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Renishaw

Prof Nick Weston PhD CEng MIEEE FIMechE
Renishaw plc

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Founded on innovation

- first touch-trigger probe invented in 1973 to measure fuel pipes for the Olympus (Concorde) jet engine
- organic growth sustained by patented innovations
- £331.9 million turnover (y/e June 2012), 95% exported
- £83.2 million operating profit (as above)
- £47.9 million spend on R&D and engineering (14.4% of turnover)
- FTSE 250: £1.1 billion valuation
- 15 Queens Awards
- over 3,000 staff in 32 countries

Sir David McMurtry
Chairman & CEO

THE QUEEN'S AWARDS FOR ENTERPRISE 2009

THE QUEEN'S AWARDS FOR ENTERPRISE 2011

THE QUEEN'S AWARDS FOR ENTERPRISE 2012

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Renishaw's research & development

New Mills

CMM, machine tool, encoder, engineering

Wotton

Raman

Charfield

Dental, neurological, software

Glasgow

Molecular diagnostics

Woodchester

Laser & calibration

Castle Donington

CMM software

Edinburgh

Sensors

Exeter

Controllers

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Renishaw's global manufacturing

Pre-production

New Mills, Glos, UK

Machining and assembly

Miskin, Glamorgan, UK

Machining

Stonehouse, Glos, UK

Sub-system and final assembly

Swords, Dublin, Ireland

Woodchester, Glos, UK

Old Town, Glos, UK

Pune, India

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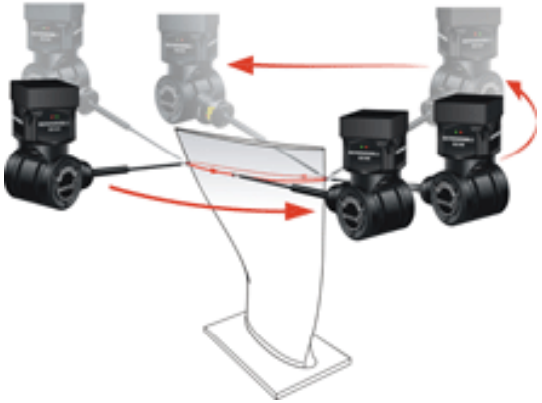
Precision technologies – industrial metrology

CMM metrology



Machine calibration

On-machine measurement

Position feedback

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Precision technologies – healthcare

Dental CAD/CAM

Raman spectroscopy (including medical diagnostics)

Stereotactic neurosurgery

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Precision technologies – recent investments

Additive manufacturing

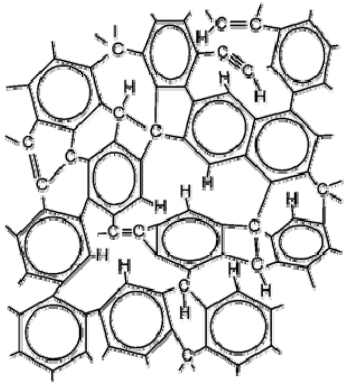
In April 2011 purchased MTT Technologies Ltd, which is now the ‘Additive Manufacturing Products Division’ of Renishaw plc

Large-scale metrology

MDL

Own 66% of Measurement Devices Ltd, a global pioneer and world leader in laser measurement technology and positioning and navigation systems

Materials technology



Renishaw Advanced Materials Ltd provides innovative commercial and research solutions to materials technology problems, including diamond-like carbon coatings (DLC) and shape memory alloys

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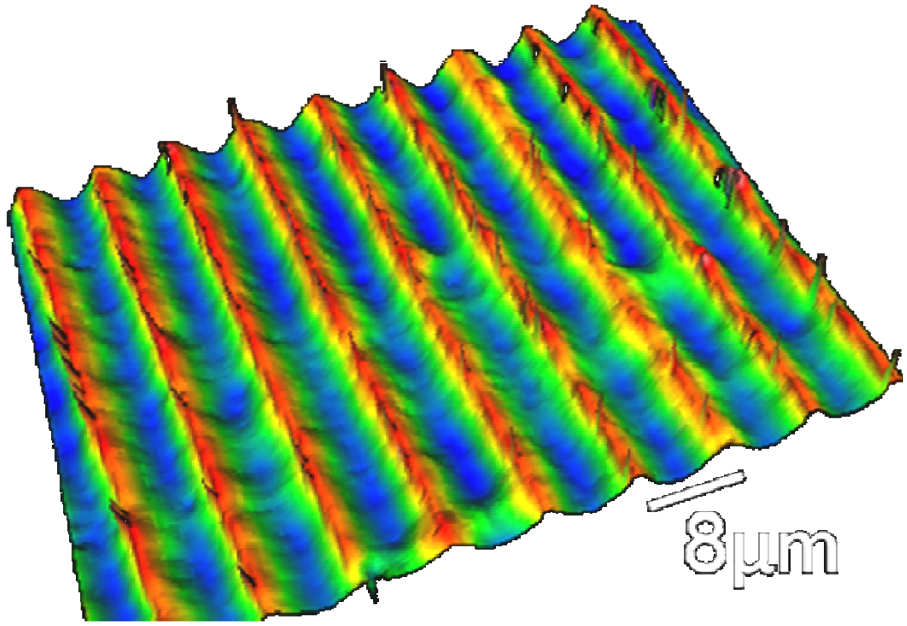
Renishaw and the EngD

