

Flexibly Your Laser Partner

convergent





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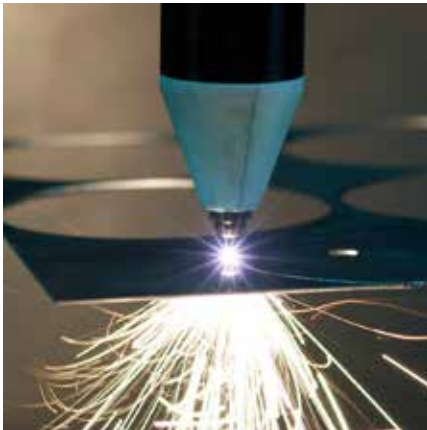
Laser Cutting and Welding

High quality cutting and welding performance of **Convergent Photonics** fiber and CO₂ laser is primarily a result of:

- Laser beam quality (mode) that is optimized for producing high quality cut edges in thin and thick material at a competitive speed.
- Laser beam that is round such that cut width is independent of cutting direction.
- Ability to deliver pulses having fast rise and fall times so as to minimize piercing time in cutting.
- Stable output over time in the environment of the manufacturing facility.

Application Guide

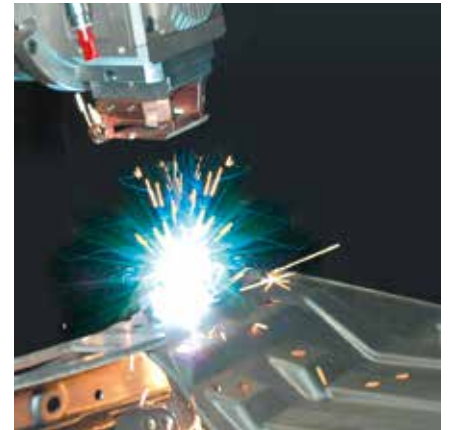
	CF1000	CF2000/3000/4000	CD6000	CT6000	CMxx/CX/CVxx	CLxx
Brazing			X	X		
Cladding		X	X	X		
Cutting	X	X		X	X	
Drilling						X
Heat Treating		X	X	X	X	
Welding	X	X	X	X	X	
Additive Manufacturing	X					



Laser cutting of 0.5 mm thick stainless steel sheet using a **Convergent Photonics** CF3000 fiber laser.



Precision cutting of an aircraft engine component using **Convergent Photonics** CL50k Nd:YAG laser.



Laser welding titanium alloy using **Convergent Photonics** CV5000 CO₂ laser.



3D bevel cutting of 12mm mild carbon steel using **Convergent Photonics CV5000 CO₂ laser**.



Laser cutting of stainless steel combustor using **Convergent Photonics CX3000 CO₂ laser**



Laser drilling of aerospace turbine blade and vanes using **Convergent Photonics CL50k Nd:YAG laser**.

Pulsing

The piercing performance of the laser, particularly in mild steel, is influenced by its pulsing characteristics. Since much of stainless steel cutting uses nitrogen assist, continuous wave (CW) cutting is used primarily for these materials.

Convergent Photonics lasers give fast (~60microsecond for CO₂ lasers, ~20 microsecond for Fiber lasers) rise time on the pulse that contributes to faster piercing.

Laser Drilling

High speed, high profile laser drilling requires high peak power that **Convergent Photonics** flashlamp pumped Nd:YAG lasers are designed for. At 50kW maximum peak power, CL Series lasers can drill as small as 0.1mm diameter hole on uncoated or thermal barrier coated components. At 0.25mm diameter, the laser is capable of drilling aerospace quality cooling hole of 25mm deep at angle as shallow as 10 degrees to the surface, in a fraction of time of other processing methods.

It is no surprise that **Convergent Photonics** Nd:YAG lasers have been aerospace and energy industry standard for laser drilling for more than 30 years.

High Peak Power

50kW maximum peak power, with variable pulse width and pulse frequency, **Convergent Photonics** Nd:YAG is unmatched in speed and quality of deep hole drilling.

Variable Spot Size

Equipped as standard device, Variable Spot Module enables adaptive hole size control for percussion drilling.

Drilling on the Fly

Percussion drilling can be efficiently performed using “*Drill on the Fly*” feature, where laser beam pulsing can be synchronized to the CNC encoder feedback.

Cutting Capability

Typical cutting capability represented by maximum thicknesses for mild steel, stainless steel, aluminum, copper and brass is shown in the table below.

	CX2500	CX3000	CX4000/ CM4000	CV5000/ CV6000	CF2000	CF3000/ CF4000
Mild Steel	15 mm	20 mm	25 mm	25 mm	15 mm	20 mm
Stainless Steel	8 mm	10 mm	15 mm	20 mm	8 mm	12 mm
Aluminum	5 mm	8 mm	12 mm	12 mm	6 mm	8 mm
Copper	-	-	-	-	4 mm	5 mm
Brass	-	-	-	-	4 mm	5 mm

Back reflection protection

With the growing popularity of fiber lasers in sheet metal cutting and welding applications, users are increasingly aware of one weakness of fiber lasers: vulnerability against back-reflection from the metal work-piece.

