P.A.Hilton Ltd

LABORATORY PROPOSAL

MECHANICAL ENGINEERING

P.A.Hilton Ltd.
'Engineered to enthuse, educate and endure'

Lab Planning Guide

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Introduction to P.A.Hilton Ltd.

P.A.Hilton Ltd is a leading brand name in the provision of educational teaching equipment for engineering. Founded in 1959, we offer customers the reassurance of our knowledge and experience in the field. We are committed to our customers and continue to support units supplied years and indeed decades ago with on-going sales and aftersales support. The longevity and reliability of our products speaks volumes about our high quality standards of production. We manufacture all products in the UK and test each item on our premises to ensure our high quality standards are adhered to before sending out each item. Our research and development team continue to further enhance our product range with the latest ideas and innovations. Unlike other manufacturers we do not simply scale-down industrial equipment for the lab, but start from the perspective of an engineering question or theorem which we then devise custom equipment to suit in a robust format. This lends itself to our motto:

'Engineered to enthuse, educate and endure'

We **enthuse** students by making engineering theorems come to life in the lab by our equipment

We solely focus on products that **educate** meaning our range is focused on learning outcomes with the student at the centre of the process

We build robust products to **endure** class after class of inquisitive students

Customer References -British Isles

P.A.Hilton Ltd. has helped to set up numerous Mechanical Engineering Labs around the world over the last half century. We can supply customer lists by country or by product on request. Relevant reference sites in the British Isles for P.A.Hilton Ltd equipment include:

Scotland & Northern Ireland

Queen's University Belfast

University of Edinburgh

Ulster University

Northern & Central England

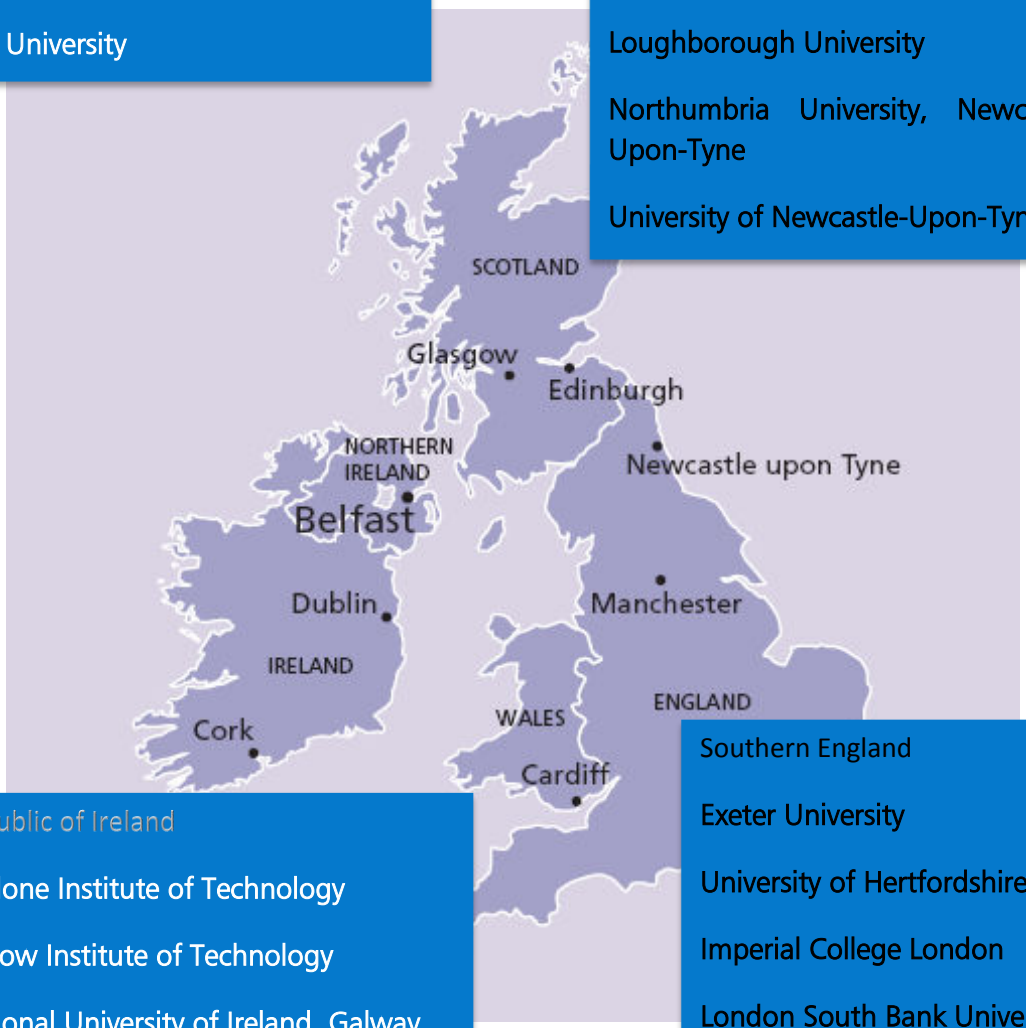
De Montfort University

Nottingham University

Loughborough University

Northumbria University, Newcastle-Upon-Tyne

University of Newcastle-Upon-Tyne



Republic of Ireland

Athlone Institute of Technology

Carlow Institute of Technology

National University of Ireland, Galway

Southern England

Exeter University

University of Hertfordshire

Imperial College London

London South Bank University

Relevant reference sites for P.A.Hilton Ltd equipment worldwide include:

