



Ambu Recognized for

2021

New Product Innovation

Global Flexible Single-use

Endoscope for Advanced Visualization

Excellence in Best Practices

Strategic Imperatives

Frost & Sullivan identifies three key strategic imperatives that impact the medtech industry: disruptive technologies, innovative business models, and transformative Mega Trends. Every company that is competing in the medtech space is obligated to address these imperatives proactively; failing to do so will almost certainly lead to stagnation or decline. Successful companies overcome the challenges posed by these imperatives and leverage them to drive innovation and growth. Frost & Sullivan’s recognition of Ambu reflects how well it is performing against the backdrop of these imperatives.



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. Ambu excels in many of the criteria in the single-use flexible endoscope category for advanced visualization & endoscopy industry.

AWARD CRITERIA	
<i>New Product Attributes</i>	<i>Customer Impact</i>
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

About Ambu

Ambu is a global medical device company (headquartered in Denmark) and is the world leader in single-use endoscopy with more than 4,000 employees. Ambu was founded in Copenhagen in 1937 by German engineer Holger Hesse.

“Ambu looks to differentiate its device from reusable solutions while also adhering to strict reliability and quality standards of CE and the U.S. FDA and adapting to growing market demands for innovation.”

- Pavel Zhebrouski, Best Practices Research Analyst

In 1956 Ambu truly gained notice for its self-inflating resuscitator. Developed by Hesse and anesthesiologist Henning Ruben, the Ambu ventilation bag would mark a major milestone in emergency medical equipment and hospital care and define the product category – indeed, the bag would become synonymous with Ambu much the way tissue paper is synonymous with Kleenex.

Ambu created the world’s first single-use flexible endoscope in 2009 and now leverages a decade of single-use flexible endoscopy experience in multiple clinical areas, with more to come in the near future. Ambu’s innovation pace is unmatched, launching five new endoscopy products in the last three years and successfully entering multiple new single-use flexible endoscopy markets, including ENT, urology, and gastroenterology. Ambu has announced that it will quadruple its innovation pipeline and plans to launch more than 20 new flexible endoscopy products over the next three years. In the company’s 2020 fiscal year, Ambu achieved a remarkable milestone, selling 1,085,000 endoscopes¹, making it by far the world’s leading single-use flexible endoscope supplier.

¹ Ambu, Investor Presentation, Full-year 2019/20 Results

Aiming to Reduce Infections, Improve Workflow and Increase Productivity with Best-in-Class Single-Use Flexible Endoscopes

Ambu offers a wide spectrum of single-use endoscopes for hospital-based procedures in the operating room (OR), emergency room (ER), intensive care units (ICU), and at the bedside, as well as the millions of endoscopy procedures performed in the office and outpatient clinic care settings. To date, Ambu endoscopes bring value for clinicians providing patient care in pulmonology, otorhinolaryngology, gastroenterology, and urology. In the ICU and OR settings, where Ambu has been present the longest, the company has successfully converted an estimated 30% of the procedural market share of flexible bronchoscopy to single-use and today is the clear single-use market leader in those segments. Additionally, the company has seen comparatively faster post-launch growth of its new endoscopes in ENT and urology compared with the bronchoscope. This demonstrates the viability for single-use endoscopy in adjacent clinical areas and shows Ambu's ability to successfully enter new market segments despite not being a historically known supplier in these clinical applications. It also shows single-use's broad acceptance by physicians.

The company's industry-leading technology represents a new approach to the long-standing challenge of expanding endoscopy procedures while ensuring devices are safe, affordable, and accessible. Single-use flexible endoscopes are sterile and patient-ready out of the package – enabling improved safety by eliminating the risk of patient cross-contamination and improved clinical workflows by eliminating endoscope cleaning and reprocessing. Single-use endoscopes boost overall productivity for healthcare providers by offering a system that is always ready when needed without the traditional large-scale capital and repair budgets required for reusable endoscopes.

Ambu currently provides single-use endoscope families in bronchoscopy, rhinolaryngoscopy, cystoscopy, and duodenoscopy. Importantly, Ambu's innovative platform forgoes the traditional video endoscopy tower size and expense in favor of its aView and aBox all-in-one video displays. By combining the multiple single-use endoscopes with versatile displays, hospitals can invest in a platform that is a fraction of the expense required for video towers and is far more compact and portable.

The aScope™ 4 Broncho portfolio features three sizes of bronchoscopes, ensuring clinicians have a suitable instrument for any of the varying ICU and OR procedures enabled by the aScope. These include intubation, secretion management, bedside percutaneous dilatational tracheostomy, bronchoalveolar lavage, bronchial wash, one-lung ventilation, and training.² The aScope 4 Broncho can also be utilized with the company's proprietary integrated sampling system – the BronchoSampler – which is a safe, one-handed, one-clinician alternative for specimen sampling. The fifth-generation aScope Broncho is on the horizon with new and improved features such as high-definition imaging.

