

ChemSkills WP10 (Petrochemicals)
Analysis of survey responses + interviews
February 2025

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Executive summary

- Ever-leaner petrochemical company structures necessitate a versatile workforce, emphasizing broader skill sets (regulatory, toxicology, SSbD, communications) over specialization.
- The availability of required skills for the circular transition is global but costly, necessitating a broader, international employee pool.
- The industry's shift towards cleaner operations is vital but hinges on supportive regulatory frameworks and political will, which is a prerequisite to attract the right workforce with the adequate skillsets.
- Digital skills, and in particular AI and blockchain applications, will prove critical to support the transition towards a circular petrochemical industry. These skills come in addition of the acquired skillset in e.g. engineering.
- Communication skills and regulatory knowledge are increasingly crucial to promote the industry's interests and reputation.
- Collaboration between universities and companies is essential to align curricula with industry needs, and practical on-site training is invaluable.

Survey on skills requirements and gaps in petrochemicals industry

The chemical industry is currently undergoing a major transition. This transition encompasses a circular and digital transformation affecting energy supply, feedstock selection and production processes at large.

The [ChemSkills](#) project aims to respond to these challenges by identifying and developing green/circular and digital skills, in addition to skills to produce 'safe and sustainable by-design chemicals' within the industry. The project consists in listing the skills needed to address future challenges in the European chemistry industry at large, and petrochemicals in particular.

For this purpose a survey has been circulated to collect the views from the petrochemicals industry on skills requirements, gaps and training programmes. The results of this survey will be combined with other sources, such as interview responses -see below, to develop policy recommendations at large and specific training programmes in particular.

About the survey

Timing: The survey ran from May 2024 to date.

Scope: 25 responses received from the following petrochemical companies. For some companies multiple responses have been received:

- Advario
- BASF
- ExxonMobil
- Neste
- OMV
- Sabic
- Shell
- St1 Refinery
- Versalis

Member States in which the companies operate:

- Belgium
- The Netherlands
- Germany
- France
- Italy
- Spain
- Sweden
- Austria
- Finland
- Bulgaria
- Romania
- Slovak Republic

- Croatia
- Estonia

Summary of survey responses

- **Availability of workforce** with adequate skillset is key: managers, technicians and operators are sought after, more than “elementary” workforce. Digitally skilled profiles are located mostly in Eastern Europe and India and will require the industry to tap from a global employee pool.
- Expertise of **workforce in "newer" technologies** and markets is critical and in particular biofuels, hydrogen, alternative feedstock.
- **Digital skills and “green” skills are interlinked:** digital skillsets are considered a tool/enabler to facilitate the green transition and allow for making production processes easier. e.g. Blockchain can help trace the life cycle of chemical products and facilitates document-sharing and with that compliance check processes with legislation.
- Relevance of **existing training programmes:** sufficient programmes available, almost 1 out of 4 organizations invest more than 80 hours per employee per year. However **content will need to be adapted** to focus on digital skills and circular economy e.g. mass balance.

Survey questions and responses

What are the current trends/drivers of change that you experience in your current market? Select up to 3 most important.

1	Growing emphasis on sustainability and circular economy;	<ul style="list-style-type: none"> - Changing trade flows with imports from Asia and challenging cost competitiveness in Europe - Excessive energy cost
2	Increased adoption of digital technologies;	Implementation of digital technologies to optimize activities and to allow for compliance of chemical products and production processes with EU regulations e.g. Digital Passport and Digital Safety Datasheet (SDS)
3	Regulatory changes impacting industry practices.	
4	Shift towards automation and robotics.	
5	Rising demand for personalized and customised products	Developments of customised products of progressively higher value, to win competition vs lower value imported products.

Almost all (20 out of 25) respondents confirmed that their organisation will be affected by the market transition towards a green economy. This transition is driven to a large extent by regulation requiring investment to lower the overall environmental and climate footprint of petrochemical operations in terms of energy supply and feedstocks, which comes at a time of high energy prices, affecting the margins and competitiveness of the European industry at large. Somewhat less but still a significant share (13 out of 25) of the respondents confirmed that their organisation will be affected by the upcoming changes in the market towards a digital economy.

