

Mechatronics Research Centre

Innovation through integrated mechanical, electronic and software engineering

The Mechatronics Research Centre (MRC) is a highly successful research unit within De Montfort University (DMU).

The MRC has sought and established an international reputation for its research work in the general domain of computer controlled machines and machine systems, systems engineering and integration and is one of the UK's premier centres for mechatronics systems research operating at a national and international level.

Mission

The MRC aims to conduct high quality fundamental and applied research within the integrated disciplines of mechanical, electronic and computing/software engineering that is innovative and relevant to the needs of UK and European industry and society.

Background

The Mechatronics Research Centre was formed in 1994. The centre is one of the UK's premier centres for mechatronics research with projects funded by a range of agencies including the EPSRC, ESRC, TSB, EU, KTP, The Royal Society, Regional Development Agencies and industry partners. The centre has consciously developed active international research links and collaborations.

Expertise

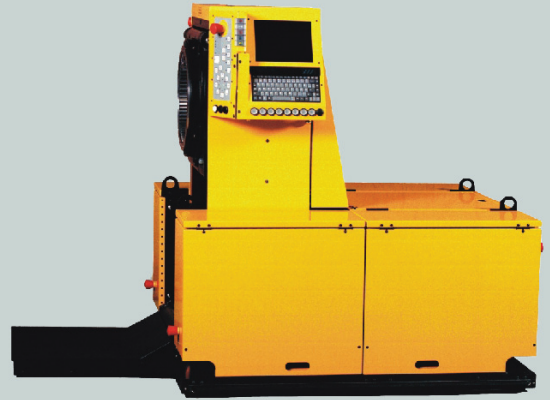
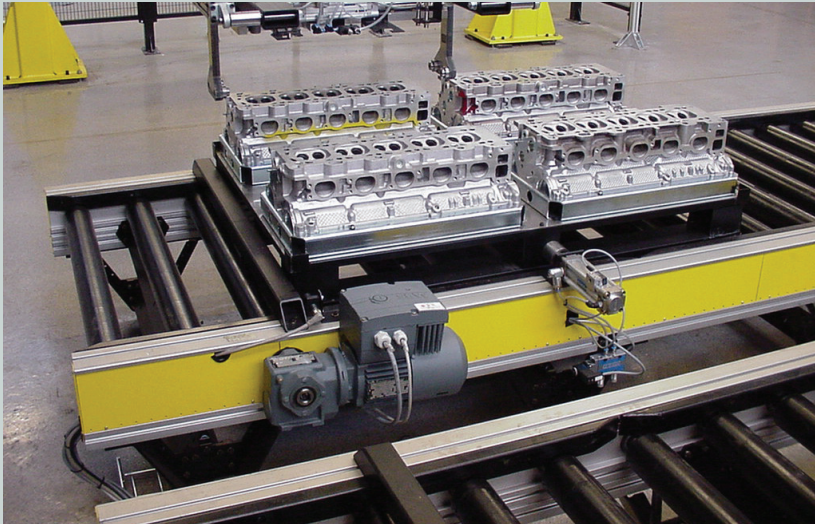
The centre offers businesses in the mechanical, electronic and computing and software engineering sectors expertise and support including:

- e-home technologies/services and smart-home technologies
- component based architectures and system design for machine systems
- Distributed control network technologies
- Smart actuators and sensory systems design
- System modelling and simulation
- Virtual engineering (digital manufacturing)
- Control systems design, data acquisition and telemetry
- Information management systems design and implementation
- Internet-based technologies
- Robotics and automation
- Advanced pneumatic servo-actuator systems design

Facilities

The Mechatronics Research Centre operates from the Intelligent Machines and Automation Systems (IMAS) laboratory, facilities include:

- Automation systems including industrial robots, AGVs, conveying systems
- A virtual engineering suite and virtual reality platform
- Modelling and design suites from devices, applications through to systems levels
- A comprehensive range of rapid prototyping platforms for instrumentation and control
- A broad range of embedded system development platforms for various types of applications, including telemetry
- Smart appliances with data acquisition and communication capabilities
- e-Home technologies/smart home demonstrators
- Motion control and servo-pneumatic test rigs



Key Collaborations

The centre has established considerable collaborative national and international links with industrial organisations, public sector, trade associations, charities and academic partners. These include:

Academic

- MSTU Bauman (Russia)
- MSTU Stankin (Russia)
- University of Skovde (Sweden)
- RMIT University (Australia)
- CSIRO (Australia)
- University of Ingolstadt (Germany)
- Loughborough University
- University of Bristol
- University of Strathclyde
- Sheffield Hallam University

Research and Technology Organisations and Trade Associations

- Gothia Science Park (Sweden)
- The Telecare Services Association (TSA)
- The Home Improvement Agency (HIA)
- The Application Home Initiative (TAHI)

Industrial/Public Sector/Charities

- | | |
|-------------------------|--------------------------|
| – EDF Energy | – Motorola |
| – British Gas | – Siemens |
| – Severn Trent Water | – Honeywell Controls |
| – The Co-operative | – Indesit/Hotpoint |
| – Industrial Automation | – Dyson |
| – Euromaint | – Leicester City Council |
| – Volvo Group/Volvo Car | – Advantica |
| – Audi | – ExtraCare |
| – Sony | |

Research Grants and Projects

- A demonstrator for integrating smart meters into systems in smart houses (TAHi3iD@BRE), Technology Strategy Board (TSB)
- Distributed Integrated Care Services and Systems (iCARE): Technology Strategy Board (TSB) ALIP2
- DMU Creative (Cpulse), HEIF/HEFCE
- Intelligent energy management power socket/ adaptor for portable electrical devices/ appliances, Innovation Fellowship (EMDA/ ERDF)
- Holistic framework and tools for sustainable energy efficiency in networked home appliances (DEMS), EPSRC/TSB
- Interoperability Framework Initiative (IFI) to devise CENELEC standard for 'Service Level Interoperability in Connected Home environments' via a Working Agreement' (TAHI)
- Platform Independent Model Driven Architectures for Future Vehicle Systems – EMDA Transport iNET

Contact details

Professor Philip Moore / Chi Biu Wong

Mechatronics Research Centre
De Montfort University
Queens Building
The Gateway
Leicester LE1 9BH, UK

T: +44 (0)116 257 7053

E: prmoore@dmu.ac.uk / cbwong@dmu.ac.uk

W: mrg.dmu.ac.uk

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