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Designed by engineers for engineers

Energy study forms a key aspect of learning in both first & second years as an engineering student. There are key concepts and principles that can be greatly enhanced by visualisation and experimentation, which positively impacts the learning process and therefore, pass marks.

PA Hilton's world-leading range enables clear and comprehensive learning of materials and their properties covering a variety of theories and topics.



Energy quantification C200 Bomb Calorimeter

- Allows measurement of the calorific value of liquid and solid fuels by a fundamental rate of rise method



Flame stability C552 Flame Propagation and Stability Unit

- Allows investigation of the relationship between flame speed and air – fuel ratio for a variety of slow burning gaseous fuels. Numerous accessories are provided to explore how flames can be controlled and manipulated



Fossil fuels

C492 Combustion Laboratory Unit

- Enables students to study many aspects of combustion theory and burner operation using the optional gas and oil burners. Domestic heating simulation can also be demonstrated via the in-built water temperature control
- Research paper based on this unit <https://www.mdpi.com/2071-1050/5/5/2098> Image is of a C492 at Portsmouth University



Energy transfer

H656 Boiling Heat Transfer Unit

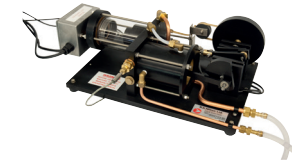
- Three modes of pool boiling observed easily
- Allows safe investigation into the normally dangerous condition of film boiling
- Ozone-friendly, low pressure, non-toxic working fluid
- Optional 'Computerised Data Acquisition Upgrade'



Engines

C100 Internal Combustion Engine Test Stand

- A regenerative engine test bed that allows the investigation of torque-speed, power-speed, specific fuel consumption, thermal and mechanical efficiency over a wide range of conditions on both petrol and diesel engines



H112R Stirling Engine

- Investigates one of the methods available to convert heat energy directly into work*
- *requires H112 base unit for operation



Energy demand

S220 Rankine Cycle Steam Turbine

- A desk-top, electrically heated, self-contained two-part unit which demonstrates a fully closed Rankine Cycle with sub-atmospheric condensing conditions. The unit combines the S211 turbine with an electrically heated steam generator plant.



Renewables

RE510 Educational PEM Fuel Cell

- Demonstrates a high watt density pem fuel cell, generating electrical power directly from hydrogen. Able to be electrically loaded both internally and externally by the operator.



RE540 Photovoltaic Trainer

- Demonstrates the practical application of a Solar (PV) Power Generation System



RE570 Horizontal Axis Wind Turbine

- Allows investigation of an efficient three phase to DC Horizontal Axis Wind Turbine for the use of power generation