

# Transforming the machinery sector with advanced technologies

## Sectoral Watch: Technological trends in the machinery industry

### The role of the machinery sector

Machinery and equipment manufacturing industries provide a range of essential products and technology for applications in several other manufacturing and services industries, such as mining, manufacturing, textile, as well as producing domestic appliances. The machinery sector is a major contributor to the European economy with a current

annual turnover of **€ 700 bn**

The business environment of the machinery industry is changing fast. **Digitalisation, complex new offered products and qualified personnel** are the opportunities for growth which in turn increasingly cast doubt on the sustainability of traditional business models.

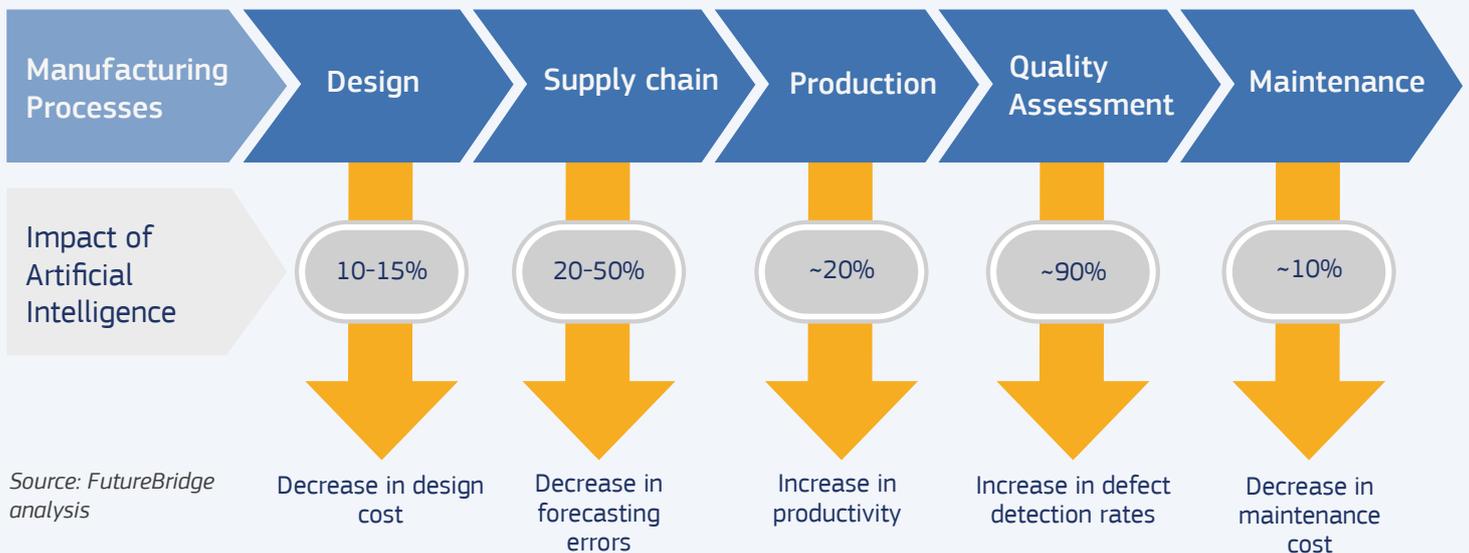
Digitalisation facilitates product development and provides new opportunities across various processes of the industrial machinery value chain from designing the product to its production, sales and offering after-sales services.

The Covid-19 pandemic had a huge impact on the European machinery industry resulting in **supply chain disruptions, a drop in demand and liquidity problems**. Nevertheless, the pandemic has been also a window of opportunity to **rationalise European production, revise supply chains and push for more digitalisation and green models**.

Technological transformation, and digitalisation in particular, allows the EU machinery industry to grow and stay competitive

**Advanced Manufacturing Technologies (including 3D printing) and Advanced Materials** are the advanced technologies with the highest innovation potential embedded in machinery. The use of **online applications** in the machinery industry has been increasingly growing, which opens an array of advantages and is an essential stage towards Industry 4.0.

### Usage of AI to improve processes in the manufacturing value chain



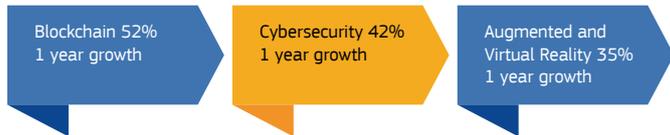
Source: FutureBridge analysis

# Transformations and fundamental shifts require diverse advanced skills, being one of the key factors determining the future success of the machinery industry

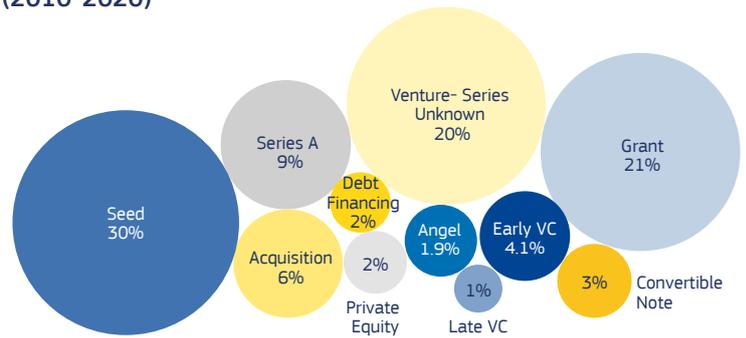
Most common advanced technological skills in the machinery sector:



Fastest growing advanced technological skills in the machinery sector:



Type of funding in the machinery industry in the EU27 (2010-2020)



Source: Technopolis analysis based on Crunchbase and Dealroom data

## The machinery industry is driving technological transformation of other industries

### Opportunities

- Digital transformation is critical now to safeguard market leadership: invest in new digital-based machinery plants.
- Hybrid manufacturing leverages the advantages of additive manufacturing and the high precision of traditional machinery methods. Hybrid machine tools combine additive and subtractive processes and enable not just a more efficient use of resources, but also the production of complex parts.
- Automated machinery can save time, improve quality and diminish the operational costs of a manufacturing company.

### Challenges

- Hybrid technologies are in its early stages. Technological challenges that need to be overcome include process planning, decision planning, use of cutting fluids and post-processing.
- An issue might be that existing EU policy measures do not optimally stimulate R&D activities in the machinery sector which makes it more complex to improve business conditions for this industry. Incentives for engaging in innovation activities in the machinery sector are considered still to be weaker in the EU in comparison to the incentives in developing economies in Asia and in the US.
- Gaining the full benefits of green technologies in the machinery industry will require a considerable investment of around €10 trillion by 2050.

## About the Advanced Technologies for Industry (ATI) project

The ATI project – funded by the European Commission – supports the **implementation** of Europe's new growth strategy with a systematic monitoring of **technological trends** and reliable, **up-to-date data** on advanced technologies.



The **Sectoral Watch** analyses trends in the generation and uptake of advanced technologies, related entrepreneurial activities and skills needs in a number of selected sectors. It interprets data from a list of data sources compiled to monitor advanced technologies and their applications in industry across Europe and key competitor economies. It allows policy makers, industries and intermediaries to contextualise the collected data on advanced technologies specific for the industries in focus.

For more information, read the full Sectoral Watch on Technological trends in the machinery industry:

<https://ati.ec.europa.eu/reports/sectoral-watch/technological-trends-machinery-industry>



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