

# IPG Growth Outlook Solid in Expanding Fiber Laser Market

Companies: COHR, IPGP, JDSU, NEWP, OCLR, RSTI

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## Research Question:

**Are IPG's first-to-market fiber laser technologies and unique business model the right tools to drive continued growth?**

## Summary of Findings

- Fourteen of 18 sources view [IPG Phototonics Corp. \(IPGP\)](#) as the fiber laser industry leader and its sales growth is expected to continue in the 5% to 15% range year to year. Fiber lasers have been a disruptive technology in some market sectors and continue to be as more market sectors adopt the technology.
- IPG strengths include high-quality products and management, competitive pricing, strong research and development and customer relationships and support.
- Competition for the fiber-laser market segment has increased as all major laser vendors have added or will soon add fiber laser products. This is likely to affect IPG; however, its strong product lineup is expected to allow continued growth.
- Leading competitors include [Nufern](#), [Fraunhofer](#), [Trumpf GmbH](#), [Mitsubishi Laser](#), [Rofin-Sinar Technologies Inc.](#) (RSTI), [JDS Uniphase Corp.](#) (JDSU), [Bystronic Inc.](#), [Amada America Inc.](#), [Mazak Optonics Corp.](#) and [Newport Corp.](#) (NEWP).
- One source thinks competitors will render IPG the "underdog" and views them as a candidate for acquisition.
- IPG is making slow progress in expanding into non-traditional markets, but limited capital budgets have delayed the adoption rate of products.
- Laser industry trends include an increase in mobile and handheld applications and expanded use of laser technology in medical applications.

## Silo Summaries

### 1) INDUSTRY SPECIALISTS

Four of five industry specialists interviewed expect IPG to continue as the industry leader for fiber lasers. One source said he expects IPG's growth to be in the 15% range year to year. The lone negative source said now that all the major laser manufacturers have or will soon have fiber laser systems, IPG has become the "underdog" and is a candidate for acquisition. Two sources consider IPG's unique in-house component production business model a competitive advantage, providing better cost, price and quality control. Demand for fiber lasers is expected to continue to increase with expansion in medical, military and mobile/handheld applications. The laser market has many competitors. with sources expecting challenges from Nufern, Fraunhofer, Trumpf, Mitsubishi Laser, Rofin, JDS Uniphase and Newport.

### 2) COMPETITORS

All four IPG competitors view them as an industry leader that will continue to grow. Automotive, telecommunications and drilling applications are expected to be the major growth areas. Emerging applications for fiber lasers include material marking and medical devices. One source said as larger laser manufacturers add fiber lasers to their product offerings, IPG will face increased competition. The IPG business model was viewed as an advantage by one competitor and a disadvantage by another because outside providers can react more quickly to technology advances. Reduced capital expenditure budgets have hampered adoption of fiber lasers, but growth is expected to continue. Fiber lasers have been available for 20 years and widespread adoption is not expected for at least five years.

### 3) MANUFACTURERS USIN LASERS

Three of four manufacturers using lasers have been customers of IPG and expect them to continue to grow. The one manufacturer that was not aware of IPG but uses lasers for several applications expects demand for industrial lasers to increase. IPG's quality, competitive pricing, research and development, strong customer relationships and support are all competitive advantages. Strong competition from larger industrial equipment providers is the norm; they include Trumpf, Mitsubishi Laser, Amada and Bystronics, JDSU and Oclaro.

### 4) VALUE-ADDED RESELLERS/OEM

Four value-added resellers view IPG as the leading fiber laser provider and they expect continued growth for the company and the industry in the range of 5% to 15% year to year. IPG strengths include high-quality products, strong management and solid custom product development collaboration. JDS, Amada and Trumpf are considered strong competitors; however they have not garnered the level of market success with fiber lasers experienced by IPG.

	IPG's Growth To Continue	IPG Business Model An Advantage	Industrial Laser Use Growing
Industry Specialists	↑	↑	↑
Competitors	↑	→	↑
Manufacturers Using Lasers	↑	N/A	↑
Value-added Resellers/OEMs	↑	N/A	↑

## Background

Blueshift's initial research indicates that IPG's fiber technology has the potential to change the world of lasers, but timing and widespread adoption remains unknown.

### CURRENT RESEARCH

In this next study, Blueshift assessed whether IPG's lasers are a disruptive technology that will continue to propel growth. Blueshift employed its pattern mining approach to establish and interview sources in five independent silos:

- 1) Industry specialists (5)
- 2) Competitors (5)
- 3) Manufacturers using lasers (4)
- 4) Value-added resellers/OEMs (4)
- 5) Secondary sources (3)

Blueshift interviewed 18 primary sources and identified three of the most relevant secondary sources focused on the industrial laser industry.

## Next Steps

Blueshift will research the adoption rate and market-leading vendors of fiber lasers outside the U.S. We will try to determine the adoption rate of IPG products in the emerging medical and material marking market segments. Finally, we will try to determine how IPG is performing in joint ventures with value-added resellers and OEMs.

## Silos

### 1) INDUSTRY SPECIALISTS

Four of five industry specialists interviewed expect IPG to continue as the industry leader for fiber lasers. One source said he expects IPG's growth to be in the 15% range year to year. The lone negative source said now that all the major laser manufacturers have or will soon have fiber laser systems, IPG has become the "underdog" and is a candidate for acquisition. Two sources consider IPG's unique in-house component production business model a competitive advantage, providing better cost, price and quality control. Demand for fiber lasers is expected to continue to increase with expansion in medical, military and mobile/handheld applications. The laser market has many competitors. with sources expecting challenges from Nufern, Fraunhofer, Trumpf, Mitsubishi Laser, Rofin, JDS Uniphase and Newport.

#### ➤ Industrial laser consultant and editor at a leading industrial laser journal

IPG is the clear market leader in fiber lasers. Although the pioneering company may see some erosion in market share in about 18 months, it will remain in the No. 1 slot for a long time. One of IPG's great strengths is working closely with customers, OEMs and end users to develop its products, while avoiding legal entanglements. Making its own diodes and components give it control over its destiny, serving as another competitive advantage. The company is moving into the systems market, perhaps to diversify in the face of more competition. It is in a strong position regardless: The fiber laser market is expected to outperform all other laser technology segments this year. Although IPG cannot sustain its meteoric growth, it should grow at least 15%.

- "IPG Photonics is the market leader in fiber lasers, both technologically and economically. They work hand in hand with their customers to develop the systems. A lot of their new work is on the cutting edge of the technology and ahead of the competition, and that's one reason why. They have a strong advantage in their beta site testing. Their customers are continually feeding them information that helps them refine their products."

