

Laser Cladding Market with COVID-19 Impact by Type (Fiber Laser, Diode Laser, YAG Laser, CO2 Laser), Revenue, End-use Industry (Oil & Gas, Aerospace & Defense, Automotive, Power Generation, Mining), and Region - Global Forecast to 2026

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Abstracts

The laser cladding market is estimated to be valued at USD 483 million in 2021; it is expected to grow at a CAGR of 9.6% during 2021–2026 to reach USD 823 million by 2026. Over the years, new and more advanced variants of laser cladding technology have emerged, especially the extreme high-speed laser application (EHLA). EHLA is a novel technology born from laser cladding (also known as laser metal deposition (LMD) or directed energy deposition – laser beam (DED-LB)). Fraunhofer ILT has developed EHLA as an advanced form of laser cladding, a replacement for chrome plating, and an alternative to spraying technologies. EHLA coatings can be applied to small and large components at speeds 10–100x times faster than laser cladding.

Laser cladding is perceived as one of the more sophisticated industrial laser applications, requiring special skills. There is a limited number of people across the globe who have developed these skills and a limited number of suppliers that provide laser cladding equipment. In the automotive industry, the valves of a non-commercial vehicle are subject to 300 to 500 million thermal and mechanical cycles throughout the life of an automobile, and an exhaust valve is subject to a stream of hot gas that may contain soot particles and corrosive constituents. In the early days of laser technology, numerous research facilities showed pictures of laser-clad valves in their publications and literature. However, not many of them were put into production or commercialized. The chief reason for this lack of market penetration is the availability of less expensive equipment for coating valves using plasma transferred arc (PTA) welding, which produces deposits with low levels of dilution. However, in the long run, laser cladding

would prove more economical and successful than traditional laser technologies such as cutting, welding, and others.

“Fiber lasers: The fastest type of laser cladding market .”

Fiber laser is a type of solid laser where the active media is the core of rare earth metals (Er, Yb, and a few others) and doped fiber, which is typically single-mode silica fiber. This doped fiber has a cavity mirror at each end or fiber Bragg gratings, which can be fabricated within the fiber. The fiber's central core is responsible for the emission of laser light, and its structure varies from simple to fairly complex. Hence, fiber lasers can be compact and rugged. A fiber laser has a large surface-to-volume ratio, and hence, heat dissipation is relatively easy. This laser is comparatively smaller and lighter in weight than traditional lasers, which helps save space. Also, there is no requirement for precise alignment of mirrors, which makes it capable of operating in variable working environments and enables ease of transportation

“System revenue: The largest revenue of the laser cladding market .”

The system revenue segment is likely to continue holding a larger market share during the forecast period. The leading position of this segment can be attributed to the ability of these systems to perform a wide range of functions, which expands their utility across several end-use industries, such as oil & gas, mining, automotive, and aviation

“Oil & gas: Largest growing end-use industry of laser cladding market”

In the oil & gas industry, laser cladding is a widely used technology for exploration, drilling, corrosion resistance, and a broad range of hard-facing applications. It is commonly used in oil refinery process plants, downhole stabilizers, valve balls/seats, sand valves, and hydraulic rods.

Laser cladding can be used to add specific beneficial properties to the surface of key components such as bearings and bearing bushes, compressor rods, drilling heads, extruders, gate & ball valves and seats, hydraulic plungers, lip seal seats, mechanical seals, O-ring seal seats, pump shafts, rotors, sleeves, and others. This results in improved reliability, durability, and reduced operational downtimes. In offshore drilling, hydraulic cylinders are exposed to salt from ocean spray that causes corrosion, pitting, and scratching. This can lead to oil contamination, seal failure, and, ultimately, machine failure.

“APAC: The fastest-growing region in the global laser cladding market .”

APAC has been ahead in terms of adoption of laser cladding solutions compared with other regions. The major countries contributing to the laser cladding market in APAC are China, Japan, India, South Korea, and the Rest of APAC. The region's increasing R&D investments and growing oil & gas, automotive, aerospace & defense manufacturing, mining, and electronics sectors are expected to drive the growth of the region's laser cladding market. Continuous demand for cost-effective, reliable, and fast-response laser cladding solutions from the aforementioned end-use industries is also expected to drive the growth of the region's laser cladding market.

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

By Company Type: Tier 1 – 40%, Tier 2 – 25%, and Tier 3 – 35%

By Designation: C-level Executives – 35%, Directors – 28%, and Others – 37%

By Region: APAC – 40%, North America – 28%, Europe – 22%, RoW – 10%

TRUMPF (Germany), OC Oerlikon Management AG (Switzerland), Coherent, Inc (US), IPG Photonics Corporation (US), Han's Laser Technology Industry Group Co., Ltd. (China), Hoganas AB (Sweden), Lumibird (France), Lumentum Operations LLC (US), Curtiss-Wright Corporation (US), Jenoptik (Germany), Alabama Specialty Products, Inc. (US), Efesto (US), Fraunhofer USA's Center Midwest (US), Gravotech (France), Hayden Corporation (US), Kondex Corporation (US), LaserBond (Australia), LaserStar (US), Laserline (Germany), Laser Cladding Technologies (Singapore), Lincoln Laser Solutions (Canada), Optomec (Mexico), Preco (US), Technogenia (France), and TLM Laser (UK) are among the many players in the laser cladding market.

