

CURRICULUM VITAE (November 2009)

Emeritus Professor Pat McKEOWN

Name: Patrick Arthur **McKEOWN**, OBE, FEng, MSc, DSc(Hon), DSc(Hon), FIMechE, FIET, Charter Fellow SME, Hon MIED, Hon FIQA.

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Date of Birth 16 August 1930

Place of Birth Cricklewood, Middlesex, England

Nationality British

Marital Status Married – Mary Patricia McKeown
Sons – Jonathan (b 1957), Jeremy (b 1960), Nick (b 1963)

Current Appointments 1 Professor Emeritus, Cranfield University, UK
2 Director, Pat McKeown and Associates, Consultants in Advanced Manufacturing Technology, Precision Engineering and Nanotechnology
3 Founder member, Founding President and Council Member, European Society for Precision Engineering and Nanotechnology. (**euspen**)

Formerly Director, Cranfield Unit for Precision Engineering (CUPE).
Chairman and CEO, Cranfield Precision Engineering Ltd Group of Companies; Chairman, Cranfield Precision Inc, Rochester, USA.

Professor of Precision Engineering, Cranfield Institute of Technology/
Cranfield University.

Member of the Board, CIM Institute, Cranfield.

Non-executive Director, Control Techniques plc, UK.
Non-executive Director, Cranfield Aerospace Ltd

- 1947-1949** Bristol Grammar School – Higher School Certificate, physics, chemistry and maths.
- 1949-1951** National Service in the Royal Engineers (Lieutenant, RE).
- 1951-1954** Student Apprenticeship at Bristol Aircraft Company, leading to work in aircraft structural design and engineering development on the dynamics of guided weapon structures. During this period obtained a Technical State Scholarship.
- 1954-1956** Attended the College of Aeronautics, Cranfield, now Cranfield University, and studied production engineering, industrial administration and aircraft design; awarded DCAe later MSc.
- 1956** Suez Campaign; Capt RE – 82 Port Regiment RE, port clearance
Aug to Dec. and port operation for invasion fleet going into Port Said, Egypt.
- 1956-1965** Joined Société Genevoise d’Instruments de Physique (GSIP), Geneva, where specialised in applied metrology. Involved in the design and development of special high precision measuring machines, including the Photo-electric Line Standard Comparator for BIPM Sèvres (the International Bureau of Weights and Measures), together with very high precision versions of GSIP jig borers, etc. Leader of a team that devised early versions of machine tool accuracy specifications in terms of 1D, 2D and 3D – also thermal drift test techniques which some fifteen years later became the subject of ANSI standards.
- 1965-1968** Appointed Technical and Works Director of GSIP’s UK subsidiary company, Newport Pagnell, assuming responsibility for the design manufacture of jig boring and special purpose high precision measuring machines.
- The latter included the world’s first “computer controlled” star plate measuring machine for astrometry research and high speed flying spot scanning machines for analysing 70mm film in stereo for particle “events” in nuclear physics bubble chamber experiments, eg CERN.
- 1968** Returned to Cranfield. Appointed Chief Engineer of the Cranfield Unit for Precision Engineering (CUPE), a Ministry of Technology sponsored industrial unit. This became entirely self-supporting on fees earned from contracts from industrial organisations both UK and overseas, within three years.
- 1970** Appointed Director of CUPE in succession to Professor John Loxham, CBE.