- “IPG controls their own destiny. They make their own diodes and drive the price down. The CEO of Rofin-Sinar, a competitor, admitted in [his last earnings talk](#) that Rofin had not achieved the 200-watt diode like IPG. When pressed on that point, he said ‘maybe’ next quarter Rofin might have that.”
- “I think IPG will see some changes in its market share. I don’t think they can continue to grow at the pace they have been—48% growth is pretty hard to sustain. I expect to see 15% growth this year, and their CEO said the same thing. In a year and a half, you’ll probably start to see some erosion [of the market share]. But IPG will be No. 1 for a long, long time, that’s for sure.”
- “Fiber lasers are surely going to outperform the overall laser market in terms of growth. It’s safe to say they’ll outperform the rest of the market for some time to come. There is a continuing rise in the popularity of fiber lasers, both lower-power and high-power. Ultra-fast pulsed lasers will also be taking the place of conventional lasers. The ability to do cool welding and cold-cutting processes seemingly [without causing distortion or cracks] in the product certainly make it attractive. We’ll be seeing a lot more of them because it gives companies a competitive advantage.”
- “You also see new markets emerging for industrial lasers, even some that didn’t exist for the product until recently. There has been some really substantial growth in the last three years in the hand-held or mobile market for industrial lasers. Not many people know this, but [Apple](#) [Inc./AAPL] went out and bought the entire output of an industrial laser outfit. It was remarkable—the entire output! The market for mobile just keeps doubling and doubling and doubling, and it seems a terrific market for the industrial laser. So the opportunities for continuous, high-volume growth are still there. And we are just going to ride along with it.”
- “The demand for fiber laser products is high and IPG is in a great position. The number of applications is so big that it makes headlines. We [industry journal editors] have found that the easiest way to get attention is to put the words ‘fiber laser’ in a headline, and the story gets picked up. We’ve joked that you could just put a sign that says “fiber laser” on your door and it will attract a crowd. My phone never stops ringing.”
- “Several companies are poised to give IPG some stiff competition: Rofin, Trumpf, JDSU and Newport, among others. There are a lot of people at both the high and low level in the marketplace and looking at OEM opportunities. IPG is aware of it and they’re making internal changes to meet that challenge. IPG’s CEO has also graciously welcomed the competition. They’ve been the pioneers, and in effect he said that now they’re going to get help and the market will expand.”
- “People have been anxious, maybe even desperate to have a second source or more for fiber lasers in the marketplace. It’s nothing against IPG, but what if a plant burns down? It’s risky to have all your eggs in one basket.”
- “IPG is also diversifying by going into the systems business. They say that they don’t want to compete with OEM systems and that they’re just filling in the blanks or filling a hole in the market. That sounds like corporate-speak to me. Again, they may be preparing for a new competitive landscape.”
- “IPG’s weaknesses....This is only speculation, but I would look at their ability to respond to service calls. You need to run three shifts a day and field calls from all over the world. That’s not unusual in customer support but other companies have struggled with that. So that is a potential weakness as they grow in size. I haven’t heard of problems with it lately though.”
- “IPG enjoys very good relationships with its customers. That is one of their great strengths, working with end users and OEMs to make better products. They work on projects jointly with customers, but they are not contractual joint ventures. There might be NDAs [non-disclosure agreements] signed, but there are no legal entanglements.”
- “Fiber-laser technology was and is a disruptive technology. But the question is, when does a disruptive technology stop becoming disruptive? It’s been highly accepted, so perhaps the term is outdated.”

**IPG Photonics is the market leader in fiber lasers, both technologically and economically. They work hand in hand with their customers to develop the systems. A lot of their new work is on the cutting edge of the technology and ahead of the competition.**

*Industrial Laser Consultant & Editor  
Leading Industrial Laser Journal*

## ➤ Research engineer in laser technology working on commercial and military applications

The source believes that IPG lasers will continue to dominate the market. Disc lasers will get some market share, but this will largely be confined to Germany, where the technology was developed. IPG fiber lasers are also “the laser of choice” for many military weapons systems being developed.

- “The two big shifts over the past five years in the laser machining market are the growth of fiber laser and ultrashort pulse lasers in manufacturing. IPG has led the fiber revolution. For ultrashort pulse lasers, companies like [Lumera](#) and [Raydiance](#) have paved the way for industry-ready [picosecond](#) and [femtosecond](#) lasers.”
- “IPG lasers are going to continue to be a market leader. Disc lasers (a rival to fiber) are also going to have some of the market, but mostly in Germany and their partners. Disc lasers are a German creation and adopted heavily by the German auto industry. But outside of Germany, the fiber lasers are preferred.”
- “IPG fiber lasers are the laser of choice right now for many military laser weapons in development. This [system](#) was designed around using six IPG lasers in one laser weapon, with each laser costing around \$1 million. This system is being testing on a Navy ship this summer, and if successful would result in around [\$6 million] of sales for every weapon purchased by the Navy (one can count the number of large nuclear vessels in the fleet to figure total business generated, estimating one or more weapons per ship).”
- “Fiber lasers are replacing traditional high-power lasers ([YAG, CO<sub>2</sub>](#)) due to the higher electrical efficiency (which lowers electric bills), reduced maintenance costs and ease of beam delivery through a flexible fiber. This change is not necessarily bringing about novel applications of lasers, but replacing older, less-efficient systems.”
- “Conversely, ultrashort pulse lasers are a new technology for the industrial market of manufacturing. These systems are not only replacing older lasers but are able to do precision work that was not previously possible with lasers. In some cases, these lasers are performing machining operations that are not possible with any other known manufacturing technology.”
- “In terms of lasers, I see continued growth in picosecond lasers and fiber lasers. I think growth in femtosecond lasers will be eclipsed by picosecond lasers because the high cost of driving the pulse width down to femtosecond does not often justify the marginal improvements in quality, and results in longer processing times. For the most part, a picosecond laser can do everything a person would want a femtosecond laser for, and it will be faster, cheaper and more reliable.”
- “The strengths of fiber lasers in manufacturing include easy beam delivery via flexible fiber, reduced maintenance cost and potentially longer lifetime than traditional high power systems. Higher efficiency [electrical energy converted to laser power] will reduce power bills and electrical cost savings will eventually pay for the laser.”
- “Weaknesses include: damage to fiber requires expert repair/replacement; laser might not be able to achieve pulse lengths short enough for certain applications that require a shorter laser-material interaction time; high levels of thermal damage ([Heat Affected Zone](#)) to surrounding material in the target (a problem with any high power laser, not just fiber).

## ➤ Expert on high-energy lasers, Los Angeles area

IPG is en route to dominate the competition as fiber-optic lasers are a disruptive technology—the rule of thumb is use lasers when you can. That said, this source believes it will take roughly a ten-year period for widespread adoption because prices need to come down more. IPG’s immediate competitive advantage stems from fiber lasers becoming the laser of choice for precision applications in industries like aircraft, weaponry and automotive. Also, its unique business model is predominantly superior in terms of competitive pricing, product quality and IPG’s wise decision to focus on product development. But this source warned that higher prices could cause IPG’s market to suffer if U.S.-Russia relations ever worsen and impact IPG’s cheaper product supply chain in Russia.

- “IPG’s business model is extremely vertically integrated. They make their own fiber and own diodes and they are Russian so you can hit their products with a car and it will still run. I have purposely dropped [their products] off the back of a truck and they still fired right up. Quality control would be an issue, but their devices speak for themselves ... The more [fiber-optic lasers] sell, the more [IPG] will sell because people will recognize their product.”
- “I have confidence they will do well [marketwise]. Everybody is cutting back on capital purchases waiting to see what’s going on with the economy. Capital equipment buys are way down. But IPG is always ahead of everyone else. They are smart business people ... and are very competitive. They will do whatever they need to do to win.”