Research Coverage:

The report segments the laser cladding market and forecasts its size, by value, based on by Type (Diode laser, Fiber laser, CO2 laser, Acoustic laser, and Others), by Revenue (System revenue, Laser revenue), by End-use Industry (Oil & Gas, Mining, Aerospace & Defense, Automotive, Power Generation, and Others), and Region (North America, Europe, APAC, and RoW),.

The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the laser cladding market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Key Benefits of Buying the Report

The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the sub-segments. This report will help stakeholders and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the laser cladding market and provides them information on key market drivers, restraints, challenges, and opportunities. The report also covers COVID-19 impact on laser cladding market.

Contents

1 INTRODUCTION

1.1 STUDY OBJECTIVES

1.2 MARKET DEFINITION

1.3 STUDY SCOPE

1.3.1 MARKETS COVERED

FIGURE 1 MARKET SEGMENTATION

1.3.2 GEOGRAPHIC SCOPE

1.4 YEARS CONSIDERED

1.5 INCLUSIONS AND EXCLUSIONS

1.6 CURRENCY

1.7 STAKEHOLDERS

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 2 LASER CLADDING MARKET: PROCESS FLOW OF MARKET SIZE ESTIMATION

FIGURE 3 LASER CLADDING MARKET: RESEARCH DESIGN

2.1.1 SECONDARY DATA

2.1.1.1 List of major secondary sources

2.1.1.2 Key data from secondary sources

2.1.2 PRIMARY DATA

2.1.2.1 Key industry insights

2.1.2.2 Breakdown of primaries

2.1.2.3 Key data from primary sources

2.1.3 SECONDARY AND PRIMARY RESEARCH

2.2 MARKET SIZE ESTIMATION

FIGURE 4 MARKET SIZE ESTIMATION METHODOLOGY: SUPPLY-SIDE ANALYSIS

FIGURE 5 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 2 (SUPPLY SIDE)—IDENTIFICATION OF REVENUES GENERATED BY COMPANIES FROM LASER CLADDING OFFERINGS

2.2.1 BOTTOM-UP APPROACH

2.2.1.1 Approach for arriving at market size through bottom-up analysis (demand side)

FIGURE 6 LASER CLADDING MARKET: BOTTOM-UP APPROACH

2.2.2 TOP-DOWN APPROACH

2.2.2.1 Approach for arriving at market size using top-down analysis
(supply side)

FIGURE 7 LASER CLADDING MARKET: TOP-DOWN APPROACH

2.3 MARKET BREAKDOWN AND DATA TRIANGULATION

FIGURE 8 DATA TRIANGULATION

2.4 RESEARCH ASSUMPTIONS

FIGURE 9 ASSUMPTIONS

2.5 LIMITATIONS

2.6 RISK ASSESSMENT

TABLE 1 LIMITATIONS & ASSOCIATED RISKS

3 EXECUTIVE SUMMARY

FIGURE 10 GLOBAL PROPAGATION OF COVID-19

TABLE 2 RECOVERY SCENARIOS FOR GLOBAL ECONOMY

3.1 REALISTIC SCENARIO

3.2 OPTIMISTIC SCENARIO

3.3 PESSIMISTIC SCENARIO

FIGURE 11 GROWTH PROJECTIONS OF LASER CLADDING MARKET IN
REALISTIC, OPTIMISTIC, AND PESSIMISTIC SCENARIOS

FIGURE 12 DIODE LASER TO HOLD LARGEST SHARE OF LASER CLADDING
MARKET DURING FORECAST PERIOD

FIGURE 13 LASER CLADDING MARKET FOR LASER REVENUE TO GROW AT
HIGHER CAGR DURING FORECAST PERIOD

FIGURE 14 LASER CLADDING MARKET FOR AEROSPACE AND DEFENSE TO
GROW AT HIGHEST CAGR DURING FORECAST PERIOD

FIGURE 15 LASER CLADDING MARKET IN APAC TO GROW AT HIGHEST CAGR
FROM 2021 TO 2026

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE OPPORTUNITIES IN LASER CLADDING MARKET

FIGURE 16 RISING DEMAND FOR ADDITIVE MANUFACTURING AND RAPID
MANUFACTURING APPLICATIONS WOULD DRIVE IMPLEMENTATION OF LASER
CLADDING PRODUCTS ACROSS AVIATION AND AUTOMOTIVE END-USE
INDUSTRIES

