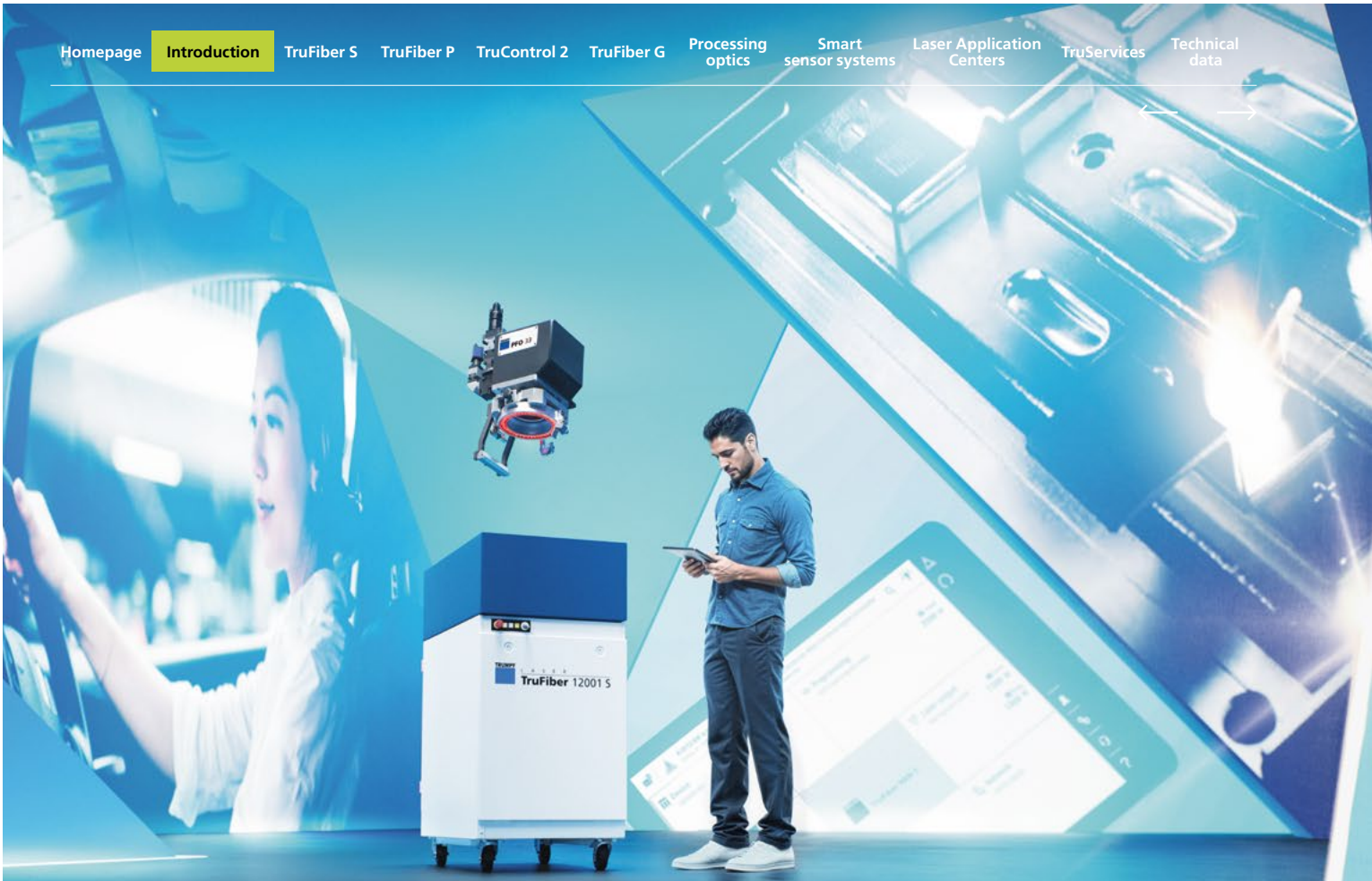
TRUMPF

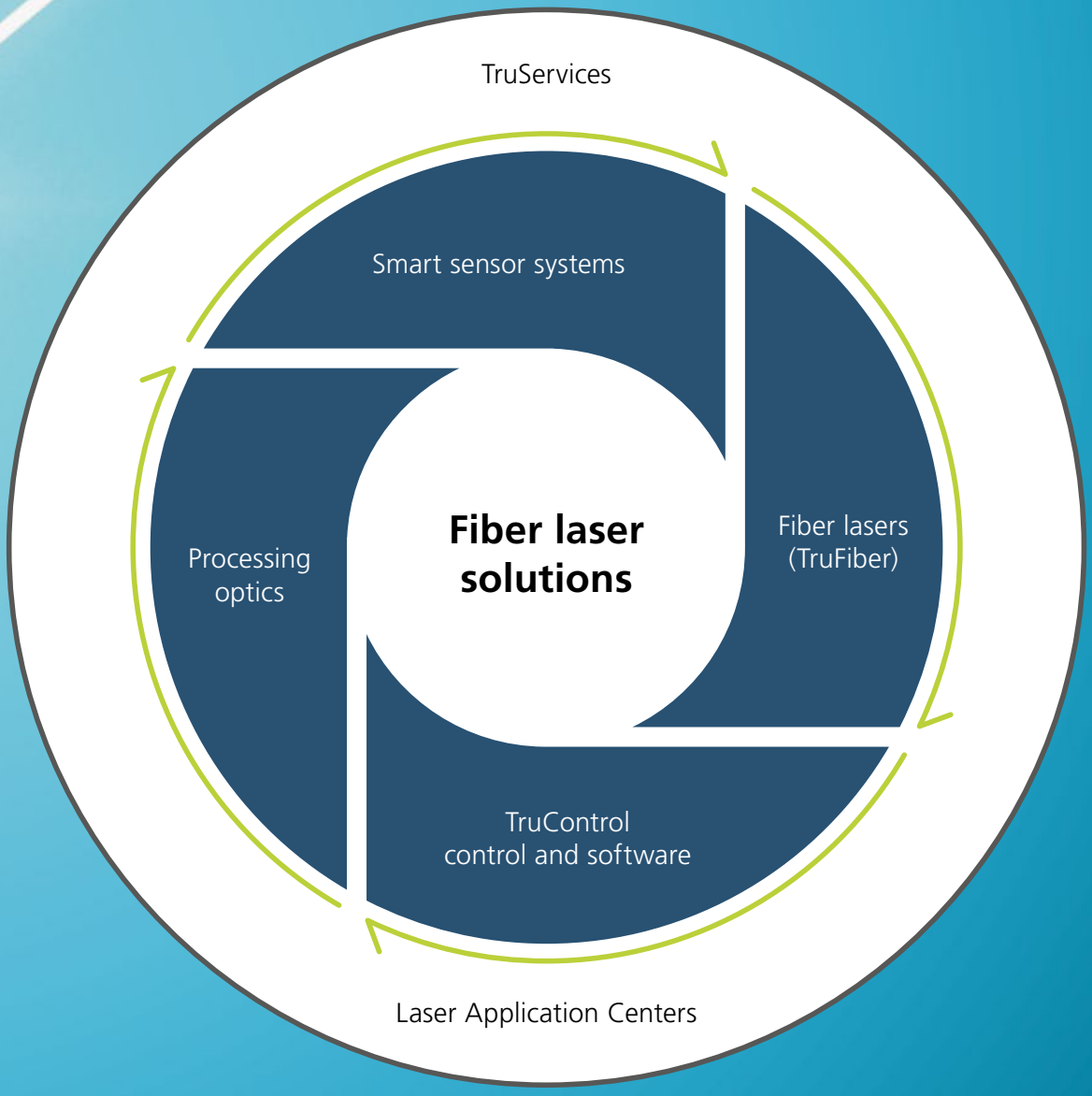
Imagine beyond imagination

The smartest fiber lasers. Ultimate solutions.