- “The fiber laser is a disruptive technology ... CO<sub>2</sub> lasers will continue to be used in the industry for a long time because they are cheap, but ...the fiber laser is roughly 10 times shorter in wavelength than the CO<sub>2</sub>...[and disruptive] if you are looking for precision cutting or marking or heating, fusing.”
- “Fiber lasers have unique precision. It enables you to do things you simply cannot do with CO<sub>2</sub> lasers; so very fine cutting, full penetration welding, things of that nature, CO<sub>2</sub> aren’t capable of doing.”
- “CO<sub>2</sub> will be around for a very long time because they can be made big and made cheap.”
- “The fiber laser medium cannot store energy so ...it runs on an average level as opposed to peak energy...Fiber will not ever replace specialty applications like disc lasers or picoseconds lasers.”
- “[Fiber lasers] will be widely adopted if you are talking a 10-year time frame. The prices need to come down and that comes to the question of what IGP’s position is ... they are the largest makers of laser diodes.”
- “IPG is smart in the fact that they are pushing their money back into development. They are developing kilowatt-class fibers [lasers], and are up to 5 kilowatt-class fibers now ...They are leading the pack. They are the guys that are pushing the envelope. Some of the claims they make are taken with a very large grain of salt by other experts in the industry, but in general they usually manage to do what they say they can do.”
- “They’re [IPG] well on their way to controlling the overall industry.”
- “In high-tech metal working industries, fiber lasers are what you need and they [IPG] are coming close to dominating that industry.”
- “[IPG’s] main competition in this country is a company called Nufern ... Nufern is trying to do what IPG is doing, but they are a small company and European owned. They started in Australia and then were bought out by the Europeans. They make excellent fiber and they build lasers that are competitive with IPG devices. But they are a flea on IPG’s back at the moment. IPG is the 800-pound gorilla. [Fraunhofer](#), of course, in Europe. [Trumpf](#) in Europe, too ... [Cymer](#) [Inc./CYMI] is a whole different thing. It’s an ultraviolet producer. They do deep UV for chip burning ... for electronics [for example]. It’s apples to persimmons.”
- “Part of their [IPG’s] ability to be ... priced competitively is that a great amount of stuff they build their lasers with comes out of Russia...As long as their supply line to Russia is good, then IPG is good [from a competitive advantage]. But if relations got unpleasant with Americans and Russians ... they got problems.”
- “The fiber laser will become more of the standard because it’s particularly robust and flexible in that it can be employed everywhere [depending on the application] and the cost will keep coming down.”
- “Basically, the rule in any industry is if you can do it with fiber, do it with fiber. If you can’t do it with fiber than do it with [slab \[lasers\]](#).”
- “Fiber lasers are like the electronics industry...It’s on a curve like [Moore’s Law](#) where the capacity is doubling.”
- “You’ll see fiber lasers move into the aircraft and aerospace industries. There are applications for them that people haven’t even thought of yet.”
- “IPG lasers are in a variety of weapons...automotive, aircraft engineering, [United Technologies Corp.’s/UTC] [Pratt & Whitney](#), [Rolls-Royce](#)—anybody who has to make a very little hole and be precise.”

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*Expert on High-energy Lasers*

## ➤ Researcher at industry organization focused on business intelligence, education, consulting and standards

IPG faces significant challenges regarding the use of its fiber laser systems in the heavy industrial manufacturing sector. Almost all of the traditional global manufacturers of heavy industry laser systems now sell fiber lasers, making IPG the underdog or an acquisition target. The companies making fiber laser systems include: Mitsubishi Laser, Trumpf, Bystronic, Amada America and Mazak Optomics. The medical sector holds more promise for growth but because of its structure, IPG would have to focus on becoming a volume OEM supplier to make headway against current leaders [Coherent Inc.](#) (COHR) and Rofin-Sinar. The source predicted slow growth and increasing competition for IPG on its current path.

- “The [laser] industry is divided between those who make systems and those who just make one or two pieces of a machine. If IPG is willing to sell components rather than systems, they might be in a better position. But if they are not going to sell on product run volume, it might not make sense. You can claim that you have the best fiber laser system, but now IPG is competing in a different way than in 2008, when they were the only game in town.

Now you have all of these established global companies with the weight of a global supply chain competing with IPG [for system sales]. I would consider IPG an underdog at this point. It would be like an upstart shoe company competing with Nike. Maybe the upstart brought a new unique toe shoe to market. But as soon as Nike has the same thing they can sell it cheaper and produce it faster.”

- “If IPG wants to rely on fiber laser systems alone, at best I see their sales creeping up a little. Yes, they are known as the big innovator. And their name is closely tied to the fiber laser. But I’m not sure if customers care if they were first to market or not. I’m not sure how much that matters.”
- “The number of product lines and the number of players in the fiber laser segment has grown dramatically between the end of 2007 and now. All of the key players in manufacturing equipment either have a fiber laser product on the market or are about to introduce one into the market. The products are similar to and competitive with IPG. When I say all of the players I mean all major companies that traditionally are identified with industrial lasers, CO<sub>2</sub> and Nd: YAG. The major players offering laser-cutting systems for the manufacturing sector are Mitsubishi Laser, which in the U.S. is distributed by their subsidiary MC Machinery Systems Inc.; Trumpf; Bystronic Inc.; Amada America and Mazak Optomics Corp.”
- “There are roughly 15 companies that are longtime players in industrial laser. In 2008, none of them had the fiber laser. Then IPG came along and introduced what was a disruptive technology at the time. But it’s not disruptive now. Everyone has or will have a fiber laser. They either have it on the market already or will bring one on soon.”
- “When IPG was the only company making a fiber laser, they were firmly in the lead. Even IPG would not say they are the only ones making a fiber laser now. They may say theirs is faster and cheaper, but it’s not the only one. I get the general sense IPG will continue to build the company and I suppose they are here to stay. But everyone has or will have a piece of the future because if you don’t have fiber laser you will be behind.”
- “IPG is definitely recognized as the company that developed and invented the technology and brought it to market first. Even if others were aware of it, they were not able to make it commercial. There is no question that IPG was copied by all of the established players. But IPG needs to do something right now if they want to stay competitive with all of the long-standing players that have global supply chain networks and established customers in manufacturing. If their goal is to get bought up by one of the big players, they are in a good position. If they want to go head to head, I’m not sure. I think they will have a harder time. The [heavy] industry is not supportive of small companies with big technologies. But I can only speak to the commercial production.”
- “We have definitely seen increasing growth in the purchase and use of fiber lasers in the manufacturing sector. There is an increase in the numbers and value of the lasers being sold. Fiber lasers are already being adopted. Fiber laser is the overall trend and it will be a while before fiber lasers saturate the market and the next big thing comes along. Maybe five years from now someone will come up with some crazy new thing but for now, it’s all about fiber lasers.”
- “The increase in fiber laser use for manufacturing is significant, but the market for lasers is volatile and when it comes to matters of financing, the products are four steps down the chain. Systems that cost \$100,000 or more tend to be low on the list of needs.”
- “Coherent is a slightly different business. They create the laser source, the laser beam and other platforms for the manufacturing of the laser source. So if you likened it to the auto industry, Coherent doesn’t make the car, they just make the engine. IPG does full systems and parts. [Fanuc](#) [Corp.] is enormous and very big in welding. RSTI is the same, they don’t make any integrated systems just components. Newport is big, but I’m not that familiar with them.”
- “There are bigger opportunities for fiber laser in the medical device area but generally the established companies develop their own equipment in-house. They buy components and make their own. If IPG established itself as a high-quality OEM or partner, it could be a sound market for them. If they want to sell components for medical, then IPG would be going head to head with Coherent and Rofin-Sinar, which lead in that sector.”