Needs of the petrochemicals sector at large

The petrochemical sector respondents identified, for the short term (1-2 years), the availability of workforce with the adequate skillsets as the top priority (4.2/5 on average), with the initial investment costs paired to that workforce following closely (4.15/5 on average). Integration of the workforce in existing systems and availability of existing training programmes are seen as less of an immediate issue.

These challenges remain in an identical order of importance on the mid-term i.e. 5-10 years.

Technicians (4.2/5 on average), professionals (4.15/5 on average) and operators (3.95/5 on average) have been identified as the most critical profiles for the industry. Highly skilled technicians, operators and professional experts are key, as other categories, such as elementary workforce, can be found more easily on the job market. In particular, workforce with dedicated knowledge on "newer" technologies and markets such as biofuels, hydrogen, alternative feedstocks, and employees with practical experience in chemical terminal environments are sought after.

It is necessary to create professional and managerial profiles with transversal regulatory, chemical and economic skills capable of generating changes in a short time but effective for the future.

According to the survey results and the comments of the respondents, no major changes in the job profiles sought are expected in the mid-term.

Skills requirements in the petrochemical industry

There is broad consensus among the respondents on the industry-specific, and to a large extent already implemented, skillsets of:

	Skillsets	Importance on average (1: least important, 5: most important)
1	Safety awareness	4.6
2	Process safety & risk management	4.4
3	Instrumentation and process control	4.35
4	Thermodynamics and heat transfer	4.25
5	Chemical process design	4.2
6	Quality control and assurance	4.2
7	Reaction engineering	4

8	Metallurgy	2.95
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Some respondents acknowledged that the skillsets listed in the survey were focused on the actual production facilities. In particular, people with practical experience in chemical terminal environments are sought after.

Beyond these skills, knowledge on policies, such as expertise in chemical risk assessment, and scenario planning have been identified as critical.

Other skills needs indicated as not listed but deemed important: digital tools, processes and process automation (see below). Controlling and handling furnaces has also been indicated as a key skillset.

- Digital skillsets

Key skillsets identified by the respondents include cybersecurity and supply chain digitization, beyond the expertise of cross-fertilized digital and sustainability/circular economy expertise. In this respect, the green transition in the chemicals industry requires the collection and management of a lot of information and therefore efficient and rapid communication processes between stakeholders and appropriate digital tools for evaluating the data collected.

	Skillsets	Importance on average (1: least important, 5: most important)
1	Sustainability and circular economy expertise	4.8
2	Cybersecurity and network security	4.55
3	Supply chain digitization and logistics	4.3
4	Data analytics	4.25
5	Digital twin modelling and simulation	3.6
6	Automation and robotics programming	3.55
7	Internet of Things	3.1
8	3D printing and manufacturing	2.45

In addition to the above listed skillsets, respondents viewed simulations and “self-documenting” planning systems to be relevant. Skills around System Analysis Programme (SAP) are also identified as relevant. In addition, the use of the BlockChain could make it possible to trace the life cycle of chemical products, facilitating the sharing of documents, agreements, production and compliance processes, logistics with the aim of processing information to measure the level of sustainability (Life Cycle Assessment) but also the degree of compliance with current legislation. The goal achieved would not only be greater efficiency of processes but also greater transparency among the stakeholders involved.

Digitalization is considered by the respondents as a fundamental process in order to simplify, and therefore manage, a complex challenge such as sustainability. In addition, it could develop tools that not only measure the "Green" level but also how economically impactful the choices made to achieve it are, without ever losing sight of the competitiveness of the European market.

It has been noted that more and more of digital competency skills are key yet most of those skills are sought for (and at a lesser cost available) outside of Western Europe and typically centred in India and East Europe.

All respondents saw a major digital competence skills gap across generations, and half of them found it to be significant. It was noted that the 'environment' causes the gap across generations, yet that everyone can learn if there is will and support from the management.