Over the last two years, Ambu has added several new endoscope products to its single-use portfolio. The aScope 4 RhinoLaryngo portfolio for ENT-based examinations enables in-patient and outpatient upper airway visualization for cancer diagnosis, voice and swallowing disorders, and hospital-based bedside consults from the ER to the ICU. The aScope 4 RhinoLaryngo Intervention model features a working channel for instrumentation access.

² <https://www.ambu.com/endoscopy/pulmonology>, accessed December 2020

For urologists, the company launched the aScope 4 Cysto in 2020, providing a single-use solution for cystoscopy and one of the most commonly used diagnostic instruments by urologists. In mid-2020, Ambu received FDA clearance for its first gastroenterology product, the single-use aScope Duodeno, entering an interventional duodenoscopy procedure market that has been challenged by patient safety risks and deadly endoscope-related outbreaks associated with reusable duodenoscopes.

Central to Ambu's platform of video-based flexible endoscopes is the hub-like nature of the high-definition monitor line. The next generation aView™ 2 Advance, launched in 2020, powers the bronchoscope, rhinolaryngoscope, and cystoscope lines – enabling clinicians and hospitals to use the same high performance, all-in-one, touch-screen units across multiple departments and sites. Unlike traditional video endoscopy towers – known for stacking multiple peripherals and being arduous to transport – the aView series is highly portable, can be setup on an IV pole, can operate on battery life, and can fit into most clinical locations with little effort thanks to its compact size. The intent is to empower the expansion of endoscopy procedures across various settings, especially bedside or cramped operating rooms.



Figure 1, Ambu monitor & endoscope platform

The Ambu display line features integrated PACS/DICOM connectivity to electronic health records with no external equipment or charge required. Frost & Sullivan notes that none of the other portable single-use endoscope solutions from other companies have these features.

Successful Response to the Actual Challenges

Ambu has responded to the dramatic challenges posed by the COVID-19 pandemic, which increased the demands for reliable infection prevention – accelerating single-use endoscopy use and development. Ambu's unparalleled supply chain power in single-use endoscopy enabled the company to meet the demand surge, making the company a reliable partner for hospitals during this period of uncertainty. Before COVID-19, the healthcare space was already focused on the advantages of single-use endoscopes related to infection prevention as they present an opportunity to definitively eliminate the risk related to reusable endoscope cross-contamination and associated patient outbreaks. Perhaps the biggest challenge in endoscopy is equipment availability – these needs are consistently strained by either capital budgets or increasingly complex, time-consuming reprocessing and sterilization operations as well as down time due to costly repairs. Single-use endoscopy ensures timely cases in the ICU/OR, expedites patient backlogs, and increases capacity in outpatient clinics through workflow improvements, scheduling flexibility, satellite office expansion, and freed-up staff time. All this enables providers to avoid those traditional difficulties – a tremendous advantage with almost no capital investment required.

As for the regulatory environment, government and regulators support market conversion to single-use endoscopes. Multiple associations are starting to support usage of flexible single-use endoscopy, and in

2020 the U.S. Food and Drug Administration (FDA) recommended that endoscope manufacturers transition to new and innovative duodenoscope designs, including single-use scopes and components, to help improve cleaning of the complex instruments and reduce contamination between patients.

Ambu has invested considerably in generating the health economic evidence to demonstrate the cost-effectiveness of flexible single-use endoscopes. Those efforts have helped bring awareness to the considerable cost and inefficiencies of reusable, flexible endoscope equipment and reprocessing. Nevertheless, Frost & Sullivan notes that there is still an ongoing challenge to create more evidence and demonstrate clinical and economic value.

Reusable endoscopes include costs beyond the initial purchase price, repairs, reprocessing, storage, transportation, and the cost of treating the infections for patients who get cross-contaminated. Ambu promptly responds to these demands while leveraging its deep expertise to make the transition from reusable to single-use endoscopes both safe and cost-effective. As a result, customers can transition to single-use endoscopy without any additional cost.

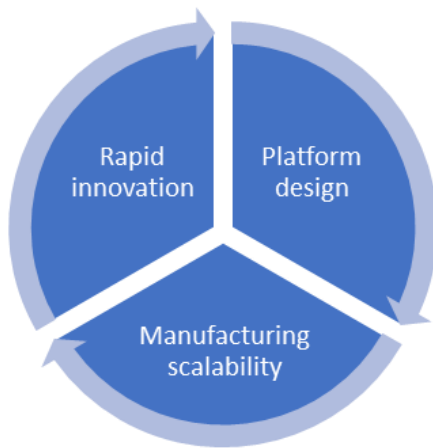


Figure 2, Ambu Innovation Approach



Figure 3, Ambu aScope Duodeno

Frost & Sullivan analysts note how Ambu has created an innovation paradigm shift in endoscopy by rapidly accelerating the introduction of technologies with shorter product life cycles. Typically, reusable scopes have very long product life cycles, which lead to slower adoption of new technologies. Despite the costly product launch, the high capital invested demands depreciation before replacing the product. There are also technology and design constraints, as the endoscope needs to withstand disinfection or sterilization. Unlike many other competitors in the space, Frost & Sullivan appreciates how Ambu leverages a single-use innovation cycle and delivers its solutions with short development and product

life cycle (two to three years). This approach requires minimal capital depreciation and brings rapid adoption of new technologies and design improvements.

