Module: Hydraulics

Course number: TTI-Hyd-R1-20

Course Director:

Course Coordinator:

Course Duration: 3 months (60 working days-60 lessons)

Qualification: Diploma level or experienced in this field

Enrolment system: Admission test

Description:

Hydraulics is one of drive systems to control machinery and equipment, comparable with pneumatics and electricity. With a variety of applications, hydraulic systems are used in all kinds of large and small industrial settings, as well as buildings, construction equipment, and vehicles. Paper mills, manufacturing, robotics, and steel processing are leading users of hydraulic equipment. The Hydraulics training course covers hydraulic principles of mechanical maintenance, types of hydraulic fluids and their characteristics. Describes components of the hydraulic system and their functions for maintenance procedures, including filters and strainers, reservoirs and accumulators, pumps, piping, tubing and hoses, control valves, relief valves, and actuating devices. This hydraulics course covers a variety of cylinders and training on hydraulic motors. In this training program, participants learn the basic hydraulic components, how they work, and their function in a hydraulic circuit.

Objectives:

1. To understand the principles of fluid flow and pressure, work, power, actuator speed for industrial and mobile hydraulic systems.
2. To learn the hydraulic component symbols typically used in industrial and mobile systems.
3. To learn various types of valves used in hydraulic system.
4. To learn about hydraulic accessories, pump, motor, cylinder etc.
5. To learn about troubleshooting of hydraulic system.
6. To learn how to design a hydraulic circuit.
7. To understand the principles of speed control.

Out Come:

1. Upon completions, trainees will be able to understand and interpret hydraulic schematics, and implement safe work practices.
2. Increase skills and productivity of engineering and maintenance employees.
3. Diagnose and repair problems in hydraulic systems at industrial worksites.
4. Prepare for the Certified Fluid Power Specialist (CFPS) certification exams.

Training Method:

1. Lectures in the classroom
2. Presentation on multimedia projector
3. Practical
4. Group discussion
5. Motivational session
6. Physical training
7. Game
8. Case study
9. Debate
10. Apprenticeship

Evaluation:

Out of the total 100 marks, the following assessment will be done.

1. Participation in the session 10
2. Written test 20
3. Practical test 40
4. Thematic presentation 20
5. Speaker evaluation 10

Total 100

Reference Books:

1. TRAINING BASIC HYDRAULIC by PARKER
2. BASIC HYDRAULICS AND COMPONENT by YUKEN
3. FLUID POWER BASIC by TRINKEL

Lesson Plan:

Sl. no.	Subject	Lesson no	Number of Sessions		Speaker
01.	Basic Hydraulics	1-2	Theory	2	
			Practical	10	
			Feedback	2	
02.	Hydraulic Symbols	3-4	Theory	2	
			Practical	10	
			Feedback	2	
03.	Hydraulic Pump	5-6	Theory	2	
			Practical	10	
			Feedback	2	
04.	Close Loop System	7	Theory	1	
			Practical	5	
			Feedback	1	
05.	Valves	8-15	Theory	8	
			Practical	40	
			Feedback	8	

06.	Hydraulic Cylinder	16-17	Theory	2	
			Practical	10	
			Feedback	2	
07.	Hydraulic Accessories	18	Theory	1	
			Practical	5	
			Feedback	1	
08.	Hydraulic Motor	19-20	Theory	2	
			Practical	10	
			Feedback	2	
09.	Hydraulic Units	21-22	Theory	2	
			Practical	10	
			Feedback	2	
10.	Troubleshooting	23	Theory	1	
			Practical	5	
			Feedback	1	
11.	Hydraulic Fluid	24	Theory	1	
			Practical	5	
			Feedback	1	
12.	Hosses and Fittings	25-28	Theory	2	
			Practical	10	
			Feedback	2	
13.	Hydraulic Circuit	29-40	Theory	12	
			Practical	60	
			Feedback	12	
14	Apprenticeship	41-60	Practical work	20	

In each session the speaker will distribute the summary of his speech to the class.