

C R A N F I E L D
I M P A C T C E N T R E

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CIC IS A LEADER IN THE FIELD OF IMPACT AND SAFETY OF STRUCTURES



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CRANFIELD IMPACT CENTRE (CIC)

An internationally respected facility with expertise in vehicle crashworthiness and occupant simulation. CIC conducts leading research that provides highly effective solutions to our customers' requirements.

Physical impact testing and computer modelling complement each other at CIC and we are in a unique position to offer both services independently or in conjunction. We can access impact analysis for a variety of structures such as restraint systems, seats and F1 vehicles through physical and virtual testing techniques.

Our state of the art testing laboratories feature a range of test rigs for both static and dynamic testing of structures. Test can be carried out for certification or research purposes.

CIC is an FIA approved test house for crash and static tests. CIC is also an approved consultancy by the Vehicle Certification Agency (VCA) for both EC Regulation R66 coach rollover Type Approval and R80.

CIC is renowned for its service excellence and confidentiality. Our highly skilled, professional engineering team will ensure your testing requirements are supported throughout the project with client focus leading our priorities.



SLED IMPACT TEST FACILITY

This facility enables the dynamic testing of large sub-structures and components. It can be used to simulate crash pulses, or to subject structures to pre-determined crash pulses.

The Sled Rig is VCA approved for EC regulation R-80 and FIA approved for F1 monocoque tests.

Full data acquisition is available together with the option of video and high-speed colour digital photography.

Specifications:

- Mass range: from 550 to 2,000kg
- Velocity range: 5 – 17m/s
- Maximum energy: 125kJ
- Sled length: 25m

Typical applications include:

- Rail, Road and Motorsport vehicle structures and components
- Aircraft structures and Components
- Seat Structures and Anchorages
- Engineering Structures for the Nuclear and Offshore Oil Industries



SLED IMPACT TEST FACILITY: DECELERATOR

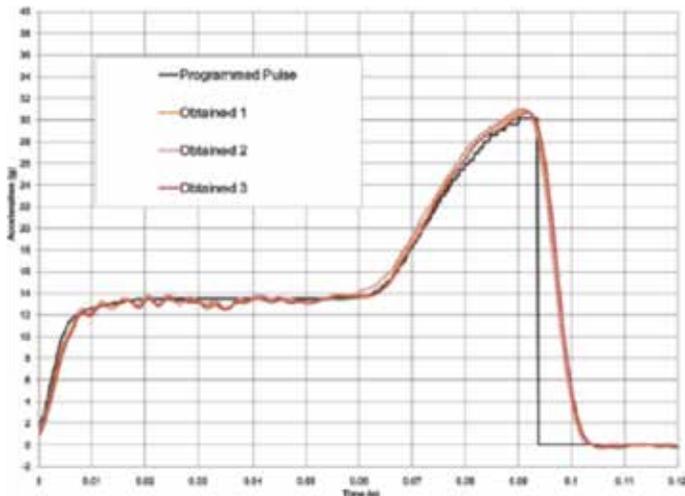
The Decelerator facility allows the user to subject any components or dummies to pre-determined pulses.

The components are attached to the trolley and then propelled into a wire break system to control the rate of deceleration.

Pulses can be accurately programmed to meet legislative standards for aircraft, child and adult seat requirements. In addition, pulses unique to the customer can be programmed with excellent repeatability.

Full data acquisition is available together with the option of video and high-speed colour digital photography.

Example of the repeatability of the Decelerator and the accuracy between predicted and obtained pulse shapes





DROP TOWER 1

8-110KG FALLING MASS

This Facility enables the centre to test a variety of specimens including aluminium honeycomb, carbon fibre tubes, steering columns to FIA regulations and automotive trim components. Full data acquisition is available together with the option of video and high-speed colour digital photography.

Specifications:

- Velocity: up to 18m/sec
- Mass range: 8-110 kg
- Temperature controlled chamber

Impactors:

- 152mm flat face
- 152mm hemisphere
- Various Penetration/indent impactors: 6, 12 & 25mm



DROP TOWER 2

50-300KG FALLING MASS

CIC's high energy capacity and relatively high velocity drop tower rig provides the capability to test for dynamic responses of selections and joints for both metallic and composite materials. It is ideal for companies who provide materials for roadside furniture.

The rig is suitable for the roadside EN 1317 barrier development and certification, a compliance approach adopted by both the EU and the US Federal Highways Administration.

Specifications:

- Min carriage weight 50kg
- Max carriage weight 300kg
- Max carriage drop height 2.5m (3.5m above ground)
- Max speed 7m/s



WHYTE & MACKAY
SCOTCH WHISKY

SAMSUNG

KING FISH

P ZERO

ROYAL
ALLENGE

MIRA

3-AXIS MOMENT OF INERTIA FACILITIES

CIC's unique Moment of Inertia Facilities provide measurement of:

- 3-Axis, moment and product of inertias
- Principal inertias and their direction cosines
- Centre of gravity in three directions

This Facility is key to the automotive and aerospace industries where inertia properties have important effects on the dynamics of a vehicle, component or system.

