SUSTAINABLE TECHNOLOGY

GREEN JOBS OF THE FUTURE

Hampden Engineering Corporation

The World Leader in Teaching Equipment

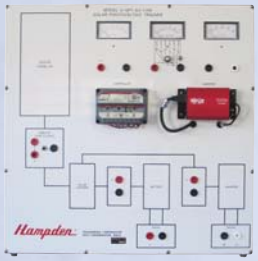
Hampden Engineering Corporation

SOLAR TECHNOLOGY

Back View

The **Model H-SPT-AC-1**
Solar Photovoltaic Trainer
offers the user
a practical alternative to
the difficulties
of supplying
electric power
to
remote locations.

Front View



Front View

The **Model H-SPT-AC-1-HS**
Table Top Solar Photovoltaic Trainer
is a control system trainer which lets the student technician
examine the electrical layout and
operational features normally associated with a photovoltaic
power source.

Back View

The **Model H-PVIT-1**
Photovoltaic Installers
Trainer
has been designed with the
latest Industrial/Commercial
components available.
The trainer will provide
the necessary
training in completing a
fully functioning,
grid-tied solar electric system.
This system
will have the capability
to be
fully monitored
and
controlled.

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POWERED BY THE SUN

The **Model H-SST-1A**
Solar System Trainer
is an actual
solar hot water heating system.
The trainer is mounted on
a mobile frame
and the
collector panel
is adjustable
for easy
positioning in
direct
sunlight.

The **Model H-SHSP-1**
Solar Heat and Solar
Photovoltaic Trainer
is a fully mobile solar heat solar photovoltaic control system trainer which lets the student technician examine the hot water and electrical layouts and operational features normally associated with a solar heating system and photovoltaic power source.

The trainer demonstrates the characteristics of the solar array, water heating, water circulation, storage battery, AC and DC distribution, and AC and DC loading. The complete water heating and charging sequence can be observed.

The H-SHSP-1 Solar System Trainer combines solar photovoltaic and solar hot water. The trainer can work as a self contained unit using energy from the sun to produce electricity and hot water.

The **Model H-WPG-1B Wind Powered Generator**
has been designed to provide the student with the basic understanding of how wind generators function as an alternate source of energy.

Cutaway view
of
wind turbine
generator

H-WPG-1B-CA
Wind Powered
Generator Cutaway
provides the student with the ability to understand the internal workings of an actual 400 watt wind generator.

The **MODEL H-WTS37-DP Distribution Panel**
allows the user the ability to connect to the Wind Generator's power source safely through circuit breakers. It also includes meters to monitor the output voltage and current.

The **MODEL H-WTS37-CA**
Wind Turbine Cutaway

The Hampden **Model H-WTS37-CA** Wind Turbine Cutaway demonstrates the internal operation of a wind generator. The Wind Turbine is mounted on a mobile base with two locking castors. For safety reasons the turbine blades have been cut down. The turbine is fully motorized, and is designed to rotate at approximately 3 rpm. The motor is connected to the blade via a slip clutch system that provides an added level of safety. The cutaway areas on the turbine allow full visual access to the internal workings of a wind turbine, such as the alternator, gears, inverter and isolator system. The Hampden **Model H-WTS37-CA** comes with complete detailed decal components. Includes control panel with RPM meter.

The **MODEL H-WTS37**
Wind Turbine with Tower Adapter
is a powerful way to make use of the wind for energy.

Rated Capacity	5 kW peak
Weight	170 lbs / 77 kg
Rotor Diameter	12 feet / 3.72 meters
Swept Area	115.7 ft² / 10.87 m²
Type	Downwind rotor w/ stall regulation control
Direction of Rotation	Clockwise looking upwind
Blades	3 Fiberglass reinforced composite
Rated Speed	50 – 230 rpm
Shutdown Speed	370 rpm
Tip Speed	66 – 213 f/s / 9.7 – 63 m/s
Alternator	Slotless permanent magnet brushless
Yaw Control	Passive
Grid Feeding	Interactive 120/240 VAC, 50-60 Hz and 120/208 VAC, 60 Hz, 3 Phase
Braking System	Electronic stall regulation w/ redundant relay switch control
Cut-in Wind Speed	8 mph / 3.5 m/s
Rated Wind Speed	20 mph / 9 m/s
User Control	Wireless 2-way interface remote system
Survival Wind Speed	140 mph / 63 m/s
Total Harmonic Distortion	2.7% at 2400W, meets UL 1741 and IEEE 1547.1 requirements
Frequency Accuracy	± 0.02 Hz
Voltage Accuracy	± 2.0 V (line to neutral)
Surge Rating	IEEE 1547 Surge rating B

NOTE: Pole, wiring and installation to be provided by school / owner

Standard Products…Designed to Meet Your Growing Needs!