Regarding genders, some respondents identified a gender gap due to historical reasons as in some countries there is a lower penetration level of university degrees in STEM subjects among women compared to men.

Note to editor: one respondent was not aware of the concept "digital twin modelling".

- Soft competency

	Skillsets	Importance on average (1: least important, 5: most important)
1	Communication	4.75
2	Problem solving	4.7
3	Critical thinking	4.65
4	Cognitive skills	4.4
5	Safety and ethics	4.35
6	Social and emotional skills	4.25
7	Content creation	3.9

One respondent remarked that this series of skills are "*often undervalued when thinking about Petchem industry but very needed.*" Cognitive skills and soft-skills are important mostly in the commercial area e.g. for negotiations, but also in the transition phase, for all the departments in the organizations. Sometimes habits must be abandoned in order to re-invent new solutions in a profoundly changing economic and social context.

- Green skillsets

By green skillsets, it is understood that they encompass sustainability values, legal standards, environmental technology and sustainability practices. Energy efficiency is deemed critical by almost all respondents:

	Skillsets	Importance on average (1: least important, 5: most important)
1	Energy efficiency	4.55
2	Acting for sustainability (i.e. know-how related to change in	4.45

	organizational structure to support green activities through life-cycle management, lean production and cooperation with external actors)	
3	Monitoring and predicting	4.4
4	Envisioning sustainable futures	4.35
5	Embodying sustainability values	4.25

As part of their additional remarks, respondents commented that the need to replace substances of concern is a key priority for the industry at product-level and less at production level. Truly understanding how to make “sustainability” a win for companies and turning the challenge into a winning proposition in the petrochemicals sector will be the key activity for the next 5-10 years.

Note to editor: “green skills” is considered a vague concept and needs to be better defined.

Existing training programmes in the petrochemical industry

The majority of respondents (17/25) confirmed that their organizations have training programmes in the digital and green skills realms available. These programmes include:

Green	Digital	Other
Refinery transformation	Data analytics and mathematical approaches.	Training / awareness raising in the regulatory field (regulatory/chemical/economic)
"Green skills" are not specially trained, as these skills come down to classical thermodynamics, chemical unit operations, material sciences etc... no real new skills required to address the sustainability transformation....	Digital Trainee Programme for future process, asset, maintenance managers	
Bio-mass balance		
Understanding of Product Carbon Footprint calculations and regulatory requirements		
Green regulations, pledges, technologies		
Green process units, training on new/upcoming		

chemicals and respective logistics supply chains		
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Many organizations already started to implement training programmes yet it is expected they increase scope and intensity over the years to come.

Almost 1 out of 4 organizations invest more than 80 hours per employee per year into learning and development. Half invest approximately 20-80 hours and 25% invest less than 20 hours per employee. In terms of the actual budgets spent, almost half of the respondents did not know how much of the development budget was spent into learning and development for employees. In terms of actual documents/guidance, 2 respondents cited “capability development plans” and mission statements as reference documents for the promotion of new skills in the sector.

Interviews: ChemSkills WP10 presentation to EEPC Conference (17 October 2024)

About the EEPC Conference

About EEPC :

EEPC, the European ethylene producers and technology providers organisation, is a sector group under Petrochemicals Europe and Cefic. EEPC was founded in 1996 with the purpose of providing a platform for the exchange of non-confidential information relating to the health, safety and environmental issues encountered in the production and handling of ethylene.

About the EEPC Conference:

At the annual EEPC Conference in 2024 approximately 45 participants registered for the break-out session “People our Next Generation” to discuss 5 concrete questions on trends in the ethylene production sector, skills needs, gaps and concrete training programmes. The workshop lasted for 2 hours, was interactive and moderated by 2 EEPC members.

