

## The History of the Incorporated Engineer

It is well documented that the origins of the professional engineer in the UK reflected the practical nature of the calling to a greater extent than the development of the profession in the rest of Europe. The founders of the industrial revolution were indeed practical men. Great engineers like Telford and Newcomen<sup>1</sup> distained theoretical training. Within the first engineering institution, the Institution of Civil Engineers, founded in 1818, there was a lively debate for many years between those who believed that the best preparation for the engineering profession was good-on-the-job training and those who saw a university education as the most important grounding.<sup>2</sup>

The arguments in favour of higher education were resolved in 1970, when the Council of Engineering Institutions<sup>3</sup> decided that future entry to the register of Chartered Engineers would require a university degree. Nevertheless, many employers continued to recognise the value of the apprenticeship route and the robust good sense and independence fostered by part time study for a higher national certificate – often at night school or day-release. Experienced holders of these qualifications continued to be recognised by the profession, but until 1987 they were called Technician Engineers (TEng) – a term easily confused with the title for the Engineering Technician (EngTech), who of course held national certificate (or equivalent) qualifications.

The higher national holders were recognised by a wide range of institutions and societies, although the founding institutions in the CEI (and those aspiring to CEI membership) limited entry to their corporate or chartered grades of membership to those holding degrees and therefore registrable with CEI. Nevertheless the CEI created registers for Technician Engineers and this was the first clear sign of the national importance accorded to this grade.

The changing nature of the UK education system and unfavourable comparisons with the approach of other arguably more successful economies certainly influenced the recommendations of the Royal Commission set up in 1979 to look into the engineering profession. The Finiston Report<sup>4</sup> that resulted recommended a wholesale replacement of the current CEng and TEng registers by those for REng (dip) and REng - registered engineers holding 3 year bachelor and 4 year masters degrees, respectively. The profession fought successfully against this. The Engineering Council, set up to implement many of the Report's recommendations, simply inherited the CEI's registers as they were in 1983.

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<sup>1</sup> Newcomen created the first practical steam engine for pumping water

<sup>2</sup> See ***The Civil Engineers - The Story of the Institution of Civil Engineers and the People Who Made It*** :Hugh Ferguson and Mike Chrimes ISBN 978 07277 4143

<sup>3</sup> Council of Engineering Institutions (CEI), a body with its own Royal Charter, was founded in 1965. This was a marked step forward in collaboration between the Institutions as the CEI now set the national standards for registration and, most significantly, held the Registers of Chartered Engineers (CEng), Technician Engineers (TEng) - later becoming Incorporated Engineers (IEng) - and Engineering Technicians (Eng Tech).

<sup>4</sup> Cmnd no 7794 (HMSO 1980)

## **Incorporated Institutions**

However there was an increasing recognition of the value and importance of the Technician Engineer. The Institution of Electrical Engineers<sup>5</sup> and IMechE both set up technician engineer institutions<sup>6</sup>, to enable higher national holders to be represented and to run their own affairs. Independent societies and institutions of Technician Engineers flourished, in part because membership allowed MIxE (Member of the Institution of xxx Engineers) style designatory letters to be used rather than (or as well as) TEng. By the early 1980s frustration with the “Technician” confusion meant that the opportunity of a merger between Institute of Mechanical and General Technician Engineers (IMGTechE) and ITEME enabled the Institution of Mechanical Incorporated Engineers (IMechIE) to be formed.

