

BOILER SYSTEMS TRAINERS

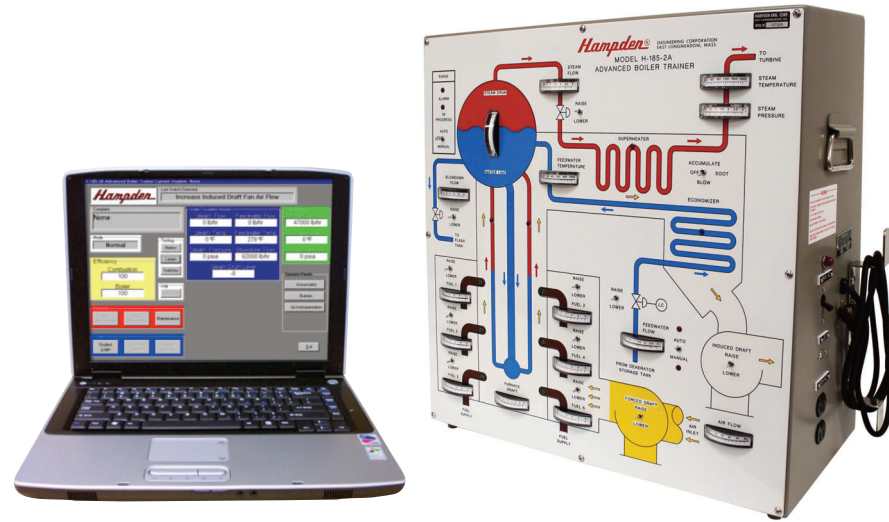


Hampden[®]
ENGINEERING CORPORATION



BOILER SYSTEMS TRAINERS

Hampden H-185-2A Advanced Boiler Trainer



MODEL H-185-2A Advanced Boiler Trainer shown with computer.

Purpose

The Hampden **Model H-185-2A** Advanced Boiler Trainer serves to demonstrate principles of operation and troubleshooting techniques of a current model boiler system. The module's front panel displays a complete pictorial view of the system. All functions operate as on the actual equipment and present the student with realistic problem solving opportunities.

Description

The boiler system simulation is based on a typical fossil-fired power plant including operational systems, digital controls, analog control loops, alarms and trips.

Steam, feedwater, flow, pressure, temperature, subsystems, and control positions are continuously displayed on screen to student and instructor.

Operational "hands-on" activities performed by students also include real time, dynamic experience with all phases of oil, gas and pulverized coal firing.

The **Model H-185-2A** Advanced Boiler Trainer is a fully computer-controlled unit designed to interface with a Laptop Computer and covers all aspects of plant operation including:

- System Description
- Theory
- Component Identification
- Subsystems Operation
- Controls
- Integrated Operations
- Features

The **Model H-185-2A** Advanced Boiler Trainer can be set to simulate the following conditions:

- Cold Boiler
- Drum Level Established
- No Load
- 5% Load
- 25% Load
- 50% Load
- 75% Load
- 100% Load

Students are able to interact with different graphic displays, view system parameters, in addition to operating digital and analog controls.

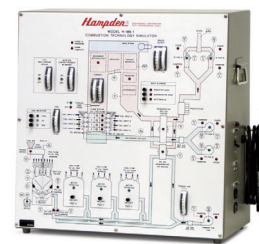
Instructors may insert simulated mechanical or electrical "faults" into the system to test a students' troubleshooting capabilities.

Simulator Malfunctions

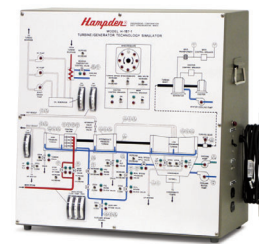
The following insertable malfunctions may be accessed via the computer program:

- Forced Draft
- Induced Draft
- Feedwater
- Drum Level High
- Pollution
- Drum Level Low
- Low Oxygen
- Boiler PSI High
- Boiler Temp High

Complete your Power Plant training with these additional Hampden Digital Simulators