Specifications:

- Mass range: from 1kg to 2500kg
- Dimension range: nominally 6500(L) x 2800(W) x 200(h) mm max

Typical applications include:

- Road and racing vehicles, engines, gearboxes
- Aircraft components, air-dropped supplies, UAVs
- Helmets, NVG systems
- Sports equipment



R66-01 COACH ROLLOVER RIG

The rig consists of a tilting platform 0.8m above the ground and is used to carry out full-scale bus rollover tests which conform to the ECE regulation 66. It accommodates both whole vehicles and partial bay sections, as required by R66.

The tilting of the platform is operated using a crane, which ensures a well-controlled, smooth motion. The coach is then free to topple off the platform once its centre of gravity over-balances the pivot position.

Specifications:

- Maximum vehicle wheelbase: 8m
- Maximum vehicle weight: 15 tonnes



STATIC TESTING

CIC can quasi-statically test a wide range of structures using a variety of rigs including:

Roll Hoop Test Facility

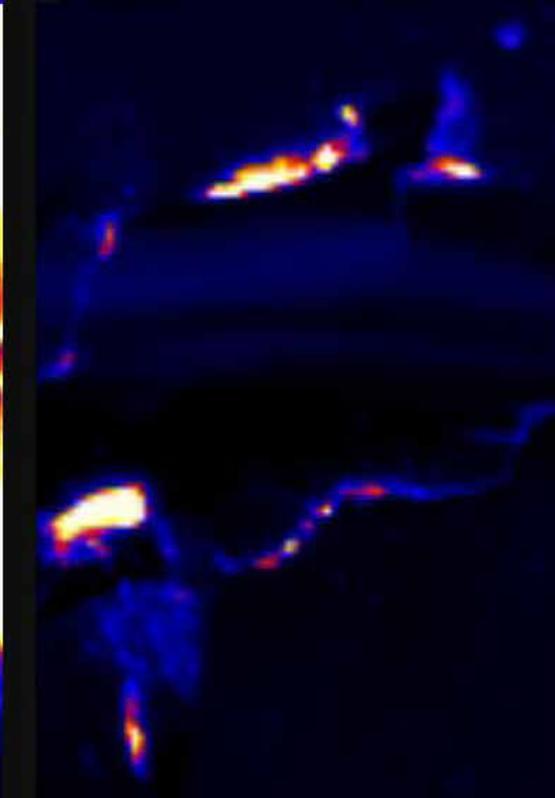
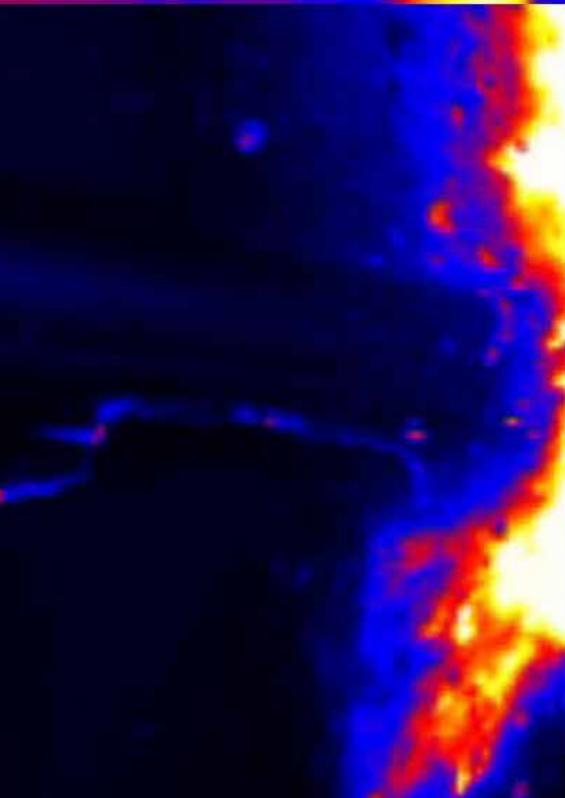
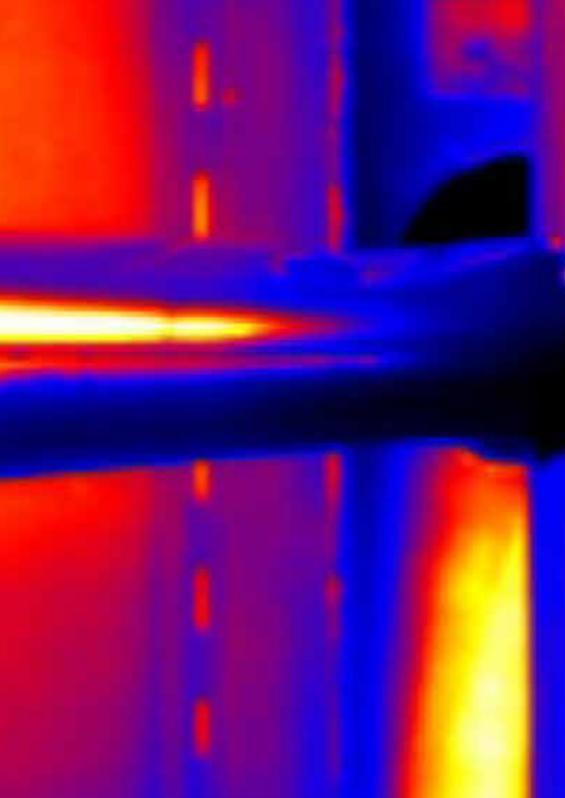
- Roll hoops can be tested on a purpose built rig conforming to FIA standards.
- Typical applications include F1, F3 and LMP's monocoques.