4.2 LASER CLADDING MARKET IN NORTH AMERICA, BY COUNTRY AND BY TYPE
FIGURE 17 US AND DIODE LASER ARE EXPECTED TO HOLD LARGEST SHARE
OF

NORTH AMERICAN LASER CLADDING MARKET IN 2021

4.3 LASER CLADDING MARKET IN APAC, BY END-USE INDUSTRY

FIGURE 18 OIL & GAS END-USE INDUSTRY TO HOLD LARGEST SHARE OF LASER CLADDING MARKET IN APAC DURING FORECAST PERIOD

4.4 LASER CLADDING MARKET, BY COUNTRY

FIGURE 19 LASER CLADDING MARKET IN CHINA TO GROW AT HIGHEST CAGR FROM 2021 TO 2026

5 MARKET OVERVIEW

5.1 INTRODUCTION

5.2 MARKET DYNAMICS

FIGURE 20 LASER CLADDING MARKET DYNAMICS: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

FIGURE 21 DRIVERS AND THEIR IMPACT ON LASER CLADDING MARKET

FIGURE 22 OPPORTUNITIES AND THEIR IMPACT ON LASER CLADDING MARKET

FIGURE 23 RESTRAINTS AND CHALLENGES, AND THEIR IMPACT ON LASER CLADDING MARKET

5.2.1 DRIVERS

5.2.1.1 Growing penetration of fiber lasers in laser cladding applications

5.2.1.2 Gradual transition from conventional laser technologies to laser cladding

5.2.1.3 Increasing requirement across additive manufacturing and rapid manufacturing

5.2.2 RESTRAINTS

5.2.2.1 High deployment costs and lack of personnel with required technical expertise

5.2.2.2 Environmental concerns over use of rare earth elements

5.2.3 OPPORTUNITIES

5.2.3.1 Adoption of laser cladding applications across aviation and automotive industries

5.2.3.2 Development of advanced laser cladding solutions

5.2.4 CHALLENGES

5.2.4.1 Slow industrial acceptance of laser cladding

5.3 VALUE CHAIN ANALYSIS

FIGURE 24 VALUE CHAIN ANALYSIS OF LASER CLADDING MARKET

5.4 ECOSYSTEM

FIGURE 25 LASER CLADDING MARKET: ECOSYSTEM

TABLE 3 LASER CLADDING MARKET: SUPPLY CHAIN

5.5 PORTER'S FIVE FORCES ANALYSIS

TABLE 4 LASER CLADDING MARKET: PORTER'S FIVE FORCES ANALYSIS

5.5.1 DEGREE OF COMPETITION

5.5.2 BARGAINING POWER OF SUPPLIERS

5.5.3 BARGAINING POWER OF BUYERS

5.5.4 THREAT OF SUBSTITUTES

5.5.5 THREAT OF NEW ENTRANTS

5.6 CASE STUDIES

5.6.1 ALPHA LASER FIXES DIMENSION OF HYDRAULIC SHAFT USING LASER CLADDING

5.6.2 EXTREME HIGH-SPEED LASER MATERIAL DEPOSITION PROVES RELIABLE, EFFICIENT, AND EFFECTIVE FOR SEALING GRAY IRON CASTINGS FOR BRAKE DISCS

5.6.3 SMART DIODE LASER CLADDING OFFERED CORROSION-RESISTANCE TO NAVAL DESTROYERS

5.6.4 LASER CLADDINGS WITH ADVANCED MATERIALS RETURNED RAM TO BETTER THAN OEM STANDARD AT LESS COST

5.7 TECHNOLOGY ANALYSIS

5.7.1 KEY TECHNOLOGY

5.7.2 COMPLEMENTARY TECHNOLOGY

5.7.3 ADJACENT TECHNOLOGIES

TABLE 5 COMPARISON OF LASER CLADDING AND ADJACENT TECHNOLOGIES

5.8 AVERAGE SELLING PRICE (ASP) TREND ANALYSIS

TABLE 6 AVERAGE SELLING PRICES OF LASER CLADDING MACHINES BASED ON TYPE OF LASERS

5.9 TRADE ANALYSIS

5.9.1 EXPORTS SCENARIO

TABLE 7 EXPORTS DATA FOR HS CODE: 901320, BY COUNTRY, 2016–2020 (USD THOUSAND)

FIGURE 26 EXPORTS DATA FOR LASERS, EXCLUDING LASER DIODES, FOR TOP FIVE COUNTRIES, 2016–2020 (USD THOUSAND)

5.9.2 IMPORTS SCENARIO

TABLE 8 IMPORTS DATA FOR HS CODE: 901320, BY COUNTRY, 2016–2020 (USD THOUSAND)

FIGURE 27 IMPORTS DATA FOR LASERS, EXCLUDING LASER DIODES, FOR TOP FIVE COUNTRIES, 2016–2020 (USD THOUSAND)