MODEL H-186-1
Combustion Technology
Simulator



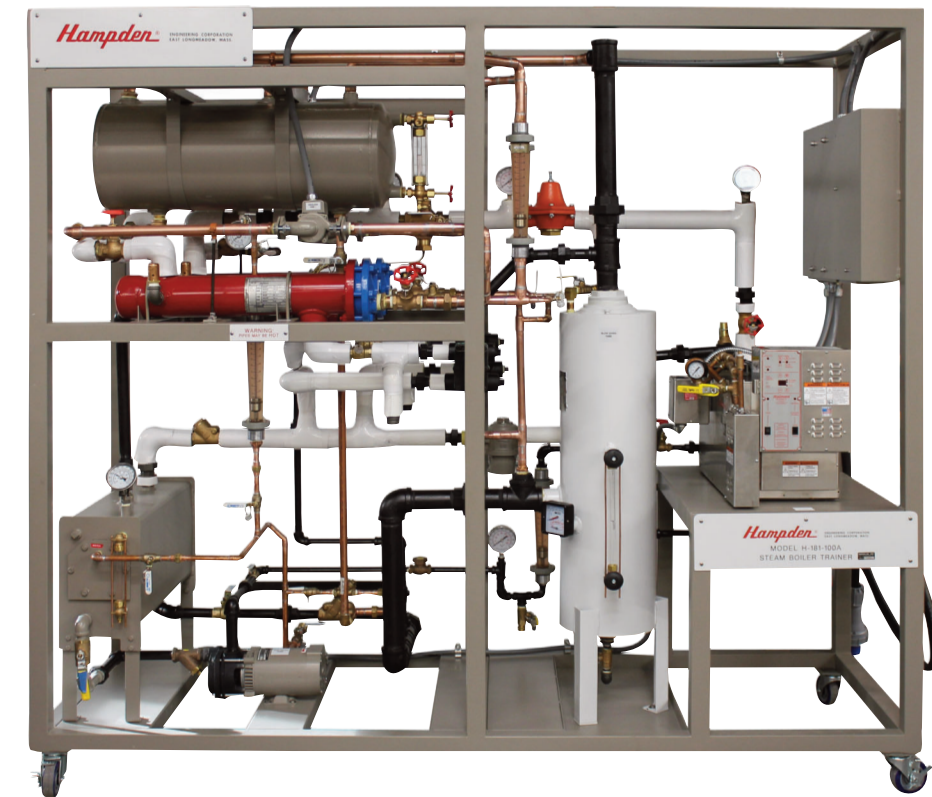
MODEL H-187-1
Turbine/Generator
Technology Simulator



MODEL H-188-1
Electrical
Generation
Fundamentals
Trainer

BOILER SYSTEMS TRAINERS

Hampden H-181-100A Steam Boiler Trainer



MODEL H-181-100A Steam Boiler Trainer

Purpose

The Hampden **Model H-181-100A** Steam Boiler Trainer efficiently provides hot water for process heat and building heat typically used throughout industry. This trainer teaches technicians the skills they need to select, operate, install, maintain and repair basic steam systems.

The **Model H-181-100A** is a "real-world" system producing heated process water. It includes the major steam and hot water system components commonly encountered. The trainer also includes extensive pressure, temperature and flow instrumentation which enables students to learn operational skills and troubleshooting. The piping is designed so that components can be removed and replaced.

Learning Topics

The **Model H-181-100A** Steam Boiler Trainer equips the trainee with experience in the following areas:

- Steam Boiler
- Condensation Systems
- Steam Traps
- Steam Pressure Control
- Steam Vacuum Breaker
- Steam to Water Heat Exchangers
- Hot Water Storage
- Hot Water Circulation Pumps
- Hot Water Temperature Control
- Pressure Gauges
- Temperature Gauges
- Flowmeters
- Ball Valves
- Check Valves
- Globe Valves

Description

The **Model H-181-100A** consists of the following:

- Industrial Boiler
- Blowdown Tank/Aftercooler
- Pressure Regulator Valves
- Temperature Regulator Valves
- Feedwater Tank and Pump
- Pressure Gauges
- Temperature Gauges
- Heat Exchangers
- Electrical Fault Package with six instructor inserted faults
- Student and Teacher's Manuals

Standard Products...Designed to Meet Your Growing Needs!

BOILER SYSTEMS TRAINERS

Hampden H-181A Steam Power Plant Trainer - Gas/Oil or Mix

Purpose

The primary function of the Hampden **Model H-181A** Steam Power Plant Trainer is to demonstrate to the student how a power station uses steam to turn a turbine which is coupled to an alternator which produces electricity. The boiler converts the water to steam which is piped through the superheater and steam separator to the turbine. The returning steam from the turbine is piped to the condenser. The steam is converted to water and piped to the condensate storage tank. Water is pumped from this storage tank to the economizer and back into the boiler.

Description

The **Model H-181A** consists of a four module control panel which includes the following:

- Module 1 Boiler/Condensate System
- Module 2 - Turbine/Alternator
- Module 3 - Cooling Tower
- Module 4 - Control Bench

The Hampden Steam Power Plant Trainer consists of a control bench. Equipment behind the bench, such as the boiler, condenser, turbine, alternator, etc., is shown silkscreened on the lower section of the panel. All interconnecting piping is also shown so that the entire system is graphically represented. All pressure and temperature gauges are shown graphically where they appear in the system so that the student can monitor the readings of the gauges and know exactly where in the system these readings are being taken. All panel-mounted equipment is identified with silk-screened nomenclature.

Required Services

The following services are required by the owners

- Oil Line Feed or Gas Line Feed
- Drain



Model H-181A
Steam Power Plant Trainer

- Exhaust Flue
- Electric Power

CDL Information

The Hampden **Model H-181A** Boiler Trainer Computer Control System forms a unique research tool for studying a boiler's static and dynamic behavior as well as a test bed for realtime control scheme evaluations. The software in the system is comprised of two modules, consisting of:

- National Instruments A/D—Display Module
- National Instruments Control Module

Configurations

- **H-181A-G** Gas Fired Steam Power Plant System
- **H-181A-O** Oil Fired Steam Power Plant System



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