating the latest industrial technologies to institutions of higher learning. He was also in the panel for the development of NOSS in Robotic Technology, Sijil Kemahiran Malaysia (SKM) Level 4 & Level 5

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