5.10 PATENTS ANALYSIS

TABLE 9 PATENTS RELATED TO LASER CLADDING, 2019–2021

5.11 TARIFFS AND REGULATIONS

5.11.1 TARIFFS RELATED TO LASER CLADDING MARKET

TABLE 10 TARIFFS IMPOSED BY CHINA ON EXPORTS OF LASERS, EXCLUDING

LASER DIODES, BY COUNTRY, 2020

TABLE 11 TARIFFS IMPOSED BY US ON EXPORTS OF LASERS, EXCLUDING LASER DIODES, BY COUNTRY, 2020

TABLE 12 TARIFFS IMPOSED BY GERMANY ON EXPORTS OF LASERS, EXCLUDING LASER DIODES, BY COUNTRY, 2020

5.11.2 STANDARDS AND REGULATIONS RELATED TO LASER CLADDING MARKET

5.11.2.1 IEC

TABLE 13 IEC LASER CLASSIFICATIONS

5.11.2.2 CDRH

5.11.3 REGIONAL STANDARDS

5.11.3.1 US

TABLE 14 LASER STANDARDS DEFINED BY ANSI

5.11.3.2 Europe

5.12 TRENDS/DISRUPTIONS IMPACTING CUSTOMERS

FIGURE 28 REVENUE SHIFT FOR LASER CLADDING MARKET

6 LASER CLADDING MARKET, BY TYPE

6.1 INTRODUCTION

FIGURE 29 DIODE LASER TO HOLD LARGEST SHARE OF LASER CLADDING MARKET DURING FORECAST PERIOD

TABLE 15 LASER CLADDING MARKET, BY TYPE, 2017–2020 (USD MILLION)

TABLE 16 LASER CLADDING MARKET, BY TYPE, 2021–2026 (USD MILLION)

6.2 DIODE LASER

6.2.1 DIODE LASER CLADDING OFFERS HIGH-QUALITY CLADDING WITH LOW DILUTION, LOW POROSITY, AND GOOD SURFACE FINISH

TABLE 17 LASER CLADDING MARKET FOR DIODE LASER, BY REGION, 2017–2020 (USD MILLION)

TABLE 18 LASER CLADDING MARKET FOR DIODE LASER, BY REGION, 2021–2026 (USD MILLION)

6.3 FIBER LASER

6.3.1 FIBER LASER IS AVAILABLE IN VARYING POWER MODES, INCLUDING CONTINUOUS WAVE (CW) AND MODULATED MODES

FIGURE 30 FIBER LASER CLADDING MARKET TO GROW AT HIGHEST CAGR IN APAC DURING FORECAST PERIOD

TABLE 19 LASER CLADDING MARKET FOR FIBER LASER, BY REGION, 2017–2020 (USD MILLION)

TABLE 20 LASER CLADDING MARKET FOR FIBER LASER, BY REGION, 2021–2026

(USD MILLION)

6.4 YAG LASER

6.4.1 YAG LASER CAN REACH DEEPER LAYERS OF SKIN TISSUES

TABLE 21 LASER CLADDING MARKET FOR YAG LASER, BY REGION, 2017–2020

(USD MILLION)

TABLE 22 LASER CLADDING MARKET FOR YAG LASER, BY REGION, 2021–2026

(USD MILLION)

6.5 CO2 LASER

6.5.1 CO2 LASER OFFERS HIGH POWER, PERFORMANCE, AND COMPACT SIZE

TABLE 23 LASER CLADDING MARKET FOR CO2 LASER, BY REGION, 2017–2020

(USD MILLION)

TABLE 24 LASER CLADDING MARKET FOR CO2 LASER, BY REGION, 2021–2026

(USD MILLION)

6.6 OTHERS

TABLE 25 LASER CLADDING MARKET FOR OTHER LASERS, BY REGION,
2017–2020 (USD MILLION)

TABLE 26 LASER CLADDING MARKET FOR OTHER LASERS, BY REGION,
2021–2026 (USD MILLION)

7 LASER CLADDING MARKET, BY REVENUE

7.1 INTRODUCTION

FIGURE 31 LASER CLADDING MARKET, BY REVENUE

FIGURE 32 LASER CLADDING MARKET FOR LASER REVENUE TO GROW AT
HIGHER CAGR DURING FORECAST PERIOD

TABLE 27 LASER CLADDING MARKET, BY REVENUE, 2017–2020 (USD MILLION)

TABLE 28 LASER CLADDING MARKET, BY REVENUE, 2021–2026 (USD MILLION)

7.2 LASER REVENUE

7.2.1 LASER REVENUE COVERS REVENUE GENERATED FROM SALES OF
DIFFERENT TYPES OF LASERS

TABLE 29 LASER CLADDING MARKET FOR LASER REVENUE, BY REGION,
2017–2020 (USD MILLION)

TABLE 30 LASER CLADDING MARKET FOR LASER REVENUE, BY REGION,
2021–2026 (USD MILLION)