Europe

Athlone Institute of Technology, Ireland

Cordoba University, Spain

Imperial College London, England

Pierre & Marie Curie University, France

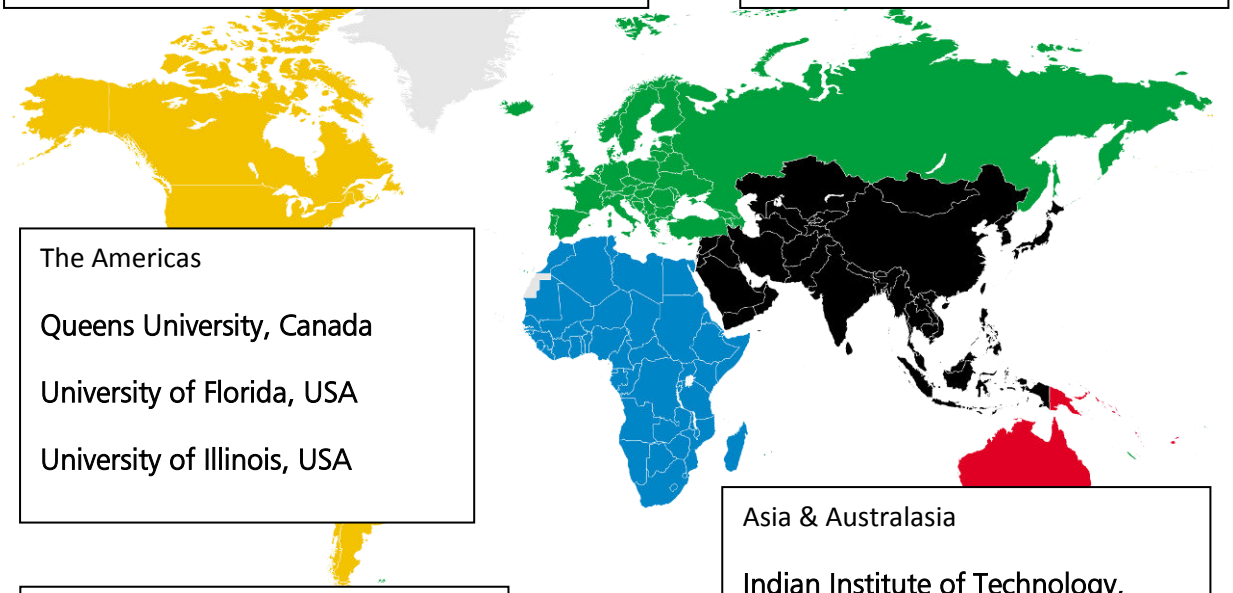
Strathclyde University, Scotland

Middle East

College of the North Atlantic, Qatar

Ministry of Manpower, Oman

Zamil Training Centre, Saudi Arabia



The Americas

Queens University, Canada

University of Florida, USA

University of Illinois, USA

Africa

Air Force Training Centre Marrakech (ERA), Morocco

Covenant University, Nigeria

Ministry of Education, Egypt

Zawiyah University, Libya

Asia & Australasia

Indian Institute of Technology, Madras, India

Nanyang Polytechnic, Singapore

Turkmenistan Polytechnic Institute, Turkmenistan

University of Technology, Malaysia

University of Queensland, Australia

Furthermore, individual Product Distribution Lists are available on request, demonstrating the wide range of institutions to which P.A.Hilton Ltd equipment has been supplied.

We consider all of our customer sites references, so if you would like us to arrange to speak to an existing customer or visit a lab site, please let us know and we can facilitate this at a mutually convenient time.

Product Range Overview

Although curriculums vary widely from institution to institution, the below list gives an overview of typical core areas in Mechanical Engineering courses and recommended products.

Many products have a number of optional extras available which extend and enhance their experimental capabilities further. Furthermore, additional products are available. Contact your local representative for more details if a product you are looking for is not listed.

