



State of Ohio Low Pressure Boiler Operator Course Contents

OHIO LP Chapter #	OHIO LP (Custom Series) Unit Title	Ohio LP (Custom Series) Chapter Title	Learning Outcomes	Ohio LP Body of Knowledge (Part#)	PETS Source Chapter (Essentials)
1	Heating Boilers	Basic Boiler Terminology	Explain common terms relating to boilers.	1	E.10.46
2	Heating Boilers	Watertube & Tubular Heating Boilers	Describe the types of watertube and tubular boilers used in heating systems.	1	E.19.86
3	Heating Boilers	Cast-Iron Sectional and Modular Boilers	Describe and explain the uses of cast-iron boilers.	1	E.19.87
4	Heating Boilers	Firetube Heating Boilers	Describe the design and use of firetube boilers for heating purposes.	1	E.19.88
5	Heating Boilers	Electric Boilers	Describe electric boilers with regard to their use and general design.	1	E.10.49
6	Heating Boilers	Steam Heating Equipment	Describe the operating principles of steam heating equipment and components.	1	E.20.95
7	Heating Boilers	Steam Heating Systems	Describe the operating principles and maintenance procedures of steam heating systems and the components of these systems.	1	E.20.96
8	Heating Boilers	Oil Burners for Heating Boilers	Describe the various oil burners used on heating boilers.	5	E.19.89
9	Heating Boilers	Gas Burners for Heating Boilers	Describe the operation of the various types of gas burners used on heating boilers.	5	E.19.90
10	Heating Boilers	Boiler Draft Equipment	Discuss, sketch and describe the basic equipment used to supply combustion air to a boiler furnace.	6	E.11.51
11	Boiler Internals and Fittings	Basic Fittings for Low-Pressure Steam Boilers	Name, describe, and explain the operating principles of various boiler fittings, pressure gages, and safety valves found on low-pressure and hot water steam boilers.	2	E.19.91 E.19.92 E.19.93
12	Boiler Internals and Fittings	Safety and Relief Valves	Discuss safety valves for power and heating boilers.	2	E.11.54
13	Boiler Internals and Fittings	Continuous and Intermittent Blowdown	Describe the purposes, equipment and operation of continuous and intermittent blowdown.	2	E.12.58
14	Boiler Internals and Fittings	Water Columns and Gage Glasses	Describe different types of direct and inferential level gages or indicators.	2	E.11.55
15	Boiler Internals and Fittings	Introduction to Piping and Pipe Fittings	Discuss the basic types of piping, pipe connections, supports, drainage devices and insulation.	4	E.9.43
16	Boiler Internals and Fittings	Introduction to Valves	Discuss the design, application and maintenance of the most common types of valves used in power piping systems.	4	E.9.44
17	Boiler Internals and Fittings	Types of Pumps	Describe the various types of pumps found in buildings and industrial plants.	3	E.15.68
18	Basic Boiler O&M	Pump Operation and Maintenance	Describe all details pertaining to pump operation and various maintenance procedures performed on pumps.	3	E.15.69
19	Basic Boiler O&M	Hot Water and Steam Heating Boiler Operations	Describe specific, safe & efficient operational procedures relating to automatically-fired, low-pressure hot water & steam heating boilers.	8	E.19.94
20	Basic Boiler O&M	Routine & Emergency Boiler Operation	Describe the routine safe and efficient operation of a packaged boiler.	8	E.12.60
21	Basic Boiler O&M	Boiler Maintenance	Describe the service and maintenance required for boilers.	8	E.27.139
22	Basic Boiler O&M	Boiler Cleaning	Discuss the procedure for preparing a boiler for inspection & cleaning, and describe mechanical & chemical boiler cleaning methods.	8	E.27.140
23	Boiler Control Systems	Basic Boiler Instrumentation & Control Systems	Describe specific types of instrumentation and controls used on boilers.	5	E.18.82



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24	Boiler Control Systems	Low-Water Fuel Cutoffs	Discuss the designs, operation and testing of low-water fuel cutoffs.	5	E.18.83
25	Boiler Control Systems	Boiler Programming Controls	Describe the operation of programming controls and discuss the proper testing and maintenance procedures.	5	E.18.84
26	Boiler Control Systems	Heating Boiler Feedwater Controls	Describe the various feedwater control methods and devices used on low-pressure steam boilers.	5	E.21.103
27	Boiler Control Systems	Heating Boiler Operating Controls	Name and describe the various operating controls found on low-pressure heating boilers.	5	E.21.104
28	Boiler Control Systems	Heating Boiler Combustion Controls	Explain the design and operation of various combustion controls on heating boilers.	5	E.21.105
29	Boiler Control Systems	Pneumatic Controls for Heating Systems	Explain the purpose of the various components found in a pneumatic control system.	8	E.21.106
30	Boiler Control Systems	Electric Controls for Heating Systems	Describe and explain the function of the various components of an electric control circuit.	8	E.21.107
31	Boiler Control Systems	Electronic Controls for Heating Systems	Describe and explain the function of the various components of an electronic control circuit.	8	E.21.108
32	Water Treatment	External Feedwater Treatment	Discuss the general principles, methods and equipment used in preparing raw feedwater for steam production in a boiler.	7	E.13.61
33	Water Treatment	Internal Feedwater Treatment and Testing Methods	Discuss the general principles, methods and equipment used in the internal treatment of raw feedwater for steam production in a boiler.	7	E.13.62
34	Water Treatment	Cooling Towers	Describe the operation and maintenance of cooling towers.	7	E.14.65

*The curriculum designed by Power Engineering Training Systems to address the Ohio Body of Knowledge requirements for the State of Ohio's Stationary Engineer, High Pressure, and Low Pressure Operator Examinations has been approved by the Division of Industrial Compliance, Ohio Department of Commerce as suitably addressing the applicable topics for the various Bodies of Knowledge. Learning materials are compiled from contents of the Essentials of Power Engineering Series, published by Power Engineering Training Systems (www.powerengineering.net).

***These learning materials are compiled in a single volume:**

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*Only the Body of Knowledge document found on the State of Ohio website at <http://www.com.state.oh.us/dic/documents/303.pdf> should be used as the fundamental reference for knowledge requirements pertinent to the State of Ohio license examination.