

Training for Proportional Systems

Course Code: TPS1

Bosch Rexroth, St Neots / Treforest / Bradford

Aims

- › To introduce students to the principles and practices of proportional control
- › Introduction to the study of circuit construction and circuit components
- › To introduce basic principles of design of proportional systems
- › Students will gain knowledge of both analogue and digital proportional systems
- › Students will gain a knowledge of both open and closed loop proportional systems
- › For student to become familiar with set-up procedures on proportional systems
- › For students to become familiar with maintenance and faultfinding techniques on proportional hydraulic systems

Course Content

Day one

- › **Valve construction and operation**
- › Types of proportional control devices
- › Pressure relief
- › Flow control
- › Direction control
- › Hydraulic symbols
- › Spool configurations
- › Selection & sizing with reference to manufacturer's data
- › **Electrical operation**
- › Types of proportional control devices
- › Basic electrical circuits and operation
- › Solenoid design
- › Comparison between conventional and proportional valves
- › Methods of control
- › Comparison between analogue and digital control

Day two

- › **Proportional Attributes**
- › Ramp
- › Gain
- › Deadband
- › Dither
- › Pulse width modulation
- › **Amplifier cards**
- › Principles of operation
- › Design and application
- › Analogue and digital
- › **Closed Loop**
- › Internal and external feedback devices
- › Operation and application of closed loop systems

Day three

- › **Integrated Electronics Option Frequency Response**
- › Principles of operation
- › Bode diagrams and their use in manufacturer's data
- › PID control

- › **Practical Exercises**
- › **Commissioning and set-up procedures**
- › Open loop circuits
- › Closed loop circuits
- › Interface to the control

Bradford

3 days

9 - 11 March

St Neots

3 days

11 - 13 May

19 - 21 October

Treforest

3 days

20 - 22 July

Note:

Practical exercises form an important part of this course, carried out using our range of specially designed training rigs. Course participants are asked to bring current circuit diagrams to these sessions where time will be devoted to their explanation.

Pre-requisites

- › Attendance on either the MH or MH-s course.
- › See Stage 2 pre-requisites (page 6)

Participants

- › Maintenance Engineers
- › Project Engineers
- › Technical Personnel
- › Sales Personnel