Fifty Years in Control Engineering; changes in Technology and Manufacturing.
2005 Electrical Manufacturing Lecture

Wednesday 14 September 2005, Refreshments from 5.30pm, Presentation 6.00pm
Hawken Auditorium, Engineering House
447 Upper Edward Street, Brisbane

Presented by: Professor Derek Atherton, University of Sussex

The presentation will discuss some of the developments that have taken place in engineering, primarily control engineering, during the last fifty years. To be precise an engineering approximation will be made and the starting year will be 1956, the year the International Federation of Automatic Control (IFAC) was founded and when I started as a research student in Manchester.

The talk will begin by looking at the status of control engineering at that period from five different aspects, which will be categorised under the headings of:-

(i) The academic status of the subject.
(ii) Professional Institutions and publications.
(iii) Simulation.
(iii) Components, concentrating on controllers and motor drives.
(iv) Manufacturing.

The talk will then discuss the changes that have taken place, in particular in the first two topics with respect to the growth of the subject content, the volume of publications, their handling and reviewing both for journals and conferences. Simulation has played a major role in control engineering, and the developments will be discussed from the analogue computers of the early days to the digital simulation languages available on personal computers today. What has and can be achieved in control, certainly in an industrial context, has been mainly more dependent on the available hardware and its cost than any new theoretical concepts. Two areas will be examined the development of PID controllers and electrical machine drives. As components have changed manufacturing strategies and techniques have also changed and our discussion again will focus on these two components. Here we will also digress outside control engineering and look at the development and manufacture of one of today's most successful products, the mobile phone.

What of the next fifty years? Dare one speculate when it is only just over a hundred years since the most eminent scientist in the UK said no machine heavier than air could fly!

Professor Derek. P. Atherton, BEng, PhD, DSc, CEng, FIEE, FIEEE, HonFInstMC, FRSA

Derek Atherton studied at the universities of Sheffield and Manchester, obtaining a PhD in 1962 and DSc in 1975 from the latter. He spent the period from 1962 to 1980 teaching in Canada where he served on several National Research Council committees including the Electrical Engineering Grants Committee. He took up the post of Professor of Control Engineering at the University of Sussex in 1980 and is currently retired but has an office at the university, gives some lectures, and has the title of Research Professor. He has been active with many professional engineering bodies, serving as President of the Institute of Measurement and Control in 1990, President of the IEEE Control Systems Society in 1995, being the only non North American to have held the position, and as a member of the IFAC Council from 1990-96. He is an Editor of the IEE Proceedings on Control Theory and Applications (CTA) and was formerly an editor for the IEE Control Engineering Book Series. He has served EPSRC on research panels and as an assessor for research grants for many years and also served as a member of the Electrical Engineering Panel for the Research Assessment Exercise in 1992.

His major research interests are in non-linear control theory, computer aided control system design, simulation and target tracking. He has written two books and is co-author of a third and has published more than 300 papers in Journals and Conference Proceedings. Professor Atherton has given invited lectures in many countries and supervised over 30 Doctoral students. He has just completed some work as a Member of a European Leonardo da Vinci Education and Culture Project, involved in the development of web based teaching and learning software for modelling, simulation and control.

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