7.3 SYSTEM REVENUE

7.3.1 EXTENSIVE APPLICABILITY OF LASER CLADDING SYSTEMS EXPANDS
THEIR UTILITY ACROSS VARIOUS END-USE INDUSTRIES

TABLE 31 LASER CLADDING MARKET FOR SYSTEM REVENUE, BY REGION,
2017–2020 (USD MILLION)

TABLE 32 LASER CLADDING MARKET FOR SYSTEM REVENUE, BY REGION,
2021–2026 (USD MILLION)

8 LASER CLADDING MARKET, BY MATERIAL

8.1 INTRODUCTION

8.2 COBALT-BASED ALLOYS

8.3 NICKEL-BASED ALLOYS

8.4 IRON-BASED ALLOYS

8.5 CARBIDES & CARBIDE BLENDS

9 LASER CLADDING MARKET, BY END-USE INDUSTRY

9.1 INTRODUCTION

FIGURE 33 LASER CLADDING MARKET FOR AEROSPACE AND DEFENSE TO
GROW AT HIGHEST CAGR DURING FORECAST PERIOD

TABLE 33 LASER CLADDING MARKET, BY END-USE INDUSTRY, 2017–2020 (USD
MILLION)

TABLE 34 LASER CLADDING MARKET, BY END-USE INDUSTRY, 2021–2026 (USD
MILLION)

9.2 OIL & GAS

9.2.1 LASER CLADDING COMBATS CORROSION IN OIL & GAS INDUSTRY

TABLE 35 LASER CLADDING MARKET FOR OIL & GAS, BY REGION, 2017–2020
(USD MILLION)

TABLE 36 LASER CLADDING MARKET FOR OIL & GAS, BY REGION, 2021–2026
(USD MILLION)

9.3 MINING

9.3.1 LASER CLADDING IMPROVES DURABILITY OF TOOLS AND DEVICES USED
IN MINING INDUSTRY

TABLE 37 LASER CLADDING MARKET FOR MINING, BY REGION, 2017–2020 (USD
MILLION)

TABLE 38 LASER CLADDING MARKET FOR MINING, BY REGION, 2021–2026 (USD
MILLION)

9.4 AEROSPACE & DEFENSE

9.4.1 LASER CLADDING IS USED FOR IMPROVING AIRCRAFT STRUCTURES

TABLE 39 LASER CLADDING MARKET FOR AEROSPACE & DEFENSE, BY
REGION, 2017–2020 (USD MILLION)

TABLE 40 LASER CLADDING MARKET FOR AEROSPACE & DEFENSE, BY
REGION, 2021–2026 (USD MILLION)

9.5 AUTOMOTIVE

9.5.1 LASER CLADDING HELPS BOOST OPERATING EFFICIENCY OF VEHICLES AND REDUCE ENVIRONMENTAL IMPACT

FIGURE 34 APAC TO ACCOUNT FOR LARGEST SHARE OF LASER CLADDING MARKET

FOR AUTOMOTIVE END-USE INDUSTRY DURING FORECAST PERIOD

TABLE 41 LASER CLADDING MARKET FOR AUTOMOTIVE, BY REGION, 2017–2020 (USD MILLION)

TABLE 42 LASER CLADDING MARKET FOR AUTOMOTIVE, BY REGION, 2021–2026 (USD MILLION)

9.6 POWER GENERATION

9.6.1 LASER CLADDING IS IDEAL FOR NUMEROUS PROBLEMS IN POWER GENERATION INDUSTRY

TABLE 43 LASER CLADDING MARKET FOR POWER GENERATION, BY REGION, 2017–2020 (USD MILLION)

TABLE 44 LASER CLADDING MARKET FOR POWER GENERATION, BY REGION, 2021–2026 (USD MILLION)

9.7 OTHERS

TABLE 45 LASER CLADDING MARKET FOR OTHER END-USE INDUSTRIES, BY REGION, 2017–2020 (USD MILLION)

TABLE 46 LASER CLADDING MARKET FOR OTHER END-USE INDUSTRIES, BY REGION, 2021–2026 (USD MILLION)

10 LASER CLADDING MARKET, BY REGION

10.1 INTRODUCTION

FIGURE 35 LASER CLADDING MARKET IN APAC TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD

TABLE 47 LASER CLADDING MARKET, BY REGION, 2017–2020 (USD MILLION)

TABLE 48 LASER CLADDING MARKET, BY REGION, 2021–2026 (USD MILLION)

10.2 NORTH AMERICA

FIGURE 36 NORTH AMERICA: LASER CLADDING MARKET SNAPSHOT

TABLE 49 NORTH AMERICA LASER CLADDING MARKET, BY TYPE, 2017–2020 (USD MILLION)

TABLE 50 NORTH AMERICA LASER CLADDING MARKET, BY TYPE, 2021–2026 (USD MILLION)

TABLE 51 NORTH AMERICA LASER CLADDING MARKET, BY REVENUE, 2017–2020 (USD MILLION)

