

Global Industrial Laser Market: Analysis By Type (Fibre, Solid State/Disc, Excimer/Diode, and CO2); By Application (Metal Cutting, Welding/Brazing, Marking/Engraving, Fine Metal Processing, Display, Non-Metal Processing, Semiconductor/PC Board, Additive Manufacturing, and Other); By Region Size, and Trends with Impact of COVID-19 and Forecast up to 2027

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Abstracts

In 2021, the global industrial laser market was valued at US\$6.89 billion and is anticipated to grow to US\$15.07 billion by 2027. An industrial laser is a mechanical device that generates a clean beam of light from a medium with controlled form, size, and purity by using molecules or atoms and stimulated emission.

Industrial lasers are capable of cutting metals and fabrics, marking tracking codes for industrial traceability, precisely welding metals, polishing metal surfaces, modifying surface roughness, and measuring part dimensions. Some of the major reasons why companies are using industrial laser are increasing shift of automotive sector towards electric vehicles, increasing legislation and traceability requirements, growing demand for material processing, rising demand of laser in aerospace sector, rising adoption of laser technology in medical industry, etc. The industrial laser market is expected to grow at a CAGR of 13.93% over the forecast period of 2022-2027.

Market Segmentation Analysis:

By Type: The report provides the bifurcation of the industrial laser market into four

segments based on type: Fibre, Solid State/Disc, Excimer/Diode, and CO2. In 2021, the Fibre segment lead the industrial laser market as they have a small footprint, good electrical efficiency, low maintenance and low operating costs. Due to the different wavelengths they can generate, they are widely used in industrial environments to perform cutting, marking, welding, cleaning, texturing, drilling and a lot more. The Excimer/Diode segment is expected to grow at the highest CAGR in the forecasted period.

By Application: In the report, the global industrial laser market is divided into nine segments based on the application: Metal Cutting, Welding/Brazing, Marking/Engraving, Fine Metal Processing, Display, Non-Metal Processing, Semiconductor/PC Board, Additive Manufacturing, and Other. The metal cutting segment held the highest share in the market in 2021 and is expected to be the fastest growing segment in the forecasted period as this laser process is noncontact, eliminating part distortion and the focusing optics are always in place, so there are no tool set-up and storage costs. Also, laser-cut edges are superior to edges produced by most other cutting processes in every respect. Piece parts cut by the laser do not require subsequent machining operations.

By Region: The global industrial laser market can be divided into four regions: Asia Pacific, North America, Europe, and Rest of the World. The Asia Pacific dominated the market in 2021 owing to the growing number of original equipment manufacturers and automotive industries, manufacturing cost reduction in the emerging countries of the region, etc. China held the major share in the Asia Pacific industrial laser market in 2021, owing to an increased industrial laser use at times of metal manufacturing like cutting of steel that is further used in the multiple industries.

North America is anticipated to lead the global industrial laser market during the forecast period due to the growing significance mergers and acquisitions along with ongoing research and development in ultra-laser technology. The US held the major share in the North American industrial laser market in 2021, and is expected to be the fastest growing region in North America during the forecasted period of 2022-2027. Presence of highly advance industrial sector in the US is one of the leading factors supporting market growth in the country.

Global Industrial laser Market Dynamics:

Growth Drivers: One of the most important factors impacting industrial laser market dynamics is the increasing shift of automotive sector towards electric vehicles. Global demand for alternative energy is on the rise, along with the popularity of electric

vehicles. As the automotive sector attempts to minimize carbon emissions, many car owners are concerned about fluctuating and rising gasoline prices. As a result, an increasing number of consumers are thinking about alternatives to internal combustion engine (ICE) vehicles.

In addition, governments worldwide are implementing incentive programs in an attempt to push drivers toward electric and other alternatively powered vehicles. Electric vehicles run on electric batteries. In the process of manufacturing battery packs, electrical contacts are achieved by welding conductors of dissimilar materials, namely copper and aluminum. Laser technology reliably achieves this, offering the advantages of narrow, high speed welding at lower heat. Laser cleaning is proven to boost battery efficiency by increasing the surface area of contact points, and laser welding is a reliable technology for efficiently connecting cells in circuits. Furthermore, the market has been growing over the past few years, due to factors such as increasing legislation and traceability requirements, growing demand for material processing, increasing demand of laser in aerospace sector, rising adoption of laser technology in medical industry, etc.

Challenges: However, the market has been confronted with some challenges specifically, emission of dangerous gases during melting process, high installation costs, etc. The installation of the industrial laser is a huge investment for the companies and same is the maintenance of them, which requires proper supervision and testing of the machine. For instance, metal laser cutting machine is one of the most expensive metal cutting equipment. Compared with CNC flame and plasma cutting machine, the cost of metal laser cutting machine is much more expensive than cutting equipment. Similarly, one of the major disadvantage of using the laser cladding equipment is capital equipment costs. Owing to the above factor, the installation costs of laser are high, which ultimately hampers the growth of the industrial laser market.

Trends: The market is projected to grow at a fast pace during the forecast period, due to various latest trends such as rising adoption of industrial robotics, increasing demand for ultrashort pulse (USP) lasers, increasing trend of automation in industries, growing laser integration in additive manufacturing, increasing use of laser in garment manufacturing, Industry 4.0, etc. The demand for robots across various industries is projected to increase as the new generation of industrial robots are cheaper, autonomous, more mobile, cooperative, and flexible. Almost all robots today use lasers for remote sensing. This means that the robot is able to tell, from a distance, some characteristics of an object. When the laser is used to measure distance in an arc around the robot, it is called LIDAR. Furthermore, laser rangefinders can be used in

mobile robotics in many different ways. Their properties such as good measurement precision and accuracy make them very effective in range measurement, so they can be used in any tasks that are being solved in mobile robotics.

Impact Analysis of COVID-19 and Way Forward:

The economic consequences from the COVID-19 pandemic definitely impacted global industrial laser markets, slowing overall market growth in 2019-2020. Due to the countries' lockdown measures and delays in production and manufacturing of industrial laser systems used in cutting, welding, nonmetal processing, and other industries, the COVID-19 pandemic halted production of several goods in the industrial laser market.

Competitive Landscape:

The global industrial laser market is highly fragmented, with a large number of small- and medium-sized manufacturers operating in the market.

The key players of the global industrial laser market are

II-VI Incorporated (Coherent, Inc.)

Jenoptik AG

Lumentum Holdings Inc.

nLIGHT, Inc.

MKS Instruments, Inc. (Newport Corporation)

NKT A/S (NKT Photonics)

TRUMPF

FANUC Corporation

IPG Photonics Corporation

Calmar Laser

Amonics Ltd.

CY Laser SRL

Apollo Instruments Inc.

Some of the strategies among key players in the market for industrial laser are product launches, mergers, acquisitions, and collaborations. For instance, in September 2022, Coherent Corp. announced the introduction of its 200 Gbps indium phosphide (InP) electro-absorption modulated lasers (EMLs) for high-speed datacenter transceivers. Whereas, in September 2022, TRUMPF launched a new and attractively priced machine for companies entering the metal-bending market. Featuring the new Right Angle (RA) control system, the TruBend 1000 is extremely easy to program and ships equipped with TRUMPF's proven tech data for metal bending.

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