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*Researcher, Industry Organization*

- “Fiber laser is a replacement technology. It is a direct substitute for low-watt CO<sub>2</sub> and a direct substitute for Nd:YAG. Fiber lasers are better than what they are replacing in every way. They are faster, better, safer, quieter and cheaper. But fiber lasers also are still considered a leading-edge technology so if you want tried and true, you may go with an Nd:YAG or diode. Diode can be two different things, the very high-powered diode or the diode laser reading technology. They are not the same thing. But lasers are sold on applications, for example, for cutting thin metal or cutting to remove segments. There are welding applications and etching or marking applications, like a low-power machine that etches on labels. Using lasers to print/etch into a bottle or the thin film process to make the guts of the solar cells or to punch holes in Band-Aids. These are not high-value processes but they are high volume.”
- “One thing that is changing now is that there is a drive to get fiber laser to a broader audience. Fiber lasers are making inroads into the automobile industry and they are growing in medical device manufacturing. They have been an advertised benefit for making photovoltaic cells. But there are certain things a fiber laser can’t do. It can’t cut through an inch-and-a-half piece of steel. It therefore will not replace the large, CO<sub>2</sub> laser used to cut thick steel and the heavy industry uses for making pre-fabricated segments for building bridges or ships.”

## ➤ **Lead instructor for a college photonics and laser technology program, East Coast**

The solid-state laser market is growing in leaps and bounds just as quickly as fiber-optic lasers. The medical industry in particular is more readily purchasing solid-state lasers because of enhanced capital expenditure budgets in contrast to the defense industry’s budget, which dwindled during the same two- to three-year period. That may be why in part the defense industry is more readily investing in cheaper fiber-optic lasers, which is a plus for IPG.

- “Fiber sales had flattened out and the growth wasn’t increasing at the same rate ... [but] it’s still a growing market and certainly one that I’ve put more emphasis on teaching within my program. In fact, I just purchased a fiber-laser training lab kit that cost about \$12,000 for the students to learn [not from IPG].”
- “Fiber lasers are more widely used ... It’s been growing pretty strong for the last four or five years, if not longer. It’s more widely adopted because the efficiency is so good. It’s becoming a tool that is opening up more markets than ever before.”
- “They are used, certainly, in cutting and welding. Also in the medical field because of the variety of available powers, high and low powers. The efficiency I heard is 45% to 50%, which is way higher compared to the normal, top lasers used. But crystal lasers, solid state lasers—their efficiency is increasing as well.”
- “At the same time, you still have ... the solid state laser industry growing in leaps and bounds ... [Manufacturers] are using fiber to drive the laser light ... from their medium ... So you get the benefit of using fiber laser light coming out of the fiber [like a fiber laser], but it’s two different ways of doing it.”
- “Solid-state laser growth is just through the roof. For instance, over the past two or three years as the defense industry is going down in terms of budget—which was a major portion of those manufacturers’ revenue—at the same time medical and other industries’ budgets have picked up and surpassed their numbers within the same time frame. The medical industry has really been adding more people and more work stations so the growth is there, too.”
- “I’m sure fiber lasers will be disruptive in the future because their efficiency and power allows you to get a lot of applications out of them.”

## 2) COMPETITORS

All four IPG competitors view them as an industry leader that will continue to grow. Automotive, telecommunications and drilling applications are expected to be the major growth areas. Emerging applications for fiber lasers include material marking and medical devices. One source said as larger laser manufacturers add fiber lasers to their product offerings, IPG will face increased competition. The IPG business model was viewed as an advantage by one competitor and a disadvantage by another because outside providers can react more quickly to technology advances. Reduced capital expenditure budgets have hampered adoption of fiber lasers, but growth is expected to continue. Fiber lasers have been available for 20 years and widespread adoption is not expected for at least five years.

## ➤ **Fiber laser researcher and developer, Arizona**

IPG will continue to dominate the commercial market as long as it keeps pushing and effectively producing high-power fiber lasers to meet industry demands. “However, high-power fiber lasers generally will not replace traditional lasers such

as diodes because they still face some technical hurdles and most fiber lasers are diode-pumped lasers. Photonic crystal fiber lasers are in a position to resolve aspects of that technical issue, which could put fiber laser sales trends into a new trajectory, including putting IPG at stiff competition with [SPI Lasers](#). The major markets that are adopting fiber lasers the fastest are automotive, defense and remote sensing applications, medical devices and telecom, and fiber lasers in general could face competition from photonic crystal lasers. Decreases in companies' capital equipment budgets have somewhat stifled wide adoption of fiber-optic lasers. Regardless, IPG still dominates the market.

- “If IPG keeps pushing power level and if they can start meeting the power level of CO<sub>2</sub> or certain solid state lasers and solve some of the [industry] issues with beam quality, then they will remain dominant and continue to grow sales.”
- “As far as kilowatt laser, IPG are pretty much the dominant people. Pulse laser companies are looking at pulse lasers for different applications ... but for drilling ... [and] telecom, IPG is pretty much dominating and seems like it will continue to dominate the market ... (IPG also develops pulse, lower repetition rate, which means the time between pulses is slower).”
- “IPG is able to control costs, obviously. [Their unique business model] gives them somewhat of a competitive advantage, but still if the market isn't there then ... However, they have been able to sell more [fiber laser] units than anybody else. They're always the ones pushing the [laser] power higher and higher, at least commercially. There are research groups out there that can go higher.”
- “There isn't anyone that is a dominant market competitor to IPG in terms of high-power fiber lasers.”
- “IPG is generally regarded as the best in the industry. They are highly adapted right now...Its claim to fame is higher-power [lasers] and they have primarily dominated the industry because of this. There is also the [University of Southampton](#) [whose subsidiary is SPI Lasers] that makes fiber lasers for welding, but ... as far as I know there is nobody that is making a ton of laser [units] like IPG. Everyone [else] is trying to focus on more niche markets ... like what I work with is specifically geared to remote sensing.”
- “Fiber lasers are going to be used a lot more. It's just a matter of people having the money to use them. It's going to take marketing on [IPG's] part to push them.”
- “Everyone wants to adopt fiber lasers ... but the problem I've seen is that in the economic downturn people are not investing in capital equipment. That has been a problem for everyone [who manufactures fiber lasers].”
- “IPG is a good size company, but the fact is they are still not the [larger] size of a Trumpf in Germany. They don't have the marketing and ability to sell like that. It will be interesting if Trumpf gets more into fiber lasers. They primarily sell solid state lasers that are not fiber; they're more bulk solid state lasers.”
- “As you get higher-power levels, fiber lasers will become more and more used in industry. Part of the problem [regarding wide adoption] is it is too hard to convince people to switch technology ... But I've seen that attitude changing over the last eight years. If more and more [companies] adopt them the attitude that fiber lasers are a novelty will wear off. Still, they are being adopted [steadily] throughout industry. I just wouldn't say they are making other lasers obsolete. But I definitely see the market expanding.”
- “Fiber lasers are not a novelty and are just going to continue to grow in application. Defense platforms and industry-based markets are interested, but it [overall fiber laser market growth] will depend on who has money to buy.”
- “There are a lot of people out there making diodes ... It just happens for [IPG] that they can control costs and they make some very good diodes. ... They are cutting out selling to other people who are selling diodes for competition purposes, I presume, because their diodes are pretty efficient and perform well and people like them and will buy them [from IPG directly].”
- “Defense has been a game changer for the market. Defense and space application, actually. There is a higher, more stringent requirement for performance and fiber lasers, hands-down, perform well in these space applications...I've seen more interest in the defense sector in the last five, six, seven years.”
- “More units [generally] are being sold and the interest in fiber lasers is continually increasing. I'd say maybe within five years or so [as far as really becoming disruptive] but that's hard to say for certain.”
- “Its disruptive aspect is a little bit slower than smartphones, for example. It's not like smartphones in that it became an overnight sensation ... Fiber lasers have been out for 20 years or so. It's a slow growth.”