Workshop questions

The participants had to respond to the following questions:

Workforce availability	Profiles	Trends	Skills gaps	Training programmes
How do you see the evolution of the availability of workforce in the next 10 years?	Which workforce profiles will the ethylene production operations then require?	What are the key trends in ethylene production in the next 10 years and how do you rank them? E.g. use of bio-, circular- and synthetic naphtha	Which gaps do you identify in skills on circularity and digital proficiency in your working environment?	Are the existing training programmes fit for purpose to meet the trends? How do you think higher education programmes should evolve ?

Summary workshop responses

Workforce availability	Profiles	Trends	Skills gaps	Training programmes
Loss of know-how due to retirement and workforce mobility Younger generation: different	General profiles (basic scientific skills) complemented with digital profiles (electrification)	Cleaner petrochemical industry can only materialize through enabling regulations and industry investment	Skillsets available but expensive, broaden pool to ex-EU Communication to civil society	Mentoring at company-level to promote hands-on learning (e.g. pump) Dual-learning university +

priorities and less long-term careers Reputation and attractiveness of the industry e.g. shifts, work-life balance	Broader > deeper, promote technical pathway and involve schools and communities		e.g. regulators, communities,... Basic skills provided at university combined with circularity, digital (AI), economics provided at company	company and promote apprenticeships Outsourcing is positive but hands-on and on-site experience is a must Include new trends into trainings and increase network between industry and education
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Extended report from workshop

Workforce availability: attendees discussed the availability of the ‘right’ workforce for the industry in the next 10 years. Due to the intrinsically global nature of the larger petrochemical industrial activities, the workforce active in the industry is mobile and moves easily from and to Europe. This allows for a large ‘employee’ pool for employers to choose from, yet also implies more volatility and shorter career paths within a single organization. In the past years attendees saw a higher flux of employees with expertise moving to non-EU regions, possibly due to better working conditions. The current retirement wave of ‘boomers’ (workforce born in 1960’s) is also expected to lead to an important loss in practical knowledge and know-how of plant operations.

Starting point is that, today, circularity and digital are not sufficiently part of the curriculum of existing workforce i.e. a mismatch between the education system and needs of the industry. In addition to the increased rate of retirees, the petrochemicals industry is not perceived as an attractive industry to work for with young graduates, which adds a layer of difficulty in attracting the rightly skilled labour. The transition the industry is going through makes potential workforce believe a long(er)-term career is going to be unlikely in the petrochemicals industry. In return, the willingness for more experienced and senior workforce to train younger generations decreased due to a tendency for these generations to switch jobs more quickly, with a preference for a better work-life balance which may prove difficult to uphold in an industry that requires night-shifts and weekend work. In addition, the incentive package as part of the salary is believed not to meet younger generations’ expectations. The leaner company structure which is being implemented across the industry provides for less time to transfer knowledge within departments. Universities do provide a lot of relevant knowledge already but insufficient problem-solving skills i.e. connecting different subjects and subject areas, which makes additional on-site training required.

Profiles: linked to the topic of workforce availability, the attendees identified a conflict between the education system and the actual industry needs. Regardless of the fact that education systems are nationally organized, across Europe the participants saw that the basic university

education is good, and is unlikely to change, but lacking is the education in digital skills necessary to aid and accelerate the transition towards a -more- circular petrochemicals industry. In this respect, and in view of the electrification processes being gradually implemented across the plants, electrical engineers who are digitally savvy are perceived as ideal workforce to support this transition.

On the ‘softer’ side of the competences, intercultural competences and communications are considered a major plus in the international and global working environment which petrochemicals industries operate in.

Finally, the participants observed that leaner company structures require the management and workforce to be more agile and flexible career-wise, which prones to preferring polyvalent profiles (combining engineering, regulatory, toxicology, SSbD¹, communications skills) rather than specialists in a given field, under the mantra “broader rather than deeper”.