By 1986 it had been recognised, as Sir Francis Tombs wrote in the Engineering Council’s 1986 Annual Report, that “confusion in the title [of Technician Engineer or Engineering Technician] by the juxtaposition of two words is a serious limitation to a wide acceptance of the two qualifications”. Sadly, discussions throughout 1986 failed to find a more suitable title for Technician Engineer but during 1987 the term Incorporated Engineer was widely accepted by the Profession and Industry as more appropriate. There had been extensive debate and vigorous promotion for this change, led by Alan Gingell, the Secretary of the Institution of Electronics and Electrical Incorporated Engineers, the largest of the non-Chartered Institutions at the time. Engineering Council Chairman, Sir Francis Tombs, commented “this will, I hope, lead to greater use of and recognition of the title”<sup>7</sup>. A petition was made to the Queen, through the Privy Council, to approve the necessary changes to the Engineering Council’s Royal Charter. Consequently, TEng formally became IEng in 1988 and all Technician Engineers were then redesignated as Incorporated Engineers.

### **But where did incorporated come from?**

The term “incorporated” emerged from the name of one of the committees through which the Engineering Council reported to the profession. The Engineering Council had found it necessary to meet separately with the institutions able to charter engineers in their own right and those that could not<sup>8</sup>. The latter were generally corporations incorporated by guarantee rather than by charter – hence the generic term “incorporated institutions”. It was a small step to take this technical term (in corporate law) and adopt it for the mass of professional engineers who didn’t hold a university degree.

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<sup>5</sup> Now IET

<sup>6</sup> The Institution of Electrical and Electronics Technician Engineers (1965), Institution of Technician Engineers in Mechanical Engineering (1978)

<sup>7</sup> Annual Report 1987

<sup>8</sup> Relationships were far more combative with the chartered institutions.

## **The Engineering Council's Role**

The Engineering Council worked hard to raise the status of the Incorporated Engineer. Historically the CEI Register had been skewed numerically towards Chartered Engineers; thus to encourage more students to see TEng as a worthwhile indication of engineering competence, a leaflet 'Your Route to Technician Engineer via BTEC Higher National Awards' was published in March 1987 jointly with the Business and Technician Education Council (BTEC). This leaflet explained how students passing BTEC engineering courses could become Technician Engineers at Stage 1 (the educational stage) on the register – the first step in climbing the professional engineering ladder. Alternative routes to registration as Engineering Technician were also considered in 1987 for those large numbers working at this level in industry but not having a mainstream academic qualification.

During the early 90s a Joint Accreditation Panel (JAP), chaired by Mike Sargent IEng, was established by nine of the engineering Institutions. This joint venture brought together all the civil, water, highways, structural and building services institutions that had members who were Incorporated Engineers and Engineering Technicians. The JAP received delegated powers from the Institutions to accredit IEng and EngTech courses on their behalf. The JAP drew up a memorandum of understanding with the BTEC laying down how the two bodies would work together; the concept was for BTEC resources to be utilized while JAP's independence was maintained in accrediting civil engineering courses. An accreditation agreement was approved in 1991 during Sir John Fairclough's Chairmanship of the Engineering Council.

The international standing of the Engineering Council was used to consolidate the position of Incorporated Engineers. The constitution of the British National Committee for International Engineering Affairs (BNCIEA) was amended in 1989 to permit Incorporated Engineers to be adequately represented. A year later the DTI was able to announce that Incorporated Engineers, as well as Chartered Engineers were to be included in the European Community Directive on mutual recognition of professional qualifications. In 2001 the International Committee was able, again with assistance from the DTI, to publish a new certificate for Incorporated Engineers who wished to be recognised in Continental Europe.

## **A charter for Incorporated Engineers**

Meanwhile a large new Institution of Incorporated Engineers in Electronic, Electrical and Mechanical Engineering was formed on 1 April 1998 by amalgamation of the Institution of Electronics and Electrical Incorporated Engineers and the Institution of Mechanical Incorporated Engineers, with the Institute of Engineers and Technicians joining after this merger. In October 2001 the Institution, now called the Institution of Incorporated Engineers (IIE) gained a Royal Charter. This enabled Incorporated Engineers to have a body representing them which held a prestigious royal charter, just like the longer-established bodies.