TABLE 52 NORTH AMERICA LASER CLADDING MARKET, BY REVENUE,

2021–2026 (USD MILLION)

TABLE 53 NORTH AMERICA LASER CLADDING MARKET, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 54 NORTH AMERICA LASER CLADDING MARKET, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

FIGURE 37 US TO CAPTURE LARGEST SHARE OF NORTH AMERICAN LASER CLADDING MARKET THROUGHOUT FORECAST PERIOD

TABLE 55 NORTH AMERICA LASER CLADDING MARKET, BY COUNTRY, 2017–2020 (USD MILLION)

TABLE 56 NORTH AMERICA LASER CLADDING MARKET, BY COUNTRY, 2021–2026 (USD MILLION)

10.2.1 US

10.2.1.1 Presence of oil & gas, automotive, and aerospace & defense industries in US to propel market growth

TABLE 57 NORTH AMERICA LASER CLADDING MARKET IN US, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 58 NORTH AMERICA LASER CLADDING MARKET IN US, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.2.2 CANADA

10.2.2.1 Demand from automotive and aerospace industries to fuel market growth in Canada

TABLE 59 NORTH AMERICA LASER CLADDING MARKET IN CANADA, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 60 NORTH AMERICA LASER CLADDING MARKET IN CANADA, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.2.3 MEXICO

10.2.3.1 Government investments in expanding oil and gas fields are expected to offer lucrative opportunities for laser cladding solutions providers

TABLE 61 NORTH AMERICA LASER CLADDING MARKET IN MEXICO, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 62 NORTH AMERICA LASER CLADDING MARKET FOR MEXICO, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.3 EUROPE

FIGURE 38 EUROPE: LASER CLADDING MARKET SNAPSHOT

TABLE 63 EUROPE LASER CLADDING MARKET, BY TYPE, 2017–2020 (USD MILLION)

TABLE 64 EUROPE LASER CLADDING MARKET, BY TYPE, 2021–2026 (USD MILLION)

TABLE 65 EUROPE LASER CLADDING MARKET, BY REVENUE, 2017–2020 (USD

MILLION)

TABLE 66 EUROPE LASER CLADDING MARKET, BY REVENUE, 2021–2026 (USD MILLION)

TABLE 67 EUROPE LASER CLADDING MARKET, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 68 EUROPE LASER CLADDING MARKET, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

TABLE 69 EUROPE LASER CLADDING MARKET, BY COUNTRY, 2017–2020 (USD MILLION)

TABLE 70 EUROPE LASER CLADDING MARKET, BY COUNTRY, 2021–2026 (USD MILLION)

10.3.1 GERMANY

10.3.1.1 Investments and initiatives by key players would drive laser cladding market in Germany

TABLE 71 EUROPE LASER CLADDING MARKET IN GERMANY, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 72 EUROPE LASER CLADDING MARKET IN GERMANY, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.3.2 UK

10.3.2.1 Increased domestic demand for energy could create lucrative opportunities for laser cladding solutions in UK

TABLE 73 EUROPE LASER CLADDING MARKET IN UK, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 74 EUROPE LASER CLADDING MARKET FOR UK, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.3.3 FRANCE

10.3.3.1 Automotive industry in France to propel market growth in future

TABLE 75 EUROPE LASER CLADDING MARKET IN FRANCE, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 76 EUROPE LASER CLADDING MARKET FOR FRANCE, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.3.4 REST OF EUROPE (ROE)

TABLE 77 EUROPE LASER CLADDING MARKET IN ROE, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 78 EUROPE LASER CLADDING MARKET IN ROE, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.4 APAC

FIGURE 39 APAC: LASER CLADDING MARKET SNAPSHOT

FIGURE 40 FIBER LASER TO CAPTURE LARGEST SHARE OF APAC LASER

CLADDING MARKET DURING FORECAST PERIOD

TABLE 79 APAC LASER CLADDING MARKET, BY TYPE, 2017–2020 (USD MILLION)

TABLE 80 APAC LASER CLADDING MARKET, BY TYPE, 2021–2026 (USD MILLION)

TABLE 81 APAC LASER CLADDING MARKET, BY REVENUE, 2017–2020 (USD MILLION)

TABLE 82 APAC LASER CLADDING MARKET, BY REVENUE, 2021–2026 (USD MILLION)

TABLE 83 APAC LASER CLADDING MARKET, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 84 APAC LASER CLADDING MARKET, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

TABLE 85 APAC LASER CLADDING MARKET, BY COUNTRY, 2017–2020 (USD MILLION)

TABLE 86 APAC LASER CLADDING MARKET, BY COUNTRY, 2021–2026 (USD MILLION)

10.4.1 CHINA

10.4.1.1 China held largest share of APAC laser cladding market in 2020

FIGURE 41 AEROSPACE & DEFENSE TO GROW AT HIGHEST CAGR IN LASER CLADDING MARKET IN CHINA DURING FORECAST PERIOD

TABLE 87 APAC LASER CLADDING MARKET IN CHINA, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 88 APAC LASER CLADDING MARKET IN CHINA, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.4.2 JAPAN

