



3D Printing with Fiber Lasers

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IPG By the Numbers



+100K
INSTALL BASE



40,000
DEVICES SHIPPED IN 2019



6,000
EMPLOYEES

2/3rds
OF FIBER LASERS
MANUFACTURED WORLDWIDE

FOUNDED
1990



NASDAQ:
IPGP



40B
POUNDS LESS GLOBAL CO₂
EMISSION WHEN OPERATING
IPG LASERS COMPARED TO
OTHERS (2011-2018)



400 PATENTS
450 PENDING



24 TERAWATT HOURS
OF ELECTRICITY SAVINGS SINCE 2011

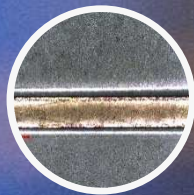
Materials Processing



CUTTING



WELDING



BRAZING



DRILLING



CLADDING



ADDITIVE
MANUFACTURING



MARKING



SURFACE
TREATMENT

GENERAL
MANUFACTURING
& OEM



HAN'S LASER

AUTOMOTIVE



SEMICONDUCTOR & ELECTRONICS



AEROSPACE



ADDITIVE MANUFACTURING

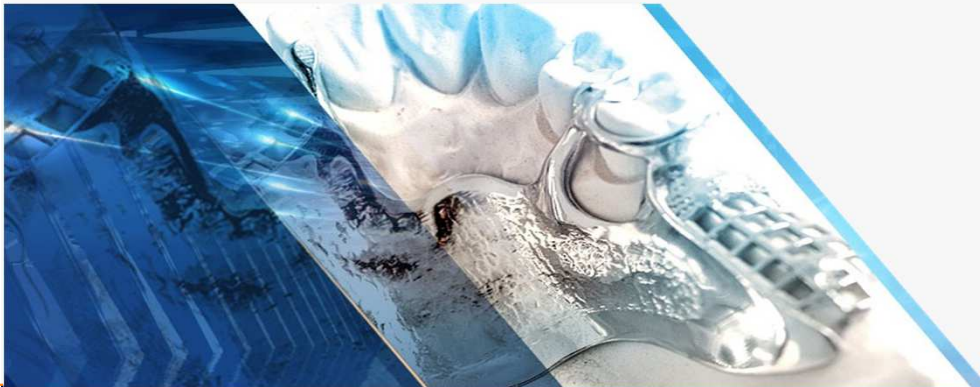


HEAVY INDUSTRY



IPG Laser Sources for 3D Printing

- Up to 1000W Ytterbium Single Mode
- For Highest Resolution, Quality and Performance
- OEM Modules & 19" Rack



OEM Modules

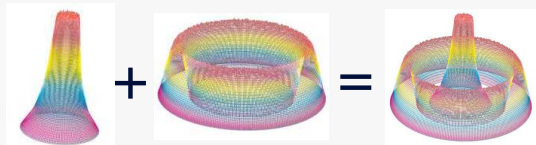


19" Rack

IPG Laser Sources for 3D Printing

Increasing build-up rate:

- **Multiple Laser Sources**
 - up to 12x 1kW
- **Beam Shaping - Adjustable Mode Beam (AMB)**
 - Combination Single Mode & Multi Mode
 - up to 25kW



Core Beam

Ring Beam

AMB Beam



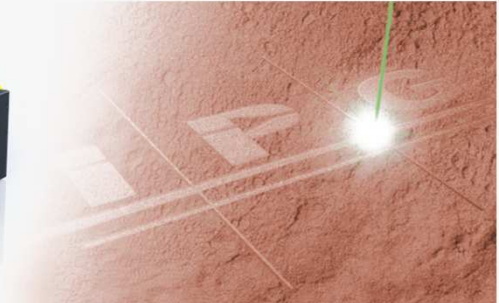
Example Machine NXG XII 600
Source: SLM Solutions



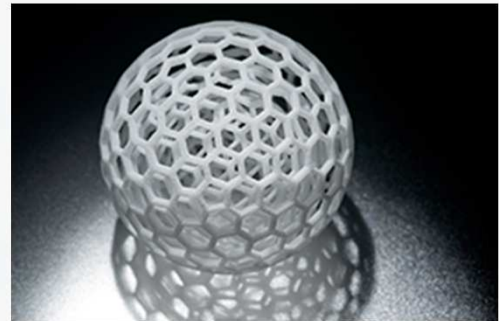
IPG Laser Sources for 3D Printing

Align to specific materials:

- **Green Single Mode Fiber Laser for high reflective Material**



- **Thulium and Raman Fiber Laser for polymer Material (1.7 - 2 μ m)**



Conclusion

What can IPG do for EPIC network:

- market leading supplier for 3D Printing Industry
- proven and broadest portfolio

What can EPIC network do for IPG:

- discuss business cases to improve rate + reliability + repeatability
- partner who take high power, compact footprint and different beam propagation into new designs