Subject Area *(Listed Alphabetically)*	Recommended Products	Advanced / Specialist
Air Conditioning & Ventilation	A660 Air Conditioning Laboratory Unit B500 Ventilation Trainer *For more see 'Refrigeration & Air Conditioning' brochure*	
Combustion	C100 Engine Test Stand C200 Bomb Calorimeter C492 Combustion Laboratory Unit C552 Flame Propagation & Stability Unit *For more see 'Energy' brochure*	
Dynamics	HTM66 Static & Dynamic Balancing HTM67 Whirling of Shafts HTM68 Balancing of Reciprocating Masses HTM70 Gyroscope HTM90 Machinery Diagnostic System *For more see 'Strength of Materials' brochure*	
Fluid Mechanics	F100 Air Flow System F300 Compressible Flow System HB100 Hydraulics Bench *For more see 'Compressible Flow & Aerodynamics' brochure*	
Heat Transfer	H102 Heat Exchanger Series H112 Heat Transfer Series H656 Boiling Heat Transfer Unit H694 Fluidisation & Fluid Bed Heat Transfer Unit *For more see 'Heat Transfer' brochure*	H352 Cross Flow Heat Exchanger H931 Steam to Water Heat Exchanger
Materials	HSM1cD Advanced Beam Testing HSM19D Rotating Fatigue Machine HSM41 Pendulum Impact Tester (25J) HSM43 Torsion Testing Machine (100Nm) HSM58 Universal Material Tester (20kN) *For more see 'Strength of Materials' brochure*	HSM34 Creep Testing Machine HSM38 & HSM45 Polariscope
Measurement Fundamentals	F110 Pressure Measurement Bench H814 Humidity Measurement Bench H981 Temperature Measurement Methods and Calibration Unit HSM17 Calibration of Electrical Resistance Strain Gauges HSM18 Electrical Resistance of Strain Gauges	

Refrigeration	R634 Refrigeration Cycle Demonstration Unit R515 Mechanical Heat Pump R560 Water Water Heat Pump R833 Air and Water Heat Pump R715 Refrigeration Laboratory Unit *For more see 'Refrigeration & Air Conditioning' brochure*	R434 Vortex Tube Refrigerator R534 Thermoelectric Heat Pump 812 Water Chiller Trainer 816 Absorption Refrigeration Demonstrator
Renewables	RE540 Photovoltaic Trainer RE550 Flat Plate Solar Energy Collector RE570 Horizontal Axis Wind Turbine RE580 Combined Wind & Solar Generator Demonstrator *For more see 'Energy' brochure*	RE510 Educational PEM Fuel Cell
Structures	HST2 Simple Suspension Bridge HST17 Forces in a Truss (Resolution) HST45 Buckling of Struts HST46 Combined Shear Force & Bending Moments Apparatus *For more see 'Structures' brochure*	HST19 Pin-Jointed Frameworks HST16 Redundant Truss
Thermodynamics	F860 Single Stage Compressor Test Unit F865 Two Stage Compressor Test Unit H813 Dew Point Hygrometer H050 Boyles Law Demonstrator H893 Bench Top Cooling Tower P372 Jet Propulsion Test Stand S220 Rankine Cycle Steam Turbine *For more see 'Heat Transfer', Compressible Flow & Aerodynamics' and 'Energy' brochures*	H411 Flow Boiling Demonstration Unit H911 Film & Dropwise Condensation
Vibrations & Acoustics	HVT5 HVT12 Universal Vibration Apparatus HVT13 Torsional Vibration Apparatus HVT14 Spring Mass Vibration *For more see 'Vibration' brochure*	B400 Acoustic Impedance Tube B600 Noise Control Demonstration Unit HVT20 Stability of Structures Apparatus

Laboratory Layout & Design

Whether a fully new laboratory is being constructed or an existing laboratory is being refurbished, it is crucial to ensure physical laboratory space is of optimum design to contain the units. If modifications are required, it is best to plan these in advance of receiving equipment on-site.

Services Required:

- Once you have selected the units of interest, refer to the technical leaflets or website for more information on the services required, which may include:
    - Water
    - Drain
    - Electricity
    - Peripherals such as computers/laptops/tablets
- Lab furnishing and layout - consider:
    - Weights and dimensions of units
    - Storage of peripherals
    - Access for loading and transporting units
    - Working areas for students and technicians

How we can help:

- Pre-purchase – we can assist with:
    - Lab planning
    - Selection of appropriate products against syllabus requirements
    - Site visits and advice on layout and services required.
- Post-purchase – we can assist with:
    - Installation
    - Commissioning
    - Training of Technical and Teaching staff on-site

Next Steps

Above: The Opening Ceremony Newcrest Mining Laboratory at the University of Queensland, Australia, the culmination of many months of planning at the University with the assistance of P.A.Hilton Ltd.

We would be pleased to assist with helping you take the next steps towards completing your new Mechanical Engineering Laboratory.

We have provided information within this guide as a general overview, so do get in touch so we can put together a package suited to your individual requirements.

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