Laser Cleaning - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Laser Cleaning Market size is expected to grow from USD 0.78 billion in 2024 to USD 1.5 billion by 2029, at a CAGR of 14.61% during the forecast period.

Key Highlights
-Laser cleaning has become a vital phase/process in various industries. Adopted mainly in manufacturing, laser cleaning has witnessed multiple upgrades to the hardware technology as sophisticated production is on the rise.
-Conventionally being used to prepare surfaces for subsequent industriae surfaces for subsequent industrial processes, automated cleaning processes are required to adhere to changes brought in by Industry 4.0. Also, abrasive blasting systems create substantial waste and damage delicate surfaces, and the use of chemical solvents causes potentially hazardous vapors and liquid waste products. Such issues led to the adoption of laser technology-based solutions for surface cleaning.
-The potentially high benefits of laser cleaning over these conventional approaches have been driving the adoption of laser cleaning. Further, laser cleaning provides accurate and precise cleaning of semiconductors, driving their adoption in the electronics industry.
-The increased demand for reliability and the increasing number of errors in electronic components created by no-clean procedures compelled the electronics manufacturing industry to refocus on cleaning. The cleaning industry provides a wide range of options for determining the ideal cleaning method, driving the growth of the laser cleaning market.
-The high price of laser cleaning equipment and lack of technical expertise poses a challenge to the market's growth. The price of 95% of laser cleaning machines is between INR 750,000 (USD 9153.43) and INR 5,500,000 (USD 67125.13) per piece.
-During the COVID-19 period, laser cleaning of bacteria-infected surfaces emerged as a highly effective procedure as the thermal effects of the laser was used to disinfect the surface.Various studies have been conducted to determine the efficacy of multiple types of lasers in cleaning bacteria-infested surfaces. The lasers are usually pulsed, but the wavelength, pulse energy, and

repetition rate must be carefully selected. Such trends are expected to contribute positively to the studied market's growth.

Laser Cleaning Market Trends

Automotive Sector to Witness Major Growth

- Laser cleaning removes all contaminants, not just those that are visible. The significant instances where I used laser cleaning in automotive include corrosion removal, coating removal, topcoat select removal, oxide treatment in automotive production or maintenance, etc.
- Laser cleaning can restore a high-value vehicle that has all its original parts and is in good condition on the surface. Great cars with minor corrosion are tough to obtain, especially as they age. According to Adapt Laser Systems, automotive manufacturers such as GM, Toyota, Michelin, and others have partnered with the organization for laser technologies, including cleaning.
- Adding to this, the significant growth in the demand for electric vehicles and the actual deployment of laser cleaning machines is further analyzed to boost the demand during the forecast period. Thousands of pulses per second are used in laser cleaning to absorb and eliminate impurities. This mainly benefits automotive parts that require bonding practice and pre-weld processes. Companies can improve the chemical characteristics that hold the battery or electric car parts together and extend the product's lifespan by eliminating pollutants before bonding or treating them. Coating removal, injection mold treatment, post-weld treatment, and tire mold cleaning are all possible applications for laser cleaning.
- Cleaning battery components with a laser system enables producers to work fast and safely while managing the ablation process down to 1 to 3-micron levels of material removal. This keeps the substrate layer intact easier, resulting in connections far superior to non-cleaned areas and significantly improved bond stability over time and miles. Laser ablation is a game-changing electric vehicle (EV) battery cleaning method because it improves conductivity between the battery cell and the bonding wire. Most manufacturers employ a typical pulsed fiber laser to clean EV batteries with conventional optical delivery. This is a terrific multi-purpose technique but does not exclusively cater to the EV industry.
- For instance, the rise in the production of EVs is expected to propel the Market studied. For example, in February 2022, Tesla planned to build a second electric vehicle (EV) facility in China to help it keep up with increasing demand locally and in export markets. In the short term, Tesla plans to increase capability in China to at least 1 million cars per year, with a second plant designed near its current production in Shanghai's Lingangfree trade zone.
- According to IEA, roughly 25.9 million electric vehicles were operating worldwide in 2022. All-electric cars accounted for about 69.5% of plug-in electric vehicles that year.
- Further, in May 2022, Toyota Group revealed plans to invest INR 48 billion (USD 624 million) in India to manufacture electric vehicle components. In addition, The first interest and exposure for electric mobility in India was driven by the National Electric Mobility Mission Plan, which is aimed at faster adoption and production of hybrids and EVsFAME I and II. The government has announced an expenditure totalling USD 1.4 billion between now and 2022, in the second phase of FAME. The study market growth can be further stimulated by such an expansion of motor vehicles.

