Co-funded by the Erasmus+ Programme of the European Union

METALS
MachinE Tool ALliance for Skills

METALS Position Paper on Additive Manufacturing Skills

The purpose of this paper is to contribute to policy-making in the European advanced manufacturing sector in relation to skills and competences. The advanced manufacturing sector supplies many different industries including automotive, aerospace and medical devices. With customised, innovative and high-quality products, advanced manufacturing has been identified by industry and governments as an important driver for the future economic growth of the EU.

However, the competitiveness of the sector is highly dependent on knowledge, skills and competencies gained through VET (Vocational Education & Training) and work-based learning, which are needed to design, produce, operate and maintain cutting-edge modern machinery and manufacturing systems.

Emerging technologies such as Additive Manufacturing (AM) provide new opportunities for industry and craft workers. In the last decade, however, advanced manufacturing has seen a shortage of skilled workers and innovative mind-set, hampering the competitiveness of the EU machine tool industry and the employability of workers.

While disruptive technologies provide new business opportunities for machine tool builders, understanding the scope of technological changes occurring on different fronts and integrating them into their own business is a complex task and requires new skills. The analysis on future skill needs carried out within the EU METALS project, focusing on AM, produced a clear conclusion. As AM moves closer to serial production, workers using conventional machines will need to develop new competencies.

With that in mind, this position paper aims to help decision-makers all over the EU to recognise the importance of AM skills in the European advanced manufacturing sector and to provide them with a series of recommendations to support the development of competencies and skills in this area. The main objective of the EU METALS project is to support the training of the current and upcoming machine tool workforce on new production methods, such as AM, and to retain and support European industry's global leadership.

In this position paper, we would like to highlight the project recommendations in order to further advance AM skills in the EU:

1. AM skills are crucial for today's workforce in advanced manufacturing. The competitiveness of advanced manufacturing companies depends on the skills possessed by its workforce. In order to utilise the full potential of advanced manufacturing, VET and manufacturing organisations must focus on developing a capable workforce that is able to harness the potential of AM. We call on VET regulatory bodies across Europe to use strategic workforce planning approaches to shape robust training programmes for AM-skilled workers. We also call on relevant national accreditation agencies across Europe to give priority to AM skills in their respective systems. AM knowledge acquired in an informal environment should be better recognized and embedded into formal qualification paths.
2. In order to help EU industry build the required AM skills to respond to 21st century needs, we call on European, national and regional authorities to increase their joint activities with industry, **craft** workers and educators. For instance, this could be done by promoting the use of the METALS e-learning platform, which was launched in the framework of this EU project. Online-based courses provide useful avenues to deepening know-how on the foundations of AM. Whenever coupled with hands-on practical experience, e-learning may also allow for scaling up knowledge of additive manufacturing technologies in the specific working area required.
3. The role of VET-educated AM talent should be better promoted across Europe, especially in a context of an aging workforce and demographic pressure. Promoting the attractiveness of a VET-enabled career to unlock the power of new emerging technologies like AM should be properly considered by Member States' authorities.
4. A fast-evolving production landscape with continuously innovating technologies require educational institutes able to constantly update their teaching offerings, in line with this evolving reality. We call on relevant national and regional authorities to design reformed VET systems where curricula catch up quickly with AM innovations. Industry **and craft** workers should be involved in such efforts as an important driver of technological advancements in this sector.
5. We call on the EU to increase funding at the disposal of VET institutes for the purchase of necessary technical equipment in the field of AM. AM machinery and ancillary equipment can be expensive for VET organisations, particularly if specific segments of the market are considered. Moreover, technology progress on AM make previously bought equipment relatively obsolescent in a short time span. EU

funding is well-positioned to provide support to VET organisations in the purchase of relevant AM hardware and software for teaching students. Increasing the financing pool at disposal would be very helpful in this respect.