

FROST & SULLIVAN



2022 TECHNOLOGY INNOVATION LEADER

*NORTH AMERICAN AUTONOMOUS
MOBILE ROBOTS FOR MATERIAL
HANDLING INDUSTRY*

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Seegrid Corporation excels in many of the criteria in the autonomous mobile robots (AMR) for material handling space.

AWARD CRITERIA	
<i>Technology Leverage</i>	<i>Business Impact</i>
Commitment to Innovation	Financial Performance
Commitment to Creativity	Customer Acquisition
Stage Gate Efficiency	Operational Efficiency
Commercialization Success	Growth Potential
Application Diversity	Human Capital

Commitment to Innovation and Creativity

Traditionally, material handling activities heavily rely on manual workforces and trucks. In countries facing labor shortages, recruiting labor forces is expensive and affects company profitability. Manual material lifting and handling also expose the workforce to possible injuries and other safety concerns. Frost & Sullivan’s research highlights approximately 35,000 people are seriously injured annually in forklift accidents in the United States. Heavy reliance on manual labor often leads to workflow inefficiencies and, in some cases, supply chain challenges. For example, the COVID-19



pandemic resulted in strict global lockdowns that caused an unprecedented shutdown of operations in many industries.

Organizations have turned to automation and robotics solutions to build a resilient supply chain, mitigate uncertainties, and improve productivity. In material handling and workflow applications, AMRs

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– Krithika Shekar, Industry Analyst

can overcome the inefficiencies and uncertainties of the manual approach. Typical AMR solutions deploy single-planar cameras and two-dimensional (2D) light detection and ranging (LiDAR) systems for safety and navigation applications. Such AMRs capture limited information from their surroundings, which is not feasible in dynamic environments, resulting in unreliable navigation and operational inefficiencies.

The US-based Seegrid, founded in 2003, is a leading solution provider of revolutionary AMRs that automate complicated material handling movements to improve efficiencies and lower dependence on the human workforce. Seegrid differentiates its AMRs from the competition by fitting them with proprietary stereo vision cameras to provide the highest density of sensory input from surroundings and a 360-degree view for reliable robotic navigation in dynamic environments. This eliminates the need for infrastructure changes in the facility. Unlike conventional AMRs with a smaller form factor and limited payload to handle heavy objects, the Seegrid Palion™ AMRs offer a high payload capacity, managing materials weighing thousands of kilograms. These AMRs also have unmatched navigation reliability and agility, real-time visibility on factory floor operations, and the ability to provide actionable insights with their built-in artificial intelligence (AI) and machine learning (ML) algorithms. Seegrid's robot automation technology is protected with more than 100 patents and helps companies achieve top-line and bottom-line objectives.

Frost & Sullivan is impressed with how Seegrid integrated sophisticated hardware, enterprise software, warehouse equipment, and actionable analytics with its AMRs to automate complicated material handling techniques in dynamic environments.



Application Diversity and Commercialization Success

Seegrid's AMRs primarily serve three industries: manufacturing, warehousing, and logistics. In manufacturing, the AMRs accelerate moving materials from one place to another on the factory floor to help companies achieve bottom-line objectives. The AMRs help operators orchestrate safer and more

“With experienced leadership and continuous R&D focus, Seegrid is poised to witness exponential growth for a sustainable future. The company is well-positioned to reap the benefits of the radically evolving AMRs for material handling space.”

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reliable material handling activities in warehousing. The AMRs streamline material flow for logistics companies to improve operational efficiencies with faster and cheaper material transportation.

Frost & Sullivan’s research highlights Seegrid’s AMR solutions to be highly adaptable to ever-changing operational environments. With robust software and AI/ML capabilities, the AMRs can quickly and easily revise material flow according to changing business

needs and processes without modifying the infrastructure. Agility is the major differentiator for Seegrid and has helped the company acquire large Fortune 100 and Fortune 200 clients (Tier 1 companies). For example, Whirlpool Corporation’s manufacturing site in Ohio builds more than 20,000 washing machines daily. The company has been using Seegrid’s AMRs for more than 10 years to move parts to the assembly line and finished products off the assembly line. The AMRs help Whirlpool reduce labor dependency significantly, achieve productivity goals, and expand facilities.

Seegrid offers three primary business models: direct purchase, leasing, and subscription. The subscription or robots-as-a-service (RaaS) model allows companies to automate without upfront investments, which appeals to both large organizations and small and medium-sized enterprises (SME). Frost & Sullivan commends Seegrid for positioning itself as a market leader in the North American AMRs for material handling space with its next-generation AMRs and flexible business models.

Human Capital and Growth Potential

Seegrid was founded by world-renowned roboticist Dr. Hans Moravec, who received his doctorate from Stanford University in 1980 for a television-equipped robot and fine-tuned vision technology at the Robotics Institute of Carnegie Mellon. He is a pioneer in the robotics field and has an enormous following worldwide for his visionary ideas realized in commercially viable solutions. Seegrid’s core team comprises talented engineers and scientists from diverse backgrounds, including computer science, robotics, mechanical engineering, aviation engineering, and electronics. The dedicated team actively pursues research and development (R&D) initiatives to advance customer-centric AMR solutions. The combination of experienced leadership, passionate talent, and strong R&D efforts enables Seegrid to develop avant-garde AMR solutions.

In 2020, Seegrid raised \$52 million from a growth equity financing round led by G2 Venture Partners and other technology and robotics investors. Frost & Sullivan estimates Seegrid to have raised more than \$150 million in funding to date. Seegrid aims to utilize the funding to expand existing product lines, increase its workforce, and penetrate new markets. The company has more than 350 employees, a leading foothold in North American market-share, and operates robotic fleets in Europe. It plans to aggressively expand its customer base. Seegrid’s agile human capital and favorable micro and macro trends position the company as a technology leader in the emerging multi-billion-dollar robotics for material handling market. Frost & Sullivan expects Seegrid to witness exponential demand for its AMR solutions and experience sustainable growth in the long run.

Conclusion

Seegrid has developed revolutionary AMRs for material handling to help reduce reliance on manual labor and improve efficiency across manufacturing, warehousing, and logistics industries. Seegrid's AMR technology uses proprietary stereo vision cameras to capture high-density information from surroundings to provide a 360-degree view and more reliable navigation than competing solutions. Utilizing technology that is protected by more than 100 patents, Seegrid Palion AMRs can execute complicated material handling movements, deliver actionable insights to operators, and are optimized to operate in dynamic environments without requiring infrastructural changes. With multiple business model options, including direct purchase, leasing, and RaaS, Seegrid has witnessed rapid adoption for its AMR solutions by Tier 1 companies and SMEs. Seegrid's experienced leadership, industry know-how, and innovative product lines solidify the company as a market leader in AMR solutions.

With its strong overall performance, Seegrid earns Frost & Sullivan's 2022 North American Technology Innovation Leadership Award in the AMRs for material handling industry.

What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Award recognizes the company that has introduced the best underlying technology for achieving remarkable product and customer success while driving future business value.

Best Practices Award Analysis

For the Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

