EMONA
INSTRUMENTS PTY LTD

ENGINEERING TEACHING EQUIPMENT

2026 SHORT FORM

Aerospace
Biomedical
Civil & Environmental
Chemical
Electrical
Mechanical
Mechatronics & Robotics
Physics
3D & Additive Manufacturing
Test & Measurement

www.emona.com.au

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AEROSPACE ENGINEERING

TOPICS COVERED

- Wind Tunnel Systems
- Jet Engines & Turboshafts
- Flight Control & Dynamics
- Aircraft Structures
- Unmanned Aerial Vehicles
- Avionics & EFIS

JET ENGINE TEST CELL

Brayton Cycle, Compressor & Turbine Performance, Emissions

STRAIN ANALYSIS LAB

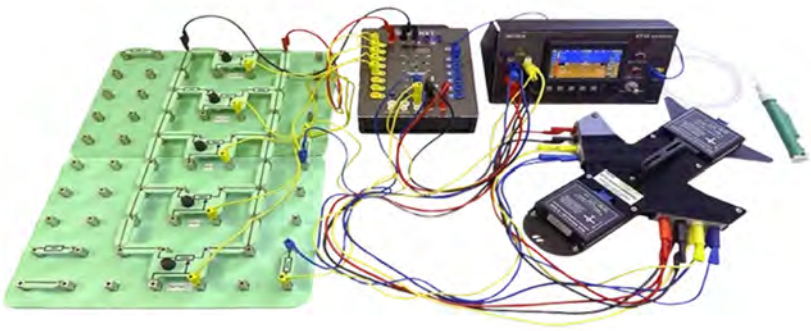
Bending, Shear, Torsion and Combined loads

FLIGHT CONTROL & UNMANNED AIR VEHICLES

AERO2 and QDrone 2 Quad-Rotor Drone

WIND TUNNEL SYSTEMS

Subsonic & Supersonic. Variable Sizes & Air Speeds



EFIS AND AVIONICS

Electronic Flight Information Systems

MANUFACTURING SPECIALISTS

- www.armfield.com
- www.quanser.com
- www.matrixtsl.com
- www.turbinetechnologies.com

BIOMEDICAL ENGINEERING

TOPICS COVERED

- Biomedical & Mechatronics System
- Materials Testing
- Wireless Data Acquisition
- Bioinstrumentation (EEG, EMG, Sp02, Respiration)

ULTRASOUND & COMPUTED TOMOGRAPHY (CT)

Ultrasonic Computer Tomography (CT) and Scan Methods

BIORADIO

Wireless, Programmable, Physiological Logging System

X-RAY APPARATUS AND CT

X-ray Apparatus & Computed Tomography Module

STRENGTH OF MATERIALS

Universal Materials Tester, Fundamentals of Mechanics

MANUFACTURING SPECIALISTS

- www.glneurotech.com
- www.gampt.de

CIVIL & ENVIRONMENTAL ENGINEERING

TOPICS COVERED

- Fluid Mechanics & Hydraulics
- Hydrology
- Water Treatment
- Irrigation Water Management
- Structural Analysis & Design
- Strength of Materials

ENVIRONMENTAL HYDROLOGY

Fluvial Mechanics, Hydrographs, Permeability, Groundwater

STRUCTURAL ENGINEERING

Forces & Moments, Forces in a Truss, Strength of Materials

PUMPS AND TURBINES

Series & Parallel Pumps, Pelton & Francis Turbines

OPEN CHANNEL & CLOSED CHANNEL FLOW

Flumes & Fluid Mechanics Demonstrators

WATER TREATMENT

Aerobic & Anaerobic Digesters, Aeration, Permeability

MANUFACTURING SPECIALISTS

- www.armfield.com

CHEMICAL ENGINEERING

TOPICS COVERED

- Reaction Engineering
- Heat & Mass Transfer
- Biochemical Engineering
- Process Control
- Water Treatment
- Membrane Science
- Separation Processes
- Unit Operations

CHEMICAL REACTION ENGINEERING

CSTR (single & in series), Tubular, Batch, Laminar, and Plug flow

FLUIDISED BEDS

Fixed and Fluidised Bed Apparatus

DISTILLATION

Continuous or Batch Distillation Columns

ABSORPTION & ADSORPTION

Gas Absorption Column & Fixed Bed Adsorption

PROCESS CONTROL

Level, Flow, Temperature, Pressure. Single Loop & Cascade

MANUFACTURING SPECIALISTS

- www.armfield.com
- www.quanser.com
- www.darbytech.ca

RENEWABLE ENERGY & HYDROGEN

TOPICS COVERED

- Wind Turbines
- Hydro Electric Power
- Hydrogen Fuel Cells
- Electrolysers & H2 Storage
- Solar PV, Concentrated Solar
- Geothermal Energy
- Energy Management
- Hybridisation & Grid Integration

