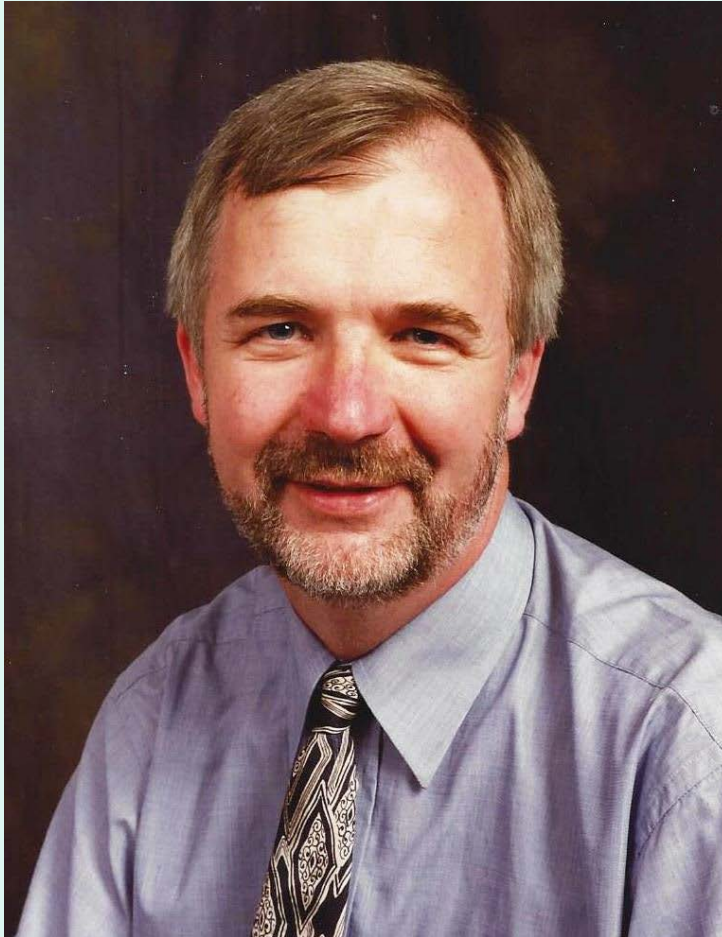


In Memory of Dr. David Hawksworth



**Innovator, Mentor and
Inspirational Leader**

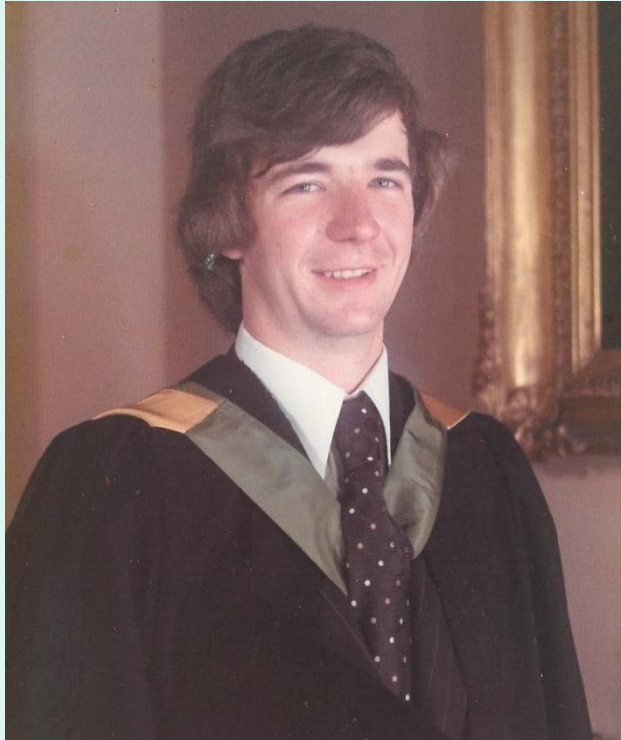
**At the forefront of MRI magnet
development for 22 years**

1953 -2017

*His legacy remains evident
in MRI to this day*

David Hawksworth - Early Days

- David was born in May 1953 – just outside Pontefract, West Yorkshire
- He grew up in Pontefract and attended St Wilfrid's High School (1964 -1971)



- David graduated from the University of Bath with a BSc in Applied Physics followed by his MSc at the University of Lancaster.
- David met Judith Green during 'Freshers' Week at the University of Bath