Adaptive T-Slot Bed

- A 3x4m T-Slot bed with M16 T-slots on 200mm centres. Various mounting brackets can be attached as supplied by CIC or the customer.
- Tension and compression testing of components with displacement controlled actuators capable of up to 50kN with a maximum of 500mm displacement.
- Various rates of applications can be achieved, a typical feed rate being 1mm/sec.
- Load and deflection data can be measured and analysed per customer requirement.

Panel Intrusion Test Facility

- A 500kN static rig capable of compression testing. This rig enables testing of motorsport composite panels to FIA regulations.



HIGH SPEED FILMING

CIC's high-speed camera facility includes three Photron Fast Cam SA3 cameras. The facility can cover multiple views such as vertical overhead, 45 degree side and horizontal side. Infrared high speed cameras are available. Export to multiple video formats.

Specifications:

- Frame capture rates from 1,000 fps up to 120,000 fps
- Improved crash area positioning and alignment
- Monochrome or colour
- On board or off board mounting (high G rate 100G's in any axis)
- Fast test turnaround time
- Synchronisation of test data with video
- Motion tracking of dummies or structures

High Speed Filming Service

CIC are now offering a new high speed filming service and camera hire to any location with the UK. We supply the equipment and operator at the location of your choice.

ACCREDITATIONS

Cranfield Impact Centre is proud to have achieved several ISO and OHSAS Standardisation awards.



ISO 9001:2008 Quality Management Systems

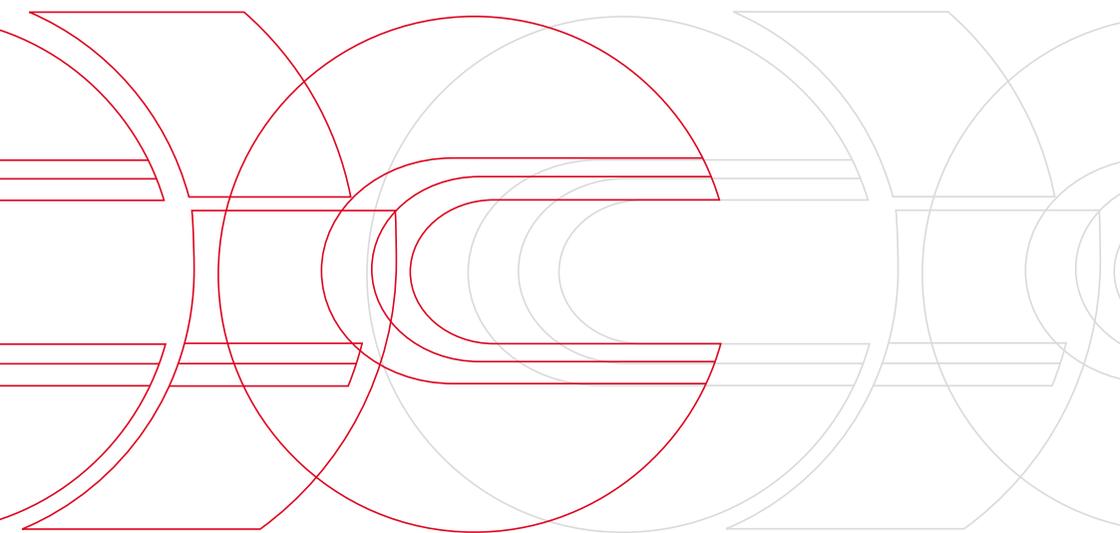


ISO 14001:2004 Environmental Management

OHSAS 18001:2007 Occupational Health and Safety Management

ISO 9001: 2008 - THE QUALITY POLICY

- Cranfield Impact Centre is committed to providing a service according to client's expectations in terms of quality and reliability and will ensure that adequate resources are available to sustain our planned business objectives.
- It is the policy of the organisation to commit and maintain a quality system designed to meet the requirements of EN ISO 9001:2008 in pursuit of its primary objectives.
- The CIC Quality Manual defines our quality objectives and key procedures which include how we commit to provide adequate physical resources.
- Client service is an essential part of the quality process and to ensure this is fulfilled, all employees receive training to ensure awareness and understanding of quality and its impact on client service.
- Cranfield Impact Centre ensures that the Quality Manual is communicated and understood throughout the organisation.
- To ensure the organisation commits and maintains its awareness for continuous improvement, the Directors formulate and implement this policy to ensure that the quality system is regularly reviewed and is subject to annual audit.
- The Quality Policy is reviewed quarterly, by Directors to ensure its continuing suitability. The Quality system is monitored by our Quality Manager (QM).
- The requirements of the organisations quality system are mandatory and all personnel have a responsibility and obligation to it.



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