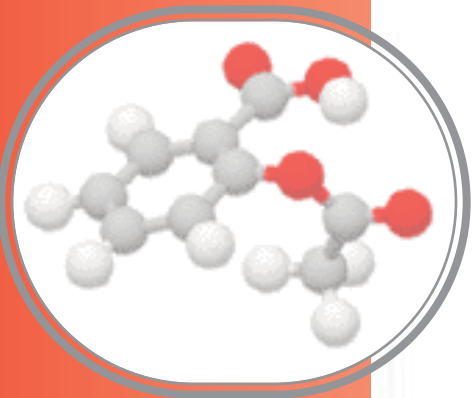
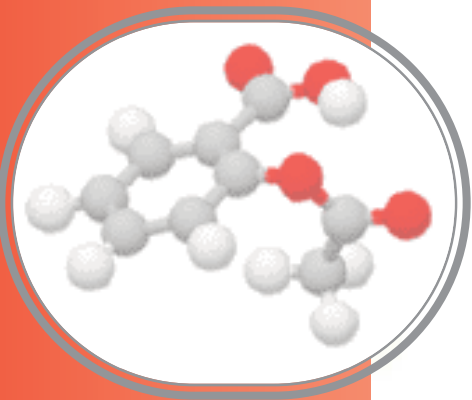


CHEMICAL ENGINEERING



Hampden[®]
ENGINEERING CORPORATION



CHEMICAL ENGINEERING SYSTEMS

Chemical Engineering is the chemical processes involving the design and maintenance used by large-scale manufacturers. Chemical engineers are responsible for the availability of the modern high-quality materials that are essential for running an industrial economy. It is a broad field that encompasses many subfields, such as biotechnology, nanotechnology, mineral processing, fluid dynamics, environmental science, materials science and thermodynamics. **Hampden Engineering** offers a wide variety of trainers and demonstrators that can provide the future Chemical Engineer with the knowledge needed to succeed in this broad field.



Evaporation / Extraction / Distillation

—Evaporation is the process by which atoms and molecules gain enough energy to enter the gaseous state. Rain and clouds are the result of evaporation. Solar Energy drives evaporation of water from the moisture in our soil, our lakes and oceans.

—Extraction can be used to separate a substance selectively from a mixture, or to remove any unwanted impurities from a solution.

—Distillation is a method of separating chemical substances based on their differences. Distillation has a number of uses from separating crude oil into uses such as transport, power generation and heating, to distilling water to remove impurities, such as salt from sea water. **Hampden Engineering** offers demonstrators to help students understand these processes.

The Hampden **Model H-6140** Double Effect Evaporator is an industrial type unit which demonstrates the fundamental principles of a multi-effect type evaporator. The unit can also be used to demonstrate the fundamental principles of a single effect evaporator.



See back cover for other models available in Evaporation / Extraction / Distillation.



Chemical Reactors

Chemical Reactors are designed to contain chemical reactions. They deal with multiple aspects of chemical engineering and are designed to react to the maximum of any given reaction. Chemical Reactors are used to manufacture a wide variety of products including: polyvinyl chloride, epoxy resin, and pharmaceuticals, to name a few. **Hampden Engineering** offers several models that can help students to understand the workings of a Chemical Reactor System.

The Hampden **Model H-6252** Modular Chemical Reactor System is used to investigate the chemical reactor which is the most commonly used, important piece of equipment in a chemical plant. This apparatus permits the student to move from classroom theory to hands-on applications with practical training. The student will control the process, and measure those variables which control the reactor. This system is designed for table top mounting. All modules consist of bases with non-mar feet and incorporate disconnect hose connections or electrical interface connections where required.



See back cover for other models available in the Chemical Reactor System.

CHEMICAL ENGINEERING SYSTEMS

Hampden Offers a Complete Line of Demonstrators, Trainers, and Systems for all Specialties within Chemical Engineering



Heat and Mass Transfer

Heat Transfer is the passage of thermal energy from a hot to a cold body. Mass Transfer involves molecular and convective transport of atoms and molecules within a physical system. It includes both fluid flow and separation operations. **Hampden Engineering** can help students understand Heat and Mass Transfer with their trainers and demonstrators.

In modern industrial plants, the by-products of a process cannot be dumped into the environment. With gaseous effluents, harmful gases can be removed from effluent streams with a gas absorption column. The Hampden **Model H-6290** Gas/Liquid Absorption Column is a pilot plant scale unit which is designed to allow students to investigate the principles of packed tower absorption processes and hydrodynamics. In modern process plants, gas absorption columns find applications in gas scrubbers, e.g. treating flue gas; and in gas/liquid reactions, e.g. removing of caustic soda from a water stream.

See back cover for other models available dealing with Heat and Mass Transfer.



Process Control

Process Control deals with controlling the output of a specific process. Precise control of level, temperature, pressure and flow is important in many process applications. Process Control is a device or set of devices to manage, command, direct or regulate the behavior of other devices or systems. Process Control enables manufacturers to keep their operations running within certain limits and to maximize their profit while ensuring quality and safety. **Hampden Engineering** offers a wide variety of trainers and demonstrators that future Chemical Engineering students can use with their Process Control studies.

The Hampden **Model H-ICS-pHX** pH Control Trainer is designed to provide instruction on the measurement and control of pH. The process loop consists of two reagent pumps, one circulating pump, two reagent tanks, each with a gravity and pump circuit; one mixing tank with three controlled level output flow circuits and one controlled drain circuit and one storage tank with liquid transfer pump.

See back cover for other models available dealing with Process Control.



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

CHEMICAL ENGINEERING PROGRAM OVERVIEW

Evaporation, Extraction, Distillation

H-6140 Double-Effect Evaporator Demonstrator

H-6150 Liquid-to-Liquid Extraction Demonstrator

H-6160 Solid-to-Liquid Extraction Demonstrator

H-IDK-1 Desalination Process Trainer

H-6173-CDL Fractional Distillation System

Chemical Reactors

H-6250 Chemical Liquid Reactor Demonstrator

H-6252 Modular Chemical Reactor System

H-6260 Chemical Liquid Tubular Reactor Demonstrator

Heat and Mass Transfer

H-6180 Tray Drier Demonstrator

H-6210 Dynamics of Stirred Vessels

H-6270 Corrosion Studies Trainer

H-6271 Mass Transfer and Diffusion Coefficients

H-6290 Gas/Liquid Absorption Column

H-6410 Laboratory Pasteurizer

H-6807 Fluidation and Fluid Bed Heat Transfer Demonstrator

H-FPST-1 Flame Propagation and Study Trainer

Process Control

H-ICS-pHT pH Process Control Trainer with Faults

H-ICS-pHX pH Control Trainer

H-ICS-7627 Instrumentation and Control Modules

H-ICS-7617 Instrumentation and Process Control Trainer

H-ICS-8189 Process Control Trainer with Faults

H-ICS-8189-4 Instrumentation and Controls Trainer with Faults

H-ICS-8189-4pH Instrumentation Controls and pH Control Trainer with Faults



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