The Institute of Materials Minerals and Mining (IOM3) – Professional Membership and the future skills landscape

Professional Membership

Professional recognition and registration is becoming even more important in this age of legislation, regulation, and litigation. It is independent proof of 'competence' as a professional. Professional recognition belongs to the individual, and it is an international benchmark of professional competence which cannot be disputed or devalued. In these continuing difficult and uncertain times, the benefits of membership are even more important.

The role of IOM3 and our current offer

IOM3 has a current membership of over 15,000 individuals, across the world, with licenses from the Engineering Council (EngTech, IEng and CEng), Science Council (CSci, RSci and RSciTech) and also the Society for The Environment (CEnv and REnvP). These licences allow us to afford our members the opportunity to demonstrate their occupational competence against a standard in engineering, science and environmental technology.

The main benefits of membership of the Institute as an individual can be broadly summarised as below:

Events & Networking

- Technical Communities and Member Communities including those existing locally such as the MIMinE
- An extensive programme of conferences, workshops and seminars

Publications and media

- Access to the monthly member's magazine, Materials World and the Clay Technology on-line publication
- Free online access to over different 120 technical journals covering a wide variety of disciplines
- Podcasts available through Spotify, Apple and Google Play featuring informal and topical discussion relating to the materials cycle

Information services

- Access to bespoke technical information and impartial advice from experts through the Technical Advice Service
- Access to the library in Grantham, OneMine and ICON library catalogue
- Free email notifications of news and content updates relevant to your interests
- Optional subscription to TMS (The Minerals, Metals and Materials Society of America) and ASM (American Society of Materials) at additional cost

Careers

- Professional Membership MIMMM – minimum of a bachelor's degree or equivalent with 4 years relevant working experience including time studying a PhD / EngD

- Industry-recognised professional qualifications including CEng, IEng, EngTech, CSci, RSci, RSciTech CEnv and REnvP
- Free online membership workshops – the 'In a day' series working towards achieving amongst others, the CEng, CSci, CEnv and FIMMM qualifications
- Minerals Reporting (MR) and Register of Ground Engineering Professional (ROGEP) recognition
- Professional development and technology updating
- Job alerts from the IOM3 website
- Online recording of continuing professional development (CPD)
- Assistance from the Member's Benevolent Trust

Younger members

- Events and meetings hosted by the Student and Early Career Committee
- Student membership
- Young Persons' Lecture Competition

From an organisational perspective, the benefits are as follows:

Education

- Accreditation support
- Community and network
- STEM liaison
- Careers support
- Staff development

Employers

- Accreditation support
- Community and network
- Business partnerships
- Jobs board
- An industry voice on government policy relating to all aspects of the materials cycle

Our current composition

With an eye for the future, firstly we have to consider the current composition of our membership. Currently a third of our members are part of the mining community and like other Professional Engineering Institutions (PEI's) we see challenges with an ageing membership and retention of early career professionals. Much has been recently done to simplify our routes to membership and because of our active volunteer network we have routes to qualification that our unique and viewed by others in high regard.

At the moment 20% of our membership is overseas based and this is also an area we anticipate to grow significantly in the longer term. Of the top 10 mining organisations based in the UK, IOM3 have active members in 40% of these companies. Shifting globally, that figure increases to 50%.

Routes to membership

Currently a large proportion of our membership development process focuses on the member (MIMMM) grade and professional registration. In mining the focus is normally on Engineering Council registration and the Chartered Engineer (CEng) qualification, but by working with key employers we could do much more to encourage progressive qualification through the Technician Engineer (EngTech) and Incorporated Engineer (IEng) grades. While mining engineers are less likely to have a pure science background, which precludes Chartered Scientist (CSci) registration, many will carry out their duties with due consideration for the environment and sustainable best practice. This makes them ideally placed to pursue professional registration through the Society for the Environment too, particularly at the Registered Environmental Practitioner (REnvP) grade.

Changes in the education sector

In mining education there is currently much change occurring. Development of the new Level 6 Trailblazer Standard will shift the delivery model and encourage increased use of the Apprenticeship Levy. Others are shifting delivery to separate geological and engineering qualifications and it is pleasing to see recent progress being made recently in Leicester with academia and industry coming together to develop practical postgraduate teaching.

Elsewhere progress continues to be made with education reform through the proposed Baccalaureate and Advanced British Standard. With a potential change in government skills based learning and better teacher CPD remain as hot topics for discussion along with better use of Apprenticeship Levy spend.

There are also many views relating to STEM learning and particularly to what extent this should be mandated up to the age of 18. Whatever your personal view there are certainly major benefits to be derived here with respect to diversity. Statistics suggest that 50% of girls study science subjects up to 16 which then diminishes to around 20% completing science subjects at the age of 18. It is hardly surprising then that we only see 16% or so of women working in science and engineering careers.

Many have a view that University funding should be a priority for our future government, with in real terms income Universities receive from fees reducing in real terms since they were capped at £9,000 in 2010. This may explain the current reliance on overseas student enrolment which it is widely reported helps Universities with funding issues. Many however are not aware of one of the lesser-known consequences of Brexit which resulted in the demise of Erasmus Exchange programmes due to lack of available funding which now creates a lack of diversity, particularly on courses delivered at masters level.

Development of the profession

IOM3 and the wider engineering community are currently working with the Royal Academy of Engineering on what is referred to as their Engineering 2030 project. This project focuses on educational and industry needs for future engineering skills in 2030 and beyond. Back in 2018 it was anticipated that by 2030, 85% of the jobs that would exist in the future, didn't exist then. It would be interesting to reflect on progress in this area taking into account the Covid pandemic and the development of artificial intelligence (AI) and machine learning.

One of the partners supporting the Engineering 2030 project is Engineers without Borders. Using tools such as their Systems Change Lab, the Re-imagined Degree Map and Global Responsibility Compass they are hoping to encourage Universities, employers and individuals to rethink the way that we work with the environment, something that is very closely aligned to work we do in the mining profession.

From an Engineering Council perspective, the Accreditation of Higher Engineering Programmes (AHEP) Standard and UK Standard for Professional Engineering Competence (UK-SPEC) documents continue to evolve. It is clear safety will continue to evolve, but sustainability and AI tools will significantly change the way we work in the very near future in the mining profession. Remote surveys and machine control are now commonplace, but it doesn't seem that long ago that these were merely aspirations for future delivery.

Development of technology brings professional standards, ethics and CPD even more so into question. Again these are areas that form a major part of current IOM3 thinking.

With all this activity it is easy to forget that as a community we have a collective voice. Recently IOM3 requested feedback from members on the consultation process relating to the Advanced British Standard and through employer networks there are a number of opportunities for employers to work on the development of apprenticeships through involvement with Trailblazer Groups.

Conclusion

In summary, all of the factors referred to in this paper have the ability to impact on the development of future engineers in the mining profession. Collectively we also have the opportunity to influence the direction of mining in the both the UK and overseas. While geopolitical factors will play a key role in the future of the activity carried out by the sector, we can potentially have more impact on any of these outcomes through the human interface. Arguably also in reality this is probably much easier to achieve.