

# IPG PHOTONICS

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Matt Briggs, Yosha Huang, Lukas Vlahos



# Outline



Company Overview

Industry Overview

Technological Advantage

Growth Opportunities

Variant Perception

Valuation

# IPG Company Overview

- World's Leading developer and manufacturer of high-performance fiber lasers, fiber amplifiers, and diode lasers that are used for diverse applications.
- Vertically integrated business model has led to industry leading margins.
- Diverse Global Customer base
  - Largest customer accounted for 11% of sales in 2013
  - Sell to OEMs, System Integrators, and End Users
- Numerous applications and industries that use IPG products
  - Offers low, mid, and high power lasers

IPG Photonics Key Stats	
Market Cap	\$3.54 Billion
2013 Revenue	\$648 Million
2013 Net Income	\$156 Million
Operating Margin	34%
Net Margin	24%

# Revenue by Region

Europe:

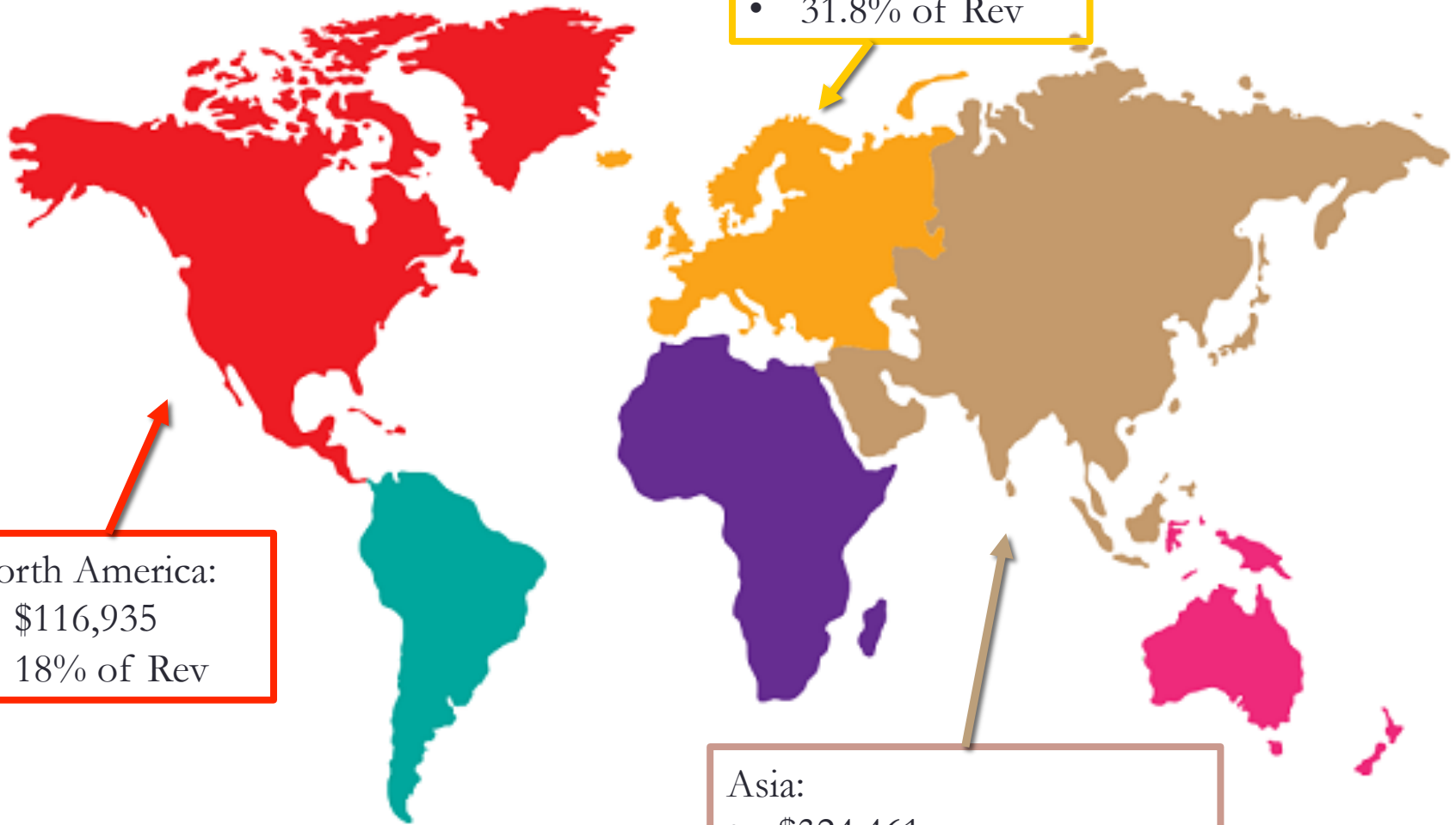
- \$205,426
- 31.8% of Rev

North America:

- \$116,935
- 18% of Rev

Asia:

- \$324,461
- 50.1% of Rev



# Laser Applications

## Materials Processing

- Cutting and Welding
- Micro-processing

**IPG's largest Source of Revenue**

## Communication

- Source in fiber Optic Communications



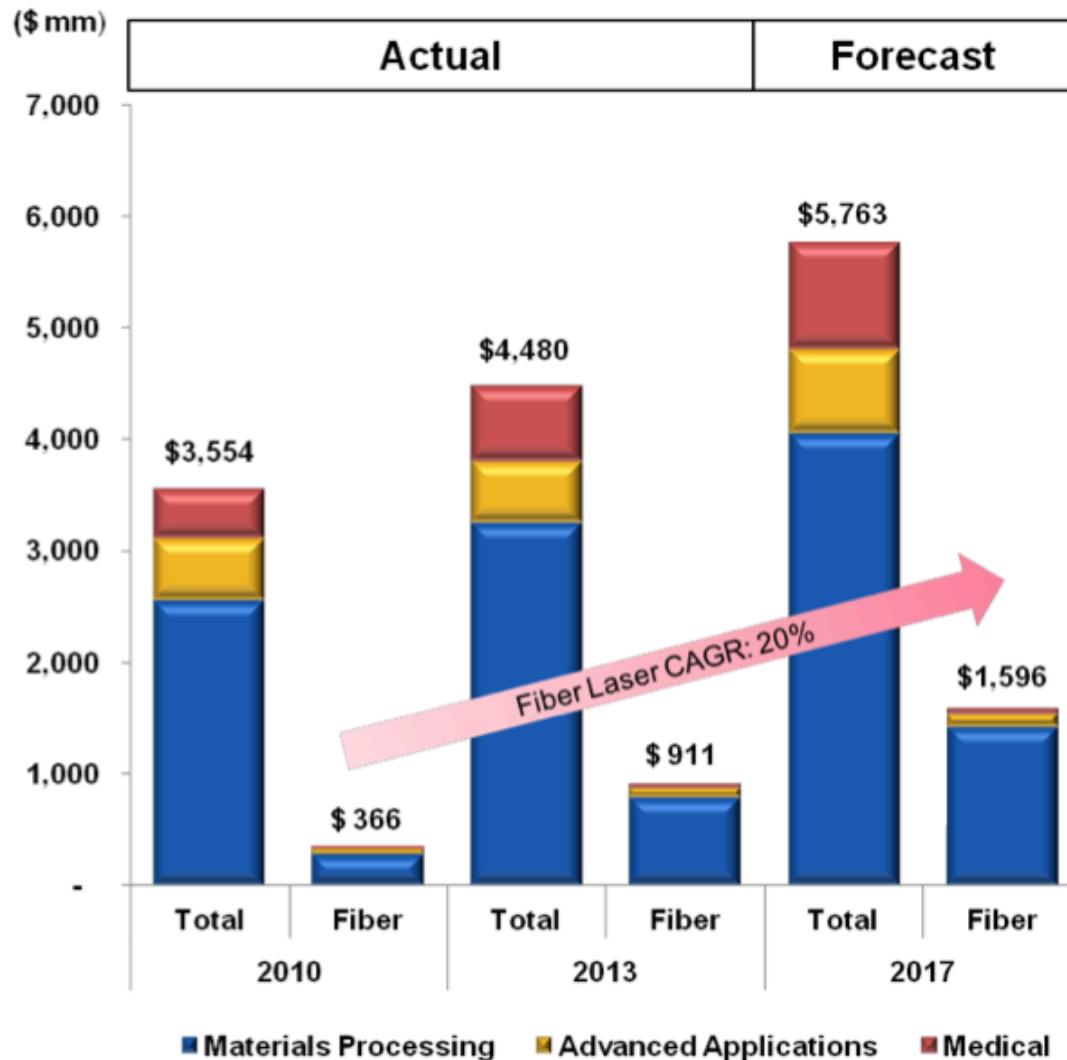
## Medical

- Surgery
- Skin and Tissue Resurfacing
- Kidney Stone Treatment

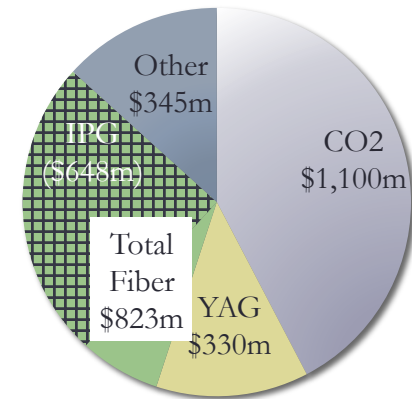
## Advanced Applications



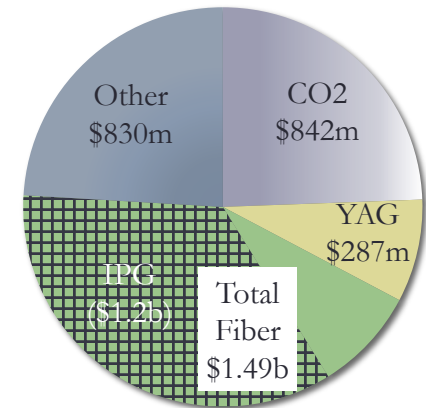
# Industry Overview



Global Laser Market Revenue, \$2.6bn (2013)



Global Laser Market Revenue, \$3.4bn (2018P)



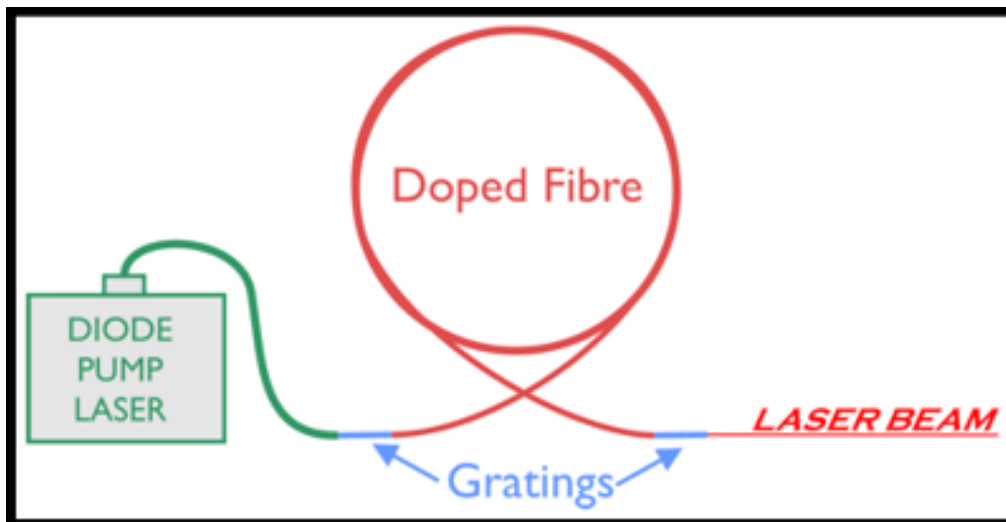
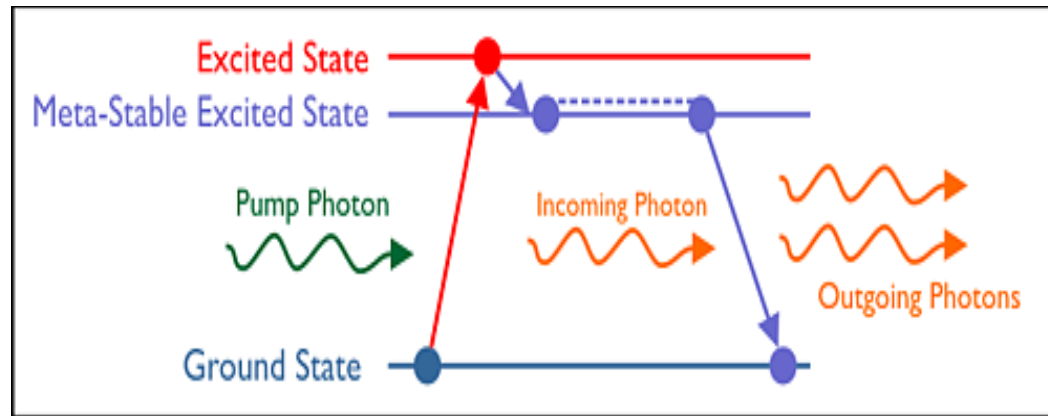