10.4.2.1 Increasing demand for electric and hybrid cars would aid growth of laser cladding in automotive industry

TABLE 89 APAC LASER CLADDING MARKET IN JAPAN, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 90 APAC LASER CLADDING MARKET IN JAPAN, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.4.3 INDIA

10.4.3.1 Expansion of oil and gas facilities to boost demand for laser cladding solutions from oil & gas industry in India

TABLE 91 APAC LASER CLADDING MARKET IN INDIA, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 92 APAC LASER CLADDING MARKET IN INDIA, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.4.4 SOUTH KOREA

10.4.4.1 South Korea has emerged as third-largest laser cladding

market in APAC

TABLE 93 APAC LASER CLADDING MARKET IN SOUTH KOREA, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 94 APAC LASER CLADDING MARKET IN SOUTH KOREA, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.4.5 REST OF APAC (ROAPAC)

TABLE 95 APAC LASER CLADDING MARKET IN ROAPAC, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 96 APAC LASER CLADDING MARKET IN ROAPAC, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.5 ROW

TABLE 97 ROW LASER CLADDING MARKET, BY TYPE, 2017–2020 (USD MILLION)

TABLE 98 ROW LASER CLADDING MARKET, BY TYPE, 2021–2026 (USD MILLION)

TABLE 99 ROW LASER CLADDING MARKET, BY REVENUE, 2017–2020 (USD MILLION)

TABLE 100 ROW LASER CLADDING MARKET, BY REVENUE, 2021–2026 (USD MILLION)

TABLE 101 ROW LASER CLADDING MARKET, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 102 ROW LASER CLADDING MARKET, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

TABLE 103 ROW LASER CLADDING MARKET, BY REGION, 2017–2020 (USD MILLION)

TABLE 104 ROW LASER CLADDING MARKET, BY REGION, 2021–2026 (USD MILLION)

10.5.1 SOUTH AMERICA

10.5.1.1 Mining and automotive industries to drive market growth in South America

TABLE 105 ROW LASER CLADDING MARKET IN SOUTH AMERICA, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 106 ROW LASER CLADDING MARKET IN SOUTH AMERICA, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

10.5.2 MIDDLE EAST & AFRICA

10.5.2.1 Presence of oil & gas and mining industries in Middle East & Africa to drive market growth

TABLE 107 ROW LASER CLADDING MARKET IN MIDDLE EAST & AFRICA, BY END-USE INDUSTRY, 2017–2020 (USD MILLION)

TABLE 108 ROW LASER CLADDING MARKET IN MIDDLE EAST & AFRICA, BY END-USE INDUSTRY, 2021–2026 (USD MILLION)

11 COMPETITIVE LANDSCAPE

11.1 OVERVIEW

11.2 KEY PLAYER STRATEGIES/RIGHT TO WIN

TABLE 109 OVERVIEW OF STRATEGIES DEPLOYED BY KEY LASER CLADDING PLAYERS

11.2.1 PRODUCT PORTFOLIO

11.2.2 REGIONAL FOCUS

11.2.3 MANUFACTURING FOOTPRINT

11.2.4 ORGANIC/INORGANIC GROWTH STRATEGIES

11.3 REVENUE ANALYSIS OF LEADING PLAYERS (2016–2020)

FIGURE 42 FIVE-YEAR REVENUE ANALYSIS OF TOP FIVE PLAYERS IN LASER CLADDING MARKET

11.4 MARKET SHARE ANALYSIS: LASER CLADDING MARKET, 2020

TABLE 110 DEGREE OF COMPETITION

11.5 COMPANY EVALUATION QUADRANT

11.5.1 STAR

11.5.2 EMERGING LEADER

11.5.3 PERVASIVE

11.5.4 PARTICIPANT

FIGURE 43 LASER CLADDING MARKET: COMPANY EVALUATION QUADRANT, 2020

11.6 STARTUP EVALUATION QUADRANT

11.6.1 PROGRESSIVE COMPANY

11.6.2 RESPONSIVE COMPANY

11.6.3 DYNAMIC COMPANY

11.6.4 STARTING BLOCK

FIGURE 44 LASER CLADDING MARKET: STARTUP (SME) EVALUATION QUADRANT, 2020

11.7 COMPANY FOOTPRINT

TABLE 111 PRODUCT FOOTPRINT OF COMPANIES

TABLE 112 TYPE FOOTPRINT OF COMPANIES

TABLE 113 END-USE INDUSTRY FOOTPRINT OF COMPANIES

TABLE 114 REGIONAL FOOTPRINT OF COMPANIES

11.8 COMPETITIVE SITUATIONS AND TRENDS

11.8.1 PRODUCT LAUNCHES

TABLE 115 PRODUCT LAUNCHES, NOVEMBER 2018–JANUARY 2020

11.8.2 DEALS

TABLE 116 DEALS, MARCH 2018– AUGUST 2021

11.8.3 OTHERS

TABLE 117 OTHERS, NOVEMBER 2018– MAY 2021

12 COMPANY PROFILES

12.1 INTRODUCTION

12.2 KEY PLAYERS

(Business overview, Products/solutions/services offered, Recent Developments, MNM view)*

