Many robotic companies are born global, and Odense’s industry is no exception. Having established strong R&D functions in their home market, companies in the Odense Robotics cluster are now expanding globally more than ever before. This annual report tracks the growth of companies in the Odense Robotics cluster. Once again, we can see strong results.

Companies significantly strengthened their global footprint in 2019, opening international affiliates and expanding their workforce at home and abroad. Last year saw a 25% increase in the number of employees abroad totalling 950 employees, almost double the number than two years ago. At the same time there was an 8% increase in employees in the cluster in Denmark, from 3,600 in 2018 to 3,900 people in 2019. Today, the cluster employs close to 5,000 people worldwide.

While key markets within robotics and automation are currently experiencing a slowdown, the cluster generated impressive financial results in 2018, the latest available figures for the cluster’s financial performance. Despite challenging market conditions, many companies expect continued strong growth.

Exports rose by an impressive 26% to reach EUR 643 million in 2018 compared with the previous year – and growth is set to continue. More than 80% of companies plan to export in the future, a steep rise from the situation today where just over half of companies export. Turnover increased by 18% on 2017 to reach EUR 897 million in 2018 and the large majority of companies expect a more than 20% increase in turnover for 2020-2022 compared to 2018.

For the first time, we have figures on international collaboration. They show a cluster with an extensive network of global partners. Almost half of companies collaborate with other robot and automation companies internationally. And more than one in four companies in the cluster collaborate with research and educational institutions abroad.

Odense has become an internationally renowned centre for robotics and has played an instrumental role in positioning Denmark as a leading robot nation. Odense is home to half of the country’s producers, accounting for half of the country’s robotic exports and 37% of Denmark’s robotics turnover.

Can Odense’s success be replicated in the rest of Denmark? Unequivocally, yes. Our goal is, together with partners, to create a national framework that accelerates growth amongst high-growth robotics companies in Odense and the rest of Denmark. We will continue to strengthen the epicentre in Odense while extending growth opportunities to innovative, high-growth robotic companies across the country.

By leveraging synergies across Denmark, we can build on our global position of strength to realise the full potential of the country’s innovative robotics companies with high-growth potential.
KEY FINDINGS

THE CLUSTER

- 133 companies in the cluster
- 41% of companies work in full or in part with collaborative and mobile robots
- 40+ education programmes
- 10+ research and education institutions

PEOPLE

- 3,900 employees in the cluster
- 4,800 employees in the cluster by 2021
- 950 employees abroad

PERFORMANCE

- EUR 897 million turnover in 2018
- EUR 643 million in exports in 2018
- EUR 800+ million invested in companies since 2015

PARTNERSHIPS

- 83% collaborate with other cluster companies
- 62% collaborate with robot and automation companies in the rest of Denmark
- 48% collaborate with robot and automation companies internationally
The Odense Robotics cluster is a strong epicentre for Denmark’s growing robotics industry.

Denmark ranks among the world’s leading nations within industrial robots. This global position of strength has to a large extent been secured as a result of innovation and development by companies in the Odense area, particularly within the collaborative robots, mobile robots and food automation.

Indeed, the Odense Robotics cluster is regarded as the epicentre of Denmark’s growing robot and automation industry. Odense is home to half of the country’s producers, accounting for half of the country’s robotic exports and 37% of Denmark’s robotics turnover.

Denmark’s robotics industry is growing with increasing activity in areas such as Aarhus, Aalborg, the Greater Copenhagen area and Southern Jutland.

And figures show that companies across the country are leveraging synergies to generate growth and drive innovation. More than 60% of companies on Funen collaborate with other robot and automation companies in the rest of Denmark.

Financial figures for the robotics industry in Denmark and in the Odense area are not directly comparable, as the figures were the latest available from Statistics Denmark at the time of report writing.

DENMARK
292 companies
8,500 employees
140 producers
91 integrators
EUR 2.4 billion in turnover
EUR 1.3 billion exports

ODENSE AREA
133 companies
3,900 employees
72 producers
25 integrators
EUR 897 million turnover
EUR 643 million exports


60%+ of companies on Funen collaborate with other robot and automation companies in the rest of Denmark.
THE CLUSTER
COMPANIES ARE SELECTED BASED ON AN ASSESSMENT OF THE FOLLOWING PARAMETERS:

Ega Matic ApS
Activity in cluster

Maskinværksted
Boelbjerg

CLU ST ER S A N D P AR T NER S
EDUC A TIO N

BEng
• Electrical and Computer Engineering
• Systems and Control Engineering

MSc
• Applied mathematics
• Computer science
• Energy systems
• Energy technologies
• Engineering robotics

Academy Profession AP
• Automation and control
• Computer science
• Communication technology
• Electrical engineering

