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EU INDUSTRY DAYS

Manufacturing and 4.0 Skills

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EU Industry Days High-Level Conference 2019

Manufacturing and 4.0 Skills

We must better anticipate the future skills needs – especially in the area of data analytics and digital security – and attract ICT talent in manufacturing. This was the key message echoed during a stakeholder session organised by CECIMO on “**Manufacturing and 4.0 Skills**”. The session took place during EU Industry Days 2019 – the European Commission’s flagship EU event dedicated to industry gathering around 1500 participants – and aimed to look into the societal aspects of the digital transformation and how to prepare talent for the future jobs.

Roland Feichtl, President of CECIMO, opened the debate and underlined that the machine tool industry is a key enabling sector and the starting point of almost every manufacturing activity in metal forming and metal cutting. It has a wide range of applications in all the main industries of the economy such as automotive, aerospace, energy generation, robotics, additive manufacturing and many more. Furthermore, CECIMO is proud to be a world market leader, representing more than one third of the world’s machine tool production. Finally, Dr Feichtl called on the European Commission and EU

leaders to place industry at the core of the EU’s future and to recognise industry as an important driver for wellbeing in Europe and a critical factor for an advanced, competitive and clean economy.

The major takeaways from the event are the following:

BECOME BETTER AT ANTICIPATING THE SKILLS NEEDS OF THE FUTURE

João Santos, Deputy Head of Unit in the Directorate General for Employment, Social Affairs, and Inclusion of the European Commission, stressed that although traditional manufacturing jobs have declined in recent years, the share of manufacturing in total EU employment is around 15%, with an important multiplier effect in other related sectors, such as marketing, sales or transportation.

“Everyone should take the responsibility and live up to the challenge, to ensure that we are ready to embrace a skills revolution.” João Santos



Roland Feichtl, CECIMO President



Jean-Hugues Rodriguez, Airbus

As Manufacturing 4.0 leads to a deep transformation in production processes, the main concern is that the talent shortages and skills mismatches will impact competitiveness, innovation potential, and social cohesion and fairness. He drew attention to the **importance of having the right intelligence with respect to so-called '21st century skills' that are currently in high demand.** With the help of big data, the European Commission and the European Centre for the Development of Vocational Training (Cedefop) are also trying to shed light on what skills are in demand and where. The first results of this project will be released in March.

Jean-Hugues Rodriguez, Competence and Workforce Planning Manager at Airbus, stressed that all actors should enhance communication on new skills needs to provide visibility of future of industry in Europe, as it brings fantastic opportunities for all talents and new generations. Airbus as built and share internally its competence strategy, then check and share some external reports to understand better other perspectives of skills and demographic evolutions.

"It is time to engage all industry actors and institutions to provide a common view of main skills needs and demographic trends in Europe and worldwide to avoid missing opportunities in boosting our industry development and engaging new generations in skills for the future".

Jean-Hugues Rodriguez

WORK TOGETHER IN PARTNERSHIPS

According to the European Commission, creating the right partnerships will be instrumental in addressing the skills needs of the future. Such partnerships already exist at EU level, for example the Blueprint for Sectoral Cooperation on Skills, the European Alliance for Apprenticeships and the European Digital Skills and Jobs Coalition. Another very recent initiative launched by the Commission, which will be strongly supported through the Erasmus programme in the period 2021-2027, is to establish European Platforms for "Centres of Vocational Excellence". These will bring together local and regional partners from education, business, and research, as well regional authorities and development agencies, to co-create local "skills ecosystems".

Another example brought up by **Jens Redmer, Principal New Products at Google**, is their partnership in Germany with a Union. Google will invest in research to find out the needs for reskilling programmes and how to incentivise people to pick up digital skills.

"From a societal perspective, the education system in many countries needs nothing less than a revolution. We need to train trainers, we need to train the teachers that teach our children – as 90% of jobs in Europe will need to have digital skills". Jens Redmer

MAKE SMALL-SCALE, TRADITIONAL INDUSTRY RELEVANT TO ICT TALENT

Barbara Colombo, Vice President of FICEP Group and Vice President of UCIMU (Italian machine tool, robots, automation systems and ancillary products manufacturers' association),



Jens Redmer, Google

shared her story as an example of an Italian SME that became a world leader in the manufacturing of computer numerical control (CNC) machines and systems for the steel construction industry. She explained that while Industry 4.0 is changing manufacturing, Italian companies operating in the sector are facing challenges relating to finding staff due to the lack of students enrolling in technical schools. Adding to this, the relevant skills are often not available within the existing workforce. Because of this, in FICEP they invested in an academy for their staff and customer personnel to be trained on new technologies and particularly on data. Programming is also a key competence; CNC machine programming, programmable logic controller (PLC) for automation and product lifecycle management (PLM) are at the heart of the entire production process. Digitisation has not only opened new possibilities for the remote management of process supervision and predictive maintenance, but it has also made machine operators' jobs easier. Machine tool operators no longer need to solve critical issues regarding the machines, as they are now dealt with at a higher level in CNC and PLM programming.