Trends: in terms of general trends affecting the industry and the related workforce, the participants found that:

- Industry: the industry has embarked on a transition towards clean(er) operations in terms of emissions and overall climate and environmental footprint. This includes reducing CO₂ emissions, both from energy supply through electrification of furnaces with renewable energy sources, renewable/bio-feedstock selection, increased levels of circularity from cradle-to-grave and recycling. While this transition is supported by especially the younger workforce generations, the attendees noted that it can only materialize provided the regulatory framework is fit-for-purpose and there is political will at both EU and national levels to make sure the policies are supportive of this transition.
- Workforce: classic curricula to operate in petrochemicals industry are chemistry, engineering (mechanical, chemical, industrial). While some of these conventional curricula may allegedly have lost some attractiveness, communications skills and knowledge on regulatory affairs are judged to have become increasingly important to promote the industry’s interests with civil society, including NGOs, neighbouring communities and regulators. The topic of circularity as such can boost the reputation of the industry and its workforce if base chemicals are demonstrated as critical to attain the circularity goals and messages reach ordinary people.

Skills gaps: in general the attendees considered the required skills to underpin the circular transition of the industry to be generally available but expensive, which requires to broaden the ‘employee’ pool to outside Europe.

Attendees distinguished between curricular skills needs and organizational/cultural needs. In terms of the curricular skills needs, beyond the skills needs required under the ideal profile – see above, it was also suggested that lifecycle assessments (LCA’s) will gain importance in the future, especially in light of the transition of the industry towards a more circular future. In this regard understanding and interpreting lifecycle assessments, as well as selecting and inserting reliable data/input into a LCA, and the transmission of data across departments within the same organization and across organizations have been mentioned. For this purpose, IT, AI in general and

¹ Safe and sustainable by design chemicals

Blockchain applications in particular, as well as their related software, will prove critical to be understood and managed.

Communication skills have been identified as a critical skillset moving forward to allow for a better understanding of the industry's challenges and opportunities by civil society at large.

In terms of the organization/cultural needs, universities and companies need to cooperate more to match the skills needs in the industry with the curricula offered at university / higher education level. Also, "learning by failing" is not embraced in every organization's trainings culture and should be stimulated more. Practical experience is judged critical and can only be learnt on-site when it comes to turn-arounds and major maintenance works of the plant's systems. Cross-industry initiatives e.g. cross-industry consortia, platforms, can help to learn and implement best practices from other value chains in the area of circularity and digital.

Training: hands-on and on-site experience is considered most valuable, more than outsourcing training programmes to consultants with little to no experience in the industry. In this regard, on-site training and mentoring programmes delivered by colleagues have value when they deliver pragmatic solutions to concrete problems the employees face. Intergenerational or senior – junior colleagues engagement yield more result than outsourced or online trainings. Similar level of collaboration is needed from universities who should adapt the curricula in such a way to meet the industry's needs and also implement dual learning through dedicated apprenticeships (company learning 50% and university/higher education 50%).

Summary & conclusions from survey and interviews

- Ever-leaner petrochemical company structures necessitate a versatile workforce, emphasizing broader skill sets (regulatory, toxicology, SSbD, communications) over specialization.
- The availability of required skills for the circular transition is global but costly, necessitating a broader, international employee pool.
- The industry's shift towards cleaner operations is vital but hinges on supportive regulatory frameworks and political will, which is a prerequisite to attract the right workforce with the adequate skillsets.
- Digital skills, and in particular AI and blockchain applications, will prove critical to support the transition towards a circular petrochemical industry. These skills come in addition of the acquired skillset in e.g. engineering.
- Communication skills and regulatory knowledge are increasingly crucial to promote the industry's interests and reputation.
- Collaboration between universities and companies is essential to align curricula with industry needs, and practical on-site training is invaluable.

Recommendations

The following recommendations have been developed based on the survey and interview responses. They gather high-level recommendations addressed to EU and national policymakers to improve the collaboration between industry and educational institution.

Foster Higher Education-Industry Collaboration

Strengthening the cooperation between higher education e.g. universities and petrochemical companies is critical to ensure that academic programs are aligned with industry needs. This can include:

- Promoting STEM and working in petrochemicals industry as early as possible i.e. as of secondary education.
- Developing higher education curricula in consultation with industry experts to match the skills required in the workforce. Promote internships in petrochemical companies with higher education curricula.
- Implementing dual learning programs where students split their time between classroom learning and hands-on industry experience.