### **SARTOR 3**

However, the need to address Finniston's recommendations grew more intense. Key arguments against the raising of academic standards had been the specialist nature of school 6<sup>th</sup> form education and the relative dearth of opportunities to study engineering at university. The opening up of higher education with the local authority grant system and the development of Polytechnics (many based on former Technical Colleges) able to award CNAA engineering degrees meant one of these arguments no longer held true. Perceptions of a decline in A level content, reflected in an increasing need for first year "remedial" coaching in mathematics at university nailed the other.

In 1997, after a long period of consultation within the profession, the Engineering Council launched the third version of its standards for registration, SARTOR 3. This raised the academic entry standard for chartered engineer to a four year MEng and that of the Incorporated Engineer to BEng. The unspoken assumption was that there would be "fewer and better CEng – more and better IEng"<sup>9</sup>, IEng becoming the mainstream qualification for professional engineers.

Aware that an apparently lesser university qualification could be a deterrent to aspiring IEngs, the Engineering Council adopted the catchphrase "equal but different" to describe the differing skills and competences of the two grades of engineer. This seems in retrospect to have been a mistake. The register fell in popularity as higher national holders felt disenfranchised and BEng degrees dried up.

#### **Another title change?**

During the period following relaunch of the Engineering Council in 2002, as EC(UK), there were a number of initiatives that bore on the understanding of the description, Incorporated Engineer.

The original specification for UK-SPEC envisaged Chartered Engineering Technologist as a new title for Incorporated Engineers. However the proposal met with widespread opposition from existing Incorporated Engineers, who believed it indicated a watering down of their engineering competence.

A working group was set up by the new Board to look further into the adoption of the term "technologist". This responded to an initiative by the Institute of Marine Engineers<sup>10</sup> to widen its role to cover scientists and technologists working in the maritime industries, and their decision to create a title "marine technologist", aimed at those with an applied science background. The academic standard was set at masters degree level. It was therefore not directly related to the standing of Incorporated Engineer.

The working group was taken over by the ETB, and reported in June 2003. Its findings were rejected by the EC(UK) Board, as it made no clear recommendations for distinguishing technologist qualifications from engineering ones. The report was revisited in 2005 and a working group set up to resolve the question of whether there was a viable way forward to creating a technologist register. The working group reported in 2006 that no agreement could be reached on the question of whether technologists should have academic

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<sup>9</sup> Quoted from a Paper to the Engineering Council's Board for Engineers Registration in 1998

<sup>10</sup> Now the Institute of Marine Engineering, Science and Technology

qualifications at masters level (the position of the only two chartered engineering institutions who had technologist members), or bachelor level (the view strongly held by other institutions, including incorporated bodies). The latter view also aligned with the international scene, where at least four countries, including Canada and Australia, had IEng-equivalent engineers, registering them as technologists. The outcome, adopted by the Board in May 2006, was that no action was to be taken for at least 2 years.

However, Professor Banks, a new member of the Board, pressed for a review of the issue of the decline of IEng registration in December of that year. A new working group was set up under the auspices of the Board's Registration Standards Committee. They reported in June 2007, recommending *inter alia* that "the Incorporated Engineer title should be replaced, and market research should be undertaken into the acceptability of Registered Engineer or Registered Professional Engineer" [titles]. Unfortunately the Royal Academy of Engineering immediately made it clear that it would not favour a title which had REng as its post-nominal, since this might be confused with FEng. The group therefore decided to offer a wider range of titles for consideration, although it agreed that Registered Engineer should remain one of the options.

In April 2008 all the professional engineering institutions were asked for their views (and were encouraged to seek the views of their IEng members) on the following five possible titles:

- Engineer Practitioner (EngP)
- Incorporated Engineer (IEng)
- Registered Engineer (REng)
- Chartered Certified Engineer (CCEng)
- Associate Chartered Engineer (ACEng)

The responses showed that the two most favoured titles were Incorporated Engineer and Chartered Certified Engineer, with the latter having a slight majority among IEng registrants. The balance of opinion among the institutions however favoured retention of the current Incorporated Engineer title, and many current registrants expressed this view strongly as well. Many respondents felt anyway that effective promotion would make more difference to the success of this registration category than any change to the title. The outcome was to retain the status quo.