David Hawksworth - UW-Madison

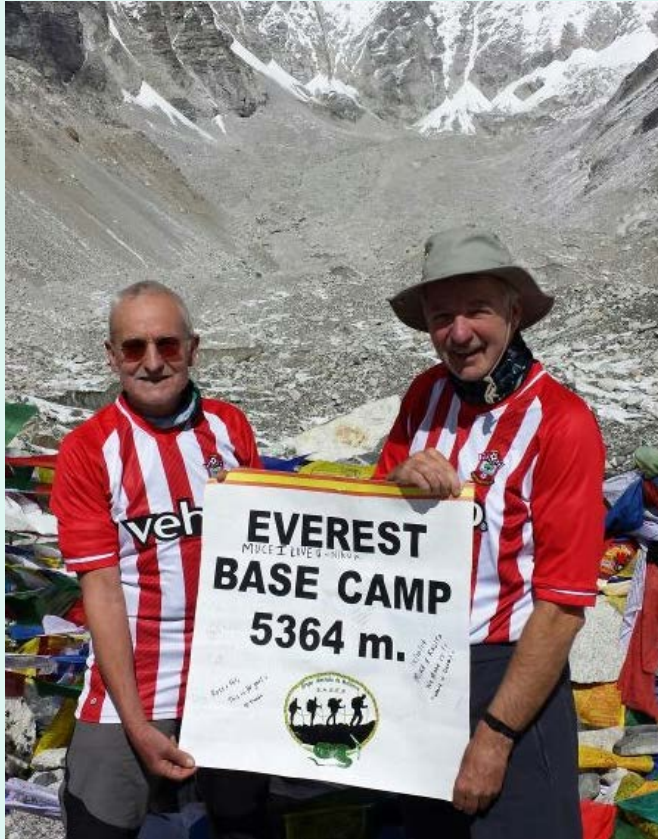
- As part of his degree David spent a six month period in Martin Wilson's Group at Rutherford Labs.
- Whilst at Rutherford, he worked with research Scientist David Larbalestier, who he later joined at UW-Madison Dept. of MS&E as his first PhD student



- David and Judith married in 1976 just one week before moving to Madison.
- Here he continued his research in increasing the upper critical field of NbTi and NbTiTa alloys and earning his PhD in Materials Science - Applied Superconductivity

David Hawksworth - Oxford Magnet Technology

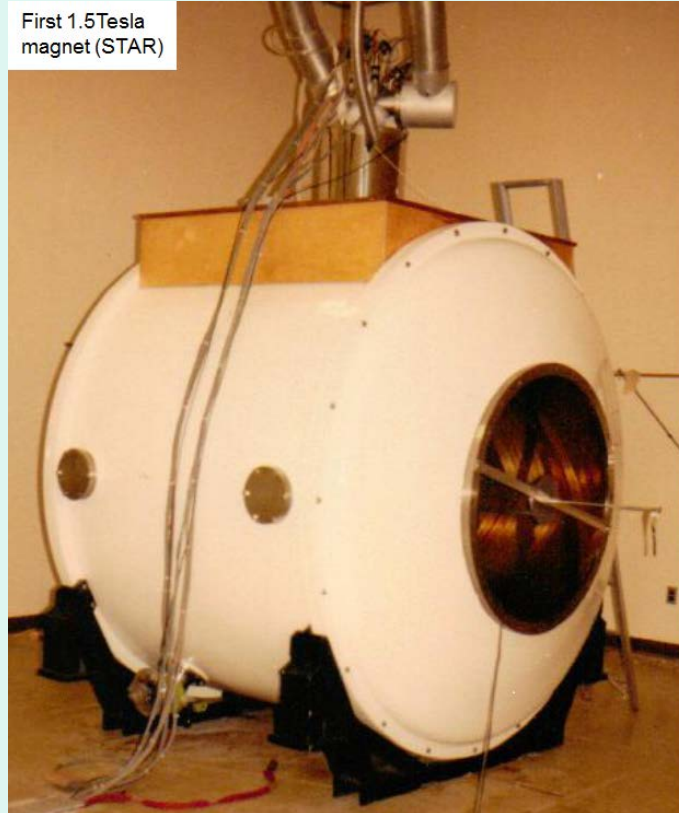
- Passionate about Football (soccer)
 - Played for school, university and local teams.
 - Dedicated supporter of the “Saints” Southampton F.C.



