Laser Cleaning Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

Key Highlights
Laser cleaning has developed as an important phase/process in many industries. Largely adopted in manufacturing, laser cleaning has witnessed multiple hardware technology upgrades, as sophisticated production is on the rise.
Conventionally being used to get surfaces ready for subsequent industrial processes, automated cleaning processes are required to adhere to changes that have been 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.
Further, laser cleaning's basic industrial applications range from mold and part cleaning to removing coatings from battery foils. It is increasingly observed to adapt to changes driven by miniaturization. This factor has led to providers in the industry offering adaptable systems that can be used across multiple parts and processes.
With increasing power watts, the cost of equipment increases. It requires technical experts to solve the solutions that are presently low in number. Thus high cost and lack of technical expertise might challenge the market growth.
With the outbreak of COVID-19, laser cleaning of bacteria-infected surfaces emerged as a highly effective procedure as the thermal effects of the laser can be used to disinfect the surface.

Laser Cleaning Market Trends

Automotive Holds the Significant Share in Market

Laser cleaning can restore a high-value vehicle with all its original parts and in good condition on the surface. Great cars with little corrosion are tough to obtain, especially as they age. According to Adapt Laser Systems, automotive manufacturers such as Toyota, Michelin, GM, and others have partnered with the company for laser technologies, including cleaning.
The significant growth in the demand for electric vehicles and the significant deployment of laser cleaning machines are 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 trend is particularly beneficial for automotive parts that require bonding preparation 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.
The advancement of battery technologies, such as improved longevity, lifespans, and charging times, has been among the most significant advancements in the EV sector. However, new production and maintenance approach becomes necessary as new advances emerge. One has been laser cleaning for EV batteries in the electric car industry. Laser cleaning has grown popular in the EV battery sector due to its ability to regulate the cleaning process with micron precision and minimize excessive thermal stress on the substrate.
As battery modules comprise hundreds of poles and busbars that must be cleaned before welding, even a 1% variation might result in enormous issues. Laser cleaning gives customers the precision to get consistent cleaning results and avoid quality problems.
In 2021, Tesla, the electric vehicle manufacturer from California, was granted another patent for a laser-based windshield cleaning device. The patent application, "Pulsed laser cleaning of dirt deposited on glass articles in cars and photovoltaic assemblies," essentially refers to utilizing lasers to replace traditional windshield wipers.
Moreover, IEA stated that in 2021, electric vehicles would account for about 10% of global automotive sales, up from 4%in 2019. It increased the overall number of electric vehicles on the road to almost 16.5 million, more than tripling the number in 2018. Electric car sales have continued to rise in 2022, with 2 million sold in the first quarter, up 75% over the same period in 2021. It is analyzed to boost the market demand during the forecast period.

North America to Account for the Most Significant Share

In the United States, a major factor that has contributed to significant enhancements in laser cleaning in aerospace is the increased expenditure by the government on the US army. The United States led the ranking of countries with the highest military spending in 2021, with USD 801 billion dedicated to the military.
In January 2021, the US Navy tested laser cleaning technology on aircraft support components to safely remove corrosion and other hazardous coatings. The Fleet Readiness Center East (FRCE), a division in the US Navy, is looking to adopt laser ablation technology at the facility, replacing other traditional methods of cleaning like plastic blasting and mechanical removal methods, both of which use a significant amount of consumables, and can be dangerous to operate.
The region also dominates the laser cleaning market due to the rising usage of gas lasers in manufacturing industries and the increasing use of laser cleaning technology in the automotive sector. For instance, the American EV manufacturer Tesla has patented a new car feature that uses lasers for cleaning. In September 2021, the US Patent and Trademark Office granted the company a patent on using lasers to clean debris off a windshield and other glass parts of a vehicle.
Laser Cleaning systems are increasingly used in restoration activities in Canada as they offer several advantages over traditional methods like micro-abrasive cleaning or using detergents and corrosive chemicals. Laser technology can gently clean and remove soil from different types of sandstone, marble, granite, terracotta, and concrete without causing physical damage or harm to the architectural surfaces.
Centre Block, the main building of the Canadian parliamentary complex on Parliament Hill, is undergoing its first comprehensive restoration in a century. Its rehabilitation team, led by Public Services and Procurement Canada, is turning to laser technology. The technology is used as one of the early stages of cleaning, giving the team a better sense of the condition of the stone.

Laser Cleaning Market Competitor Analysis

The laser cleaning market is fragmented due to the presence of a large number of regional and international players across the globe. 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. Key players are Coherent Inc., Trumpf, Laser photonics, etc. Recent developments in the market are:

March 2022 - HGLASER's Entire line of laser cleaning automation for Positive and negative plates has launched. It provides high quality and high efficiency. Eight lasers are used, and multi-head light output can be customized according to the width. The positive and negative electrodes can be cleaned at the same time. It can process 72 products per minute, and the yield rate is ?99.5%.

Additional Benefits:

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

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