**There isn't anyone that is a dominant market competitor to IPG in terms of high-power fiber lasers.**

*Fiber Laser Researcher & Developer*



- “Watch for these photonic crystal fibers ... if they can solve some of these light beam problems that will make them an advantage to solid state lasers ... Then you will really have some high competition [for IPG] ... from Southampton [research] and SPI.”
- “[Photo crystal fiber](#) [lasers] are really the hot research right now ... I was sitting with IPG about six or seven years ago and asking are you going to be using photo crystals. At the time, they said no.”
- “Every year fiber-optic laser usage increases. There is more interest not just for use in industry, but the military’s expressed a high interest because fiber lasers are more robust than traditional lasers and ... you basically have a single strand of fiber ... so if it is a rocket or plane parts, it does not get out of alignment.”

➤ **Engineer at manufacturing company of custom-built laser delivery systems and components**

Fiber-optic lasers are not necessarily a disruptive technology from a technical standpoint. Regardless, this competitor is seeing an increase in component sales this year and considers IPG the major, if not leading, competitor in the market. This competitor says the industry most widely adopting fiber lasers and related delivery components is the automotive industry’s robotics sector.

- “I don’t consider any [of the lasers on the market] disruptive ... Different lasers are used for different applications and within different industries. Having fiber lasers [in any relevant market] is like having a box of tool bits with just another size available to use.”
- “One of the huge competitors is IPG. We usually don’t sell as many laser systems [because] we sell more of the laser delivery components.”
- “[Our] fiber-optic laser] sales are pretty much increasing through the orders I see although I cannot provide specific numbers.”
- “The sales are driven solely by applicability. Fiber lasers go beyond precision application. It’s also the type of machines and processes used. They are used more than just precision as a parameter.”
- “I would have to say it’s mostly being more widely adopted by the robotic side of the automotive industry ... In that case, it’s about the emissions; the finer the piece of fiber, [the more applicable]. It’s a lot easier to use instead of fixed mirrors.”

➤ **CEO of a precision fiber laser provider**

The market for fiber lasers is fairly limitless—at present, IPG does not have the ability to do precise cutting and engineering or lower power (in the single-digit kilowatt range). Fiber laser technology is less rare than the broader application of it to precision engineering.

- “IPG is the most prominent fiber laser manufacturer, and they have a broad range of products as well. They’re used in car manufacturing, welding, cutting, you name it.”
- “We’re a femtosecond pulse laser maker and pioneered a style of laser that heretofore didn’t exist. The distinction is, it’s a really short pulse. By drilling, cutting or engraving with no heat, that’s a big distinguishing characteristic. If you’re trying to drill a hole for a fuel injector, or cut a metal stent for the heart—before, you did it mechanically or with a laser that machined through a thermal process that essentially melted the material down. The way to describe ours is it ‘vaporizes’ the material with no stress fractures, burring or snags.”
- “IPG is an example of a large fiber company that’s grown dramatically because its entire product line is fiber based. And they’re more reliable and scalable in terms of power and lend themselves to greater cost reduction.”
- “We would not typically compete with them because they’re really not in the precision machining [area]. It’s the difference between microsurgery versus taking a hacksaw and cutting the arm off.”
- “Fiber lasers are not a niche market; it’s a huge market and growing fast.”
- “Like everything else, the trend is toward smaller, faster and cheaper. What fiber really does is make it more robust. With fiber guiding the light instead of a bunch of mirrors, it’s not nearly as fragile; where with mirrors, you get a disruption that can impact the quality of the beam.”

**IPG is the most prominent fiber laser manufacturer, and they have a broad range of products as well. They’re used in car manufacturing, welding, cutting, you name it.**

*CEO, Precision Fiber Laser Provider*

➤ **Sales and marketing executive of leading U.S. laser power supply and manufacturing company**

IPG's vertical integration business approach could hurt the company if its power supply technologies do not keep up with what is currently available via OEMs. Some of IPG's competitors are taking advantage of these more advanced power supplies, which help fuel fiber lasers' efficiency and high powers—two fiber laser features integral for any fiber laser manufacturer looking to capture future market share and expand into sectors outside of automotive.

- “Vertical integration can be a disadvantage. ... If you're IPG, you can't stop the train at 60 miles per hour and suddenly go in another direction if a new [laser] technology takes over the market. But if fiber-optic lasers continue on their current advance, then IPG will continue to do very well.”
- “If you look at some of the newest [power supply] technology, they [IPG] can build better lasers, but they won't respond to any of our communications, as a power supply OEM. We are selling to their competitors and their competitors have [laser power supply] features that IPG can't replicate rep rates, efficiency at higher power at quicker repetitions... They can do what our competitors do. They just don't always take advantage of the [external options] to do that. I'm not knocking them ... Vertical integration just isn't the way to go from the power supply perspective.”
- “Telecom is probably at the very end of [IPG's recently report] revenue stream. I'd check the numbers, but auto industry probably accounts for much [of the current and future growth] because IPG has the big kilowatt systems those industries need.”
- “The fiber laser industry is growing. It's gone from about one or two suppliers to about 140 or 150. Coherent and [Spectra-Physics](#) [a Newport Corp. company] ... and IPG are the dominant players. There are probably 20 that really compete in that segment.”
- “In the market segment, they are in with Trumpf and the other big [industrial] players...JDS Uniphase, [Jenoptik](#) in Germany, [Rofin-Lasag] in Switzerland. If you break it down though, IPG is not big in all market segments. They have their niches.”
- “[Fiber lasers] are definitely changing the industry in that their wavelengths are strong, 500 to several thousand nanometers. ... They won't replace diode lasers. Diodes are what they use to pump the fiber lasers in some cases, depending on the technologies. In essence, you can't say fiber will replace diodes.”
- “We cut the spectrum of power applications in fiber lasers just as we do with direct drivers ... and I find [fiber lasers have] been widely adopted. The automotive industry rally enjoys fiber couples [power supply] because it delivers more power. Also, medical has adopted fiber lasers on a very small scale. They are still mostly flash-lamp based.”
- “There are no discernible trends [in fiber lasers] other than the power and efficiency is going up. When I started years ago, it was 5% and now 40% to 45% efficiency is common ... Anytime you can increase the efficiency and the wavelengths to power the laser, you open up different markets. That's the way it's always been over the years.”

Vertical integration can be a disadvantage. ... If you're IPG, you can't stop the train at 60 miles per hour and suddenly go in another direction if a new [laser] technology takes over the market. But if fiber-optic lasers continue on their current advance, then IPG will continue to do very well.

*Sales & Marketing Executive  
Laser Power Supply & Manufacturing  
Company*

### 3) MANUFACTURERS USING LASERS

Three of four manufacturers using lasers have been customers of IPG and expect them to continue to grow. The one manufacturer that was not aware of IPG but uses lasers for several applications expects demand for industrial lasers to increase. IPG's quality, competitive pricing, research and development, strong customer relationships and support are all competitive advantages. Strong competition from larger industrial equipment providers is the norm; they include Trumpf, Mitsubishi Laser, Amada and Bystronics, JDSU and [Oclaro Inc.](#) (OCLR).