RENEWABLE ENERGY SYSTEMS

Hybrid Renewable Energy Trainer & New Energy Lab (PV, Wind, Fuel Cells, Electrolyser, Batteries)

HYDROGEN & FUEL CELL TECHNOLOGY

Fuel Cells (12W-30kW), Electrolysers, Metal Hydride

HYDRO-ELECTRIC POWER TRAINING SYSTEMS

Hydro-Electric Power Training System

SOLAR ENERGY CONCENTRATOR

Solar Energy Concentrator Training System

MANUFACTURING SPECIALISTS

- www.heliocentris.com
- www.bedoeng.com
- www.amatrol.com

ELECTRICAL ENGINEERING

TOPICS COVERED

- AC & DC Power Supplies
- Electrical Machines and Drives
- Electronics Labs
- High Voltage Testing
- Test & Measurement
- Telecommunications
- Signals & Systems
- Power System Simulation

SMART GRIDS & POWER SYSTEMS

Generation, Energy Flow, Storage, Consumption, SCADA

FUNDAMENTALS OF ELECTRICAL ENGINEERING

Breadboards, Electronics, Photovoltaics, Telecoms, Control

HIGH VOLTAGE LABORATORY

AC, DC, Impulse—Up to 500kV

ELECTRICAL MACHINES AND DRIVES

1kW and 3kW Motors, Loads, Meters

DISSECTIBLE MACHINES SYSTEMS

DC, AC, Single & Three Phase Motors / Generators

TEST & MEASUREMENT

Oscilloscopes, Generators, Spec Analysers, DC & AC Power

ELECTRICAL ENGINEERING

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- AC & DC Power Supplies
- Electrical Machines and Drives
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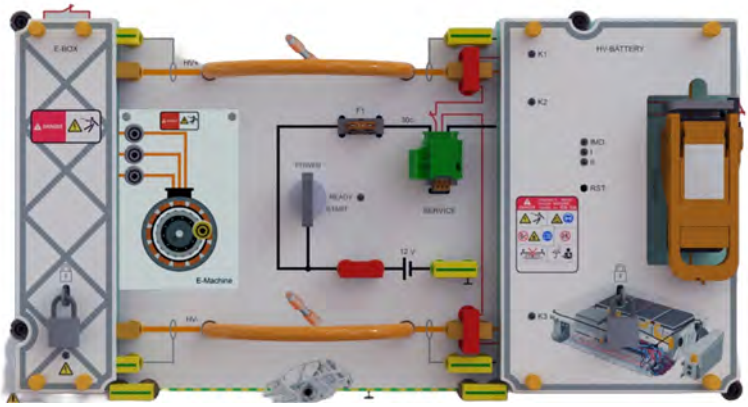
- Power System Simulation



HIGH VOLTAGE BATTERY TECHNOLOGY

Motor Vehicle Mechatronics, System & High Voltage Technology

AC/DC POWER SUPPLY AND LOADS

Battery Testing , PV and Renewables

CONTROL SYSTEMS & DYNAMICS

Ball & Beam, Rotary Inverted Pendulum, Active Suspension

REMOTE / WEB CONTROLLED EXPERIMENTS

AC/DC Circuits, Circuit Theory, DC Logic, Telecommunications

MANUFACTURING SPECIALISTS

- www.quanser.com
- www.leybold-shop.com
- www.tercosweden.com
- www.kandh.com
- www.emona-tims.com

TELECOMMUNICATIONS

TOPICS COVERED

- Modulation & Coding
- Software-Defined Radio (SDR)
- Fiber Optics
- Signals & Systems
- 4G & 5G Theory
- Antenna Theory & Operation
- Microwave Propagation
- RF Test & Measurement

TELECOMS EXPERIMENT BOARD

Modulation & Coding, SDR, Fiber Optics + Simulation Software

ADVANCED EXPERIMENT PLATFORMS

Wireless Technologies, 4G & 5G Theory, Digital Communications

ANTENNA LABS

Antenna Operations, Design, Frequencies of 650-4400MHz

MICROWAVE TRAINERS

Polarization, Absorption, Interference, Diffraction & Refraction

RF TEST & MEASUREMENT

Spectrum Analysers (26.5Ghz) , VNA and RF Generators

MANUFACTURING SPECIALISTS

- www.leybold-shop.com
- www.emona-tims.com
- www.emona.com

AI & MECHATRONICS

TOPICS COVERED

- Control Systems
- Autonomous Systems
- Haptic Feedback Systems
- Open Architecture Robotics
- Smart Sensors
- Applied AI
- Industrial Applications & Process Control