# Who are the End Users?



# Fiber Lasers - Function

- Electrons excited by pumping into excited state.
- Specialized material settles into meta excited state.
- All atoms in meta excited state release photons at once; released gradually through from mirrored chamber.






































- Utilize fiber optic cables doped with rare minerals to store excited electrons.
- Initial pump energy provided by Diode pump laser
- Beam can be more finely controlled with gratings at release point.



# Value Proposition of Fiber Lasers

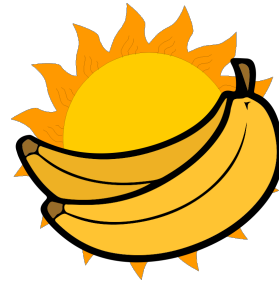
- Efficiency – dissipates heat over the entirety of the cable, reducing energy loss.
- Precision – fiber lasers offer straight, focused beams, increasing power and accuracy.
- Maintenance – mirrors used in other lasers require frequent, extremely complicated alignment; fiber lasers avoid this problem entirely.
- Convenience – lighter and smaller due to the removal of large mirrored chambers.


	Power	Beam Quality	Electrical Efficiency	Wave- Length	Footprint	Maintenance	Ownership Costs
Fiber Laser							
CO <sub>2</sub> (Gas)							
Lamp Pumped Nd: YAG (Solid State)							
Disk Lasers Yb: YAG (Solid State)							
Direct Diode							

# Vertical Integration

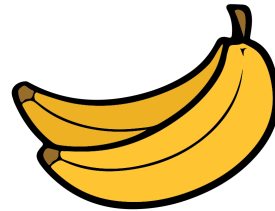
- Occurs when a company expands into areas at different points along the same production path.
- A company that controls its suppliers has backward integration.
- A company that controls its distributors has forward integration.

- Lowers costs and improves margins.
- Additional competitive advantage.



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Banana Microchips



Banana Phones

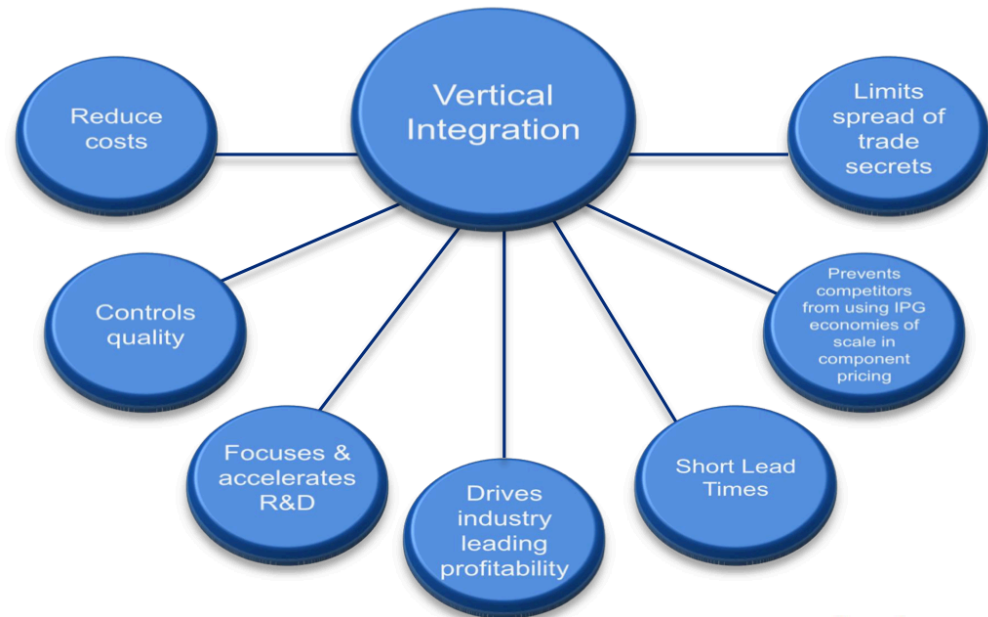


The Banana Store

# Vertical Integration

## Components

- Complete control over manufacturing process.
- Patents on diode pumps, special fibers, optical components, amplifiers, and gratings.
- Diodes and other components more reliable and powerful than others on the market.



## Applications

- Extensive application testing facilities – offers process development services.
- Does further R&D on new applications of more powerful lasers.

# Investment Thesis

- Conventional lasers are getting older (20+ years)
- Companies looking to replace older lasers
- Market is mostly concentrated with conventional lasers



- Fiber lasers are a cheaper, more powerful, and more reliable alternative
- IPG is the leader of the fiber laser space.



