

Soft Robotics for Medical Applications Market Forecasts to 2032 – Global Analysis By Product Type (Soft Robotic Surgical Devices, Soft Robotic Prosthetics, Soft Exosuits & Wearables, Soft Endoscopes & Catheters, Soft Rehabilitation Devices, Soft Haptic Feedback Devices, Actuators, Sensors & Control Modules, and Other Product Types), Material, Technology, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Soft Robotics for Medical Applications Market is accounted for \$117.83 million in 2025 and is expected to reach \$463.22 million by 2032 growing at a CAGR of 21.6% during the forecast period. Soft robotics in medical applications involves creating flexible and bio-friendly robotic systems designed to interact safely with the human body. Built from soft, bendable materials, these robots replicate natural motion and provide controlled, delicate handling during clinical tasks. They support minimally invasive surgery, rehabilitation therapies, prosthetic function, wearable medical devices, and diagnostic operations. Their inherent softness improves patient safety, comfort, and precision, making them suitable for navigating sensitive or irregular anatomical structures where rigid robotic technologies may pose limitations.

Market Dynamics:

Driver:

Inherent safety and tissue compatibility

Unlike rigid instruments, these systems mimic natural muscle movement, reducing trauma during delicate procedures. Their flexibility allows surgeons to operate with greater precision in minimally invasive interventions. Advances in biomaterials and soft actuators are further enhancing patient outcomes by minimizing scarring and recovery times. Hospitals are increasingly adopting these devices to align with personalized medicine and patient-centric care models. As biocompatible polymers and adaptive control systems evolve, soft robotics are becoming indispensable in next-generation surgical applications.

Restraint:

High initial cost and investment

The integration of advanced sensors, AI-driven control systems, and specialized materials makes manufacturing expensive. Smaller healthcare facilities often struggle to justify the expenditure compared to conventional rigid robotics. Training surgeons and staff to operate these systems adds further financial and operational burden. Limited reimbursement pathways for robotic-assisted procedures also slow adoption in cost-sensitive markets. Until economies of scale and modular designs reduce expenses, high investment will remain a barrier to widespread deployment.

Opportunity:

Growth in emerging economies (APAC)

Rapid expansion of healthcare infrastructure in countries like China, India, and South Korea is driving demand for advanced surgical technologies. Governments are investing in hospital modernization and encouraging local production of robotic systems. Rising surgical volumes, coupled with increasing awareness of minimally invasive techniques, are accelerating adoption. Partnerships between global manufacturers and regional players are fostering technology transfer and market penetration. As affordability improves and training programs expand, APAC is poised to become a hub for soft robotic surgical innovation.

Threat:

Competition from established rigid robotics

Companies like Intuitive Surgical have already entrenched their technologies in

hospitals worldwide. Rigid robotics are perceived as more reliable due to decades of clinical validation and surgeon familiarity. Soft robotics must prove their durability, precision, and cost-effectiveness to gain equal trust. Market leaders in rigid robotics continue to innovate with AI integration and advanced imaging, raising the competitive bar. Without clear differentiation in safety, adaptability, and patient outcomes, soft robotics risk slower adoption against entrenched incumbents.

Covid-19 Impact:

The pandemic disrupted surgical procedures globally, delaying elective surgeries and reducing demand for new robotic systems. Manufacturing and supply chain interruptions further slowed deployment of soft robotic devices. However, COVID-19 accelerated interest in remote-assisted surgery and tele-robotic platforms, where soft robotics can play a vital role. Hospitals began prioritizing automation and resilience, creating opportunities for flexible, adaptive surgical tools. Post-pandemic strategies now emphasize decentralized manufacturing, infection control, and digital integration, all of which align with the strengths of soft robotics.

The soft robotic surgical devices segment is expected to be the largest during the forecast period

The soft robotic surgical devices segment is expected to account for the largest market share during the forecast period, due to their ability to conform to complex anatomical structures makes them ideal for delicate procedures such as neurosurgery and cardiovascular interventions. Hospitals are increasingly adopting these systems to reduce operative trauma and improve recovery times. Advances in AI-driven motion control and haptic feedback are enhancing surgical precision. Continuous innovation in biocompatible materials and modular designs is reinforcing their leadership. As demand for minimally invasive and patient-friendly solutions grows, soft robotics will remain the largest segment in surgical applications.

The home healthcare segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the home healthcare segment is predicted to witness the highest growth rate, driven by the need for gentle, adaptive devices that improve patient comfort. Increasing elderly populations, long-term illnesses, and a broader move toward at-home treatment encourage the use of soft robotic tools for mobility aid, therapy, and everyday assistance. These technologies help lessen caregiver workload, strengthen

patient autonomy, and support better health outcomes. Innovations in smart wearables and soft robotic components are expanding their use in residential healthcare settings.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, due to expanding healthcare infrastructure and rising surgical volumes in China, India, and Japan are key drivers. Governments are promoting local manufacturing and import substitution to meet growing demand. Rapid adoption of robotic-assisted surgery and AI-driven diagnostics is reshaping surgical practices in the region. Strategic collaborations between global OEMs and regional firms are accelerating technology transfer.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to the U.S. and Canada are leading innovations in surgical robotics, smart operating rooms, and AI-powered diagnostics. Hospitals are integrating IoT and data analytics to optimize workflows and enhance surgical precision. Regulatory bodies are streamlining approval processes for next-generation robotic systems, encouraging faster commercialization. Strong reimbursement frameworks and high adoption of minimally invasive techniques further support growth.

Key players in the market

Some of the key players in Soft Robotics for Medical Applications Market include Boston Dyn, Kawasaki H, Siemens H, Mitsubishi, Medtronic, ReWalk Rob, Stryker, Ekso Bioni, Johnson &, Ottobock, Intuitive S, Zoll Medic, ABB, GE Health, and Philips He.

Key Developments:

In October 2025, Mitsubishi Corporation announce that it has agreed to subscribe for new shares to be issued by Eagers Automotive Ltd. through a strategic placement, and has entered into a Strategic Partnership Agreement to promote collaboration and explore new business opportunities across the automotive and mobility sectors.

In March 2025, Siemens announced that it has completed the acquisition of Altair Engineering Inc., a leading provider of software in the industrial simulation and analysis

market, for an enterprise value of approximately USD 10 billion. With this acquisition, Siemens extends its leadership in simulation and industrial artificial intelligence (AI) by adding new capabilities in mechanical and electromagnetic simulation, high-performance computing (HPC), data science and AI.

Product Types Covered:

Soft Robotic Surgical Devices

Soft Robotic Prosthetics

Soft Exosuits & Wearables

Soft Endoscopes & Catheters

Soft Rehabilitation Devices

Soft Haptic Feedback Devices

Actuators, Sensors & Control Modules

Other Product Types

Materials Covered:

Silicone Elastomers

Hydrogels

Thermoplastic Elastomers

Textile-based Soft Materials

Composite/Hybrid Materials

Technologies Covered:

Pneumatic Actuation

Hydraulic Actuation

Electroactive Polymers (EAP)

Shape Memory Alloys/Polymers

Magnetic Actuation

Cable/Tendon-driven Systems

Embedded Soft Sensors & Electronics

3D Printing & Additive Manufacturing

Applications Covered:

Minimally Invasive Surgery

Rehabilitation & Physical Therapy

Prosthetics & Orthotics

Patient Mobility & Support

Diagnostics & Imaging Support

Drug Delivery & Sampling

Remote & Tele-assisted Care

End Users Covered:

Hospitals

Clinics

Rehabilitation Centers

Ambulatory Surgical Centers

Home Healthcare

Research Institutes

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants

- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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