Address Skill Availability and Costs

To ensure the availability of necessary skills for the circular and digital transition, the EU should:

- Promote international collaboration to tap into a global talent pool.
- Offer financial support and incentives to manage the costs associated with acquiring and developing these skills.

Enhance Communication Skills

To bridge the gap between the petrochemical industry's challenges and public understanding, it is essential to prioritize communication skills. This can be achieved through:

- Incorporating communication trainings into both academic curricula and industry-specific professional development programs.
- Encouraging companies to adopt a culture of open and transparent communication with civil society, e.g. through active engagement with higher education institutions e.g. lectures, on-site traineeships,...

Promote Practical and On-Site Training

To address the gap in practical skills due to an expected loss in expertise, the following measures should be adopted:

- Developing, organizing and evaluating new training programs on electrification at large, as well as AI, Blockchain and its relevance for the industry e.g. LCA reporting;
- Prioritizing hands-on and on-site training over outsourced programs with limited industry relevance.
- Encouraging intergenerational mentoring programs within companies to facilitate knowledge transfer from senior to junior employees.

Support Cross-Industry Initiatives

Cross-industry collaboration can drive innovation and best practices in areas such as circularity and digital transformation. Policy and funding measures to support this include:

- Establishing platforms and consortia for cross-industry knowledge sharing. Promoting knowledge and collaboration efforts with educational institutions.

- Incentivizing participation in collaborative projects across value chains e.g. automotive that focus on sustainability and digitalization.

Encourage Versatility in the Workforce

To adapt to leaner company structures and shifting industry demands, policies should:

- Encourage a broad skill set approach rather than niche specializations.
- Promote continuous learning and adaptability among employees to meet evolving industry requirements.

Facilitate Clean Operations and Regulatory Support

The transition towards cleaner operations is crucial for the industry's future. To support this, the EU should create supportive regulatory frameworks that encourage environmentally friendly practices. Such frameworks will drive demand for training programs in the area of digital and circular skillsets.

Annex (extract from competence matrix WP10)

The below job roles have been listed as critical in support of the petrochemical industry's transition towards implementing circular production processes. Green: existing job roles under [ESCO](#), red: to be developed job roles.

<p>Health, safety and environmental manager</p>	<p>Health, safety and environmental managers design and execute corporate policies and procedures related to occupational health and safety and environmental protection. They analyse business processes to ensure compliance with government and environment legislation, conduct risk assessment in the domain of occupational health and safety, evaluate the environmental impact of economic activities and design the appropriate measures for the improvement of work environments and cultures. They coordinate the implementation of an integrated health, safety and environmental management system, defining effective indicators, organizing audits and eventually participating in accident investigation and reporting. They promote an integrated approach to sustainability and occupational health within business organisations, liaising with corporate and line managers and training employees. They are responsible for drafting technical documentation related to the compliance with health and safety and environmental legislation.</p>
<p>Cybersecurity risk manager</p>	<p>Cybersecurity risk managers identify, analyse, assess, estimate and mitigate cybersecurity-related risks of ICT infrastructures such as systems or services. They manage these aspects by planning risk analysis, applying, reporting, assessing, communicating, and treating them. They establish a risk management strategy for the organisation and ensure that risks remain at an acceptable level for the organisation by selecting mitigation actions and controls.</p>