- Great opportunity for IPG to steal market share from competitors and further innovate its products

- Recent insider sales have lead to an overreaction from the market, driving the prices down.
- The Street is concerned about adoption rates of the disruptive technology.
- The Street is overly concerned about increased competition from low-cost producers due to temporary slowdowns in bookings from key market sectors, like China.

# Breakdown by Product Line

Product line	% revenue	Forecast assumptions
High Power	54%	<ul style="list-style-type: none"><li>• Forecast strong growth in material processing.</li><li>• Difficult for first generation lasers to compete in pricing since efficiency of fiber lasers allows high wattages</li><li>• UV Lasers will add additional product line for more precise machining and memory usage.</li></ul>
Pulsed	17%	<ul style="list-style-type: none"><li>• Revenue will decline due to increased Chinese competition</li></ul>
Medium Power	11%	<ul style="list-style-type: none"><li>• Revenue will increase in material processing (correlated to high power growth)</li></ul>
QCW	4%	<ul style="list-style-type: none"><li>• Revenue will increase in fine welding applications as they replace Nd:YAG</li></ul>
Low Power	2%	<ul style="list-style-type: none"><li>• Decrease in revenue due to stronger competition in Asia and from established gas laser producers which can manufacture low power lasers at a lower price point</li></ul>

# Market Penetration by Application

**Highest projected growth**

**High power applications**

(cutting and welding)

**Marking**

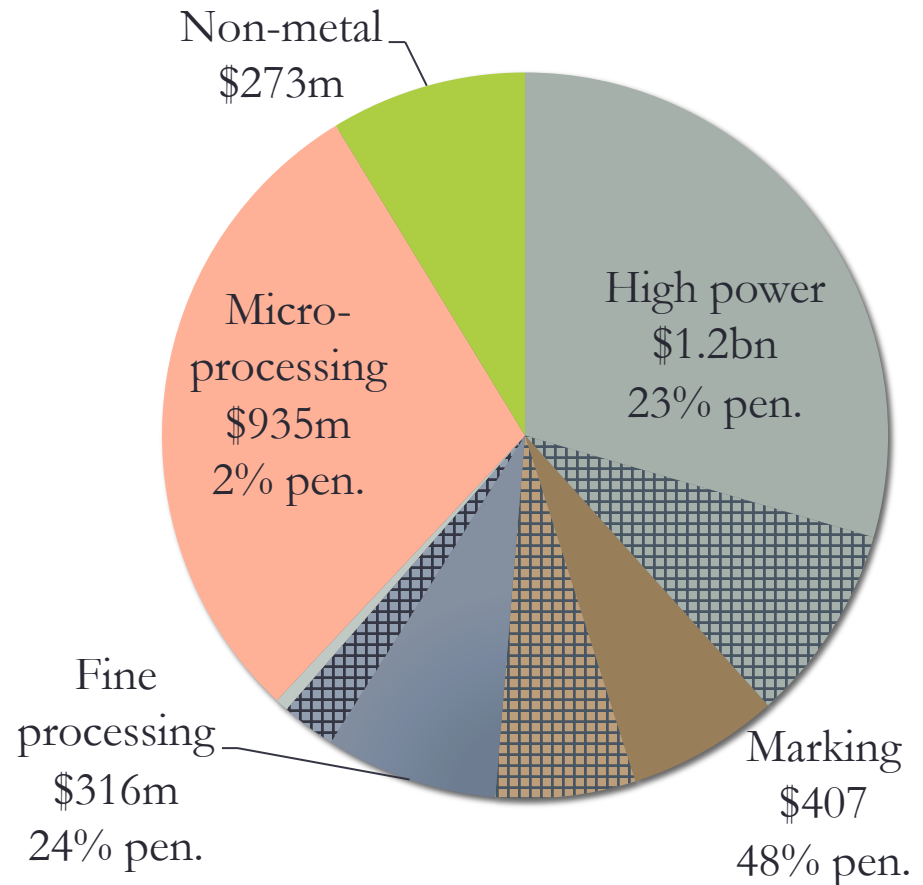
**Fine Processing**

**Micro-processing**

(semiconductor, packaging,  
flat panel display, solar)