Electricity Automation and IT
• Automation and control
• Computer science
• Electrical engineering

Bachelor
• Mechatronics

Metal, Industry and Technology
• Automation and control
• Electrical engineering

Bachelor BA
• Engineering and technology
• IT and software engineering
• Robotics

Continuing Education
• Academic education

SIMAC
• Mechatronics

DISCIPLINES
• Automation and control
• Energy systems
• Energy technologies
• Engineering robotics

Academic Education
• Continuing education

OTHERS

Activities
• Implementation of solutions
• Development of new applications

Academic
• Industry 4.0

SDU ROBOTICS
• Public sector and business support providers

ODE NSE ROBOTICS
WHERE ROBOT HEROES GROW
Part of Business Hub Fyn
GROWTH IN COMPANIES

The robot and automation industry in and around Odense continues to grow.

The cluster has grown steadily in terms of the number of companies in recent years, reaching 133 at the end of 2019. This represents a more than 50% increase since 2015.

A total of 13 companies – including a high proportion of promising robotic startups – joined the cluster in 2019, while nine companies either ceased operations or ceased to be part of the cluster.

The Odense area continues to be the primary base for companies’ development. A total of 80% of companies are headquartered on Funen, while 12% have their headquarters abroad and only 8% elsewhere in Denmark.
The cluster’s strong entrepreneurial environment means it is home to many young companies and startups.

The cluster is made up of many young companies and startups. Close to 70% of companies have been established since 2010 and almost 60% of companies have fewer than 10 employees.

Many newcomers to the cluster in 2019 were indeed promising robotic startups, several of which also secured a place in Odense Robotics StartUp Hub – one of Europe’s leading robotic incubators.

This high concentration of young companies and startups can to a large extent be contributed to the cluster’s entrepreneurial environment. With strong support from the municipality and the cluster management team, the area offers prime conditions for growth and innovation to robotics startups.
An increasingly large proportion of companies work with collaborative and mobile robots.

The Odense area is a global stronghold for collaborative robots and mobile technologies – and an increasing number of companies are active in these fields.

More than 40% of companies work with collaborative robots and/or mobile robots and related products. The figure equates to a total of 55 companies in the cluster active in this area, more than double the number in 2017.

The strong focus on collaborative and mobile robots stems originally from early pioneers Universal Robots and Mobile Industrial Robots, both global leaders and headquartered in Odense. The city is also home to a plethora of companies creating new technologies that build on existing collaborative and mobile platforms, thereby extending functionality and creating new application areas.

For example, OnRobot offers a range of gripper and sensor end-of-arm tooling to be fitted to collaborative robot arms, including Universal Robots, and light industrial robots. Likewise, Nord Modules and ROEQ offer modules to be fitted to the Mobile Industrial Robots platform, enabling heavy payload transportation between production lines.
PEOPLE
WORKFORCE EXPANDS GLOBALLY

Almost 4,000 people are employed in the cluster today. Companies are also expanding internationally, with the workforce outside of Denmark approaching 1,000 people.

The cluster’s workforce grew by more than 8% in 2019 totalling around 3,900 people – a high growth rate, particularly considering companies’ ongoing recruitment challenges. The total workforce is expected to increase by 23% to as many as 4,800 in 2021.

While workforce growth in 2019 is lower than previous years, it is in line with global industry trends and reflects companies’ increasing focus on building a strong global presence in order to drive exports and secure talent.

The cluster significantly expanded its global presence in 2019, with many companies opening offices and hiring employees abroad. In November alone, for example, Universal Robots, Mobile Industrial Robots and OnRobot established offices in Barcelona.

Companies increased their workforce abroad by 25% last year to 950 employees, almost double the number than two years ago. The cluster now employs close to 5,000 people in total in Denmark and worldwide.
HIGH DEMAND FOR TALENT

Attracting talent continues to be the greatest growth barrier. Companies expect to recruit more from abroad.

As many as 70% of companies say recruiting qualified employees is a growth barrier. While this represents a slight decrease on previous years, talent attraction remains the greatest growth barrier for companies.

Companies have long struggled to attract qualified employees, particularly engineers, developers and other people with a technical background. As a result, talent attraction, onboarding and retention are key focus areas for companies and the cluster as a whole. Many companies are actively participating in joint cluster efforts to create and retain a strong talent pool, with key activities including the 'We are robot heroes' campaign.

Employing talent from abroad for open positions in Odense is one way in which some companies are addressing their recruitment needs. Indeed, this is set to be increasingly commonplace in coming years. In 2020, 22% of companies expect to recruit from abroad for positions in the Odense area. Last year, 15% of companies recruited from abroad to Odense.