Even with high power QBH or QD delivery cables designed to handle kW-level back-reflection stripping from the fiber cladding, back-reflected light couples into the core of the delivery cable which then couples back into the fiber laser. Even with fiber lasers from leading suppliers, through numerous painful lessons, system integrators have learned that laser combiners, and/or modules can be damaged if back-reflection protection is not robust.

Building upon Convergent Photonics' years of experience in high power industrial lasers, the new CF series lasers have incorporated **cutting-edge back-reflection prevention techniques** suitably distributed through-out the laser. The coupled back-reflection is stripped through proprietary mode-stripping techniques, and safe dissipation of unwanted light, at critical points in the laser.

These sophisticated back-reflection techniques have also been tested, and their robustness demonstrated, in -kW level fiber amplifiers that are much more sensitive to back reflected light. Incorporating these back reflection protection schemes in the new CF series fiber lasers has resulted in unparalleled performance in cutting and welding a variety of highly reflective metallic material from as thin as <0.5mm to as thick as 25mm. Compared to third parties typical performances, and depending on material and set-up, Convergent Photonics laser is 3 to 30 times more resistant to back reflection due to focal errors, according to the optical configuration.

Specifically, CF laser systems incorporating these protection schemes have been demonstrated to be tolerant to positional offsets of many multi-millimeters from the focal position, during extensive cutting trials in brass and copper. In contrast fiber lasers from other competitors exhibit much smaller offset tolerances away (either+/-) from the focal position; CF lasers have exhibited virtually no false-faults or reliability issues when operating with this unique, proprietary protection scheme.

CF SERIES - High Power Industrial Fiber lasers

Convergent Photonics CF Series fiber lasers are designed to deliver the best performance in material processing to better suit the customer needs. Its modular and robust design is highly efficient and compact with output powers up to **4kW**. The CF series lasers guarantees high reliability, superior performance, and low operational cost with virtually no maintenance required. The lasers are equipped with a patented PLe certified high speed electronic shutter to ensure safety while process interlocks are not secure. The CF lasers are very easy to integrate into different machine configurations. The lasers require less floor space than other conventional lasers, this along with the standard laser delivery cable of 30 meters in length; makes the physical laser placement very flexible. In addition, lasers can be configured with an optional FFS (Fiber-Fiber-Switch) which allows the laser to be time shared with multiple workstation processes to maximize efficiencies. The user friendly MMI software is simple to use and continuously monitors the laser performance and records data for analysis.



CF1000

CF1000



Features of CF1000 fiber laser are:

- Flexible laser beam delivery, up to 5 m standard delivery fiber length, longer lengths upon request
- High electro-optical efficiency, up to 32% wall-plug efficiency
- High peak energy in pulsed mode
- Simple, compact, maintenance free and robust design
- 19" Rack configuration integrated Power Supply with communication cards
- 19" Rack configuration Fiber Laser Module normally utilized on multi-kilowatt products

General Specifications

		CF1000		
		Min	Typ.	Max
Nominal Output Power		1000W		
Power Range		200 W	1000 W	1050 W
Power Stability		Typ. ± 1%		Typ. ± 2%
Pulsing Frequency		0 -5 kHz		
Wavelength		1070nm		1080nm
Polarization		Random		
Feeding fiber core diameter		20 µm or 50 µm		
Beam Parameter Product (1/e2)		0.8 mm*mrad		1 mm*mrad
Electronic Shutter On/Off Time		N/A		
Feeding fiber length		5 m		
Minimum bend radius		100 mm		
Output connector		QBH		
Estop Safety		PLe		
Diode Pointing Laser		Wavelength 635/658 nm Power <1 mW		
Electrical Power Consumption		3.3 kW		4.0 kW EOL
Voltage (50-60 Hz.)		90	220	364
Operating Environment (min/max)		5° C / 50° C		
Relative Humidity		< 95% non-condensing		
Laser Cooling		Cooling Cap. 2.3 kW*		
35% Glycol Mix	Cooling Cap.	2.3 kW*		
	Pressure	3 Bar	5 Bar	7 Bar
	Flow	7 l/Min	8 l/Min	10 l/Min
		Temp. 20° C ±1		
Process Fiber Cooling	Cooling Cap.	0.3 kW		
	Pressure	1.5 Bar	3 Bar	4 Bar
	Flow	1 l/Min	1.5 l/Min	2 l/Min
		Temp 27° C		
Dimensions W / H / L	Power Supply	501 mm/133 mm/787 mm (3U)		
	FLM	501 mm/89 mm/787 mm (2U)		
Weight	Power Supply	64 Kg		
	FLM	23.5 Kg		
Connections	Coolant	10 mm push lock fitting (x2)		
Ingress Protection Rating (IEC60529)		See Note**		

*Note: Additional 1kW suggested for power meter cooling during service.