**Non-metal processing**

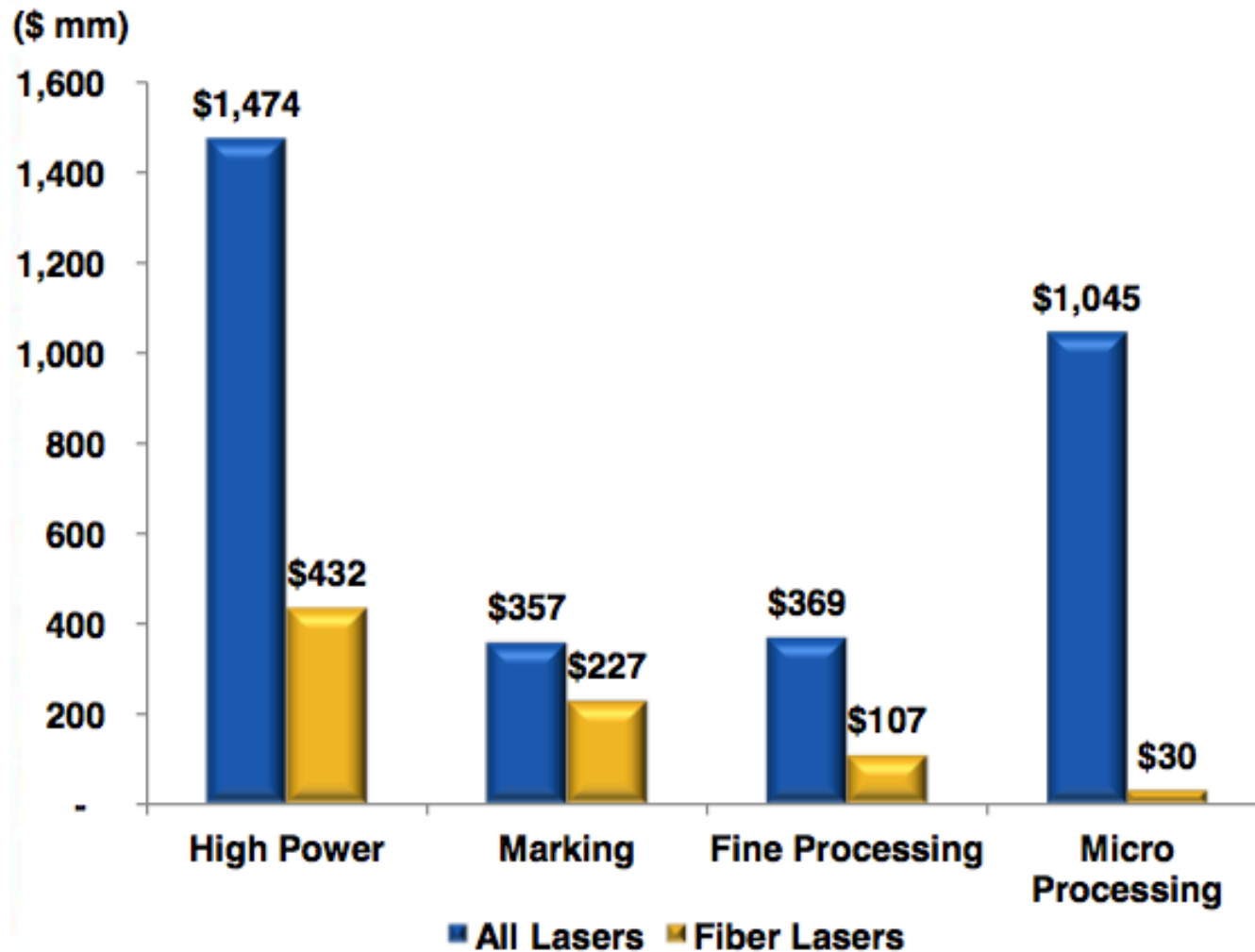
**Slowest projected growth**



New products will be able to address unpenetrated markets.



# Growth Opportunities



# Comparables

	IPG Photonics	Coherent	ESI	Newport Corp	Rofin-Sinar Technologies
Market Cap	<b>3.45B</b>	1.62B	222.5M	717.6M	649.2M
P/E (TTM)	<b>20.02</b>	24.05	--	26.04	26.57
ROA	<b>14%</b>	4.9%	-4.4%	5.4%	3.1%
Operating Margin	<b>34%</b>	9.7%	-12%	8.7%	6.4%
Net Margin	<b>24%</b>	7.5%	-25%	4.6%	4.3%
Revenue Growth (q/q)	<b>14.3%</b>	-8.1%	-4.5%	-3.5%	-3.5%

# Valuation

Case		Assumptions	P/E Multiple	Price Target
Bear	20%	Competitors are able to break into high power market (16% q/q); Chinese competition forces greater than expected decline in other segments (-14% q/q)	17	\$63.45
Base	50%	IPG maintains technological advantage, high power growth is strong (22% q/q); Chinese impact limited to smaller segments (-10% q/q)	20	\$80.52
Bull	30%	High and medium power growth is stronger than expected (26% q/q); Chinese impact reduced (-7% q/q)	21	\$89.50

Current Price - \$66.86

Price Target - \$79.80 (19.35% return)

# Industry Share Valuation

	2013	2014	2015
Total Laser Industry Revenue	4,480	4,704	4,939
% Growth		5%	5%
Total Fiber Laser Revenue	911	1,093	1,312
% Growth		20%	20%
Market Share	20%	23%	27%
IPG's marketshare of Fiber Lasers	71%	69%	67%
<b>IPG Fiber Laser Revenue</b>	<b>647</b>	<b>754</b>	<b>879</b>
Cost of revenue	302	355	413
% of Revenue	46.7%	47.0%	47.0%
Gross profit	344.7	399.8	465.8
Gross Margin	53.3%	53.0%	53.0%
Total operating expenses	121.0	141.8	167.0
Operating Margin	18.7%	18.8%	19.0%
<b>Operating income</b>	<b>224</b>	<b>258</b>	<b>299</b>
Operating Margin	34.6%	34.2%	34.0%
<b>Net income</b>	<b>153</b>	<b>181</b>	<b>209</b>
Net Margin	23.7%	24.0%	23.8%
<b>Earnings Per Share</b>			
Basic	3.07	3.48	\$4.02
Diluted	2.95	3.48	4.02

Current Price - \$66.86

Price target by  
Market share value:

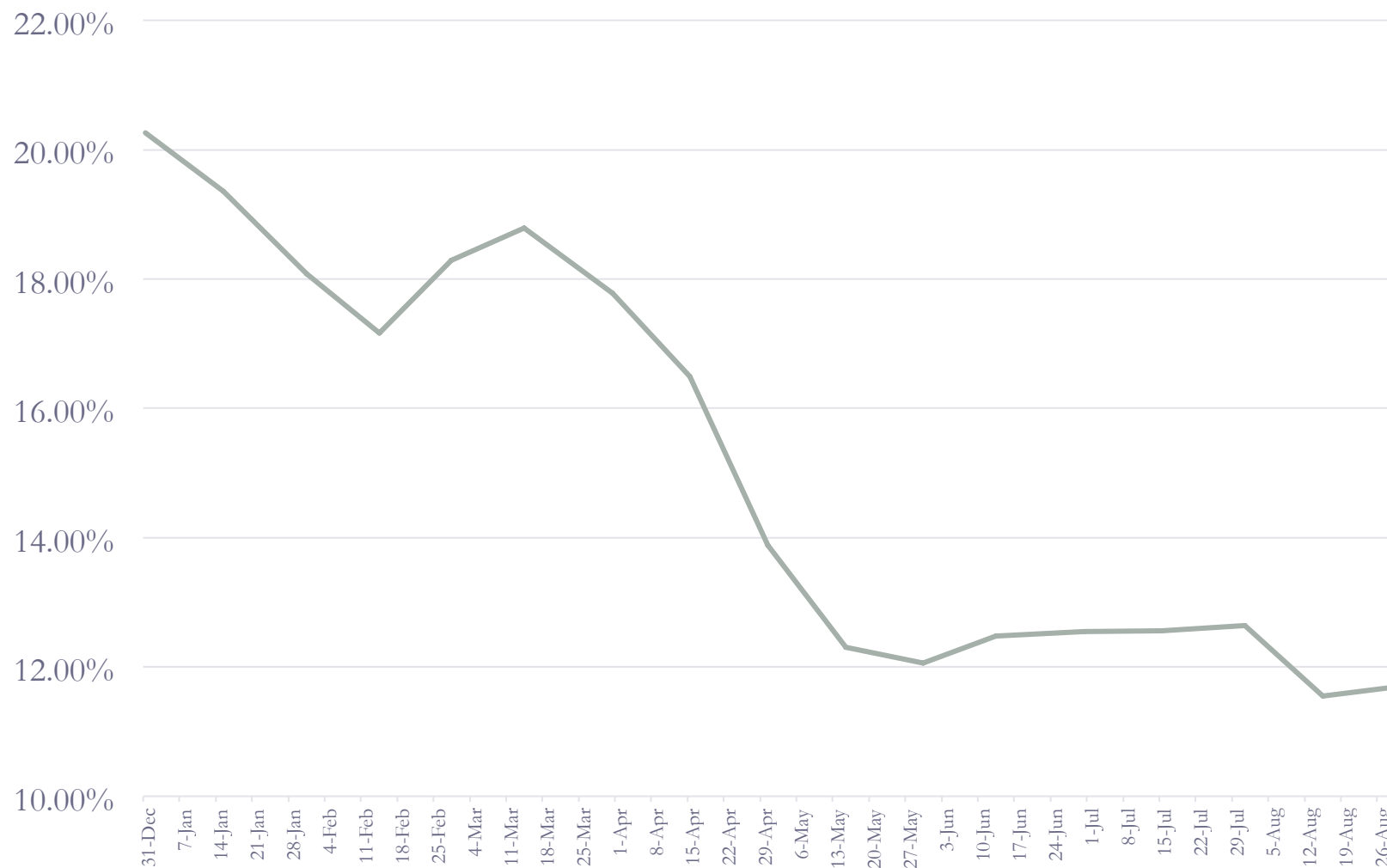
\$80.46 (20.34% upside)

Q&A

# Appendix



# IPGP Short Interest



# Return Sensitivity

2015 P/E	20
2015 EPS	4.03
Share Price	\$80.52

Current Price	\$67.93
Expected Return	18.54%

Return Sensitivity Analysis

	17	18	19	20	21	22	23
3.63	61.64	65.27	68.90	72.52	76.15	79.77	83.40
3.73	63.34	67.07	70.80	74.52	78.25	81.97	85.70
3.83	65.04	68.87	72.70	76.52	80.35	84.17	88.00
3.93	66.74	70.67	74.60	78.52	82.45	86.37	90.30
4.026	68.44	72.47	76.50	80.52	84.55	88.57	92.60
4.13	70.14	74.27	78.40	82.52	86.65	90.77	94.90
4.23	71.84	76.07	80.30	84.52	88.75	92.97	97.20
4.33	73.54	77.87	82.20	86.52	90.85	95.17	99.50
4.43	75.24	79.67	84.10	88.52	92.95	97.37	101.80

# Valuation – Base

	Q1 2013 (A)	Q2 2013 (A)	Q3 2013 (A)	Q4 2013 (A)	Q1 2014 (A)	Q2 2014 (A)	Q3 2014 (P)	Q4 2014 (P)	Q1 2015 (P)	Q2 2015 (P)	Q3 2015 (P)	Q4 2015 (P)
Revenue (by product line)	141.7	166.1	172.2	170.6	170.6	192.2	195	199	199	217	228	235
% Growth (yoy)					20%	16%	13%	17%	17%	13%	17%	18%
High power laser	75.1	85.4	95.8	100	100	104.1	116.9	122.0	122.0	127.0	142.6	148.8
% Growth (yoy)	19%	38%	42%	-13%	33%	22%	22%	22%	22%	22%	22%	22%
% Revenue	53%	51%	56%	59%	59%	54%	60%	61%	61%	59%	63%	63%
Pulsed laser	33.3	40	34.4	28.8	28.8	32.4	31.0	25.9	25.9	29.2	27.9	23.3
% Growth (yoy)	21%	5%	-32%	67%	-14%	-19%	-10%	-10%	-10%	-10%	-10%	-10%
% Revenue	24%	24%	20%	17%	17%	17%	16%	13%	13%	13%	12%	10%
Medium power	10.4	15.7	14.2	17.5	17.5	21.6	17.9	22.1	22.1	27.2	22.5	27.8
% Growth (yoy)	9%	41%	27%	43%	68%	38%	26%	26%	26%	26%	26%	26%
% Revenue	7%	9%	8%	10%	10%	11%	9%	11%	11%	13%	10%	12%
QCW laser	3.9	5.6	6.5	5.6	5.6	8.1	8.8	7.6	7.6	10.9	11.8	10.2
% Growth (yoy)	>100	>100	>300	43%	44%	45%	35%	35%	35%	35%	35%	35%
% Revenue	3%	3%	4%	3%	3%	4%	5%	4%	4%	5%	5%	4%
Low power laser	4	3.6	2.8	3.8	3.8	3.1	2.5	3.4	3.4	2.8	2.3	3.1
% Growth (yoy)	6%	-14%	-28%	-7%	-5%	-14%	-10%	-10%	-10%	-10%	-10%	-10%
% Revenue	3%	2%	2%	2%	2%	2%	1%	2%	2%	1%	1%	1%
Laser Revenue subtotal	126.7	150.3	153.7	155.7	155.7	169.3	177.0	181.0	181.0	197.1	207.1	213.2
Other products	5.8	6.2	8.6	6.8	6.8	6.7	7.1	7.2	7.2	7.9	8.3	8.5
% Growth (yoy)				18%	17%	8%	-18%	6%	6%	18%	17%	18%
% Laser Revenue	5%	4%	6%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Services, parts, accessories	9.2	9.6	9.9	8.1	8.1	16.2	10.6	10.9	10.9	11.8	12.4	12.8
% Growth (yoy)				-13%	-12%	69%	7%	34%	34%	-27%	17%	18%
% Laser Revenue	7%	6%	6%	5%	5%	10%	6%	6%	6%	6%	6%	6%