Delivering Value with a Customer-focused Approach

Today, Ambu is the most innovative single-use endoscopy player in the market, with a commitment to constant development. While performing as one of the fastest-growing companies in the medtech space, buoyed by a robust financial position to fund growth, it mainly focuses on research and development. Notably, in 2020 Ambu launched three new growth engines: aScope™ Duodeno and aScope™ 4 Cysto supported by the cross clinical advanced monitor platform aView 2 Advance.

Frost & Sullivan feels that the company distinctly stands out in the market with its manufacturing and supply-chain efficiency. It outperforms competitors with a focus on innovation and high-scale, low-cost manufacturing. New market entrants are not as advanced in product design; Ambu, by contrast, is developing its fifth-generation bronchoscope and adds new innovations and improvements to every new iteration, taking advantage of the rapid technology advancements within image sensors, materials, artificial intelligence, and image enhancement. Ambu's short product life cycles are unique; as soon as a product has launched, in most cases, it has already started developing the next generation.

Ambu attributes the success of its innovations to staying close to customers and exceeding their expectations. A vital part of its strategy is to build strong and cooperative relationships with its customers and partners. Ambu is on contract with all four major group purchasing organizations (GPOs) in the U.S. Recent contract expansions give 90% of U.S. hospitals access to Ambu's complete line of single-use endoscopes; 98% of U.S. hospitals have access to Ambu's rhinolaryngoscopes, bronchoscopes, and cystoscopes. Three of the four major GPOs have now created specific single-use endoscope categories.³

Ambu also has a strong team of clinical training specialists who continuously support customers with training needs and education. The team collects feedback from clients to incorporate new developments as per the actual market needs.

Ambu emphasizes building trust and credibility among the medical community and conveying its solutions' benefits while ensuring high-quality outcomes. The company takes part in numerous clinical and scientific studies and shares the gathered evidence for public benefit.

Ambu looks to clearly differentiate its devices from reusable solutions while adhering to strict reliability and quality standards of Conformité Européenne (CE) and the FDA, adapting to growing market



Figure 4, Ambu aScope 4 Cysto

³ Ambu Expands Single-Use Endoscopy Contracts with Two U.S. Group Purchasing Organizations, <https://www.businesswire.com/news/home/20210204005748/en/Ambu-Expands-Single-Use-Endoscopy-Contracts-with-Two-U.S.-Group-Purchasing-Organizations> , accessed February 2021

demands for innovation. The company provides a broad portfolio of innovative solutions and has a strong pipeline of new products entering the market in the coming years. In 2020, Ambu added three new visualization products. This shift will expand the number of product launches from an accumulated five in the previous three years up to 20 planned over the coming three years.⁴

The company continues its vital growth while increasing its global footprint to become a standard choice for medical institutions worldwide. Frost & Sullivan commends Ambu for its ongoing excellence and its pioneering and leading role in setting new market standards for single-use endoscopes.

Conclusion

There are growing demands for the transition from reusable to single-use endoscopes, to improve patient safety and enable other benefits — expanding endoscopy procedures while ensuring devices are also affordable and accessible.

Frost & Sullivan applauds the way that Ambu responds promptly to new market demands. It values and understands the importance of investing in innovation and staying ahead of the competition from an innovation perspective. The company provides its customers with a full spectrum of single-use devices for in-hospital (operating room, emergency room, intensive care unit, neonatal unit) and out-of-hospital settings — all while optimizing workflow, reducing costs, and improving patient care. Ambu truly differentiates itself from other competing solutions through its innovation and proven performance and eliminates cross-contamination risk. Frost & Sullivan believes that these benefits are especially crucial during the COVID-19 pandemic and will continue to be in the post COVID-19 endoscopy market.

With its commitment to innovation and ground-breaking single-use endoscopes, Ambu earns the 2021 Frost & Sullivan Global New Product Innovation Award.

⁴ Ambu, *Investor Presentation, Full-year 2019/20 Results*

What You Need to Know about the New Product Innovation Recognition

Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

New Product Attributes

Match to Needs: Customer needs directly influence and inspire product design and positioning

Reliability: Product consistently meets or exceeds customer performance expectations

Quality: Product offers best-in-class quality with a full complement of features and functionality

Positioning: Product serves a unique, unmet need that competitors cannot easily replicate

Design: Product features an innovative design that enhances both visual appeal and ease of use

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create on-going growth opportunities and strategies for our clients is fuelled by the Innovation Generator™. [Learn more.](#)

Key Impacts:

- **Growth Pipeline:** Continuous flow of Growth opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



The Innovation Generator™

Our six analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