- 1973** Appointed to a Personal Chair in Precision Engineering at Cranfield Institute of Technology, now Cranfield University (the UK's leading post-graduate university in industrial science, engineering and management), whilst retaining the directorship of CUPE.
- 1974** Elected to full membership of CIRP, now the International Academy of Production Engineering, at the General Assembly in Tokyo / Kyoto, Japan.
- 1975** Three week lecture tour of Australia addressing university/industry collaboration and high precision manufacturing technologies.
- 1976** Founded and appointed head of Cranfield's new Department for the Design of Machine Systems, which later became the Cranfield College of Manufacturing, now part of the Cranfield School of Applied Sciences. MSc courses and PhD research established.
- Initiated the formation of Cranfield Research & Developments Ltd, a holding company for university companies. Established Cranfield Moulded Structures (synthetic granite structural materials), and Cranfield Precision Systems (electronic measurement and control systems, later advanced CNC systems).
- 1979** Encouraged and helped International Publishing Company Ltd to Establish the international journal, *Precision Engineering*, now the journal of the American Society for Precision Engineering, the Japan Society for Precision Engineering and the European Society for Precision Engineering and Nanotechnology (**euspen**)
- 1980** Elected senior member of the United States Society of Manufacturing Engineers
- 1981** In November 1981 visited South Korea under a UNIDO appointment as consultant adviser in metrology and precision engineering.
- Organised and ran the first International Precision Engineering Seminar, a biennial event – No 1 at Cranfield, No 2 (1983) NBS (NIST) Gaithersburg, USA, No 3 (1985) at Interlaken, Switzerland , No.4 (UK), No.5 (1989) Monterey, Cal, USA, in partnership with ASPE, The American Society for Precision Engineering. ASPE meetings are based on the format evolved for the IPES series and together with **euspen** attracts a high percentage of the world's leading precision engineering practitioners.
- 1981-1984** Served on the Council of CIRP.
- 1981-1985** During this period served as President of the CIRP Scientific Technical Committee for Metrology in Quality Control, later STC "P" - Precision Engineering.

- 1982** Awarded a Fulbright Travel Award; went to the USA as a Visiting Professor of Mechanical Engineering at the University of Wisconsin-Madison. Conducted graduate modular short courses in precision engineering at Madison over several years.
May, awarded the Society of Manufacturing Engineers' Frederick W. Taylor Research Medal at the Society's 50th Anniversary Convention, Philadelphia, USA.
- Visited North Carolina State University, Raleigh, and gave lecture to US Office of Naval Research (later repeated in Washington DC) by which first funding of Precision Engineering Centre was obtained by Professor Ralph Burton, NCSU, leading to the formation of ASPE, the American Society for Precision Engineering.
- 1982-1987** From July 1982 to March 1987 appointed to membership of the UK's Department of Trade & Industry's Advanced Manufacturing Technology Committee which also covered the SERC/ACME Committee. Also a member of DTI's Metrology and Standards Requirements Committee.
- 1983-1986** From December 1983 to July 1986 appointed to the Visiting Committee for the Royal College of Art, London.
- 1985** In September 1985, appointed Honorary Professor of the Nanjing Aeronautical Institute, People's Republic of China; gave lectures in precision engineering and structured an MSc course on the subject.
- 1986** Formed Cranfield Precision Systems Inc. (later Cranfield Precision Inc.) Rochester, NY, USA; subsidiary company for service and sales in USA of CUPE and later, Cranfield Precision Engineering Ltd products.
- On 23 April 1986 he presented the 1986 James Clayton Memorial Lecture at the Institution of Mechanical Engineers, entitled *High Precision Manufacturing and the British Economy*. (Awarded Donald Julius Groen prize for best paper of the Institution of Mechanical Engineers, presented May 1987).
- Elected to the Fellowship of Engineering, now the UK's Royal Academy of Engineering (**FREng**); also elected to the new Charter Fellowship of the Society of Manufacturing Engineers, USA, FSME.
- 1987** **March**: appointed to a working party of the UK Government's Advisory Committee for Advanced Research and Development (ACARD) which advises the UK Cabinet on these matters. Appointed to serve on the Department of Trade & Industry's Nanotechnology Strategy Committee for three years.

Awarded Thomas Hawkesly Gold Metal, Institution of Mechanical Engineers.

Joined the Board of the Institute of Grinding Technology, based at Bristol University (1986 to 1992).

Formed Cranfield Precision Engineering Ltd – in effect taking the CUPE industrial unit out of CIT to be a company wholly owned by the University with subsidiaries Cranfield Precision Systems Ltd, Cranfield Precision Inc (USA) and Cranfield Moulded Structures Ltd.

Elected Vice-President of CIRP (now The International Academy of Production Engineering).

