

Executive Summary World Robotics 2020 Service Robots

Service robotics encompasses a broad field of applications, most of which having unique designs and different degrees of automation – from full tele-operation to fully autonomous operation. Hence, the industry is more diverse than the industrial robot industry (which is extensively treated in the companion publication World Robotics 2020 Industrial Robots). IFR Statistical Department is currently aware of almost 890 companies producing service robots or doing commercial research for marketable products. A full list is included in chapter 4 of World Robotics 2020 Service Robots. IFR Statistical Department is continuously seeking for new service robot producers, so please contact statistics@ifr.org if you represent such a company and would like to participate in the annual survey conducted in the first quarter of each year. Participants receive the survey results free of charge.

Sales of professional service robots on the rise

The market for professional service robots grew strongly in 2019 by 32% from USD 8.5 billion to USD 11.2 billion. The markets for most types of service robots seems hardly affected by the Covid-19 pandemic. Actually, the pandemic has boosted the market for robotic disinfectant solutions and created additional demand for robotic logistics solutions in warehouses, factories, and for home delivery. It is therefore not hard to understand, why the service robotics industry will leave this global challenge in victory lane. Robotic solutions support social distancing, are not sent to quarantine and are not affected by travel bans.

Turnover with medical robotics has increased by 28% in 2019, accounting for 47% of the total professional service robot turnover. This was mainly driven by robotic surgery systems, which are the most expensive type of service robot. Robotic solutions are already established in logistics but there is still a lot of potential. In terms of units sold, logistics robots account for 43% of the total units of professional service robots. The number of units sold increased by 42% in 2019 and turnover increased by 110% because in this segment, RaaS business models offer an excellent opportunity for customers that are curious but reluctant to invest in the hardware. Autonomous mobile robots have initially been used in warehouses but with digitalization of production, they are also part of today's modern factory. Defense applications accounted for 15% of the total sales of professional service robots. The segment of field robotics grew by 3% in terms of turnover and by 8% in terms of units. While robotic solutions have been established in dairy farming and the markets seems to be rather saturated, agricultural applications like fruit picking constitute a challenge for robotics both technologically and because of the rather low costs of human labor. The Covid-19 pandemic might change this and offer an excellent opportunity for suppliers of such robots because travel bans are causing a shortage of labor supply in harvest season. Robotic solutions for inspection and maintenance have seen a tremendous increase in recent years. Turnover was up 131% in 2019. Robots also become more common in **public environments**. Deployment of new grew by 44% and turnover grew by 42% in 2019. The new social distancing

paradigm and Covid-19 related travel restrictions provide excellent growth opportunities for these applications. The market for professional cleaning robots will benefit from the increasing hygiene requirements in the Covid-19 pandemic. It can be reasonably expected that unit sales and turnover will increase strongly in 2020. Unit sales of powered human exoskeletons were up 26% in 2019 but this is still an underperformance compared to their potential and broad range of applications it has. An increasing share of RaaS business models might support the breakthrough of this type of service robot.

Sales of both, professional and personal service robots will continue to increase strongly.

Professional service robots:

2019: 173,000 units, +32%

Potential development

2020: 240,000 units, +38%

2023: 537,000 units, +31% CAGR

Service robots for domestic/household tasks:

2019: 18.6 million units, +40%

Potential development

2020: 21.6 million units, +16%

2023: 48.6 million units, +31% CAGR

Service robots for entertainment:

2019: 4.6 million units, +13%

Potential development

2020: 5.1 million units, +10%

2023: 6.7 million units, +10% CAGR