Maintain Hydraulic Systems 4
MEM18021B: Maintain hydraulic systems

HYDAC unit number: ST-T14-0
Duration: 32 hours (4 days)

This training unit can be nationally recognised through an association with AiGROUP

Overview

This course continues with our theme of building on the knowledge gained from the courses that came before it. This course takes the student on a hydraulic maintenance & troubleshooting journey on systems, looking at the theory behind different maintenance principles to hands on exercises that are designed to challenge. The student is introduced to a variety of systems and components such as closed loop hydrostatic transmissions, hydraulic steering, energy storage, fluid connectors, fluid condition monitoring, system flushing and commissioning.

At the completion of this course the student will be able to successfully identify and implement a maintenance strategy and process, ensure correct selection and installation of suitable hydraulic hoses, steel lines and connectors, calculate hydraulic motor forces, service hydro-pneumatic accumulator's, correctly install condition monitoring sensors, program and use electronic measuring devices, interpret the collected data and apply that information to a maintenance plan.

Program

Day 1 – Welcome and introductions and overview
Maintenance Philosophies & Strategies GE99-T02-0
- Overview of various maintenance strategies
- Reactive maintenance
- Condition based maintenance, CBM
- Predictive maintenance, PdM
- Application of each strategy to particular applications
- Cloud based condition monitoring systems and analytics

Maintenance Management & Cost Analysis GE99-T03-0
- True cost of ownership
- Building in reliability
- Root cause analysis
- Cost analytics and formulas

Sensors & Test Systems – hardware & data EL99-T09-0
- Overview of sensors and their construction
- Comparison between transducer and transmitter
- Fluid side, electrical side, inside
- Evaluate what can be measured
- Introduction to data logging and measurement
- Data logging and information interpretation

Written assessment for each of the above
Day 2 - Hydraulic Lines, Hoses & Fittings AS99-T01-0
Discuss threads and connectors
USS/UNC/UNF/Metric light/ Metric heavy
History of pipe development
Threaded connection standards
Metal & elastomeric seals
Tube working pressures
Hydraulic hose types and identification
Thread identification – Hands on exercises

Hydraulic Motors and System Theory CH99-T09-0
Overview of hydraulic motors and their applications
Actuator types – Linear, rotary, oscillating
Motor types – LSHT & HSLT
Variable displacement motors and controls
Motor calculations –
• Force
• RPM
• Output flow
• Output power

Written & practical assessment

Day 3 - Accumulator General Principles AC10-T14-0
Introduction to accumulator technology
History – design, development & applications
Accumulator construction - bladder, diaphragm, piston
Calculations for gas pre-charge
General safety - storage, transport, operational
Standards, certificates & approvals
Plant design registration
Gas charging and testing equipment
Operating procedure and pre-charge checking
Practical exercise – Disassemble, inspect, re-assemble, and charge a bladder type accumulator

Written assessment

Day 4 - Hydraulic Steering Systems CH99-T15-0
Hydraulic steering types and applications
Orbitrol steering valve operation
Exploded view
Practical exercise – dismantle and inspect an orbitrol

Hydrostatic Drive & Systems Theory PU99-T05-0
Introduction to hydrostatic drive systems
Discuss closed loop transmissions
Discuss various hydrostatic transmission applications

Hydraulic Troubleshooting Practice CH99-T11-0
Hands on troubleshooting on the training rigs
Includes report writing and use of catalogues and specification sheets
Final maintenance step - System pressure testing techniques
Discuss oil flushing versus cleaning principles & techniques
Pressure piping standards & importance of implementing a pressure test plan
Discuss safety around oil handling and the work areas and proof testing

Prerequisites

Basic Hydraulics 1 or equivalent
and / or
Maintain Hydraulics 2 or equivalent
and / or
Intermediate Hydraulics 3 or equivalent.

Before this course can be undertaken, the participant would need to have gained a basic understanding of hydraulic principles and components.
This course can only be provided for those fluent in English. Participants must be able to read and write, and to follow instructions.

It is incumbent on the participant to provide clear evidence that these units or equivalents have been completed. Please bring the original documents, or certified copies of transcripts of results, or any relevant statements of attainment to the course so that we can make copies of them to use as evidence on your behalf.

What do we mean by certified copies?
Information about those who may legally certify a copy of a document in Australia can be found here: https://www.legislation.gov.au/Details/F2018L01296

If you do not hold any of the above-mentioned units or certificates, you are still very much encouraged to attend the course, however only a HYDAC training certificate can be issued. This is not nationally recognised.

Clothing and equipment

Pens, paper, tools and training resources are provided.

Clothing should be neat casual, or cotton drill work clothing is fine, but they must be clean.

Dirty work boots are not to be worn, fully covered footwear such as runners are acceptable. Open toed footwear must not be worn.

Lunches

Morning tea, lunch and afternoon tea are provided. If you have any special dietary needs, please contact HYDAC beforehand to arrange alternatives.

Course dates, times and venues

We are offering the majority of our courses around Australia and New Zealand. They are subject to availability and minimum numbers.
Course dates, times and venues

The prices listed in this document are for training courses conducted in Australia only. Please contact HYDAC Training Centre for more information.

Times: 8:30AM to 5:00PM
Dates: Please check our website (www.hydac.com.au/hydac-training) for information on available dates.

Course fee

Course fee is AUD $1720 per participant, plus GST.

The optional surcharge for a nationally recognised statement of attainment issued through AI Group is $180 per participant, plus GST.

Therefore, the total fee for the course and the optional nationally recognised statement of attainment is $1900 plus GST.

Maximum class size is 12 people.
Flights, accommodation and taxi charges are not included in the course fee.

Unique Student Identifier (USI)

If you are interested in applying for the nationally recognised statement of attainment, you will need to come to the course with a USI, (Unique Student Identifier). A nationally recognised statement of attainment cannot be issued to an individual without a USI to match it to.

Information about the USI initiative can be found at the Australian Government website: www.usi.gov.au

A USI is linked to the National Vocational Education and Training (VET) data collection. This means that an individual’s nationally recognised training and qualifications gained anywhere in Australia, from different training organisations, will be kept all together.

If you are a New Zealand resident, you will not be able to create your USI with your New Zealand passport as identification until you have crossed through customs into Australia. This is because New Zealand nationals do not need a visa to enter Australia.

If you are an international student from elsewhere, you will be able to create a USI by using your Australian visa as identification.

Contact

Technical Training Officer

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