

Global TGV Laser Induced Machine Market 2025 by Manufacturers, Regions, Type and Application, Forecast to 2031

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Abstracts

According to our (Global Info Research) latest study, the global TGV Laser Induced Machine market size was valued at US\$ 27.3 million in 2024 and is forecast to a readjusted size of USD 56.6 million by 2031 with a CAGR of 7.1% during review period.

In this report, we will assess the current U.S. tariff framework alongside international policy adaptations, analyzing their effects on competitive market structures, regional economic dynamics, and supply chain resilience.

Through Glass Vias (TGVs) refer to tiny, vertical conductive paths that pass through glass substrates, which are crucial for applications in microelectronics, especially for high-density interconnect (HDI) circuits in advanced packaging technologies. These vias allow electrical signals to be transmitted through glass, providing an alternative to traditional materials like FR4 (fiberglass) or ceramics. TGVs are commonly used in 3D packaging, LEDs, sensors, and radio-frequency (RF) circuits. A Laser Induced Machine for creating TGVs typically uses laser ablation to drill micro-vias through the glass, which are then metallized to form conductive pathways. This technology is especially advantageous for high-density packaging and high-performance devices, as it can create extremely fine and precise vias that are difficult to achieve using traditional mechanical drilling methods.

TGV hole-forming technology needs to take into account the requirements of cost, speed and quality. The challenge is that it needs to meet a series of requirements such as high speed, high precision, narrow pitch, smooth sidewalls, good verticality and low cost. For many years, many research works in the industry and academia have been committed to the development of low-cost, fast and scalable hole-forming technology.

Generally speaking, TGV can be made by sandblasting, photosensitive glass, focused discharge, plasma etching, electrochemical method, laser induced etching and other technologies. So far, laser induced etching has obvious advantages and has been applied. It is expected to stand out in hole-forming technology, making laser etching equipment one of the core equipment of hole-forming process. This process first uses laser technology to preset small holes on the glass wafer, and then puts the glass wafer into a HF solution containing 8% to 15% mass concentration, and the temperature of this solution is maintained at 20°C to 40°C. Then, the container is placed in an ultrasonic device and the device is turned on, and the device emits 40KHz ultrasonic waves. During the etching time of 60 to 120 minutes, the small holes on the glass wafer are etched with HF solution until the required diameter is reached. After the etching is completed, the glass wafer is removed and cleaned with deionized water. Finally, the aperture and permeability of the glass through hole are tested to ensure the process quality.

In terms of product types, wafer-level packaging occupies an important position, and it is expected that the share will reach 52.14% in 2031. At the same time, in terms of application, the share of semiconductors in 2024 is about 60.56%, and the CAGR in the next few years is about 5.13%. In addition to traditional semiconductors and electronics, equipment will be expanded to self-driving cars, 5G communications, biomedicine and transparent displays. It is expected that display panel applications will gradually occupy a larger market in the future.

High-precision TGV (Through Glass Via, glass through hole) laser equipment is a key equipment in the fields of semiconductors, display panels, MEMS (micro-electromechanical systems) and advanced packaging. With the continuous breakthroughs in technology and the growth of market demand, TGV equipment will play an increasingly important role in the field of high-end manufacturing. In terms of international market share and ranking, the main manufacturers are LPKF, 4JET, EKSPLA, TRUMPF, Philoptics, etc. The top five manufacturers in 2024 account for about 87.21% of the international market.

In terms of domestic market share and ranking, the main manufacturers in the Chinese market are LPKF, 4JET, EKSPLA, TRUMPF, Philoptics, etc. The top five manufacturers in 2024 account for about 88.01% of the domestic market. It is expected that industry competition will become more intense in the next few years, especially in the Chinese market. Domestic companies are expected to achieve overtaking in this field and become important players in the global market. China will become the fastest growing market, benefiting from policy support (such as the '14th Five-Year Plan') and

technological breakthroughs of local companies (such as Deer Laser's deep hole processing equipment). It is expected that the proportion of China's market size in the world will increase significantly in 2031. North America and Europe focus on high-end application upgrades, such as high-performance computing chip packaging.

This report is a detailed and comprehensive analysis for global TGV Laser Induced Machine market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global TGV Laser Induced Machine market size and forecasts, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2020-2031

Global TGV Laser Induced Machine market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2020-2031

Global TGV Laser Induced Machine market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2020-2031

Global TGV Laser Induced Machine market shares of main players, shipments in revenue (\$ Million), sales quantity (Units), and ASP (K US\$/Unit), 2020-2025

The Primary Objectives in This Report Are:

- To determine the size of the total market opportunity of global and key countries
- To assess the growth potential for TGV Laser Induced Machine
- To forecast future growth in each product and end-use market
- To assess competitive factors affecting the marketplace

This report profiles key players in the global TGV Laser Induced Machine market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key

companies covered as a part of this study include LPKF, Delphi Laser, GH Laser, HSET, INTE Laser, E&R Engineering, Philoptics, DR Laser, LasTop Tech, 4JET, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

TGV Laser Induced Machine market is split by Type and by Application. For the period 2020-2031, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Wafer Level Packaging

Panel-Level Packaging

Market segment by Application

Semiconductor

Display

Other

Major players covered

LPKF

Delphi Laser

GH Laser

HSET

INTE Laser

E&R Engineering

Philoptics

DR Laser

LasTop Tech

4JET

Huagong Laser

RENA

Lyric

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe TGV Laser Induced Machine product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of TGV Laser Induced Machine, with price, sales quantity, revenue, and global market share of TGV Laser Induced Machine from 2020 to 2025.

Chapter 3, the TGV Laser Induced Machine competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by

landscape contrast.

Chapter 4, the TGV Laser Induced Machine breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2020 to 2031.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2020 to 2031.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2020 to 2025. and TGV Laser Induced Machine market forecast, by regions, by Type, and by Application, with sales and revenue, from 2026 to 2031.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of TGV Laser Induced Machine.

Chapter 14 and 15, to describe TGV Laser Induced Machine sales channel, distributors, customers, research findings and conclusion.

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