70% of companies say recruiting qualified employees is the greatest growth barrier

22% of companies expect to recruit from abroad in 2020
Companies generated EUR 897 million in 2018. Turnover is expected to increase despite challenging marketing conditions.

The robot and automation industry generated a turnover of EUR 897 million in 2018 on Funen alone – an increase of 56% since 2015. This shows a profitable industry successfully performing in terms of both development and sales.

Turnover is set to increase significantly in the coming years despite challenging market conditions, with expectations higher than previous years. A total of 58% expect an increase in turnover of 20% or more for 2020-2022 compared to 2018.

The global industrial robots market experienced a slowdown in 2019 and this will inevitably have an impact on turnover in the short term. Indeed, several companies in the cluster say that they are seeing the first signs of a decrease in growth. Nevertheless, there is good reason to be optimistic. Long-term drivers, for industrial robots and automation as a whole, remain strong.

### Turnover, EUR million

Source: Statistics Denmark, September 2018

<table>
<thead>
<tr>
<th>Year</th>
<th>Turnover, EUR million</th>
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<tbody>
<tr>
<td>2015</td>
<td>576</td>
</tr>
<tr>
<td>2016</td>
<td>683</td>
</tr>
<tr>
<td>2017</td>
<td>763</td>
</tr>
<tr>
<td>2018</td>
<td>897</td>
</tr>
</tbody>
</table>

EUR 897 million turnover in 2018

20%+ increase expected by 2022
SATISFACTORY PROFITS

On the whole, companies are satisfied with their financial result.

A total of 43% of companies said their result in 2018 was acceptable or satisfactory.
RISE IN EXPORTS

Exports have increased significantly and will continue to rise in coming years.

Companies are expanding globally more than ever before, establishing affiliates worldwide to support global sales. This strong focus on internationalisation is driving significant export growth.

Exports rose to an impressive EUR 643 million in 2018 – a 26% increase on the previous year and an 85% since 2015. Exports now account for 72% of the cluster’s total turnover on Funen.

And exports are set to grow even more. Today, just over half of companies in the cluster export, and as many as 83% say they expect to export in the future.

Out of the companies that do not export today, how many expect to do so in the future

Source: Odense Robotics, January 2020
CLUSTER ATTRACTS INVESTMENTS

More than EUR 800 million has been invested in companies since 2015.

Since 2015, more than EUR 800 million has been invested in cluster companies. Investors represent the primary source of capital (54%), followed by public funding and loans. Indeed, the cluster has become a magnet for investors who want to be part of the industry’s growth journey.

These investments from Denmark and abroad have been instrumental in enabling robotic startups and high-growth companies to fuel their expansion. Particularly of note is the acquisition of Universal Robots and Mobile Industrial Robots by Teradyne in 2015 and 2018 respectively.

There were several investments of note throughout 2019. On the venture capital side, OnRobot announced that the company had secured EUR 25 million from Vaekstfonden, the European Investment Bank and several prominent investors to fund its global growth within end-of-arm tools.

Blue Ocean Robotics announced that it has raised around EUR13 million from Danish investors to fund its continued development of service robots for the healthcare, hospitality, construction and agriculture industries.

On the corporate side, Sensohive received a significant investment from Vancouver-based construction company Kryton International in exchange for 30% ownership in the company.

Total investments in companies, EUR million

Source: Odense Seed and Venture, 2020
Note: Additional investments that are not public knowledge can have taken place.

Sources of capital

Source: Odense Robotics, January 2020
CONTRIBUTION TO SUSTAINABLE FUTURE

Companies in the cluster are making important contributions to a sustainable future.

Robotics technologies and automation are key drivers for sustainable development, supporting several UN Sustainable Development Goals (SDG). New innovative solutions can solve global challenges and improve development within areas such as human health, economic development and climate change. For example, robotics technologies can be applied to shape healthier work environments, smarter workflows, more efficient energy consumption and distributed production close to customers.

For the first time, figures are available for the cluster’s contribution towards a sustainable future. Companies contribute to a wide range of SDGs, with by far the greatest contribution being to SDG 9: Industry, innovation and infrastructure followed by SDG 8: Decent work and economic growth and SDG 12: Responsible consumption and production.

Results also show that many companies are actively integrating SDGs in operations and development. As many as 68% of companies work/have worked proactively with SDGs or plan to do so. This demonstrates a widespread recognition of the importance of the SDGs and that many companies are already actively working towards sustainable development.

In 2019, several companies highlighted how their technology contributes to the sustainability agenda. For example, Farmdroid launched their autonomous vehicles for sowing and weed removal that allow crops to be grown organically, thereby reducing CO₂ emissions and contributing to sustainable agriculture. Trivision further marketed their technology that can reduce food waste by controlling packaging and labelling. And Blue Ocean Robotics acquired Beam, a telepresence robot that enables people to communicate virtually and as a result reduce transport costs and CO₂ emissions.
STARTUP HUB FOSTERS SUCCESSFUL BUSINESSES

Robotic entrepreneurs grow their business at Odense Robotics StartUp Hub.