- 1988** Elected President of CIRP (1988-1989); presidential address Trondheim, Norway, August 1989.
- 1990** Appointed non-executive director of Control Techniques plc, a £100m UK multi-national company in advanced electronic drives, servo systems and high capability CNC systems; manufacturers in UK, USA, Germany, Italy, Singapore and Australia.
- 1991** **January:** awarded the **OBE** in the New Year's Honours List.
- Visited University of Connecticut, Storrs, USA, to give public seminar on Precision Engineering.
- Appointed International Advisor to the Institute of Manufacturing Technology (later GINTIC), Nanyang University of Technology, Singapore (1991-1997).
- Appointed member of the Membership Committee of the Royal Academy of Engineering, UK (1991-1994).
- 1992** Became a member of the Council of Advisors of the Chiang Industrial Charity foundation, Ltd, Hong Kong.
- Relinquished the CEO position within Cranfield Precision Engineering Ltd, remaining as Chairman.
- 1993** Organised the 7th International Precision Engineering Seminar at Kobe, Japan, in partnership with the Japan Society for Precision Engineering.
- 1994** Lecture tour of Australia – “Overseas Expert Lecturer” in advanced manufacturing and precision engineering, sponsored by Institution of Engineers, Australia.
- Visiting Russell Severance Springer Professor of Mechanical Engineering, University of California, Berkeley, to run special four-

week course in precision engineering and to advise on expanding precision engineering research and teaching.

- 1995** Retired from chairmanship of Cranfield Precision Engineering Ltd; appointed Professor Emeritus, Cranfield University; formed own consultancy company, Pat McKeown and Associates.
- 1996** **February:** Gave invited-keynote lecture at AGM Assembly, Bombay, of Indian Machine Tool Manufactueres' Association ; **March:** invited as special lecturer under the National Science Council, Taiwan ROC's "Honorable Visiting Program"
- May 1996** – awarded **Hon DSc**, University of Connecticut, USA.
- June 1996** – awarded **Hon DSc**, Cranfield University, UK.
- 1998** Founder member and first President of the European Society for Precision Engineering and Nanotechnology (euspen), established with European Commission funding.
- October:** Awarded Life Achievement Award, American Society for Precision Engineering.
- 1999** **March :** awarded the Faraday Medal of the Institution of Electrical Engineers, now IET.
- 2001** **June:** appointed non-executive director Cranfield Aerospace Ltd.
- 2002** **May :** Eindhoven, awarded Life Achievement Award of euspen.
- 2003** **December :** awarded International Prize of the Japan Society for Precision Engineering, Tokyo.
- May:** Keynote lecture, euspen 7th International Precision Engineering Conference, Glasgow.
- 2007** **February :** awarded the Georg-Schlesinger Preis 2006, by the State of Berlin.
- November:** Keynote lecture ASPEN , Gwangju , South Korea.
- 2008** **March:** Awarded the James Clayton Prize, 2007, of the Instn of Mechanical Engineers, London
- 2009** **March:** Eastern Region IMechE lecture "Ultra-precision Engineering-Origins to the State-of-the Art"
- November:** Awarded the ASME / SME M.Eugene Merchant Manufacturing Medal, Orlando, Florida.

Other Appointments and Background Information

Past

Past Chairman of the Evaluation Panel for the Centre for Mechanical Engineering and Process Technology of the US National Bureau of Standards, now NIST, Gaithersburg, Washington, USA – a post held for 6 years.

Member of Council, Cranfield Institute of Technology / Cranfield University.

Member of Royal Academy of Engineering's MacRobert Award Committee for 4 years; member of RAEng Membership Committee.

Member of the UK's Nanotechnology Strategy Committee, within the Government's Department of Trade and Industry's LINK programme.

Won orders for design, build and supply of many world state-of-the-art ultra-precision machine tools and special metrology systems from leading USA corporations, including IBM, Corning, Hughes -Danbury Optical Systems, TRW, Gleason, UTRC, Bausch and Lomb, Landis Tool, Kodak, etc, etc. Provided consultancy services in precision engineering to Cincinnati-Milacron, Oakley Works, Cincinnati.

Honorary Vice-President of the British Institute of Quality Assurance.

Chairman of the Organising Committee for the International Precision Engineering Seminars held every two years (1981- UK, 1983 – USA, 1985 – Switzerland, 1987 – UK, 1989 – USA, 1991 – Germany, 1993 – Japan, 1995 – France, 1997 – Germany)

Present

Member of Senate, CIRP (the International Academy for Production Engineering).

Member of Court, Cranfield University.

Member of Council , **euspen**

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