**Note: The laser needs to be protected from dust ingress that will interfere with operation of the unit, and from water splashed onto it. The specified test period is 8 hours, with maximum of 80 cabinet volumes of air exchanged with surroundings.

CF2000

CF3000

CF4000



CF4000 Fiber Laser



Convergent Fiber Pump Module

CF2000 - CF3000 - CF4000

Main features:

- Flexible laser beam delivery, up to 30 m delivery fiber length
- High electro-optical efficiency, over 30% wall-plug efficiency
- Patented high speed electronic shutter [100 ms]
- Highly resistant to back-reflection, compatible with all metal materials including copper and brass
- Simple, compact, maintenance free and robust design

New CF Series features include:

- Optimized beam profile for both thin and thick sheet metal cutting and welding
- Capable cutting up to 20mm mild steel

	CF2000/CF3000/CF4000
	100 µm feeding fiber
Feeding fiber core diameter	100 µm
Feeding fiber length	20 m (30 m under request)
Minimum bend radius	200 mm
Output connector	QBH
Beam Parameter Product (1/e ²)	3,5 mm mrad

CF lasers metal cutting typical capabilities are given below. Real performances depend also on beam delivery system and cutting head design.

	CF2000	CF3000	CF4000
Mild Steel	15 mm	20 mm	
Stainless Steel	8 mm	12 mm	
Aluminum	6 mm	8 mm	
Copper	4 mm	5 mm	
Brass	4 mm	5 mm	

General Specifications

	CF2000	CF3000	CF4000
Max Average Power	2000W	3000W	4000W
Wavelength	1080 nm		
Operating Environment (min/max)	5° C/50° C (40° F/120° F)		
Relative Humidity	< 95% non-condensing		
Diode Pointing Laser	Wavelength 635/658 nm Power <1 mW		
Electrical Power Consumption	7kW	10 kW	12,5 kW
Voltage	360 - 490 VAC, 3-phase		
Dimensions W/H/L	830 mm/1020 mm/830 mm		
Weight	220 Kg	250 Kg	290 Kg
Connections	0.75 inch hose barb (x2)		
	8 mm tube fitting		
Ingress Protection Rating (IEC60529)	IP54 (NEMA13 equivalent)		

CT6000

CT6000 – High Power Twin Laser

CT6000 Convergent Photonics laser is an innovative concept laser based on patented technology. It is equipped with two different process fibers, one with high power low brightness for welding/brazing (BPP = 66 mm*mrad), one at lower power higher brightness (BPP = 4 mm*mrad) for cutting/remote welding .

At the push of a button the laser can switch between one fiber and the other, allowing:

- maximum flexibility, as the same laser suits all possible applications
- wider application spectrum (cutting, laser welding, brazing, cladding)
- lower ownership cost
- optimal for low to medium production capacity, switching over different jobs

Switching from a configuration to the other does not require recalibration or adjustment, and require just a few seconds. The laser will supervise the fiber safety of both cables independently, and allows to use one process fiber while the other is disconnect or its working cell is accessed to change part.

CONVERGENT PHOTONICS laser CT6000 is equipped with n. 2 exit fibers a 100 µm core feeding fiber on the fiber side, a 600 µm core feeding fiber on diode side:



CT6000 with integrated chiller.

Hybrid		
	Diode	Fiber
Feeding fiber length	20 m	
Minimum bend radius	200 mm	
Feeding fiber core diameter	600 µm	100 µm
Output connector	QD	QBH
Beam quality	66 mm*mrad	4 mm*mrad
Safety functions Performance Level(*)	PL c	

Building upon Convergent Photonics' years of experience in high power industrial lasers, the new CT series lasers have incorporated cutting-edge back-reflection prevention techniques, suitably distributed through-out the laser. The coupled back-reflection is stripped through proprietary mode-stripping techniques, and safe dissipation of unwanted light, at critical points in the laser.

*Note: as per EN ISO 13849:2008



General Specifications

	CT6000	
Electrical power input (Total)	27,6 kW	
Electrical power input Laser w/o chiller	20 kW	
Voltage 3P + PE	400 V(min.) - 460V (max) ± 10%	
Frequency	50/60 Hz	
Operating conditions		
Ambient temperature	10 °C (min) - 42 °C (max)	
Relative humidity	95% non-condensing	
Nominal optical power output (Fiber)	4000-4200 W	
Nominal optical power output (Diode)	6000-6200 W	
Power stability	± 2% max	
Polarization	Random	
Fiber exit wavelength (nm)	1070 (min) - 1080 (max)	
Diode exit wavelength (nm)	910 (min) - 960 (max)	
Line width (FWHM)	5 nm (max)	
Pulse		
ON/OFF time	80 µs	
Repetition rate	5 kHz (max)	
Electronic shutter		
ON/OFF time	200 ms (max)	
Safety (*)	PL e	
Aiming diode		
Wavelength	635 nm	
Power output	< 1mW	
Laser class (**)	4 (IV)	
Cabinet protection	IP54	
Cooling (Integrated Water-Water Chiller)		
Required capacity	15kW	
Inlet temperature	15° -27° C	
Nominal inlet pressure	3 bar	
Max inlet pressure	6 bar	
Minimum flow rate	30 l/min	
Max flow rate	35 l/min	
Fluid	Tap Water	
Filter requirement	100 µm	
Cooling (Without Integrated Water-Water Chiller)		
	Laser Circuit	Optics Circuit
Required capacity	14kW	1kW
Inlet temperature	20 °C ± 1 °C	25 °C ± 3 °C
Nominal inlet pressure	3 bar	1.5 bar
Max inlet pressure	6 bar	3 bar
Minimum flow rate	60 l/min	30l/min
Fluid	Distilled water with 35% DOWFROST™ HD	DI Water
Filter requirement	100 µm	
Dimensions (mm)		
Width	1050	
Height	2100/1300 (w/o chiller)	
Length	1050	
Weight (Kg)	950/650 (w/o chiller)	