<p>Sustainability manager</p>	<p>Sustainability managers are responsible for ensuring the sustainability of business processes. They provide assistance in the design and implementation of plans and measures to ensure that the manufacturing processes and products comply with given environmental regulations and social responsibility standards and they monitor and report on the implementation of sustainability strategies within the company supply chain and business process. They analyse issues linked to manufacturing processes, use of materials, waste reduction, energy efficiency and products traceability to improve environmental and social impacts and integrate sustainability aspects into the company culture.</p>
<p>Logistics engineer</p>	<p>Logistics engineers design and implement systems aimed to optimise the time and efforts invested in transportation activities. They ensure that systems allow for micro-tracking and smooth communication across transport methods and stages.</p>
<p>Data analyst</p>	<p>Data analysts import, inspect, clean, transform, validate, model, or interpret collections of data with regard to the business goals of the company. They ensure that the data sources and repositories provide consistent and reliable data. Data analysts use different algorithms and IT tools as demanded by the situation and the current data. They might prepare reports in the form of visualisations such as graphs, charts, and dashboards.</p>
<p>Calculation engineer</p>	<p>Calculation engineers draw conclusions about real systems, such as on strength, stability and durability, by performing experiments on virtual models. They test production processes as well.</p>

<p>Robotics engineer</p>	<p>Robotics engineers design and develop robotic devices and applications in combination with mechanical engineering principles. They use pre-established designs and current developments for improving or inventing systems, machinery and equipment. They combine several knowledge fields such as computing, engineering, and electronics in the development of new engineering applications.</p>
<p>Embedded systems security engineer</p>	<p>Embedded systems security engineers advise and implement solutions to control access to data and programs in embedded and connected systems. They help ensuring the safe operation of products with embedded systems and connected devices by being responsible for the protection and security of the related systems and design, plan and execute security measures accordingly. Embedded systems security engineers help to keep attackers at bay by implementing safeguards that prevent intrusions and breaches.</p>
<p>3D printing technician</p>	<p>3D printing technicians assist in the designing and programming of products, ranging from prosthetic products to 3D miniatures. They may also provide 3D printing maintenance, check 3D renders for customers and run 3D printing tests. 3D printing technicians can also repair, maintain and clean 3D printers.</p>
<p>Calculation engineer</p>	<p>Calculation engineers draw conclusions about real systems, such as on strength, stability and durability, by performing experiments on virtual models. They test production processes as well.</p>
<p>Blockchain architect</p>	<p>Blockchain architects are ICT system architects that are specialized in blockchain-based solutions. They design architecture, components, modules, interfaces, and data for a decentralized system to meet specified requirements.</p>

<p>Communication manager</p>	<p>Communication managers are responsible for developing communication strategies in order to promote the organization's mission, services or product. They coordinate communication projects and manage the communications issued by the company for both the internal and the external clients. They supervise internal communications, ensuring that communications reach each one of the employees and further questions can be answered. For external communications, they coordinate coherence among the messages transmitted in mails, printed materials, press articles, and corporate promotional materials. They strive to maintain truthful communications.</p>
<p>Electrical engineer</p>	<p>Electrical engineers design and develop electrical systems, electrical equipment, components, motors, and equipment with the feature of energy transmission. They engage in large scale projects such as the design and maintenance of power stations, and the distribution of power to smaller applications such as household appliances.</p>
<p>Sustainability manager</p>	<p>Sustainability managers are responsible for ensuring the sustainability of business processes. They provide assistance in the design and implementation of plans and measures to ensure that the manufacturing processes and products comply with given environmental regulations and social responsibility standards and they monitor and report on the implementation of sustainability strategies within the company supply chain and business process. They analyse issues linked to manufacturing processes, use of materials, waste reduction, energy efficiency and products traceability to improve environmental and social impacts and integrate sustainability aspects into the company culture.</p>

Strategic Planning manager	Strategic planning managers create, together with a team of managers, the strategic plans of the company as a whole, and provide coordination in the implementation per department. They help to interpret the overall plan and create a detailed plan for each one of the departments and branches. They ensure consistency in the implementation.
Sustainable Products Sales manager	Sustainable Products sales managers are responsible for marketing products developed and produced according sustainable business processes. They are able to understand, explain the production processes and make such products commercially attractive.
Safe & Sustainable by Design Products manager	Safe & Sustainable by Design Products managers monitor and apply incoming EU and national regulations applicable to the design, production and marketing of chemical substances in order to ensure their safe and sustainable production and use. They also communicate with both actors in the value chain and external partners about the products, their safe use and their sustainability footprint.