METALLURGY IN THE UK

Richard Brown
Materials World magazine
,
29 Oct 2018

Qualifications in metallurgy are increasingly diminishing in the UK. Richard Brown of M&C Educational Training Services Ltd discusses the current situation and how metallurgy training can be saved.

The state of metallurgy training in the UK is dire, with very few organisations providing the opportunity for approved continuing professional development training. This is even lower for part-time and employed positions in metal work, as so few institutes are able to progress to regulated qualifications and have their own degrees available, in collaboration with a university partner.

In the last four years there have been little opportunities for employed, part-time students to progress their studies to higher education level in metallurgy. This actively increases the skills gap and puts the sector at risk of shrinking.

Data published by the UK government confirms that we have a shortage of qualified, experienced metallurgists linking to the UK Standard for Professional Engineering Competence (UK-Spec). These ever-decreasing numbers are affected by many factors, not only common to metallurgy. The UK is dealing with an ageing workforce, where knowledge and skills are not being replaced – fewer employers and fewer jobs are also contributing to the sector's demise.

The metallurgy sector has always been small and niche, and there's a possibility that this could remain the case – but even so, perhaps it is time to consider a change.

Modern metallurgy training

John Campbell, Emeritus Professor of Castings Technology at the University of Birmingham, UK, said, 'Over the past two decades, the manufacture of castings has become sophisticated in the design of filling systems for moulds. New filling behaviour, now nearly, or sometime completely free from turbulence can produce products of extreme reliability and with high properties. For the future design of a properly integrated metallurgical training and education, modern casting technology is clearly an essential requirement.'

A significant contributing factor to the current situation has been industries moving away from the UK, attracted by the lower manufacturing overheads and cost of workforces overseas. But price isn't everything, and homegrown skills and craftsmanship were quickly becoming lost.

These issues, along with a new set of challenges as the UK exits the European Market, have brought the sector to an interesting position.

The reduced number of employers, and therefore jobs, has a two-way relationship with training schemes – this lower demand will result in a decrease in the availability of further and higher education provision. Lower demand and falling group sizes mean training providers and courses have also reduced.

Full-time higher education (HE) prospectuses offers minimal degree courses in fields such as metallurgy, so part-time students find it hard to find an accredited provider, which is exacerbated by distance, availability and opportunities for study for a person who wants to start or progress in metallurgy when already working full-time.

In recent years, metallurgists have been recruited from overseas, but this has now decreased as even these pools of opportunity have dried up.

Consider the issue of part-time education providers offering HE or qualifications in HE in metallurgy. No programmes are offered except from one company – M&C Educational Training Services Ltd, a privately owned organisation with the ambition to become a private university. M&C was formed to support metallurgy for the manufacturing engineering sector.

An education in metal work

So what can the metallurgy sector do to grow a robust skills base and develop career path options?

The industry needs organisations built on academic and technical support teams with the capability to transfer knowledge and skills that contribute to fit-for-purpose qualifications.

The modern learning environment must adopt modern methods to teaching, learning and assessment (TLA), with innovative content and teaching styles – including virtual learning environments in student-centred, interactive manner driven by the student.

For M&C Educational Training Services, past successes in providing qualifications have been built upon continuing academic rigour, meeting industrial sector criteria and looking for accreditation of regulated and validated qualifications to UK-Spec.

One of the group’s metallurgy building blocks is creating courses designed to fit the needs of and also shape the future of the industry, based on experience.

Many employers consider investing in the career development of their homegrown workforce and training as part of the company’s development plan. Over several years, engineering apprenticeships at Level 3 have been embedded in these development plans.

It is becoming difficult to find courses for part-time student metallurgists at regular establishments, so the alternative is to provide on-the-job training without a CPD award, or undertake a professional qualification.

Further education has normally been identified with work, study and day release, providing the opportunity for gaining experience on the job, linking skills to competence built up over a period of time and often linked to engineering technicians. However, our market intelligence suggests that regulated qualifications and validated degrees for metallurgy and casting are more important than CPD.

In continuing efforts to bridge the skills gap, M&C aims to further its distance and blended learning CPD courses, to convert these to regulated qualifications for employers and students who want accredited options.

Building an industrial workforce

Employees often fit into the classification of a mature workforce, who may have several sets of qualifications and a broad range of experience across their careers, which provides an excellent base for a flexible study approach, meeting requirements of both employees and employers.

Future metallurgy training would fit into areas of accreditation of prior learning/accreditation of prior experiential learning (APL/APEL). With this in mind, M&C is developing individual learning plans (ILP) that take into account the varying needs of individual students, and how they must be addressed in different ways.

ILPs can be used by an individual alone or as part of an organisation, to manage learning over the course of their life. ILPs are designed to incorporate the long-term goals of the student, synthesise with the larger educational framework, and give credence to the student's aspirations, whether cultural, artistic, social or personal.

This, in short, looks at what the individual and company needs and their requirements to achieve this. It is very attractive to some employers as it considers the building blocks as core, with a flexible curriculum.

The inclusion and requirements of the part-time student and employer, creating and providing opportunities through the workplace, can also be supported by developing an industrial mentor-training programme. These maximise and use the workplace for application of knowledge and skills, which can be developed to fully embrace the part-time student's or employer's needs.

Programmes of this nature should encourage students to look at their employer's needs and develop a mini work-based project along those lines, as this would provide real-life work-based activities, benefiting both parties.

Such a project can be undertaken as part of a blended learning teaching method, embracing flexible, distance and eLearning, supported by face-to-face academic delivery and the use of video conferencing for individual and group tutorials supported by experienced academics.

Part-time students would also benefit from access to industrial technical eBooks, academic and support teams, visits to relevant companies, and an industrial mentor.

Our experience has demonstrated that students can benefit from additional technical support, for example in report writing, or workshops to focus on strengthening specific skills like written and verbal communications. But, most importantly, teaching styles, practices and tools must be broad and wide-ranging in order to suit the educational needs of the next generation and secure a strong future for UK metallurgy.