➤ **Program manager at a major aerospace company**

IPG leads in fiber-laser system sales in the U.S. military and defense markets, but defense only accounts for 4% to 5% of IPG's business. IPG faces considerable and ongoing competition in the larger industrial manufacturing segment for fiber-laser cutting and welding, where it battles Mitsubishi Laser, Trumpf and others. The source described IPG as having a mid-level market position in the manufacturing category, which suggests that the one-time leader has lost market share

to larger corporate players that have copied IPG's technology. IPG remains strong in communications. Overall, the source believes IPG's fiber-laser technology and efficient operations will continue to contribute to its growth, but IPG is not alone in supplying the largest fiber-laser market segment of industrial manufacturing.

- "I am very familiar with IPG. I have not visited their manufacturing facility but my boss has been to their factory. They know how to do business and they have a very successful production line. I do believe IPG's fiber laser technology and business model will drive their continued growth."
- "The IPG technology is disruptive in terms of defense products. But in terms of lasers for cutting or welding cars and manufacturing, it's an already accepted technology. There it becomes about the cost advantage. It is hard to assess market share. They have already secured the communication market. For cutting and welding in manufacturing, they are in the middle area and there are a number of competitors including the companies that make CO<sub>2</sub> and thin disc, such as Trumpf and Mitsubishi and the others you mentioned [Amada, Bystronics]. The competition will continue for IPG in that segment. In the high-powered, high-quality area, IPGP is in a good position if they can figure out how to get around the physics."
- "In the overall scheme of things, IPG has sold hundreds of industrial lasers for cutting and welding. On the government and defense side, the sales probably only represent about 4% to 5% of their business. They started with a 2-kilowatt laser and then developed a 5-kilowatt laser. They now have a 10-kilowatt laser and we believe they are working on a 20-kilowatt laser. The lasers used as a cutting torch to sever a cable or to weld materials rely on the lower kilowatts. But at the 10-kilowatt level, they are getting us in the door with lasers as a way to effect damage to a target. So with the high-quality higher-powered beam, if you have a small plane in sight, you can cut a wing off or do other damage."
- "For our purposes, we require a very high-quality, high-powered beam. We have taken IPG's laser and put it into a beam director to increase that capability. We bought five laser systems from them and the government probably has another 10 IPG fiber laser systems across a spectrum of agencies. But the defense side represents a small side of their business."
- "Our division handles defense research and development for our company and our group does their laser work. Over the last five years, IPG Photonics has primarily been a laser cutting and welding-machine manufacturer, making the kind of lasers that only go out a few feet. But they developed a set of lasers that, instead of producing what we would consider a bad beam, had the kind of beam quality that could cut metal 10 feet to 20 feet out. When you get to that level the laser has use as a potential weapon that can do damage, although we really need a laser that can do damage two to three miles out."
- "We really need to move from 10 kilowatt to 20 kilowatt. The truth is, we want something that is 100+ kilowatts, so we are not where we want to be yet. But we are not a principal part of their business. I would guess they have sold less than 20 fiber lasers [for defense use] over the last five years. That's probably only worth about \$20 million to \$30 million to them over the last five years."
- "To the best of my knowledge, IPG is the only major engine house developing fiber lasers for our [military] customers, although there are some small engine houses working on it. There are no other fiber options out there at the power level we need. Everyone within the Department of Defense is buying from IPG and I would say there are about 10 to 15 systems in use across our customer agencies."
- "There is another step where you take a number of fiber lasers and combine them. The IPG guys are working on this along with other people at national labs like MIT, the Air Force research labs, the Navy, [Lincoln](#) and [Jefferson](#) labs. When the original concept was developed about 10 years ago some of the original people at Southampton University thought you could not get beyond the 5-kilowatt level because of the physics. Now we are at 10-kilowatts and moving to 20-kilowatt. I do think there are physical limitations, but we are working on it. IPG continues to provide the building blocks for others at the labs. I think of IPG as a commodity supplier to their [government/military] labs effort. They are looking for ways to transfer the technology to high-quality, commercial technologies that we can engineer and build and sell."

**I am very familiar with IPG. They know how to do business and they have a very successful production line. I do believe IPG's fiber laser technology and business model will drive their continued growth.**

*Program Manager  
Major Aerospace Company*

➤ **Chief technology officer, dental and medical laser technology manufacturer**

Despite its competitors, IPG will remain the market leader because of its extraordinary research facilities in Russia and Germany, its high-quality product and strong customer support. The source's company uses IPG laser equipment for prototypes but did not sign with IPG because it didn't want to commit to buying the high volume of diodes that IPG required. However, it may start buying high-power laser equipment from IPG in the next year. IPG's pricing is very competitive; the main drawback is its production volume makes it less flexible in producing lasers of different wavelengths for small customers.

- "We have some IPG laser products that we use for prototypes. In our serial production, we don't use them. We may be using them in a year or so, though, because we are going to want more powerful lasers."
- "As far as I can tell, IPG will remain the strong market leader. They are doing things right. They have very strong researchers in Germany and Russia. Their manufacturing is paperless, they do a lot of testing before launching a product; they're automated. There is going to be competition from China, but I think IPG will stay the market leader."
- "IPG's strengths are that they can be very competitive on pricing and building volume. They are also very consistent in quality, and we had very good support from them. I was dealing directly with the engineers there, and we had a very good response [whenever issues arose]."
- "Their weakness is that since they produce in such high volumes, they are less flexible when it came to making different wavelengths. It was difficult for them to adjust for such a small volume. What happened is that we were talking to them several years ago, and they wanted to supply us with all the diode lasers. In return, they wanted a commitment to a certain volume [in the tens of thousands]. I understand that because they are looking for big-scale operations and to partner with a big account. But for us, it is dangerous. For dental work, it is still unstable. I think we were very smart not to sign with that. And since they could not supply all our diode lasers, they said 'no, we cannot be your supplier'."
- "We definitely looked at the competition. IPG's competitors are JDSU, [Oclaro](#) [Inc./OCLR]. Newport is not right for us—they're bars rather than pig-tailed. ... We did not want to limit ourselves to a single supplier."
- "Germany is a competitor, but they can't make things better and cheaper than IPG in the United States. China is going to eventually make equipment that, because of lower cost even if it is less reliable, will be bought by companies that may not require as much."
- "We make laser equipment for therapeutic and general medical applications. We have FDA approval for a high-powered laser, and we're still developing in this area. We've developed a laser tool for pain control having to do with minor, temporary pain and swelling [a use approved by the FDA], and one doctor certified in its use is in London right now with the U.S. Olympic team. He's working the gymnasts and the basketball players."
- "I don't see an application for fiber lasers in dentistry right now. You need direct diodes, not fiber lasers. IPG is not looking at dental lasers very much right now. I know they acquired some technical knowledge that allowed them to go in this direction. They're watching it; they don't want to invest in it unless it is a sure winner."
- "[On trends in laser manufacturing:] "They will be in the blue wavelength where not as many are available—around 2½ microns. Red will work for more medical and surgical procedures, which have traditionally used CO<sub>2</sub> lasers. Some of these will be replaced by fiber lasers, which won't require as much maintenance. They will last for half a century. ... Fiber lasers will get more into reliability and the quality of the beam."

As far as I can tell, IPG will remain the strong market leader. They are doing things right. They have very strong researchers in Germany and Russia. Their manufacturing is paperless, they do a lot of testing before launching a product; they're automated. There is going to be competition from China, but I think IPG will stay the market leader.