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HEAT PUMP – GEOTHERMAL

The **Model H-HPT-3 Heat Pump Trainer** is designed for use with a wide variety of fossil fuel furnaces, electric furnaces, air handlers, and evaporator coil combinations.

The **Model H-GHT-4 Gas Fired Warm Air Heating Trainer** provides hands-on training by allowing students to conduct tests and adjustments on a modern forced air gas modulating furnace.

The **Model H-GTL-1 Geothermal Trainer** provides hands-on training by allowing students to conduct tests and adjustments on a modern Geothermal Heat Pump.

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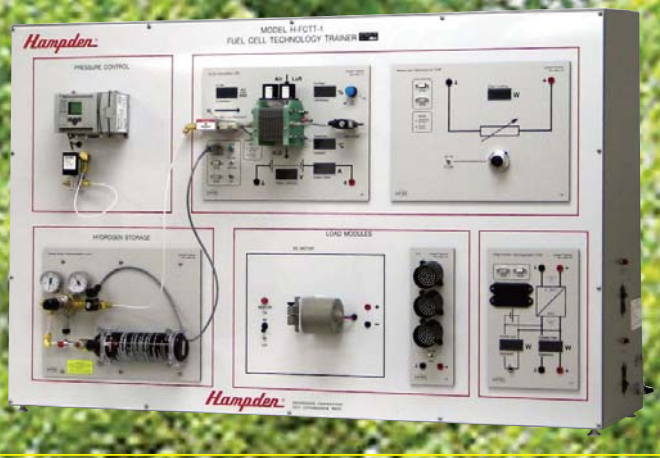
FUEL CELL – ETHANOL – BIO-DIESEL

The **Model H-BIO-100**
Bio Diesel Demonstrator
is ideal for the small producer using the same protocol and with the same quality construction as the larger units.
Bio Diesel units are chosen for their rugged design, ease of use, no wash process protocol and price/capacity ratio.
The H-BIO-100 is capable of producing up to 26.5 gallons per batch.



The **Model H-FCTT-1**
Fuel Cell Technology Trainer
allows the student to create a grid independent power supply that uses only hydrogen as its fuel.

The **Model H-6150-TT**
Table Top Liquid-To-Liquid Extraction Demonstrator
option has been developed to permit student study of the fundamentals of a small scale liquid-to-liquid extraction stem.
In addition to demonstrating the hydrodynamics of liquid-to-liquid extraction systems and interface control techniques, this unit can also be used to determine the mass transfer rates, heat transfer coefficients, extraction efficiency, and operating conditions.

The **Model H-ETS-1A**
Ethanol Production Process System
is designed to facilitate the instruction of students on the process required to produce ethanol for experimental purposes.

Ethanol is a very promising fuel alternative to oil
since sources are widely available
and
ethanol is clean-burning.

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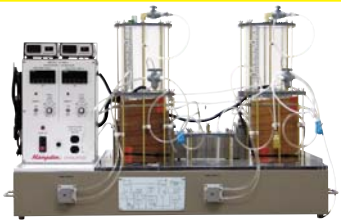
WATER/WASTEWATER TECHNOLOGY

The **Model H-6515 Anaerobic Digester** is a bench top trainer designed to demonstrate the fundamentals of the anaerobic treatment processes. Anaerobic treatment processes involve bacteria which function only in the absence of air.



The **Model H-6518 Aerobic Digester** is a bench top trainer designed as a comprehensive study facility of biological water treatment processes.

The **Model H-6520 Infiltration Demonstrator** investigates the infiltration rates of different soil types and soil surface treatments. (Shown with accessories)

The **Model H-RPT-1 Residential Piping Trainer** demonstrates the process of a low flow pressure assisted toilet system.

The **Model H-PST-1 Plumbing System Trainer** demonstrates the process of using gray water in toilet flushing systems.

Hampden is committed to providing industry-leading technology.

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GREEN MECHANICAL COUNCIL

Hampden® ENGINEERING CORPORATION

99 Shaker Road P.O. Box 563, East Longmeadow, MA 01028-0563 • TEL. (413) 525-3981 • (888) HEC-CORP • FAX (413) 525-4741