*Note: as per EN ISO 13849:2008

**Note: as per IEC 60825-1:2007, EN 60825-1:2007, FDA Regulation 21 CFR Chapter J 1040.10.



CD6000 - High Power Diode Laser

CD6000 Diode laser has been designed for applications which do not require high brilliance (i.e. welding, brazing, cladding).

General Specifications

		CD6000	
Electrical power input (Total)		27,6 kW	
Electrical power input Laser w/o chiller		20 kW	
Voltage 3P + PE		400 V(min.) - 460V (max) ± 10%	
Frequency		50/60 Hz	
Operating conditions			
Ambient temperature		10 °C (min) - 42 °C (max)	
Relative humidity		95% non-condensing	
Nominal optical power output (Diode)		6000-6200 W	
Power stability		± 2% max	
Polarization		Random	
Diode exit wavelength (nm)		910 (min) - 960 (max)	
Line width (FWHM)		5 nm (max)	
Pulse			
ON/OFF time		80 µs	
Repetition rate		5 kHz (max)	
Electronic shutter			
ON/OFF time		200 ms (max)	
Safety (*)		PL e	
Aiming diode			
Wavelength		635 nm	
Power output		< 1mW	
Laser class (**)		4 (IV)	
Cabinet protection		IP54	
Cooling (Integrated Water-Water Chiller)			
Required capacity		15kW	
Inlet temperature		15 ° -27 °C	
Nominal inlet pressure		3 bar	
Max inlet pressure		6 bar	
Minimum flow rate		30 l/min	
Max flow rate		35 l/min	
Fluid		Tap Water	
Filter requirement		100 µm	
Cooling (Without Integrated Water-Water Chiller)		Laser Circuit	Optics Circuit
Required capacity		14kW	1kW
Inlet temperature		20 °C ± 1 °C	25 °C ± 3 °C
Nominal inlet pressure		3 bar	1.5 bar
Max inlet pressure		6 bar	3 bar
Minimum flow rate		60 l/min	30l/min
Fluid		Distilled water with 35% DOWFROST™ HD	DI Water
Filer requirement		100 µm	
Dimensions (mm)			
Width		1050	
Height		2100/1300 (w/o chiller)	
Length		1050	
Weight (Kg)		950/650 (w/o chiller)	

*Note: as per EN ISO 13849:2008

**Note: as per IEC 60825-1:2007, EN 60825-1:2007, FDA Regulation 21 CFR Chapter J 1040.10.

CPH-Fiber

Convergent Photonics Cutting Head

CPH-CO₂

The Convergent Photonics head is available both for equipping High Power CO₂ and Fiber laser cutting machines. For CO₂ version, lenses can be changed in fast and easy way thanks to the cartridge design of the head. With the set of lens provided (5" and 7,5") machine productivity and cutting quality are boosted. For Fiber version the head is equipped with a 7,5" and a protection glass underneath easy changeable.

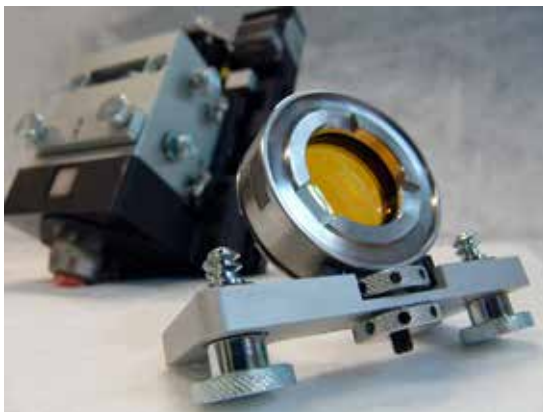


The cutting head is equipped with a **Safe Impact Protection System**, able to prevent any damage in case of contact.

The head is easy to integrate thanks to the interface plate equipped with magnets.