*Chief Technology Officer  
Medical Laser Tech Manufacturer*

➤ **Engineer, large oil and gas drilling and completion company**

Low-power lasers are used in measuring, sensing and analysis applications in this company's drilling and completion service offerings. High-power lasers are used in some welding applications and testing is underway for high-power laser usage for actual drilling, but it is too early to tell if the application will be viable. This source was not familiar with IPG; however, he said the use of lasers in industrial application is on the rise and will continue to grow as new applications are always being developed.

- “I am not familiar with IPG, but we use lasers for many applications in our field. Heat measurement and sensing applications, drill bit and material analysis and ongoing well monitoring are a few of the low-power application where lasers are being used.”
- High-powered lasers are used for welding applications. We just replaced a radial welder valued at about \$500,000 with a YAG laser at a cost of \$50,000.
- “In my experience the use of lasers in industrial application will continue to grow as they offer precision control, are usually cleaner and less costly to operate than the process they are replacing.”
- “We are currently in the process of testing the use of high-powered lasers for actually drilling wells. It’s way too early to tell if it will be a viable application, but lasers have become powerful enough to at least consider it.”

➤ **Director of sales, laser engraving and marking company that uses an IPG laser product**

The company uses an IPG laser product in one of its product lines and is very satisfied with IPG’s product quality, delivery, customer support and work ethic. The market for laser applications, including mobile devices, continues to grow. No other competitors appear strong enough to take away IPG’s share of the fiber-laser market.

- “IPG’s customer support and delivery has all been very good. They work hard to take care of us.”
- “We looked at their competitors, and obviously we thought enough of IPG to choose them over everyone else. We’ve been happy with the quality of the product.”
- “I think [IPG] will remain the market leader for now. I don’t have any reason to think they won’t be.”
- “Our fiber laser sales increased slightly from last year, and we sold more CO<sub>2</sub> lasers, too. We’ve been gradually increasing our laser product sales every year.”
- “Lasers are definitely displacing conventional tools in many settings. There are still people using primitive hand-held devices to mark products, and you have metal engravers and stamping, all sorts of things. We’re slowly trying to indoctrinate them into laser engraving, where one of the greatest benefits is speed.”
- “There are so many different markets that it’s practically endless—that’s the beauty of lasers. We make laser engraving and marking applications, for example, and you can use them to mark devices such as iPads and iPods. You have businesses that need bar codes, the military and Air Force need to mark tools. And with CO<sub>2</sub> lasers you can cut glass, fabrics, acrylics—basically anything. We had a guy lasering college emblems onto carpets. There are an awful lot of applications out there.”

There are so many different markets that it’s practically endless—that’s the beauty of lasers. We make laser engraving and marking applications, for example, and you can use them to mark devices such as iPads and iPods. You have businesses that need bar codes, the military and Air Force need to mark tools.

*Director of Sales  
Laser Engraving & Marking Company*

#### 4) VALUE-ADDED RESELLERS/OEM

Four value-added resellers view IPG as the leading fiber laser provider and they expect continued growth for the company and the industry in the range of 5% to 15% year to year. IPG strengths include high-quality products, strong management and solid custom product development collaboration. JDS, Amada and Trumpf are considered strong competitors; however they have not garnered the level of market success with fiber lasers experienced by IPG. Challenges facing IPG include a lack of software expertise and missing development schedules.

➤ **President, global laser systems integrator**

IPG will continue to dominate the higher kilowatt fiber laser market for a while. It’s more pressing competition—now and over the past two years—is from those companies developing fiber lasers at the lower levels of 1,000 kilowatts and below. Generally, fiber lasers are a disruptive technology and taking over market share from such competing lasers as Nd:YAG. The markets primarily embracing the technology are medical, automotive, aviation, electronic sensors and defense (Departments of Defense and Energy, specifically).

- “They [IPG] have competition more on the lower wattage level; maybe 1,000 watts or less. But the people who compete with IPG over the last two years have learned ... [that] within their companies they need to develop

higher wattage as time goes on. To compete with IPG, they have to integrate higher wattage levels of [laser] modules.”

- “[The competition] can learn up to a certain kilowatt, but IPG will command the higher market demands like 20 kilowatts, 60 kilowatts. They’ll probably maintain that market share until other people catch up.”
- “It takes a while to switch from a 1090 [laser system] to a different wavelength and then switch again. So if [IPG] has a good plan on where they are going, like different beam components, that will help with related sales.”
- “We use [IPG]. They are one of our vendors and we don’t have any [business/delivery] problems at all.”
- “We have integrated more fiber lasers than YAG lasers. Yes, the market’s been moving away from YAGs and moving to fiber lasers.”
- “We have [increased sales] heavily in medical ... To say there is a [specific] emerging market is hard to say because everyone is kind of switching to fiber ... Its taking over in green wavelength ... [and has] grabbed some of the market from the YAG lasers. I don’t know the exact numbers but fiber will never take over the YAGs because the fiber lasers don’t have the pulse energy.”
- “It’s already happening. It’s real time: fiber lasers have been out for while, but it’s becoming a more prudent tool and more and more people are using it in their applications.”

They [IPG] have competition more on the lower wattage level; maybe 1,000 watts or less. But the people who compete with IPG over the last two years have learned ... [that] within their companies they need to develop higher wattage as time goes on. To compete with IPG, they have to integrate higher wattage levels of [laser] modules.

*President  
Global Laser Systems Integrator*

## ► VP of sales, die-cutting, printing and laser systems company that uses IPG lasers

IPG is going to expand its market share over the next year. It is the clear fiber laser leader in industry, including welding and electronics, and continues to grow. It’s an excellent partner for OEMs, offering strong support, on-time delivery and a quality product. Fiber laser is the “tsunami of technology” and continually expanding in markets throughout the world.

- “Fiber laser is the tsunami of technology. In terms of market share, I think IPG is going to keep growing. You can’t stop it. They’ve developed lasers with different wavelengths and pulse strengths that work for different applications in the electronics industry, welding and heat-treating. They have really taken over the industry and are going to continue to grab market share in the industrial sphere. They’re also exploring other areas, such as medical uses.”
- “We’re a company that builds laser systems, and we use laser products from IPG and integrate them into our systems. It’s like they make the engine, and I make the car. IPG’s support and delivery is very good. In fact, they’ve been delivering quicker than they say they’re going to lately. They’ve also been really good in their response [to any issues]. We ship globally, to China and other places, and they’ve give us good support and hand-off.”
- “We’ve worked with IPG since they came on the market and I’ve been in the laser industry for 22 years, so I’m very familiar with all the players out there. And IPG is ahead of all the competition. There are companies similar to IPG, but no one is as good. For example, a company wanted to sell us [a laser product] that is water-cooled, and along with that you need a \$10,000 system for water cooling, and a lot of companies don’t want to mess with that. Meanwhile, IPG has one that is air-cooled, so you don’t need those extras. Technologically, it is just better.”
- “IPG fiber laser is more of a solid-state device, unlike those of some of the competitors. That means the maintenance on it is about as low as you can get. With the others, you need a skilled maintenance person on staff, and every time he opens the cabinet, they have to worry that he’s going to break something.”

