

Global Fiber Bragg Grating (FBG) Market Analysis and Forecast 2024-2030

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Abstracts

Summary

A fiber Bragg grating (FBG) is a type of distributed Bragg reflector constructed in a short segment of optical fiber that reflects particular wavelengths of light and transmits all others. This is achieved by adding a periodic variation to the refractive index of the fiber core, which generates a wavelength specific dielectric mirror. An FBG is an invisible reflector inside the core of the fiber that is set to a specific wavelength of light. When the fiber where the FBG is located is exposed to strain or temperature, the FBG's "center wavelength" shifts to a higher or lower wavelength. The direction and magnitude of the shift is proportional to the change in strain or temperature.

A fiber Bragg grating can therefore be used as an inline optical filter to block certain wavelengths, or as a wavelength-specific reflector. Fiber Bragg Gratings are made by laterally exposing the core of a single-mode fiber to a periodic pattern of intense ultraviolet light. The exposure produces a permanent increase in the refractive index of the fiber's core, creating a fixed index modulation according to the exposure pattern. This fixed index modulation is called a grating. At each periodic refraction change a small amount of light is reflected. All the reflected light signals combine coherently to one large reflection at a particular wavelength when the grating period is approximately half the input light's wavelength. This is referred to as the Bragg condition, and the wavelength at which this reflection occurs is called the Bragg wavelength. In a FBG, the refractive index of the core is periodically modulated along the fiber's main axis. The period of the modulation ranges typically from a few hundred nanometers to a few microns. When light is launched into a FBG, it experiences a certain amount of scattering at each grating plane. Most of the scattered light becomes more and more out-of-phase and eventually decays due to deconstructive interference. If the Bragg



condition is satisfied for one of the colors of the input light, then a sharp reflected peak is observed in the backward direction with a center wavelength determined by the grating's parameters.

According to APO Research, The global Fiber Bragg Grating (FBG) market is projected to grow from US\$ million in 2024 to US\$ million by 2030, at a Compound Annual Growth Rate (CAGR) of % during the forecast period.

The US & Canada market for Fiber Bragg Grating (FBG) is estimated to increase from \$ million in 2024 to reach \$ million by 2030, at a CAGR of % during the forecast period of 2025 through 2030.

Asia-Pacific market for Fiber Bragg Grating (FBG) is estimated to increase from \$ million in 2024 to reach \$ million by 2030, at a CAGR of % during the forecast period of 2025 through 2030.

The China market for Fiber Bragg Grating (FBG) is estimated to increase from \$ million in 2024 to reach \$ million by 2030, at a CAGR of % during the forecast period of 2025 through 2030.

Europe market for Fiber Bragg Grating (FBG) is estimated to increase from \$ million in 2024 to reach \$ million by 2030, at a CAGR of % during the forecast period of 2025 through 2030.

The major global manufacturers of Fiber Bragg Grating (FBG) include Micron Optics, Proximion AB, HBM FiberSensing, ITF Technologies Inc, FBGS Technologies GmbH, Technica, iXFiber, Smart Fibres Limited and fos4x, etc. In 2023, the world's top three vendors accounted for approximately % of the revenue.

In terms of production side, this report researches the Fiber Bragg Grating (FBG) production, growth rate, market share by manufacturers and by region (region level and country level), from 2019 to 2024, and forecast to 2030.

In terms of consumption side, this report focuses on the sales of Fiber Bragg Grating (FBG) by region (region level and country level), by Company, by Type and by Application. from 2019 to 2024 and forecast to 2030.

This report presents an overview of global market for Fiber Bragg Grating (FBG), capacity, output, revenue and price. Analyses of the global market trends, with historic



market revenue or sales data for 2019 - 2023, estimates for 2024, and projections of CAGR through 2030.

This report researches the key producers of Fiber Bragg Grating (FBG), also provides the consumption of main regions and countries. Of the upcoming market potential for Fiber Bragg Grating (FBG), and key regions or countries of focus to forecast this market into various segments and sub-segments. Country specific data and market value analysis for the U.S., Canada, Mexico, Brazil, China, Japan, South Korea, Southeast Asia, India, Germany, the U.K., Italy, Middle East, Africa, and Other Countries.

This report focuses on the Fiber Bragg Grating (FBG) sales, revenue, market share and industry ranking of main manufacturers, data from 2019 to 2024. Identification of the major stakeholders in the global Fiber Bragg Grating (FBG) market, and analysis of their competitive landscape and market positioning based on recent developments and segmental revenues. This report will help stakeholders to understand the competitive landscape and gain more insights and position their businesses and market strategies in a better way.

This report analyzes the segments data by Type and by Application, sales, revenue, and price, from 2019 to 2030. Evaluation and forecast the market size for Fiber Bragg Grating (FBG) sales, projected growth trends, production technology, application and end-user industry.