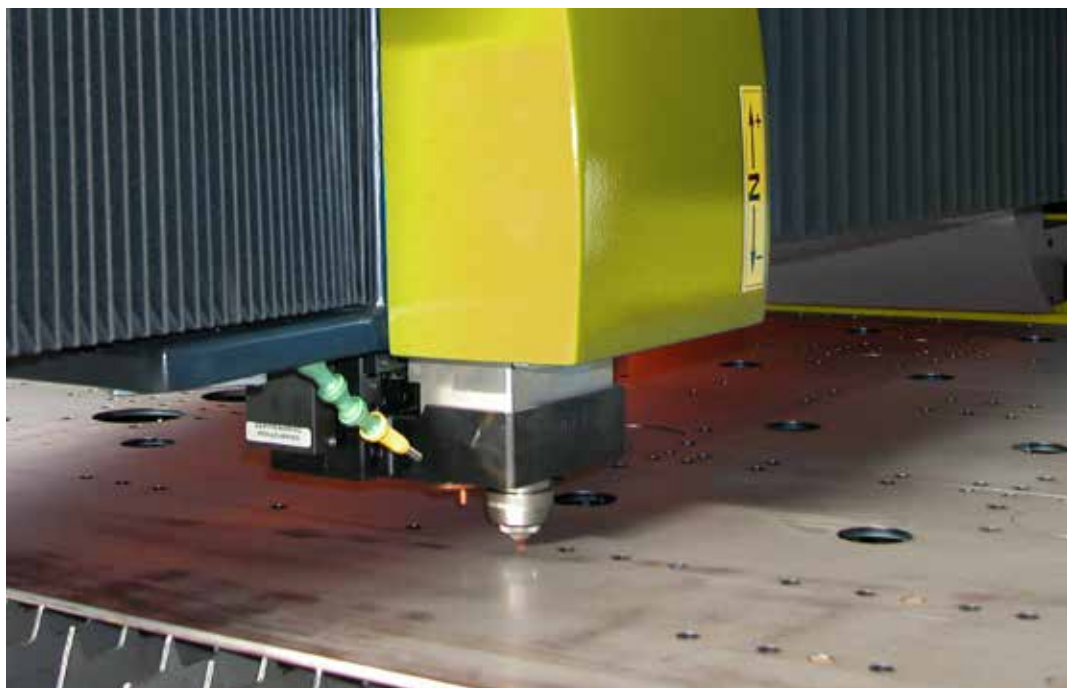
The F axis motor and relevant gear box, is available in different configurations (vertical or horizontal mount). It allows to change focal position during cutting, also when cutting with high pressure gas (up to 28 bar).

The head is equipped with a metallic capacitive sensor very robust (without ceramic fragile elements) and relevant electronic for stand-off automatic control easy to integrate in the most commonly used CNCs.



Technical Data

	CO ₂ version	Fiber version
Focal lens	5", 7,5"	7,5"
Focal axis stroke	24 mm	
Max Cutting Gas pressure	28 bar	
Max Optics air cooling pressure	3 bar	
Weight	12Kg	
Max Laser Power	5 kW	4 kW



CM4000



CM Series laser turbine with magnetic bearing saves maintenance cost.

CM Series

New CM Series features include:

- Low Gas Consumption - Total gas consumption as low as 5-15 L/H
- Energy Conservation Mode
- Solid State High Voltage Power Supply (4kW only)
- Magnetic Bearing Turbine
- Oil Free Transformer Power Supply

Convergent Photonics provides the highest performing, highly efficient and very reliable CO₂ Lasers for manufacturing.

New CM Series Lasers by Convergent Photonics, with optimum beam quality for laser processing, excel in cutting and welding broad range of materials and thicknesses.



CM4000 CO₂ Laser

		CM4000
Average Power		200 - 4000 W
Wavelength		10.6 μm
Beam Propagation Factor M2 typical (Prometec)		2.0 - 2.4
Beam Divergence		1.5 mrad half angle
Beam Diameter at Output		14.5 mm @ 1/e2, 19 mm full beam
Pulsing Pulse Rep. Rate		0-2 kHz
Pulse Width		>100 μseconds
Pointing Stability		+/-150 μrad
Ambient Temperature (min/max)		10° C/40° C (50° F/104° F)
Relative Humidity		<95% non-condensing
Diode Pointing Laser		Wavelength 635 nm Power <1 mW
Electrical Power Consumption		34 kW
Voltage		400 - 460 ± 10% VAC, 3-phase
Cooling	Required capacity	30kW
	Inlet temperature	18° - 20° C
	Nominal inlet pressure	4 Bar
	Max inlet pressure	5 Bar
	Minimum flow rate	133 Lpm
	Fluid	Distill Water/35% Glycol
Filter requirement		500 μm
Dimensions (mm) W x H x L		884 x 960 x 3156
Gas Consumption He (68%), N ₂ (36%), CO ₂ (4%)		5-15 LPH
Weight		1,200 kg
Ingress Protection Rating (IEC60529)		IP54 (NEMA13 equivalent)

CM Series Lasers with DC discharge are the most efficiently run industrial CO₂ laser available. Equipped with magnetic bearing turbine, smart gas feed system, and new reliable power supply, the laser requires minimal maintenance, and very low operational expense, reducing overall cost of ownership. CM Series Lasers are equipped with most recent technological advancement available to the fast flow CO₂ lasers.