Asia Pacific is Expected to be the Fastest Growing Market

- China has become more stringent in the field of environment protection and citizens are increasingly concerned with protecting themselves from pollution. A growing number of issues, in particular pollution problems that are a major reason for the demand for laser cleaning solutions, can be observed in the Traditional Cleaning Industry.
- Moreover, China's manufacturing processing is rising to a higher level, with lasers as the significant supporting technology and significantly becoming ready and mature due to the country's national strategies "Industry 4.0" and "Made in China 2025., which

are expected to bring increased opportunities for various vendors offering laser cleaning systems.
- The market is expected to witness an increased performance of lasers for materials processing, and the number of promising laser treatment applications is growing in Japan's industrial domains. Furthermore, to correctly employ lasers, laser processing technology is being created based on laser science for enhancement and systematization, production technology for manufacturing high-quality items, and an increase in the number of laser researchers and engineers.
- Further, the market sees innovations to help create healthier homes as over 70% of people in urban India buy more home-cleaning products. For instance, in February 2022, Dyson announced India's first vacuum cleaner with laser detection technology. The vacuum cleaner is designed to detect concealed particles as small as 10 millimeters. The Dyson V12 Detect Slim is a new cordless vacuum cleaner with a hyperdymium motor that generates up to 150 air watts of intense suction. Its five-stage filtration system collects 99.9% of dust particles as small as 0.3 microns.
- The necessity for laser cleaning machines to ensure the highest possible prewelding and postwelding treatment results in a growing and strong connection, which can be sufficiently coated without being subjected to any coating process, due to significant automotive demand in South Korea Increased demand for laser cleaning machines has been observed due to the use of harmful chemicals or wastes and other uses such as removal of contamination by oxidising agents, injection mold disinfection, corrosion resistance and Bond preparation. According to KAIDA, in 2022, around 851 thousand gasoline vehicles were sold in South Korea. The next popular fuel type was diesel, followed by hybrid cars in third place. That year, the sales of electric or hybrid vehicles noticed a large increase compared to the last year.
- In February 2022, Samsung SDI, a South Korean battery manufacturer, started cleaning prismatic battery cans with laser equipment. Materials, including cathode, anode, and separators, are deposited in a metal container in prismatic batteries. Before being inserted into the can, these components are formed into a jelly roll. The laser begins immediately after the jelly roll is inserted and before the can's opening is sealed with a cap.
- Other Asian countries, such as Australia, Thailand, and Indonesia, which are expected to grow significantly in the studied market during the forecast period, are included in the rest of the Asia Pacific segment.

Laser Cleaning Industry Overview

The laser cleaning market is fragmented due to many regional and international players. Due to the fragmented nature of the Market, the competition amongst the players is high, and various new players are also investing in this Market. Jinan Xintian Technology Co., Ltd (XT Laser), TRUMPF Group, Laser Photonics Corporation, Laserax Inc., and Adapt Laser Systems are critical players in the Market. Players in the Market are adopting strategies such as partnerships, innovations, and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

- May 2022 - Laser Photonics Corp. launched the CleanTech3000-CTH laser cleaning system. The CleanTech3000-CTH laser cleaning system is a handheld laser cleaning equipment capable of removing the most challenging corrosion and improving adhesion before painting. This system includes an integrated chiller and is the same size as the 2000-CTH, which was formerly the most efficient for the commercial industry. The Laser Photonics CleanTech Handheld series of "Roughing" lasers was expanded by introducing the 3KW laser blaster, as stated in the Laser Photonics Cleaning Laser selection guide.
- April 2022 - Laser Photonics Corp., a provider of high-tech laser systems for laser cleaning, announced the upgrades to the existing product line. Advancements are being made to the entire product line, which includes everything from Class IV to Class I laser blaster cabinets, automatic laser cleaning equipment, and robotic applications. Also, in May 2022, Laser Photonics Corp. announced the launch of the CleanTech3000-CTH laser cleaning system (3KW).
- March 2022 - IPG Photonics constantly upgraded its laser cleaning portfolio; the company launched LightWELDXR, the third product offering within its handheld laser welding and cleaning product line. The new product provides an extended range of handheld laser welding and cleaning capabilities to address more materials and thicknesses than previous LightWELDmodels. This is done by producing a much smaller spot size and delivering more than six times the energy density.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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