

Ethanol Process System

Educational Training Equipment for the 21st Century

Bulletin 132-130F

H-ETS-1A

Ethanol Production Process System

Purpose

The Hampden **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. The student will be able to observe and control the process of producing ethanol from corn, sugar, sorghum, fruits or several other sources. When using this unit along with the **Model H-6150-TT** Liquid-to-Liquid Extraction Demonstrator option, it is possible to produce ethanol with high purity.

Description

The Hampden **Model H-ETS-1A** Ethanol Production Process System utilizes a mixture called a “mash” which is produced when the ground material is mixed with water. This unit consists of:

- Mobile Steel frame and panel assembly
- Cooling water reservoir w/ sight glass (10 gallon)
- Cooling water supply pump
- Heated water reservoir w/ sight glass and 1000W heater (3 gallon)
- Heated water supply pump
- Grinding mill w/ speed control
- Cyclone transport system
- Cooker/Fermenter w/ sight glass
- Mixer, 20–2000 rpm
- Boiler w/ sight glass and 1000W heater
- Bottoms drum w/ sight glass
- Material transfer pump w/ solenoid dirrectional control
- Condensate drum w/ sight glass
- Vapor condenser
- Control panel
- Temperature control (2)
- Pump control (3)
- Digital temperature display
- Thermocouple selector switch (4-position)
- Thermocouples (8)
- Input: 208/230VAC - 1Ø - 60Hz

MODEL H-6150-TT
Tabletop Liquid-to-Liquid Extraction Demonstrator



MODEL H-ETS-1A Ethanol Production Process System
Dimensions: 72"H x 79"W x 24"D
Shipping Weight: 925 lbs

Experiments

- Effect of temperature on ethanol purity
- Use of different raw materials to produce ethanol
- Effect of type of yeast added on fermentation time
- Effect of fermentation time on ethanol yield

Options

- ◆ Tabletop Liquid-to-Liquid Extraction Demonstrator (**H-6150-TT**)
- ◆ Measurement Equipment
- ◆ “CDL-L” Add-on Package consisting of:
 - Analog Input Module, Thermocouple
 - Isolated USB/RS415 coverter Module
 - Power Supply — 24 VDC
 - 6-ft Computer Cable
 - LabVIEW® Control Software

Computer is included. Templates for LabVIEW® control software are included.

Specify **H-ETS-1A-CDL-L** when ordering

All Hampden units are available for operation at any voltage or frequency



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