- New turbine equipped with Magnetic Bearing rotating mechanism.
- Smart gas feed system to minimize laser gas consumption.
- New high voltage power supply with hi-tech resin. No more oil submerged components.

CX2500 CX Series

CX3000

CX4000

Convergent Photonics CX Series Lasers, designed with operational efficiency in mind for laser processing, are considered as the best economical fit for cutting and welding broad range of materials and thickness in 2D and 3D. Technologies used have been refined over years of development to ensure most economical solution to the users without sacrificing performance and reliability. CX Lasers main features are:

- High Reliability
- High Operational Efficiency
- Small Footprint

CX3000 CO₂ Laser



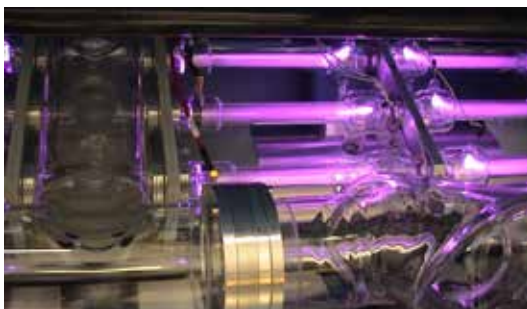
	CX2500	CX3000	CX4000
Average Power	200 - 2500 W	200 - 3000 W	200 - 4000 W
Wavelength	10.6 μm		
Beam Propagation Factor M2 typical (Prometec)	2.1 - 2.5		2.0 - 2.4
Beam Divergence	1.5 mrad half angle		
Beam Diameter at Output	14.5 mm @ 1/e ² , 19 mm full beam		
Pulsing Pulse Rep. Rate	0-2 kHz		
Pulse Width	>100 μseconds		
Pointing Stability	+/-150 μrad		
Ambient Temperature (min/max)	10°C/40°C (50°F/104°F)		
Relative Humidity	<95% non-condensing		
Diode Pointing Laser	Wavelength 635 nm Power <1 mW		
Electrical Power Consumption	29 kW	32 kW	37 kW
Voltage	400-460 ± 10% VAC, 3-phase		
Cooling	Required capacity	27 kW	34 kW
	Inlet temperature	18° - 20° C	
	Nominal inlet pressure	4 Bar	
	Max inlet pressure	5 Bar	
	Minimum flow rate	133 Lpm	
	Fluid	Distill Water/35% Glycol	
Filter requirement	500 μm		
Dimensions (mm) W x H x L	850 x 887 x 2551		855 x 883 x 3105
Gas Consumption - He (68%), N ₂ (36%), CO ₂ (4%)	20 - 70 LPH		20 - 40 LPH
Weight	1,137 kg		1,200 kg
Ingress Protection Rating (IEC60529)	IP54 (NEMA13 equivalent)		

CV5000 CV Series

CV6000

- High Quality Beam Output at High Power
- Magnetic Turbine Bearing to Minimize Maintenance Cost
- Solid State High Voltage Power Supply

Convergent Photonics CV Series Lasers with DC discharge are the most efficiently run industrial CO₂ lasers, available now with 5 and 6kW output models. With magnetic bearing turbine, the laser requires minimal maintenance; reducing total cost of ownership significantly. CV Series Lasers, with optimum beam quality for laser processing, excel in cutting and welding broad range of materials and thicknesses.



CV5000 CO₂ Laser

		CV5000	CV6000
Average Power		200 - 5000 W	200 - 6000 W
Wavelength		10.6 μm	
Beam Propagation Factor M2 typical		2.2 - 2.6	
Beam Divergence		1.5 mrad half angle	
Beam Diameter at Output		14.5 mm @ 1/e2, 19 mm full beam	
Pulsing	Pulse Rep. Rate	0-2 kHz	
	Pulse Width	>100 μseconds	
Pointing Stability		+/-150 μrad	
Ambient Temperature (min/max)		10° C/40° C (50° F/104° F)	
Relative Humidity		<95% non-condensing	
Diode Pointing Laser		Wavelength 635 nm Power <1 mW	
Electrical Power Consumption		40 kW	44 kW
Voltage		400-460 ± 10% VAC, 3-phase	
Cooling	Required capacity	36 kW	40 kW
	Inlet temperature	18° - 20° C	
	Nominal inlet pressure	4 Bar	
	Max inlet pressure	5 Bar	
	Minimum flow rate	133 Lpm	
	Fluid	Distill Water/35% Glycol	
	Filter requirement	500 μm	
Dimensions (mm) W x H x L		849,6 x 957 x 3119	
Gas Consumption - He (68%), N ₂ (36%), CO ₂ (4%)		20-70LPH	
Weight		1,200 Kg	
Ingress Protection Rating (IEC60529)		IP54 (NEMA13 equivalent)	