In her view, the key to success is to introduce new 4.0 skills and competences in technical schools. For example, a technical school in Italy created two labs: one focusing on 3D modelling to design a product and the other was a miniature version of a production cycle that included automation, robots, CNC/PLC programming. Enterprises can play a vital role in students' skills development by investing resources into creating school environments tailored to the new requirements of the market.

"Thanks to the large investment in industry 4.0, FICEP is now recognised worldwide as a supplier of turnkey advanced factories more than a machine tool company for structural steel fabrication. We supply automation, intelligent steel fabrication, mobile applications, software integration, production management and analysis – this is the big change". Barbara Colombo

Andrew Hodgson, Strategic Sales Lead for Digitalisation at Siemens UK's Digital Factory, described how his company was part of a government programme called "Made Smarter". The programme brought together companies like CISCO, Microsoft, customers, suppliers and competitors who collaborated with the British government to put this programme at the center of industrial policy. "Make smarter" gives SMEs the opportunity to visit an innovation hub, see innovation happening and gain a real grasp of how they can benefit from digitisation. For example, in these demonstrators and Catapult centers machine tools and other machines are designed with virtual reality and with virtual commission. Due to this, instead of products being tested on the shop floor for three months, they are tested in a virtual environment which results in a better product in half the time. Big companies like Airbus have been doing this for years, but now the technology is available to everyone who makes a machine tool.

"Bringing technology down to earth and showing it to the SMEs gives them the confidence that their money spent for digitisation is well spent and not a risky venture". Andrew Hodgson



Barbara Colombo, FICEP Group



Andrew Hodgson, Siemens UK's Digital Factory

"The entry barrier level for SMEs has never been lower. It has never been easier for SMEs to get access to computing power, memory space, programming interfaces, open libraries. You don't necessarily need the hardcore AI engineer in your company". Jens Redmer

LEARN TO LEARN

Kristina Dervojeda from the Innovation Research Center at PwC set the scene for the discussion by presenting a study which was part of a two-year European Commission (EASME and DG GROW) initiative. The study explores how to align advanced manufacturing education and training with the evolving needs of the market and ways of developing curriculum guidelines for education and training providers. The study will identify the key skills for the manufacturing professions of the future. **While it is undeniable that one of the most important skills is the ability to interact with modern interfaces, including human-machine interfaces, it is striking to see that non-technical skills like adaptability and flexibility are equally important.** She explained that most of the non-technical competences are either insufficiently covered or entirely missing in current curricula. She emphasised that lifelong learning remains crucial for the 21st century. For this reason, people must acknowledge that education and training never stop and that they need to upskill themselves throughout their entire career trajectory.

"It doesn't matter anymore what you know but your ability to constantly adapt to changing circumstances."
Kristina Dervojeda

Jens Redmer highlighted that 90% of data from sensors, customers and machines in a typical company is unstructured. Due to this, companies will not be able to generate insights, value and knowledge out of this data. As a response to companies' struggles, Google initiated a programme six years ago called "Grow with Google" that trained more than three million people in Europe on basic digital skills.

BE AGILE

Mr Redmer revealed that Google has reinvented its way of thinking numerous times: bringing its technology to the mobile



João Santos, European Commission



Kristina Dervojeda, PwC

space ten years ago, later changing its mantra to artificial intelligence and now offering programming interfaces and research results to the wider industry. He delivered a strong message to companies: "It's a mistake to think that digitisation will not impact your business. Companies need to reinvent themselves constantly and optimise every single step in the value chain from production, design processes, copyright prototyping, sales process, after sales, maintenance etc."

Airbus concentrated their efforts into fostering a more agile workforce, a new working culture that empowers employees and renders them responsible for their own personal development within the company. Airbus has created a new forward-looking HR approach, a "PULSE" academy which has identified the 18 strategic competences needed for Airbus employees. The competence strategy is endorsed at the top management level in order to ensure that all actions put in place – for instance: learning, knowledge management and so on – are aligned and available for all employees in digital form.

"We give the means, we give some advice, but then we ask all our employees worldwide to themselves anticipate this future and make the most out of the digital tools we offer to them. This is the way we believe we can prepare the future with high flexibility". Jean-Hugues Rodriguez

Andrew Hodgson analysed the three pillars for 4.0 skills – for instance: government, manufacturing and education. In Siemens' culture, reskilling and upskilling is a top-down process. The upgrades on the factory shop floor are designed and engineered by a workforce that needs to have the right skills. Therefore, without downplaying the importance of technology, in his view, the main driver for success is that talents want to be part of new solutions in the factory.

"Teaching somebody how to pick up a skill that improves their job, improves the factory, improves their output is learning that they can absorb and take heartily. This is what makes the difference. By learning new skills, they secure their own future and their role in the job".
Andrew Hodgson