# Valuation – Bull

	Q1 2013 (A)	Q2 2013 (A)	Q3 2013 (A)	Q4 2013 (A)	Q1 2014 (A)	Q2 2014 (A)	Q3 2014 (P)	Q4 2014 (P)	Q1 2015 (P)	Q2 2015 (P)	Q3 2015 (P)	Q4 2015 (P)
Revenue (by product line)	141.7	166.1	172.2	170.6	170.6	192.2	202	207	207	225	245	253
% Growth (yoy)					20%	16%	17%	21%	21%	17%	21%	22%
High power laser	75.1	85.4	95.8	100	100	104.1	120.7	126.0	126.0	131.2	152.1	158.8
% Growth (yoy)	19%	38%	42%	-13%	33%	22%	26%	26%	26%	26%	26%	26%
% Revenue	53%	51%	56%	59%	59%	54%	60%	61%	61%	58%	62%	63%
Pulsed laser	33.3	40	34.4	28.8	28.8	32.4	32.0	26.8	26.8	30.1	29.8	24.9
% Growth (yoy)	21%	5%	-32%	67%	-14%	-19%	-7%	-7%	-7%	-7%	-7%	-7%
% Revenue	24%	24%	20%	17%	17%	17%	16%	13%	13%	13%	12%	10%
Medium power	10.4	15.7	14.2	17.5	17.5	21.6	19.2	23.6	23.6	29.2	25.9	31.9
% Growth (yoy)	9%	41%	27%	43%	68%	38%	35%	35%	35%	35%	35%	35%
% Revenue	7%	9%	8%	10%	10%	11%	9%	11%	11%	13%	11%	13%
QCW laser	3.9	5.6	6.5	5.6	5.6	8.1	9.1	7.8	7.8	11.3	12.7	11.0
% Growth (yoy)	>100	>100	>300	43%	44%	45%	40%	40%	40%	40%	40%	40%
% Revenue	3%	3%	4%	3%	3%	4%	5%	4%	4%	5%	5%	4%
Low power laser	4	3.6	2.8	3.8	3.8	3.1	2.6	3.5	3.5	2.9	2.4	3.3
% Growth (yoy)	6%	-14%	-28%	-7%	-5%	-14%	-7%	-7%	-7%	-7%	-7%	-7%
% Revenue	3%	2%	2%	2%	2%	2%	1%	2%	2%	1%	1%	1%
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Other products	5.8	6.2	8.6	6.8	6.8	6.7	7.3	7.5	7.5	8.2	8.9	9.2
% Growth (yoy)				18%	17%	8%	-15%	10%	10%	22%	21%	22%
% Laser Revenue	5%	4%	6%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Services, parts, accessories	9.2	9.6	9.9	8.1	8.1	16.2	11.0	11.3	11.3	12.3	13.4	13.8
% Growth (yoy)				-13%	-12%	69%	11%	39%	39%	-24%	21%	22%
% Laser Revenue	7%	6%	6%	5%	5%	10%	6%	6%	6%	6%	6%	6%

# Valuation – Bear

	Q1 2013 (A)	Q2 2013 (A)	Q3 2013 (A)	Q4 2013 (A)	Q1 2014 (A)	Q2 2014 (A)	Q3 2014 (P)	Q4 2014 (P)	Q1 2015 (P)	Q2 2015 (P)	Q3 2015 (P)	Q4 2015 (P)
Revenue (by product line)	141.7	166.1	172.2	170.6	170.6	192.2	186	190	190	206	206	212
% Growth (yoy)					20%	16%	8%	11%	11%	7%	11%	12%
High power laser	75.1	85.4	95.8	100	100	104.1	111.1	116.0	116.0	120.8	128.9	134.6
% Growth (yoy)	19%	38%	42%	-13%	33%	22%	16%	16%	16%	16%	16%	16%
% Revenue	53%	51%	56%	59%	59%	54%	60%	61%	61%	59%	63%	63%
Pulsed laser	33.3	40	34.4	28.8	28.8	32.4	30.3	25.3	25.3	28.5	26.6	22.3
% Growth (yoy)	21%	5%	-32%	67%	-14%	-19%	-12%	-12%	-12%	-12%	-12%	-12%
% Revenue	24%	24%	20%	17%	17%	17%	16%	13%	13%	14%	13%	11%
Medium power	10.4	15.7	14.2	17.5	17.5	21.6	17.0	21.0	21.0	25.9	20.4	25.2
% Growth (yoy)	9%	41%	27%	43%	68%	38%	20%	20%	20%	20%	20%	20%
% Revenue	7%	9%	8%	10%	10%	11%	9%	11%	11%	13%	10%	12%
QCW laser	3.9	5.6	6.5	5.6	5.6	8.1	7.8	6.7	6.7	9.7	9.4	8.1
% Growth (yoy)	>100	>100	>300	43%	44%	45%	20%	20%	20%	20%	20%	20%
% Revenue	3%	3%	4%	3%	3%	4%	4%	4%	4%	5%	5%	4%
Low power laser	4	3.6	2.8	3.8	3.8	3.1	2.5	3.2	3.2	2.6	2.1	2.7
% Growth (yoy)	6%	-14%	-28%	-7%	-5%	-14%	-10%	-15%	-15%	-15%	-15%	-15%
% Revenue	3%	2%	2%	2%	2%	2%	1%	2%	2%	1%	1%	1%
Laser Revenue subtotal	126.7	150.3	153.7	155.7	155.7	169.3	168.8	172.3	172.3	187.5	187.5	192.9
Other products	5.8	6.2	8.6	6.8	6.8	6.7	6.8	6.9	6.9	7.5	7.5	7.7
% Growth (yoy)				18%	17%	8%	-22%	1%	1%	12%	11%	12%
% Laser Revenue	5%	4%	6%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Services, parts, accessories	9.2	9.6	9.9	8.1	8.1	16.2	10.1	10.3	10.3	11.3	11.2	11.6
% Growth (yoy)				-13%	-12%	69%	2%	28%	28%	-31%	11%	12%
% Laser Revenue	7%	6%	6%	5%	5%	10%	6%	6%	6%	6%	6%	6%