UW-Madison Materials Science “Flux Pinner” 1978

David Hawksworth - Oxford Instruments

- In 1981 David and Judith returned to the UK, where he Joined Oxford Instruments newly formed NMRI group as Project Engineer
- He was a member of the team that built the first 1.5T 1m bore whole body superconducting MRI magnet



David Hawksworth - Oxford Magnet Technology

- 1982 Oxford Magnet Technology Ltd. created as part of Oxford Instruments plc.
- David became the Engineering Manager and later Director of OMT Ltd., where he was instrumental in leading the team which developed the first whole body 1.0T and 1.5T active shield MRI magnets, Mobile and Refrigerated systems.



1st generation 1.5T Active Shield



2nd Generation 1.0T & 1.5T Active Shield

David Hawksworth - Oxford Magnet Technology

- By investing in high R&D intensity, concurrent engineering and excellence in NPI, the OMT Engineering Team produced a number of innovative systems
 - 1994 World's first Open MRI magnet.
 - 1997 World's first 3.0T Active Shield magnet.
 - 1999 World's first 1.0T Open Active Shield magnet.
 - 2000 World's first 4.0T Active Shield magnet
 - 2000 World's shortest 1.5T MRI magnet.



HTS whole body MRI Magnet



4.0T Active Shield Magnet

David Hawksworth - Oxford Magnet Technology

- Following formation of a Joint Venture with Siemens AG, David spent 3 years with Siemens Medical before returning to OMT as Managing Director in 1995.
- He lead his team through a culture of quality and best practice to be the innovative world leaders in the production of cost and performance optimised MRI systems.



David Hawksworth - Oxford Magnet Technology

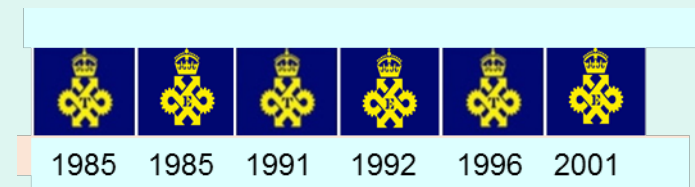
- Growth in MRI Technology and Market
 - Customer Led Manufacturing Excellence and Best Practice
 - 1983 100 units, 1985 220 (500th magnet), 1998 500, 2002 700 (7000th magnet)
 - Lead time reduced from 120 days (1989) to 26 days (1995)
 - Average cost reduction 1992 – 2003 = 8% / year!
- During David's technical leadership OMT Ltd. received 6 Queen's Awards for:



Technology in 1985, 1991 and 1996

Export in 1985 and 1991

Enterprise in 2001.



David Hawksworth - Oxford Magnet Technology

- 1.5 Tesla Active Shield Magnet evolution



1989

OR30

**Length: 2.4m
13,000kg**

1994

OR35

**Length: 2.2m
8,650kg**

1997

OR70

**Length: 1.6m
4,070kg**

2003

OR105

**Length: 1.5m
4,050kg**

2004

OR122

**Length: 1.2m
4,350kg**

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David Hawksworth - Legacy

- In November 2003 Siemens acquired the remaining 49% of OMT making it a wholly owned by Siemens plc.
- David left OMT to become Managing Director of Oxford Biosensors followed by UK and Ireland Managing Director of Quest Diagnostics, in recent times he was enjoying being back in the world of superconductivity in an advisory capacity with Tokomak Energy.
- His professional legacy should be thought of not just in business terms, but also in human terms. He was very much a people's person whose passion, dedication and friendship will be a great loss to his colleagues and our community.
- He developed younger generations of business leaders, within and beyond superconductivity, by providing an inspirational role model of how to build and manage complex teams working on the most demanding problems.
- He leaves us with many memories of an utterly positive and ethical engineer and manager who had an unusual empathy for all who worked with him.
- He is survived by his wife Judith and children Matthew, Rebecca and Elizabeth

David Hawksworth - The IEEE Max Swerdlow Award

David's personal contributions to the superconducting industry were recognised by the conferring of **The IEEE Max Swerdlow Award for Sustained Service to the Applied Superconductivity Community** at the 24th International Conference on Magnet Technology (MT24) in Seoul, Korea in 2015



- for sustained leadership and exceptional service to the applied superconductivity community, in particular,
- for playing a key role in the process which has changed MRI from a scientific novelty to a reliable, trusted and widely available clinical procedure,
- for leading the development at Oxford Magnet Technology of 4T whole body and 1T and 1.5T active shield MRI systems and an ongoing range of cost and performance optimized MRI magnet systems, and
- for promoting a culture of quality and 'best practice' in the production of MRI magnets.

Dr. David Hawksworth
1953 -2017