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Level 3 Mobile Hydraulic Intro to Design and Sizing

Course Description: This course covers designs, sizing and selection of components, installation and startup problems for Mobile Hydraulic Systems. The course will also cover many of the common mistakes and oversights made by system designers. Class work is reinforced with several hands-on labs. This is an excellent course for those responsible for starting up new systems, new designers and engineering types as well as those responsible for troubleshooting and fixing hydraulic system problems. This course is structured for design-responsible personnel including design and sales engineers.

Prerequisites: Level 1 Mobile Hydraulic fundamentals.

Textbook: 3-Ring binder with Lightning Reference Fluid Power handbook.
Eaton/Vickers, Parker, Bosch/Rexroth and other hardback books optional.

Learning Objectives:

- Review PSI and GPM formulas and charts.
- Explain how to control shock problems caused by pressure controls.
- Explain how to remotely control pressure valves.
- Discuss why spool type directional valves leak and how to use this phenomena to improve the system design.
- Explain the causes of heat generation in systems and how to reduce its effects.
- Discuss the use of non-compensated and pressure compensated flow controls.
- Explain the formula that allows the use of smaller electric motors.
- Design and select Pilot Operated check valves.
- Select filters and locate them for the best results.
- Select and locate heat exchangers.
- Explain how logic valves function.
- Explain basic proportional and servo valve functions and the electrical signals needed to control.
- Explain how to control de-compression problems that cause system shock.
- Use the load sense and torque limiting pump controls to reduce heat and conserve energy.