High Energy Lasers - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 120 pages | Mordor Intelligence

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Report description:

The High Energy Lasers Market size is estimated at USD 10.16 billion in 2024, and is expected to reach USD 14.99 billion by 2029, growing at a CAGR of 8.09% during the forecast period (2024-2029).

The industry is one among the ones hit by the COVID-19 pandemic. As the demand for machine inventory declined, the demand for high-end lasers declined in the year 2020. The market started recovering eventually after a slowdown and increased demand from China.

Key Highlights
-Lasers have demonstrated their effectiveness against missiles and are now used as the first line of defense. Because of rising defense budgets and research grants, militaries around the world are adopting high-energy laser-based equipment and investing heavily in R&D.
-High-energy lasers have played a crucial role in modern society, with increasing applications in manufacturing, communication, and defense. With the growing defense budget and research grants, militaries worldwide are adopting high-energy laser-based equipment and investing heavily in research and development. For example, in May 2021, the US army began testing a prototype laser weapon for close-range air defense; the weapon is a 50-kilowatt high-energy laser attached to a Stryker A1 vehicle that can locate, lock on, track, and destroy airborne threats.
-The defense industry drives a prominent share of the R&D and application of the technology. Major spending countries are keen on developing and inducting the technology as part of their forces and operation. According to SIPRI, total global military spending will increase by 0.7% in real terms in 2021, reaching USD 2.1 trillion. According to new data on global military spending, the five largest spenders in 2021 will be the United States, China, India, the United Kingdom, and Russia, accounting for 62% of total expenditure. Such developments should pave the way for new technologies and modernization.

-With the proliferation of drones in the defense sector, the demand for solutions that can track and destroy them has gained traction. For instance, in March 2021, European missile-maker MBDA and French firm CILAS agreed to collaborate with electronic warfare and intelligence specialist SIGN4L to explore co-development opportunities in high-energy laser weapons systems to destroy drones. Such developments are expected to increase over the coming years further.
-The application of high-energy lasers as part of missile defense systems is expected to increase, with major defense spenders increasingly adopting these solutions and showing interest in developing such solutions. For example, in March 2021, the Israeli Defense Ministry showed interest by seeking US funding and expertise for their air and missile defense lasers; Israel's current prototypes have achieved an output beam of nearly 100 kilowatts, whereas the United States has been exploring 300-kW weapons capable of killing cruise missiles.
-The most difficult task for researchers is to create a laser capable of reaching high enough levels to partially damage or defeat a target while tracking multiple objects at the same time. In turbulent air conditions such as dust and humidity, the laser must propagate efficiently and remain precisely focused on the target. The system must account for target movement, platform movement, and beam distortion caused by weather or environmental conditions.

High Energy Lasers Market Trends

Rising Demand for Laser Weapons Systems in Navy and Growth for Non-lethal Deterrents?

- To combat airborne threats like missiles and drones, the demand for laser weapon systems in the navy is rapidly rising across the globe. As the first line of defense against missiles, lasers are being used because they have proven effective. For instance, a flight IIA DDG Arleigh Burke destroyer is scheduled to have Lockheed Martin's High Energy Laser with Integrated Optical-dazzler and Surveillance, or HELIOS, permanently installed on board in 2021. The Laser was formally integrated into the Aegis Combat System by the US Navy.
- Apart from this, laser-based weapons are being tested for disabling drones by integrating such weapons aboard naval vessels. For example, the USS Portland successfully disabled an uncrewed aerial vehicle during a new high-energy laser weapon system test during COVID-19. Northrop Grumman developed the system, and the test was conducted after the incident with the Chinese destroyer, where a weapons-grade laser was shot by a US Navy P-8A Poseidon patrol aircraft.
- In addition to the United States, various other countries are also aiming at expanding their naval capabilities in deterring and disabling threats. China is among the countries set to race with the United States for supremacy in this field. China's People's Liberation Army Navy (PLA Navy) tested their tactical laser system that bears remarkable similarity to the US Navy's Laser Weapon System (LaWS) .
- As navy vassals are prone to attacks from missiles and other airborne threats against whom the defense section is increasingly developing and inducting technologies that can defend against such threats. In March 2021, announced that the ship-borne laser weapon is edging closer to achieving pinpoint accuracy.

Asia Pacific to Witness the Highest Growth

- The Asia-Pacific region is a leading adopter of high-energy lasers across various fields due to the growth of the market, driven by major countries like China, India, and Japan. The US-China tensions, inter-border conflicts, and the focus on nuclear power have furthered high-energy lasers in the defense and military systems of various countries in the region, like India.
- As part of the Tactical High Energy Laser System for the Army and Air Force of India, the country has adopted and encouraged high-energy lasers in the military as part of the TechnologyPerspective and Capability Roadmap by the Ministry of Defence.
- The Defence Research and Development Organisation of India announced plans to form a national program on directed energy

weapons, including high-energy lasers. The DRDO is working on chemical oxygen-iodine lasers and high-power fiber lasers and is eyeing a budget of USD 100.0 million from the Ministry of Defence for the 2021-2022 budget, which is aimed at the production of high-power laser weapons. Such spending on high-energy lasers is expected to impact the country's growth positively.
- According to SIPRI, China, the second-largest consumer in the world, increased its military spending by 4.7% in 2021 to an estimated USD 293 billion. China has increased its military spending for 27 years running. The 14th Five-Year Plan, which runs from 2021 to 2025, was first implemented with the Chinese budget for 2021. As part of its New Concept Weapons, China is expected to advance and implement high-energy lasers in its defense systems. The military spending and the country's inclination toward integrating HELs indicate the studied market's positive growth.
- With the focus on controlling the space in terms of military dominance, the studied market is expected to benefit from technological advancements made by China with government-funded investments in research and development.

High Energy Lasers Industry Overview

The high-energy laser market is moderately competitive and consists of numerous major players. Many major players continue to hold a considerable share in the overall market in terms of market share, especially across developed economies in regions such as North America. The leaders constantly innovate with new technology and invest in research and development. In addition, these companies are leveraging their strategic collaborative initiatives to increase their market share and increase their profitability.

- September 2022 - The Laser Cutting Company (TLCC) has released a high-energy Trumpf TruLaser 5040 fiber flat-bed laser cutter with EdgeLine Bevel, a Trumpf solution, that allows users to automatically bevel or countersink part edges during the cutting process, eliminating the need for pricey and time-consuming secondary processes.
- September 2022 - Precitec, a leader in laser cutting and welding manufacturing solutions, and TCI Cutting, a manufacturer of laser and waterjet cutting machines, have a long history of collaboration. TCI Cutting has developed fibre laser cutting machines in collaboration with Precitec, such as the Dynamicline Fiber 20kW with 4G maximum acceleration, carbon fiber bridge and linear motors, and the high-energy laser ProCutter 2.0 cutting head.

Additional Benefits:

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

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