- We have had a long involvement in the EngD, over a number of centres
- To date we have had
  - two complete their studies
  - three are writing up
  - another six are still at their studies



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Example projects

- Novel optical filters for Raman spectroscopy
- Non-contact free-form surface measurement
- Prototyping techniques for LTCC
- Laser machining of ceramics
- Flexible process for the manufacture of diffractive optical elements

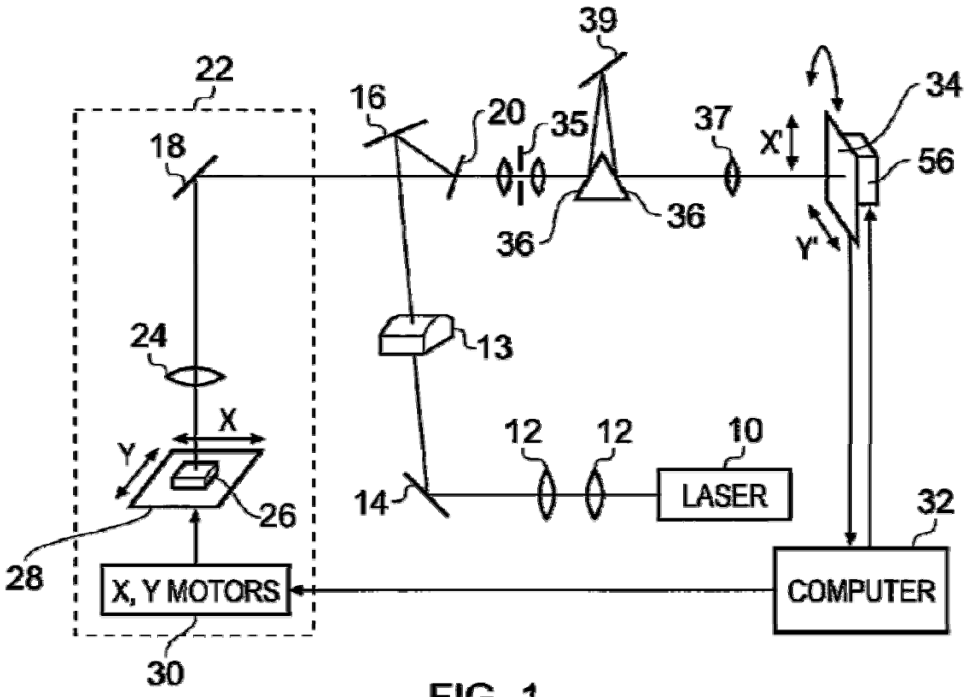

FIG. 1

- Design of a breakthrough motion controller.
- Real-time control software for concurrent processing.
- In-process inspection of composite layup.
- Hybrid manufacturing methods - additive and subtractive manufacturing.

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An example

Dr Yvonne Huddart - Non-contact free-form surface measurement

Yvonne designed an optical surface measuring system with:

- no moving parts
- accurate to the diameter of a human hair
- which will capture 10 million data points in one minute

This technology has resulted in 5 patent applications

It will be the basis of a range products which will start launching in 2014

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Renishaw and the EngD

- The EngD is by far our ***most preferred*** vehicle for ***collaborative research*** with universities
- It is the ***most successful*** method of ***technology transfer*** we have yet discovered
- It allows us to ***train***, ***recruit*** and ***retain*** the very best research and development talent
- It helps us ***work effectively*** with some ***first class academics***
- The EngD produces ***commercially aware scientists and engineers*** – the ***life-blood*** of ***knowledge intensive companies*** like ours