Odense Robotics StartUp Hub is recognised as one of the best robotic incubators in Europe. It is located at the 2,000m² specialist facility at the Danish Technological Institute, a leading research and technology organisation. Here, robotic and drone startups are joined by a team of business and technology experts that help turn technology into good business.

The Hub focuses specifically on hardware startups and aims to create the shortest route from prototyping to financing and commercialisation. Unlike many other incubators, the Hub does not claim any ownership interest or membership fees. What is more, startups access the Hub services for free. Many successful robotic startups emerge from Odense Robotics StartUp Hub and stay in Odense as they continue to grow their innovative businesses in international markets. The Hub also works with promising drone startups.

A total of 20 companies have been or are currently part of the Odense Robotics StartUp Hub since it’s opening in 2015. Today, these companies employ more than 110 people. Since 2015, the 20 startups have secured more than EUR 20 million in external investments and more than EUR 6 million in soft money, without giving up any equity to the Hub.
PARTNERSHIPS
Companies recognise that cluster collaboration is key to driving innovation and growth. As many as 83% of companies collaborate with other companies in the cluster. For the first time, figures are also available for collaboration with other robot and automation companies outside the cluster. As many as 62% companies collaborate with other robot and automation companies in Denmark outside of Funen, and 48% with robot and automation companies internationally.

A high percentage of companies – 85% – collaborate with research and education institutions in Denmark. And more than one in four companies in the cluster collaborate with research and educational institutions abroad.
METHODS

Scope
This report includes the companies that are currently or have been part of the Odense Robotics cluster. The companies typically have strong links to the robot and automation sector through, for example, a dedicated strategic focus on the industry, a significant share of revenue from the industry, dedicated technology and/or actively collaborate in the cluster. Geographically speaking, the companies are located on the island of Funen, Denmark, either with a headquarters or branch.

Categories of companies
The companies have been categorised as one of the following:
- Producers: Develop and manufacture automated machines, robots or components.
- Integrators: Sell automated machines, and design and develop automation solutions that can include robots.
- Suppliers of components and services: Dedicated suppliers of parts and/or services for automatic machines or robots.
- Distributor/sales: Companies that distribute and/or sell automatic machines and robots, and related parts and products.
- Consultancy: Consultants offer advisory services on a range of topics relating to robot and automation.

While many companies have products or services across multiple categories, the category selected indicates a company’s primary focus.

Data sources
The report primarily uses quantitative analysis. It is based on data from Odense Robotics’ annual survey of cluster companies conducted by Wilke A/S, data from Statistics Denmark and data from the public Central Business Register.

The latest company survey was sent in October 2019 and a total of 65 companies participated. The result is considered to be representative of the cluster as a whole, because responses were spread evenly in terms of company size and type.

Data concerning the number of companies is derived from Odense Robotics, which tracks the cluster’s development on an ongoing basis. Data concerning the year when companies were established and their location is taken from public databases and registers based on company VAT numbers. Data relating to whether companies work in full or in part with collaborative and/or mobile robots or related products is based on Odense Robotics’ market insights.

The number of full-time employees on Funen and abroad is calculated by Wilke A/S based on the latest company survey and desk research. Future growth in the workforce is based on company projections. These figures do not take into account additional companies being established in the cluster in the future and other related factors.

Data concerning companies’ turnover and export is calculated by Statistics Denmark. The data relates to companies in the cluster in September 2018 and solely relates to turnover and export generated on Funen.

Data relating to company satisfaction with financial results and expectations for turnover and exports are based on the latest annual survey. The same applies to data on UN Sustainable Development Goals as well as data on company collaboration with other companies and organisations in and outside the cluster.

Data relating to investments in companies is based on interviews by Odense Seed and Venture with investors, founders, CEO’s in the cluster as well as public data. Dates refer to the day deals were signed. Additional investments can have taken place without the knowledge of Odense Seed and Venture.

Use of material
Odense Robotics would like to thank all the companies that took part in the survey. Thanks to their participation, this report can offer unique insights into the development of the cluster. Please state the source when using or referring to the material in this report.

This report is available on Odense Robotics’ website.
ODENSE ROBOTICS

Our vision is to make Odense the global leader of the next industrial revolution by serving the needs of its robotics cluster.

We accelerate growth and innovation in the robot and automation cluster in and around Odense. We do this by connecting businesses, people, research and education, advancing policy and branding the cluster.

We do this because we believe that robot technology can bring about meaningful change in the workplace – not just for businesses, but also for the people who work there.

www.odenserobotics.com