Fiber Bragg Grating (FBG) segment by Company

Micron Optics

Proximion AB

HBM FiberSensing

ITF Technologies Inc

FBGS Technologies GmbH

Technica

iXFiber



Smart Fibres Limited

fos4x

Advanced Optics Solutions GmbH

Wuhan Ligong Guangke

TeraXion

FBG Korea

GEOPTEX bvba (FOS&S)

Alnair Labs Corporation

Fiber Bragg Grating (FBG) segment by Type

Fiber Bragg Grating Filter

Fiber Bragg Grating Sensors

Other

Fiber Bragg Grating (FBG) segment by Application

Optical Communication

Aerospace Applications

Energy Industry

Transportation

Geo-Technical & Civil Engineering

Other



Fiber Bragg Grating (FBG) segment by Region

North America

U.S.

Canada

Europe

Germany

France

U.K.

Italy

Russia

Asia-Pacific

China

Japan

South Korea

India

Australia

China Taiwan

Indonesia

Thailand



Malaysia

Latin America

Mexico

Brazil

Argentina

Middle East & Africa

Turkey

Saudi Arabia

UAE

Study Objectives

1. To analyze and research the global status and future forecast, involving, production, value, consumption, growth rate (CAGR), market share, historical and forecast.

2. To present the key manufacturers, capacity, production, revenue, market share, and Recent Developments.

3. To split the breakdown data by regions, type, manufacturers, and Application.

4. To analyze the global and key regions market potential and advantage, opportunity and challenge, restraints, and risks.

5. To identify significant trends, drivers, influence factors in global and regions.

6. To analyze competitive developments such as expansions, agreements, new product launches, and acquisitions in the market.

Reasons to Buy This Report



1. This report will help the readers to understand the competition within the industries and strategies for the competitive environment to enhance the potential profit. The report also focuses on the competitive landscape of the global Fiber Bragg Grating (FBG) market, and introduces in detail the market share, industry ranking, competitor ecosystem, market performance, new product development, operation situation, expansion, and acquisition. etc. of the main players, which helps the readers to identify the main competitors and deeply understand the competition pattern of the market.

2. This report will help stakeholders to understand the global industry status and trends of Fiber Bragg Grating (FBG) and provides them with information on key market drivers, restraints, challenges, and opportunities.

3. This report will help stakeholders to understand competitors better and gain more insights to strengthen their position in their businesses. The competitive landscape section includes the market share and rank (in volume and value), competitor ecosystem, new product development, expansion, and acquisition.

4. This report stays updated with novel technology integration, features, and the latest developments in the market.

5. This report helps stakeholders to gain insights into which regions to target globally.

6. This report helps stakeholders to gain insights into the end-user perception concerning the adoption of Fiber Bragg Grating (FBG).

7. This report helps stakeholders to identify some of the key players in the market and understand their valuable contribution.

Chapter Outline

Chapter 1: Introduces the report scope of the report, executive summary of different market segments (by type and by application, etc), including the market size of each market segment, future development potential, and so on. It offers a high-level view of the current state of the market and its likely evolution in the short to mid-term, and long term.

Chapter 2: Introduces the market dynamics, latest developments of the market, the driving factors and restrictive factors of the market, the challenges and risks faced by



manufacturers in the industry, and the analysis of relevant policies in the industry.

Chapter 3: Fiber Bragg Grating (FBG) production/output of global and key producers (regions/countries). It provides a quantitative analysis of the production, and development potential of each producer in the next six years.

Chapter 4: Sales (consumption), revenue of Fiber Bragg Grating (FBG) in global, regional level and country level. It provides a quantitative analysis of the market size and development potential of each region and its main countries and introduces the market development, future development prospects, market space of each country in the world.

Chapter 5: Detailed analysis of Fiber Bragg Grating (FBG) manufacturers competitive landscape, price, sales, revenue, market share and industry ranking, latest development plan, merger, and acquisition information, etc.

Chapter 6: Provides the analysis of various market segments by type, covering the sales, revenue, average price, and development potential of each market segment, to help readers find the blue ocean market in different market segments.

Chapter 7: Provides the analysis of various market segments by application, covering the sales, revenue, average price, and development potential of each market segment, to help readers find the blue ocean market in different downstream markets.

Chapter 8: Provides profiles of key manufacturers, introducing the basic situation of the main companies in the market in detail, including product descriptions and specifications, Fiber Bragg Grating (FBG) sales, revenue, price, gross margin, and recent development, etc.

Chapter 9: North America (US & Canada) by type, by application and by country, sales, and revenue for each segment.

Chapter 10: Europe by type, by application and by country, sales, and revenue for each segment.

Chapter 11: China by type, by application, sales, and revenue for each segment.

Chapter 12: Asia (Excluding China) by type, by application and by region, sales, and revenue for each segment.



Chapter 13: Middle East, Africa, Latin America by type, by application and by country, sales, and revenue for each segment.

Chapter 14: Analysis of industrial chain, sales channel, key raw materials, distributors and customers.

Chapter 15: The main concluding insights of the report.



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