## Marketing IEng

It is possible that a concerted effort to promote IEng registration following the launch of SARTOR 3 would have helped. The Engineering Council's Board for Engineers Registration recommended a registration campaign in 1998, which was eventually funded in late 1999. The campaign, led by Claire Wainwright, was successfully piloted in East Anglia. It demonstrated that employers would respond to information about the nature and value of registration by using this in assessing employees and applicants. However greater change was afoot, and the upheavals caused by the review and restructure of the Engineering Council during 2000 and 2001 meant that this was not pursued further.

Subsequent changes separated the responsibility for registration from the promotional arm of the profession. The latter, originally Engineering and Technology Board (ETB)<sup>11</sup>, was largely established to encourage young people to seek engineering careers. While their constitution enabled them to promote registration, this was largely neglected until September 2004. During the period when marketing fell between the two organisations, a significant decline took place in the numbers of registered Incorporated Engineers - from 1997 to 2007 the numbers fell by a quarter. Struggling with this decline, the IIE accepted the opportunity to merge with the Institution of Electrical Engineers, which subsequently became the Institution of Engineering and Technology in March 2006.

In September 2004 the ETB adopted a marketing programme which specifically provided for promotion of registration and membership. The programme consisted of a "challenge fund" offering grants to organisations with proposals to increase numbers of registered engineers. Although nearly £500,000 was expended over the following three years there was no discernable effect on the decline of IEng registration.

Hence, in Dec 2007 the Engineering Council's Chairman, Prof Kel Fidler, reported that he had attended the ETB Board Retreat, at which there had been significant support for the idea that the Engineering Council should play a greater role in marketing registration. The issue was further discussed at the 4 December ETB Board meeting where Prof Fidler gave a presentation proposing that the Engineering Council undertake a marketing programme in 2008. The ETB Board resolved to add £115,000 to ECUK's 2008 grant to enable this.

With dedicated materials and staff, recruitment of new Incorporated Engineers started to turn round. While 2008 recruitment remained in the doldrums, 2009 showed a 10% increase and 2010 saw 80% more recruits than 2007. At just under 900, this was still much lower than the steady 2000 plus seen in the first ten years of the Engineering Council, but significantly better than the average for the ten years ending in 2007. The Society of Operations Engineers was initially the new champion, overtaken in 2010 by the IET, with a new marketing department.

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<sup>11</sup> now EngineeringUK

## **The future**

Various theories have been advanced to explain the decline in IEng registration since the early 1980s. Some suggest that the ready availability of university education has reduced the demand for professional qualifiers – the demand for an IEng suffix is reduced by the availability of BSc. Others speculate that the “hollowing out” of modern economies has constrained the number of jobs available for those with intermediate skills. There is a school of thought that the slow consolidation of the engineering profession has increased the likelihood of Incorporated Engineers having a second tier title.

However, discussion with today’s employers demonstrates that demand for Incorporated Engineer competence is undimmed – though many employers are still unaware of the title. Globalisation has also had an insidious effect as employers are increasingly called on to demonstrate the competence of key members of their workforce. Finally, the profession itself has worked hard to defuse the internal status issue. More and more institutions encourage senior Incorporated Engineers to seek Fellow registration, while IEng representation on boards and committees is becoming commonplace.

It seems most likely to this author that the biggest disadvantage to recognition of Incorporated Engineers has been misunderstanding and ignorance, both within the profession and outside. Having finally laid the demon of title, the concerted marketing efforts of the Engineering Council, and of major professional engineering institutions should make a considerable difference to the standing of Incorporated Engineers. Oh yes, and the cost of pursuing a university education may well encourage more of our bright young men and women to understand that IEng is a worthwhile career goal.

Andrew Ramsay : December 2011.