ULTRA-LIGHTWEIGHT ROBOTIC ARMS

Robotics (portable, programmable), Smart sensors

FLEXIBLE INTEGRATED ASSEMBLY SYSTEM

Industrial Applications, Integrate Automation, Manufacturing

AUTONOMOUS GROUND ROBOTS

Mobile Robotics, SLAM & Warehouse Automation

SELF-DRIVING CARS

Self-driving Concepts, Research & Project-based Learning

QUBE-SERVO 3

Servo Motor, Rotary Control & Digital Twins

MANUFACTURING SPECIALISTS

- www.smctraining.com
- www.quanser.com
- www.kinovarobotics.com

MECHANICAL ENGINEERING

TOPICS COVERED

- Thermodynamics
- Refrigeration & Air Conditioning
- Combustion Engines
- Kinematics & Dynamics
- Statics & Mechanisms
- Structural Behaviour
- Vibration
- Machine Dynamics & Balancing
- Fluid Mechanics

THERMODYNAMICS

Saturation Pressure & Calorimeter, Expansion of a Perfect Gas

HEAT EXCHANGERS

Plate, Tubular, Shell & Tube, Jacketed, and Cross Flow Exchangers

STEAM TURBINE POWER SYSTEM

Rankine Cycle, Boiler, Steam Turbine, Cooling Tower

PUMPS, FANS & TURBINES

Series & Parallel Pumps, Wind Power

MACHINERY DIAGNOSTIC TRAINING SYSTEM

Vibration Measurement, Balancing Shafts, Interpreting Freq Spectra

MATERIAL TESTING LABORATORY

Bench Impact Tester, Tensile & Brinell Testing Machine

MECHANICAL ENGINEERING

TOPICS COVERED

- Thermodynamics
- Refrigeration & Air Conditioning
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- Kinematics & Dynamics
- Statics & Mechanisms
- Structural Behaviour
- Vibration
- Machine Dynamics & Balancing
- Fluid Mechanics

REFRIGERATION

Computer Controlled Vapour-Compression & Controlled Air Units

AIR CONDITIONING

Computer Controlled Recirculating Air

STATICS & VIBRATIONS

Friction, Strength of Materials, Theory of Materials, Torsion

SOLID MECHANICS

Civil, Materials, Fundamental Mechanics, Beams, Trusses

FLUID MECHANICS & DYNAMICS

Fluid & Pipe Friction, Pumps

MANUFACTURING SPECIALISTS

- www.armfield.com
- www.turbinetechnologies.com
- www.tercosweden.com
- www.matrixtsl.com

ADVANCED MANUFACTURING

TOPICS COVERED

- Industry 4.0 / Smart Factories
- Collaborative Robotics
- Industrial Process Control
- PLC Programming
- Hydraulics & Fluid Power
- System Integration & Networking
- Predictive Maintenance
- Digital Twins & Augmented Reality

INDUSTRY 4.0 & SMART FACTORY SYSTEMS

Training System for Industry 4.0, Industrial Process Control

HYDRAULICS & PNEUMATICS

Fluid Power, Pneumatic Actuation

ROBOTICS & AUTONOMOUS SYSTEMS

Collaborative & Industrial Robots, Robotics Training System

PLCS & ADVANCED CONTROL SYSTEMS

Programmable Logic Controllers, Embedded Systems

MANUFACTURING SPECIALISTS

- www.smctraining.com
- www.quanser.com
- www.amatrol.com
- www.kinovarobotics.com

PHYSICS EXPERIMENTS & LABS

TOPICS COVERED

- Mechanics
- Heat
- Optics & Photonics
- Atomic & Nuclear Physics
- Solid-State Physics
- Electricity & Electronics
- Desktop Quantum Computers

ELECTRON SPIN RESONANCE

Quantum Spin Mechanics, Zeeman Splitting, Resonance

NUCLEAR MAGNETIC RESONANCE

Nuclear Spin, Magnetic Moments, Relaxation Times

ATOMIC & NUCLEAR PHYSICS

Rutherford Scattering & Normal Zeeman Effect

QUANTUM COMPUTING

Desktop, Room Temperature Quantum Computers

MANUFACTURING SPECIALISTS

- www.leybold-shop.com
- www.spinquanta.com

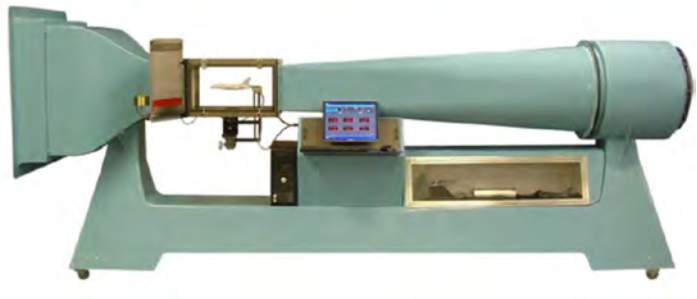
RESEARCH - ENGINEERING & PHYSICS

TOPICS COVERED

- Wind Tunnels
- Research Flumes & Wave Channels
- Hydrogen Fuel Cells
- Biofuels & Biodiesel
- Fire Testing & Reaction to Fire
- Earthquake Simulators & Structural Dynamics