# Valuation – Operating Expenses

Cost of revenue	66	77	79	81	81	88	92	95	95	103	108	111
% increase		17%	3%	3%	0%	8%	5%	2%	0%	9%	5%	3%
Gross profit	76	89	93	89	89	104	102	104	104	114	120	123
% Growth		18%	4%	-4%	0%	17%						
Gross Margin	53.3%	53.5%	53.9%	52.3%	52%	54%	53%	53%	53%	53%	53%	53%
Operating expenses												
Research and development	8.8	10.5	11.5	10.9	12.8	13.4	15.6	15.9	15.9	17.3	18.2	18.8
% of Revenue	6.2%	6.3%	6.7%	6.4%	7.5%	7.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Sales and Marketing	5.9	6.8	6.8	7.2	7.2	8.0	7.8	7.6	7.4	7.6	8.0	8.2
% of Revenue	4.1%	4.1%	3.9%	4.2%	4.2%	4.2%	4.0%	3.8%	3.7%	3.5%	3.5%	3.5%
General and Administrative	11.8	12.8	13.2	13.0	12.9	13.1	13.2	13.5	12.9	14.1	14.8	15.2
% of Revenue	8.3%	7.7%	7.7%	7.6%	7.6%	6.8%	6.8%	6.8%	6.5%	6.5%	6.5%	6.5%
Loss (Gain) on foreign exchange	(0.5)	(0.1)	1.6	1.6	(1.4)	0.9	1.0	1.0	1.0	1.1	1.1	1.2
% of Revenue	-0.3%	-0.1%	0.9%	0.9%	-0.8%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Total operating expenses	26.0	30.0	33.0	32.7	31.5	35.5	37.6	38.0	37.2	40.1	42.1	43.4
% of Revenue	18.3%	18.1%	19.2%	19.1%	18.5%	18.5%	19%	19%	19%	19%	19%	19%
Operating income	49.5	58.8	59.8	56.6	57.7	68.7	64.6	66.5	67.3	73.7	77.5	79.7
% Growth		19%	2%	-5%	2%	19%	-6%	3%	1%	10%	5%	3%
Operating Margin	35.0%	35.4%	34.7%	33.2%	33.8%	35.7%	33.2%	33.4%	33.8%	34.0%	34.0%	34.0%
Interest Expense	0	0	-0.1	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
% of Revenue	0.0%	0.0%	-0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Other income (expense)	0	0	-1.3	-1.5	1.7	-0.7	0	0	0	0	0	0
% of Revenue	0%	0%	-1%	-1%	1%	0%	0%	0%	0%	0%	0%	0%
Income before taxes	49.5	58.8	58.3	55.1	59.6	68.2	64.8	66.7	67.5	73.9	77.7	80.0
% Growth		19%	-1%	-6%	8%	14%	-5%	3%	1%	10%	5%	3%
Provision for income taxes	14.5	17.9	17.7	17.7	17.5	20.7	19.5	20.0	20.2	22.2	23.3	24.0
Tax Rate	29.3%	30.4%	30.4%	32.1%	30.1%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Net income from continuing operations	35.0	40.9	40.6	37.4	42.1	47.5	45.4	46.7	47.2	51.8	54.4	56.0
% Growth					20%	16%	12%	25%	12%	9%	20%	20%
Other												
% of Revenue												
Net income	35.0	40.9	40.6	37.4	42.1	47.5	45.4	46.7	47.2	51.8	54.4	56.0
% Growth					20.3%	16.0%	11.7%	24.8%	12.2%	9.0%	19.8%	20.0%
Net Margin	24.7%	24.6%	23.6%	21.9%	24.7%	24.7%	23.3%	23.5%	23.7%	23.9%	23.9%	23.9%



# Cost/power comparison

Material/thickness/cutting gas	CO <sub>2</sub> laser cutting speed and cost to cut 100 ft. of material	Fiber laser cutting speed and cost to cut 100 ft. of material
CRS/0.020 in./N <sub>2</sub>	992 in./min./\$0.26	2,362/\$0.05
CRS/0.118 in./N <sub>2</sub>	189 in./min./\$1.35	354 in./min./\$0.35
CRS/0.197 in./N <sub>2</sub>	83 in./min./\$3.07	189 in./min./\$0.66
SS/0.059 in./N <sub>2</sub>	378 in./min./\$0.67	1,654 in./min./\$0.09
Al/0.118 in./N <sub>2</sub>	189 in./min./\$1.35	331 in./min./\$0.38
CRS/0.250 in./O <sub>2</sub>	118 in./min./\$2.16	113 in./min./\$1.10
CRS/0.313 in./O <sub>2</sub>	99 in./min./\$2.57	99 in./min./\$1.26
CRS/787 in./O <sub>2</sub>	26 in./min./\$9.79	33 in./min./\$3.78
SS/0.236 in./N <sub>2</sub>	78 in./min./\$3.26	154 in./min./\$0.81
AL/0.236 in./N <sub>2</sub>	30 in./min./\$4.32	94 in./min./\$1.33