12.2.1 TRUMPF

TABLE 118 TRUMPF: BUSINESS OVERVIEW

FIGURE 45 TRUMPF: COMPANY SNAPSHOT

TABLE 119 TRUMPF: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 120 TRUMPF: PRODUCT LAUNCHES

TABLE 121 TRUMPF: DEALS

TABLE 122 TRUMPF: OTHERS

12.2.2 OERLIKON

TABLE 123 OERLIKON: BUSINESS OVERVIEW

FIGURE 46 OERLIKON: COMPANY SNAPSHOT

TABLE 124 OERLIKON: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 125 OERLIKON: PRODUCT LAUNCHES

TABLE 126 OERLIKON: DEALS

TABLE 127 OERLIKON: OTHERS

12.2.3 COHERENT

TABLE 128 COHERENT: BUSINESS OVERVIEW

FIGURE 47 COHERENT: COMPANY SNAPSHOT

TABLE 129 COHERENT: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 130 COHERENT: DEALS

12.2.4 IPG PHOTONICS

TABLE 131 IPG PHOTONICS: BUSINESS OVERVIEW

FIGURE 48 IPG PHOTONICS: COMPANY SNAPSHOT

TABLE 132 IPG PHOTONICS: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 133 IPG PHOTONICS: PRODUCT LAUNCHES

TABLE 134 IPG PHOTONICS: DEALS

12.2.5 HAN'S LASER

TABLE 135 HAN'S LASER: BUSINESS OVERVIEW

FIGURE 49 HAN'S LASER: COMPANY SNAPSHOT

TABLE 136 HAN'S LASER: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 137 HAN'S LASER: PRODUCT LAUNCHES

12.2.6 HOGANAS AB

TABLE 138 HOGANAS AB: BUSINESS OVERVIEW

TABLE 139 HOGANAS AB: PRODUCTS/SOLUTIONS/SERVICES OFFERED

12.2.7 LUMIBIRD

TABLE 140 LUMIBIRD: BUSINESS OVERVIEW

FIGURE 50 LUMIBIRD: COMPANY SNAPSHOT

TABLE 141 LUMIBIRD: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 142 LUMIBIRD: PRODUCT LAUNCHES

TABLE 143 LUMIBIRD: DEALS

12.2.8 LUMENTUM

TABLE 144 LUMENTUM: BUSINESS OVERVIEW

FIGURE 51 LUMENTUM: COMPANY SNAPSHOT

TABLE 145 LUMENTUM: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 146 LUMENTUM: PRODUCT LAUNCHES

TABLE 147 LUMENTUM: DEALS

12.2.9 CURTISS-WRIGHT CORPORATION

TABLE 148 CURTISS-WRIGHT CORPORATION: BUSINESS OVERVIEW

FIGURE 52 CURTISS-WRIGHT CORPORATION: COMPANY SNAPSHOT

TABLE 149 CURTISS-WRIGHT CORPORATION:
PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 150 CURTISS-WRIGHT CORPORATION: DEALS

12.2.10 JENOPTIK

TABLE 151 JENOPTIK: BUSINESS OVERVIEW

FIGURE 53 JENOPTIK: COMPANY SNAPSHOT

TABLE 152 JENOPTIK: PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 153 JENOPTIK: DEALS

TABLE 154 JENOPTIK: OTHERS

12.3 OTHER KEY PLAYERS

12.3.1 ALABAMA SPECIALTY PRODUCTS

12.3.2 EFESTO

12.3.3 FRAUNHOFER USA CENTER MIDWEST CMW

12.3.4 GRAVOTECH

12.3.5 HAYDEN CORPORATION

12.3.6 KONDEX CORPORATION

12.3.7 LASERBOND

12.3.8 LASERSTAR

12.3.9 LASERLINE

12.3.10 LASER CLADDING TECHNOLOGIES

12.3.11 LINCOLN LASER SOLUTIONS

12.3.12 OPTOMEC

12.3.13 PRECO

12.3.14 TECHNOGENIA

12.3.15 TLM LASER

*Details on Business overview, Products/solutions/services offered, Recent Developments, MNM view might not be captured in case of unlisted companies.

13 APPENDIX

13.1 DISCUSSION GUIDE

13.2 KNOWLEDGE STORE: MARKETSANDMARKETS' SUBSCRIPTION PORTAL

13.3 AVAILABLE CUSTOMIZATIONS

13.4 RELATED REPORTS

13.5 AUTHOR DETAILS

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