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Laser Cleaning - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

https://marketpublishers.com/r/L040A403FD95EN.html
Date: July 2024
Pages: 143
Price: US$ 4,750.00 (Single User License)
ID: L040A403FD95EN

Abstracts

The Laser Cleaning Market size is estimated at USD 722.38 million in 2024, and is expected to reach USD 947.21 million by 2029, growing at a CAGR of 5.57% during the forecast period (2024-2029).

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.

Key Highlights

Automatic cleaning procedures, typically used to prepare surfaces for further industrial operations, must follow the modifications introduced by Industry 4.0. Furthermore, chemical solvents are used, which results in potentially dangerous vapors and liquid waste products, and abrasive blasting systems cause significant waste and damage to delicate surfaces. These issues prompted the adoption of surface cleaning solutions based on laser technology.

The automotive industry has significantly contributed to the laser cleaning market, one of the prime driving factors. During the car manufacturing process, automotive developers look for an easy and quick way to treat composite parts before bonding to ensure the integrity of the frame’s structure.

Furthermore, the automotive domain is primarily concerned with integrating and separating all different materials. Thus, laser tech is a crucial step for developing lightweight designs from different materials and flexible production processes.

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The high-power laser cleaners are designed to clear increasingly heavy metals. In some situations, these devices are classified as 350W, 500W, 1000W, and even 2000W. However, due to the increased power, these devices are costly. As a result, these machines are used only in cases that involve a large production/repair facility that uses heavy-duty metals.

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 laser cleaning is used 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 little corrosion are tough to obtain, especially as they age. According to Adapt Laser Systems, automotive manufacturers such as GM, Michelin, and Toyota have partnered with the company for laser technologies, including cleaning.

In addition, the increase in the demand for electric vehicles and the deployment of laser cleaning machines are expected to boost the demand during the forecast period. Thousands of pulses per second are used in laser cleaning to absorb and eliminate impurities.

For instance, according to KBB, in the first quarter of 2023, just under 258,900 battery-electric vehicles were sold in the United States. This was a year-over-year increase of around 44.9% compared to the sales recorded in the first quarter of 2022. The first quarter of 2023 also recorded a hike in sales compared to the fourth quarter of 2022, making it the best quarter for BEV sales in the country across the past two years.

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 makes keeping the substrate layer intact easier, resulting in connections far superior to non-cleaned areas and significantly improved bond stability over time and miles.

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Asia-Pacific Expected to Register Significant Growth

China has begun committing a significant amount of human and material resources to advancing laser cleaning technology research. With the development of advanced lasers in the last ten years, lasers have advanced in energy output, wavelength range, laser quality, and energy conversion efficiency. Lasers have evolved from inefficient and bulky carbon dioxide lasers to lightweight and compact fiber lasers, from continuous output laser to nanosecond, picosecond, and femtosecond short-pulse laser, and from visible light output to long-wave infrared light and short-wave ultraviolet light output.

Furthermore, the rapid advancement of laser cleaning technology is intimately connected to the advancement of laser technology. In both theory and practice, laser cleaning technology has yielded positive outcomes in the country.

According to IBEF, the construction market is expected to reach USD 1.42 trillion by 2027. FDI in construction development (townships, housing, built-up infrastructure, and construction development projects) and construction (infrastructure) activity sectors stood at USD 32.08 billion in September 2023 across India.

Several companies in the country are making strategic moves to strengthen their capabilities and offer enhanced solutions to clients in the industrial sector. For instance, in February 2024, Meera Laser Solution Pvt. Ltd announced the opening of its new technology center in Pune. The new center is designed to support manufacturing activities and research and development. The facility is equipped with advanced machinery and modern research and development labs and is positioned to promote innovation and collaboration within the industrial laser solutions sector. It features specialized laboratories facilitating continuous experimentation, testing, and the development of cutting-edge laser technologies.

Laser Cleaning Industry Overview

The laser cleaning market is fragmented due to many regional and international players. Owing to the fragmented nature of the market, the competition among the players is high; various new players are also investing in the market. Jinan Xintian Technology Co. Ltd (XT Laser), TRUMPF Group, Laser Photonics Corporation, Laserax Inc., and Adapt Laser Systems are the key players in the market. Market players are adopting strategies

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such as partnerships, innovations, and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

In March 2024, Laser Photonics Corporation entered into a distribution agreement with the Fastenal Company (FAST), the largest fastener distributor in North America and a leading distributor and provider of industrial technology and products. This agreement is expected to increase its customer base and expand its distributor network while equipping the company with cutting-edge industrial laser solutions tailored according to its client's needs.

In December 2023, All Printing Resources introduced the TWEN anilox laser cleaning system (TAC). The TWEN TAC technology is laser-based, providing a safe, sustainable, and cost-effective method for cleaning anilox rolls without causing surface wear or damage to the surfaces. It does not require any human input, except for the entry of an ID, to use its fully automated Touch and Clean technology.

Additional Benefits:

The market estimate (ME) sheet in Excel format

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