DRONE AUTONOMOUS AIR VEHICLE

NVIDIA SOM, High Resolution Camera, Open Architecture, WiFi



WIND TUNNELS

Aerodynamics, Fluid Dynamics & Airflow (Lift, Drag, Pressure)

TEACHING & RESEARCH FLUMES

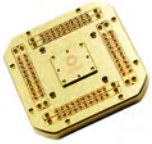
Fixed/Tilting Bed, Glass Sided, Wind & Wave Generators

PCB PRINTERS

Multilayer Printed Circuit Boards, 3D Circuitry

3D METAL PRINTERS

Fiber laser, 10+ Metals



SUPERCONDUCTING QUANTUM PRODUCTS

Computers, QPU / Quantum Chips, Control & Measurement

RESEARCH - ENGINEERING & PHYSICS

TOPICS COVERED

- Wind Tunnels
- Research Flumes & Wave Channels
- Hydrogen Fuel Cells
- Biofuels & Biodiesel
- Fire Testing & Reaction to Fire
- Earthquake Simulators & Structural Dynamics

SHAKE TABLES

Earthquake Simulation, Structural Testing, Vibration Analysis

HEXAPOD FOR ADVANCED RESEARCH

Six Degrees of Freedom Motion Platform, Manipulator Robotics

TEST & MEASUREMENT

High Resolution Oscilloscopes & RF Test Equipment

AC/DC POWER SUPPLIES

Grid Simulation, PV Profile Emulation, Smart Grids

FIRE TESTING TECHNOLOGY

Reaction to Fire Testing, Cone Calorimetry

MANUFACTURING SPECIALISTS

- www.aerolab.com
- www.quanser.com
- www.fire-testing.com
- www.nano-di.com
- www.eos.info

RESEARCH - FOOD TECHNOLOGY

TOPICS COVERED

- Food & Beverage Technology
- Liquid Foods
- Flavours & Fragrances
- Edible & Essential Oils
- Pharmaceuticals
- Membranes/RO

UHT / HTST / PASTEURISATION

Modular HTST/UHT Systems—From 1L to 300L/hr

CARBONATION, CAPPING, FILLING

Cans, Glass & PET. Can Seaming, Screw & Crown Capping

SPRAY DRYER

Bench & Tall Form Spray Dryer Systems

STERILE FILLING SYSTEM

FT83XA Sterile Filling System

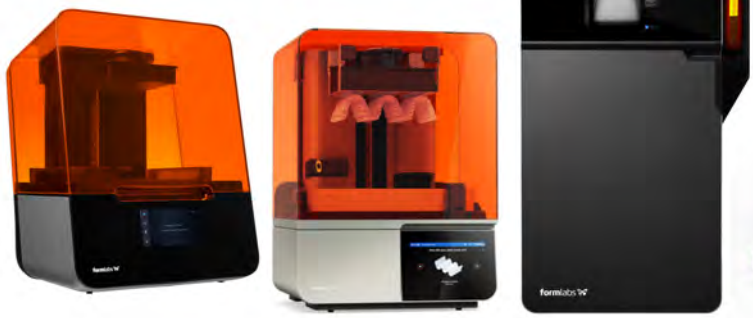
MANUFACTURING SPECIALISTS

- www.armfield.com

3D PRINTERS & ADDITIVE

TOPICS COVERED

- SLA & SLS Printing
- Engineering & Biocompatible Resin
- Thermoplastics - PLA, TPU, Nylon, ONYX
- Composite Carbon Fibre Reinforcement
- Metals - Stainless Steel, Copper, Tool Steel, Inconel
- Electronics & PCB Printing



FORMLABS

Professional SLA & SLS 3D Printing Solutions

ELECTRONICS & PCB PRINTING

Multilayer PCBs with Conductive & Insulating Inks

BAMBULAB

Thermoplastics with Laser Module

MARKFORGED

Industrial Composite & Metal 3D Printers

MANUFACTURING SPECIALISTS

- www.markforged.com
- www.bambulab.com
- www.formlabs.com
- www.voltera.io
- www.nano-di.com
- www.eos.info

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Installation Testing: www.installtest.com.au
TIMS Telecoms Trainer: www.tims.com.au

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