Fiber laser is the tsunami of technology. In terms of market share, I think IPG is going to keep growing. You can’t stop it. They’ve developed lasers with different wavelengths and pulse strengths that work for different applications in the electronics industry, welding and heat-treating. They have really taken over the industry and are going to continue to grab market share in the industrial sphere. They’re also exploring other areas, such as medical uses.

*VP of Sales  
Laser Systems Company*

- “The weaknesses of competitors includes power level. IPG can make a 20-kilowatt laser; I believe Rofin just goes to 3 kilowatts The only company that’s a competitor in the high-power market is the Trumpf, a German company that makes disc lasers. They are selling more units in the states [than they used to]. They offer total systems, so some companies who buy the whole system get some of their lasers that way. The German government helped fund Trumpf and probably offers incentives for German companies to use it.”

➤ **Engineering development director, systems integrator that has used IPG fiber products for more than a decade**

This systems integrator has purchased [EDFA fiber products](#) from IPG for more than 10 years as part of his company’s broadband telecom services. The source praised IPG’s products, upper management and collaboration on designing custom products. Its weaknesses include a lack of strong software expertise, late production introduction schedules and tardiness by operational management in responding to problems.

- “They [IPG] are technically competent in the area of optical amplifiers, designing robust product that meets or exceeds expectations.”
- “They are willing to work with us to design custom products.”
- “Their upper management is responsive.”
- “Historically, they always seem to be late with new product introduction schedules.”
- “Their firmware/software expertise is a little lacking. They have gotten a little better in this area, but are not nearly at the level of their hardware expertise.”
- “Their operational management is sometimes slow to respond, and there is a need to get upper management involved to resolve issues.”

They [IPG] are technically competent in the area of optical amplifiers, designing robust product that meets or exceeds expectations.

*Engineering Development Director*

➤ **Marketing director, laser technology manufacturer**

IPG equipment is the go-to stop for laser technology. This company, which employs IPG technology, has found itself replacing CO<sub>2</sub> lasers more than anything else. IPG has a market penetration such that it builds a strong and commodity-priced product. Amada and JDSU have competed with this but have yet to reach the IPG scale and value.

- “IPG is going to be gaining market share. They’ve been on the cutting side and adopted by most manufacturers, so as the market for fiber lasers grows and will grow, their marketplace will rise with it.”
- “We’ve traditionally sold CO<sub>2</sub> lasers, and we’re releasing a production model of a fiber laser.”
- “A lot of people looking towards the elections are trying to see what happens. There’s still projected growth, but I’m not sure if it’s five, 10, 15% year-over-year.”
- [On fiber laser sales growth:] “They’re continuing to grow. The thickness of materials that can be cut has increased, and the practicality for a jobshop to invest in a fiber laser—initially, when they came out, was a thin 3mm or 4mm material, limiting it to doing fine sheet work. But from a jobshop standpoint, we’re now seeing different head designs, with greater acceptance in a jobshop environment.”
- “Jobshops is one environment, but so far, we’ve seen more of the OEM-type environments. Someone making panels, like for example Whirlpool, can make panels for appliances and consistent with that thin gage. So fiber makes sense for them.”
- “Thinner materials are where fiber does well-exotic materials, which is where medical devices come in to play.”
- [On disruptive technology] “I think that fiber will replace a portion of what historically would have been a CO<sub>2</sub> market. Right now, I can’t say what thickness they can handle, it’s still in development. But right now, those folks that are focused on it are more focused on the thinner spectrum of the market.”
- “We utilize IPG; a majority of manufacturers don’t develop their own fiber technology. The most common provider is IPG.”
- “IPG has been the one almost everyone has started to utilize. They in turn use a lot of our machines in their product environment, so it’s natural for us to look to them to partner for the generator.”

IPG is going to be gaining market share. They’ve been on the cutting side and adopted by most manufacturers, so as the market for fiber lasers grows and will grow, their marketplace will rise with it.

*Marketing Director  
Laser Technology Manufacturer*

- “JDS is a leader, certainly—they’re connected directly with Amada. But there hasn’t been the market acceptance in the cutting areas.”
- “The challengers they’ve had have been Amada with JDSU, Trumpf, which has designed its own disk fiber. I don’t see much of anybody else out there on the cutting side.”
- “The other component in the marketplace has been that machines have gone to lower wattage and footprint machines, which impacts the CO<sub>2</sub> world.”
- [On price:] “When the first machines came out of higher wattage, they were very expensive, and that’s come down as the volume of machines have gone up. That’s certainly applicable for a larger range of uses.”

## Secondary Sources

A review of secondary sources covering the industrial laser market revealed that business leaders, engineers and application professionals gathered to explore how to expand the use of fiber lasers. IPG announced the availability of new laser systems and products to expand usage in industrial, medical, R&D and microprocessing markets. Finally, a recent survey pegs the 2011 material processing market for industrial lasers at \$10.1 billion.

### ➤ June 1 [post on optics.org](#)

This post covers a conference on fiber lasers for business leaders, engineers and applications professionals sponsored by [SEPNET](#), the South of England Photonics Network on May 29, to explore the devices future. Expanding the capabilities of fiber lasers is viewed as critical for maintaining and expanding the fiber-laser industry’s growth.

- “Fiber lasers have had huge impact in the marketplace in recent years, rapidly penetrating many areas of precision materials processing in modern manufacturing.”
- “Extending the capability of fiber lasers is key to maintaining their phenomenal growth rate, enabling many new applications as well as displacement of traditional laser sources. This event is for business leaders, engineers and applications professionals looking to understand how far and how fast fiber lasers will develop.”
- “... figures from the Laser Marketplace analysis by *Laser Focus World* at Photonics West in January 2012, which ranked the global lasers for manufacturing market at 26% of total laser sales, second only to their sales into communications (31%). Green also noted that relative to sales of traditional machine tools, global sales of laser materials processing systems had grown tenfold since 1986 (based on data from [Optech Consulting](#)).”

### ➤ May 17 [post on thefabricator.com](#)

IPG announced the introduction of several new lasers designed for the industrial, medical, R&D and microprocessing markets.

- “The company has added new models with output power up to 100 W to its line of high-power, low-noise, single-mode, single-frequency CW green fiber lasers. The GLR series lasers feature compact, air-cooled, 19-in. 3U or 4U rack-mounted pump lasers with very small and lightweight heads that do not require water or air cooling.”
- “The TLR-150-WC thulium fiber laser systems are designed for use in the industrial, medical and R&D markets for high-power, compact, wavelength-selectable, single-mode CW sources from 1,800 to 2,100 nm.”
- “The YLPS-20 is an all-fiber-format, picosecond laser for precision material micromachining.”

### ➤ March 21 [post on thefabricator.com](#)

This posting reviews a market survey that indicted the material processing market for industrial lasers in 2011 is \$10.1 billion.

- “The global market for laser systems for materials processing reached \$10.1 billion in 2011, according to a new survey by Optech Consulting, Taegerwilen, Switzerland. The market is 28% ahead of its 2010 volume and 90% bigger than in the crisis year 2009.”
- “East Asia presently reports the highest growth rates, with steeply growing demand for laser systems in China, Korea and Taiwan. Laser system demand also accelerated in other countries with high industrial production growth rates, such as India and Brazil. The market comprises laser systems for macroprocessing—mainly for cutting, welding and marking, worth about \$7 billion, and laser systems for microprocessing—for the production of semiconductors, flat-panel displays, printed circuit boards and solar cells, worth about \$3 billion.”



Additional research by Carolyn Marshall, Dann Maurno, Diana Hembree and Marissa Yaremich

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