CL30k CL50k CLR

CL Series

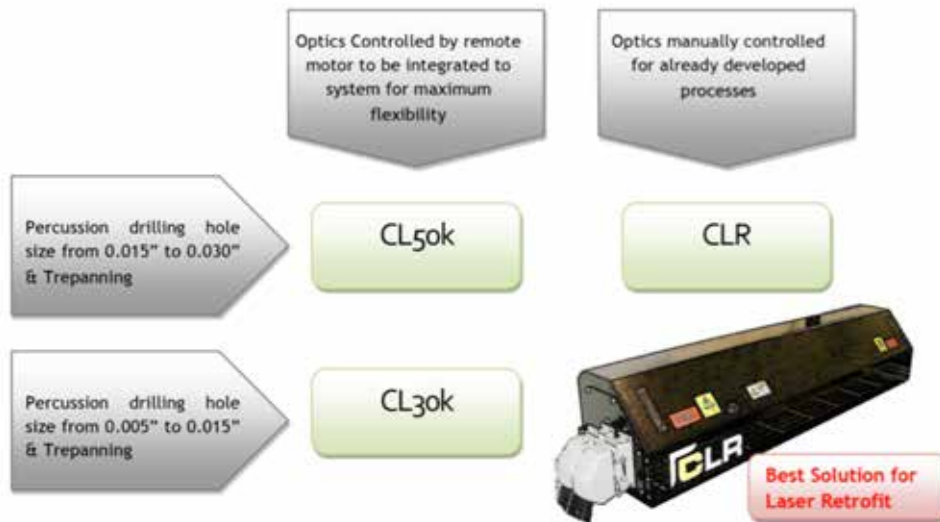
Today, world's 50% of laser drilling is performed by Convergent Photonics served Nd:YAG lasers. Our laser source is proven to work by various industries, including aerospace and land based turbine manufacturers and excel in percussion drilling and trepanning where very high peak power pulses up to 50 kW are demanded. Convergent Photonics CL Series Nd:YAG Pulse Lasers are specifically designed for laser drilling with features perfectly suited for drilling of cooling holes of turbine vanes, blades, shrouds, and combustor liners. CL Series lasers are also utilized in exotic aerospace material cutting.

Main features of CL Series are:

- High Peak Power Output for laser Drilling
- Drilling Spot Size Control
- Solid State Driving Flashlamp Power Supply

3 models are offered to meet user demands on percussion drilling and trepanning.

- CL30k best suited for small aerospace hole drilling as small as 0.1mm diameter with high profile.
- CL50k, 50kW peak power capable of drilling 25mm deep turbine blades and vanes cooling holes, as well as percussion drilling, trepanning, and cutting of combustion chamber.
- CLR is designed as upgrade for users' aging Nd:YAG laser.



	CL30k	CL50k	CLR
Excitation Source	Xenon Flashlamps		
Rated Maximum Output Power	150W	200W (HBICT) 250W (MBICT & LBICT)	
Rated Maximum Output Energy	30J	45J (HBICT) 50J (MBICT & LBICT)	
Rated Maximum Pulse Peak Power	30 kW	45 kW (HBICT) 50 kW (MBICT & LBICT)	
Power Stability	+/-5%		
Pulse Width Range	0.25 - 9.00msec, 0.01msec resolution		
Repetition Rate Range	1 - 200Hz, 0.1Hz resolution for < 50Hz, 1Hz > 50Hz		
Beam Propagation Ratio	M2<10	M2<20 (HBICT) M2<35 (MBICT) M2<40 (LBICT)	



CP4000 CO₂ Laser retrofitted with new magnetic bearing turbine to improve performance and lower the cost of maintenance.

Retrofit Your Convergent Product

Are you considering upgrading or retrofitting your **Convergent Photonics** lasers? We may be able to provide you with upgrade/retrofit kit and service which will surely provide you with good return on investment.

Convergent Laser Service

Convergent Photonics with expert laser engineers can support your equipment needs on site, over the telephone, or by e-mail.

Convergent Spare Parts

Convergent Photonics manufacturing facility holds extensive number of spare parts for current and legacy lasers to support production demand of laser users around the world.

Global Coverage

Convergent Photonics products are globally supported 24/7.



Get in contact with **Convergent Photonics** worldwide:

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History of Convergent Photonics

