

Wearable Robots, Exoskeletons: -- Markets Reach \$2.1 Billion By 2021

LEXINGTON, Massachusetts (May 5, 2016) – WinterGreen Research announces that it has published a new study *Wearable Robots, Industrial Exoskeletons: Market Shares, Strategy, and Forecasts, Worldwide, 2016 to 2021*. Wearable Robots, Exoskeletons leverage better technology, they support high quality, lightweight materials and long life batteries.

Wearable robots, industrial exoskeletons are used for permitting workers to lift 250 pounds and not get hurt while lifting, this is as close to superhuman powers as the comic books have imagined. The industrial exoskeletons are used to assist with weight lifting for workers while being as easy to use as getting dressed in the morning: Designs with multiple useful features are available. The study has 454 pages and 164 tables and figures.

Industrial workers and warfighters can perform at a higher level when wearing an exoskeleton. Exoskeletons can enable aerospace workers to work more efficiently when building or repairing airplanes. Industrial robots are very effective for ship building where heavy lifting can injure workers. Exoskeleton devices have the potential to be adapted further for expanded use in every aspect of industry.

Workers benefit from powered human augmentation technology because they can offload some of the dangerous part of lifting and supporting heavy tools. Robots assist wearers with lifting activities, improving the way that a job is performed and decreasing the quantity of disability. For this reason it is anticipated that industrial exoskeleton robots will have very rapid adoption once they are fully tested and proven to work effectively for a particular task.



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Exoskeletons are being developed in the U.S., China, Korea, Japan, and Europe. They are generally intended for logistical and engineering purposes, due to their short range and short battery life. Most exoskeletons can operate independently for several hours. Chinese manufacturers express hope that upgrades to exoskeletons extending the battery life could make them suitable for frontline infantry in difficult environments, including mountainous terrain.

Exoskeletons are capable of transferring the weight of heavy loads to the ground through powered legs without loss of human mobility. This can increase the distance that soldiers can cover in a day, or increase the load that they can carry through difficult terrain. Exoskeletons can significantly reduce operator fatigue and exposure to injury.

Industrial robots help with lifting, walking, and sitting Exoskeletons can be used to access efficiency of movement and improve efficiency.

Industrial workers and warfighters can perform at a higher level when wearing an exoskeleton. Exoskeletons can enable aerospace workers to work more efficiently when building or repairing airplanes. Industrial robots are very effective for ship building where heavy lifting can injure workers. Medical and military uses have driven initial exoskeleton development to date. New market opportunities of building and repair in the infrastructure, aerospace, and shipping industries offer large opportunity for growth of the exoskeleton markets.

Wearable robots, exoskeletons units are evolving additional functionality rapidly. Wearable robots functionality is used to assist to personal mobility via exoskeleton robots. They promote upright walking and relearning of lost functions. Exoskeletons are helping older people move after a stroke. Exoskeletons deliver higher quality rehabilitation, provide the base for a growth strategy for clinical facilities.

Exoskeletons support occupational heavy lifting. Exoskeletons are poised to play a significant role in warehouse management, ship building, and manufacturing. Usefulness in occupational markets is being established. Emerging markets promise to have dramatic and rapid growth.



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Industrial workers and warfighters can perform at a higher level when wearing an exoskeleton. Exoskeletons can enable paraplegics to walk again. Devices have the potential to be adapted further for expanded use in healthcare and industry. Elderly people benefit from powered human augmentation technology. Robots assist wearers with walking and lifting activities, improving the health and quality of life for aging populations.

Exoskeletons are being developed in the U.S., China, Korea, Japan, and Europe. They are useful in medical markets. They are generally intended for logistical and engineering purposes, due to their short range and short battery life. Most exoskeletons can operate independently for several hours. Chinese manufacturers express hope that upgrades to exoskeletons extending the battery life could make them suitable for frontline infantry in difficult environments, including mountainous terrain.

In the able-bodied field, Ekso, Lockheed Martin, Sarcos / Raytheon, BAE Systems, Panasonic, Honda, Daewoo, Noonee, Revision Military, and Cyberdyne are each developing some form of exoskeleton for military and industrial applications. The field of robotic exoskeleton technology remains in its infancy.

Robotics has tremendous ability to support work tasks and reduce disability. Disability treatment with sophisticated exoskeletons is anticipated to providing better outcomes for patients with paralysis due to traumatic injury. With the use of exoskeletons, patient recovery of function is subtle or non existent, but getting patients able to walk and move around is of substantial benefit. People using exoskeleton robots are able to make continued progress in regaining functionality even years after an injury.

Wearable Robots, Exoskeletons at \$36.5 million in 2015 are anticipated to reach \$2.1 billion by 2021. All the measurable revenue in 2015 is from medical exoskeletons. New technology from a range of vendors provides multiple designs that actually work and will be on the market soon. This bodes well for market development.



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