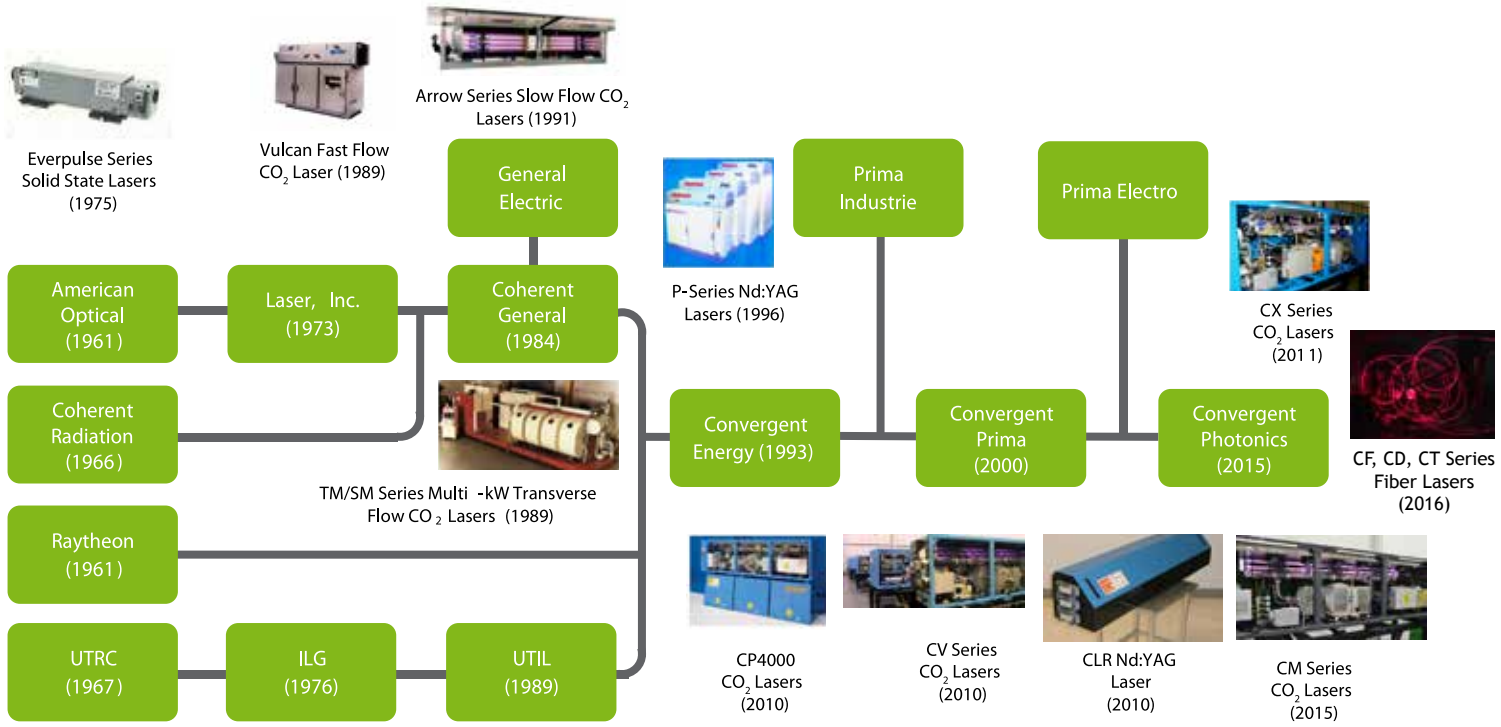
The history of Convergent Photonics dates back in 1961, shortly after the invention of the laser in 1960. The CO₂ product line of Convergent can be traced to 1966, with the start-up of Coherent Radiation (Palo Alto, CA). Coherent founders demonstrated their first CO₂ laser at the Westcon exhibition in the fall of 1966. The first customer for the laser was the Boeing Co. where it was used “to investigate cutting and welding titanium”.

In 1981, Laser Inc. began to purchase and assemble kits for CO₂ lasers from Coherent and shortly thereafter, Coherent acquired Laser Inc., which became the industrial arm of Coherent, producing several models of slow flow CO₂ lasers. Coherent General was formed in 1984 when General Electric made an investment in the company with the goal of obtaining a next generation Nd:YAG drilling laser. This business, which was now producing both CO₂ and Nd:YAG industrial lasers, was sold to Transtec in 1993, but, as part of the acquisition, Transtec was required to change the name no longer using ‘Coherent’.

The name Convergent Energy was then given to the laser business. During this same time, Transtec also acquired the rights for manufacturing and service of the Raytheon solid state laser products which had first appeared in the market also in the early 1960’s. Meanwhile, UTRC (United Technology Research Center) which was formed in 1967, had started developing high power CO₂ lasers (6 to 45 kW). The company that came out of the development was originally called the Industrial Laser Group (ILG) and, in 1989, was renamed United Technologies Industrial Lasers, or UTIL, headquartered in East Hartford, CT. This business was taken over by Transtec in 1994 when UTRC decided that it no longer wanted to pursue the industrial laser business, at which point Convergent Energy was renamed Convergent Lasers.

In 2000, Convergent Lasers was sold to Prima Industrie, becoming part of Prima Electro in 2011, under the brand name of Convergent. The third quarter of 2014 begun with the announcement that Convergent changed its name to Convergent Photonics, a strategic branding choice to communicate its new dynamic outlook and further underscoring the company’s drive to offer high reliability, innovative solutions to the market place. With this new identity, Convergent Photonics presents itself as a global supplier of photonics technologies and a myriad of high power industrial laser sources for materials processing. This transition heralds a new beginning for Convergent Photonics as it becomes a reliable international partner and provider to all leading OEMs, offering unparalleled customer satisfaction, worldwide.





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