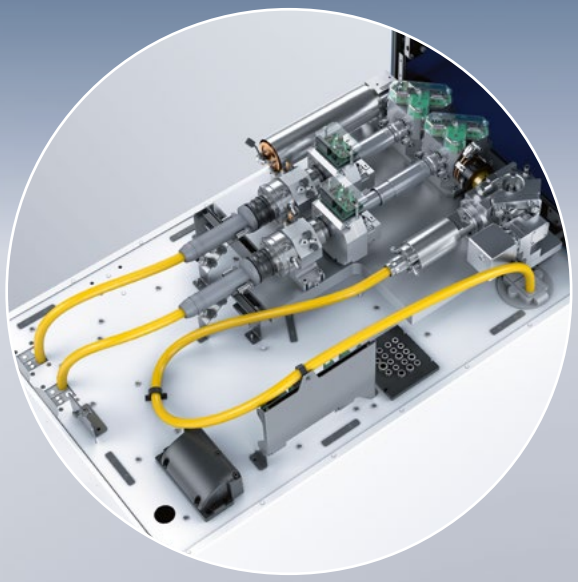


Experience unsurpassed performance with TRUMPF fiber laser solutions – tailored to your specific requirements for precision and reliability

With our portfolio of fiber lasers, you are ready for a wide range of laser applications. TRUMPF lasers have proven their strengths across a wide range of industrial applications, showing themselves to be effective, innovative and eco-friendly. At TRUMPF, we supply you with everything from a single source: lasers, sensors, optics, controls and services. Whatever your project or process – we will do everything to find the right solution for your needs.



TruFiber S



High-end fiber lasers for flexible use

The multimode fiber lasers of the TruFiber S Series are our all-rounders in the power range from 3 to 12 kW. A variable beam guidance system is integrated in the compact laser housing. The utilization of the lasers can be optimized by using several laser outputs. Our proven BrightLine Weld technology, in combination with a wide selection of pluggable laser light cables (LLK), ensures high-quality results at maximum welding speeds.

Key features

- **Multimode fiber laser with laser powers of 3 to 12 kW**
- **Variable beam shaping with up to 2 laser outputs**
- **BrightLine Weld for high-quality weld seams and virtually spatter-free laser welding**
- **Highest beam quality up to 12 kW laser power, with plug-in laser light cable**
- **With TruControl – the fastest and most intelligent laser control on the market**

For more information:
www.trumpf.com/en_GB/products/lasers/fibre-lasers/trufiber-s/

TruFiber P

Versatile fiber lasers

TruFiber P Series fiber lasers offer a power range from 0.5 to 6 kW. Thanks to selectable beam qualities, including singlemode up to 2 kW, they are also suitable for very specific applications. They are also characterized by high efficiency and consistent, high-quality process results.

Key features

- **Power range singlemode up to 2 kW, multimode from 0.5 to 6 kW**
- **1 laser output with spliced laser light cable**
- **Beam shaping with VariMode**
- **Reliable process stability and availability**
- **With TruControl – the fastest and most intelligent laser control on the market**

For more information:
www.trumpf.com/en_GB/products/lasers/fibre-lasers/trufiber-p/

TruControl 2

TruControl 2 is the most modern, intelligent and comprehensive laser control on the market. It was developed to optimally utilize the power of fiber lasers in every process step. From commissioning and setting up the system to programming the processes and monitoring operation. TruControl 2 offers extensive additional functions and can be used directly on the panel PC or remotely via a network connection.

Key features

- **Easy operation and setup of the complete system**
- **Wide range of interface options: Fieldbus, Ethernet, Digital I/O, Analog/digital real-time interface, OPC UA**
- **High availability and productivity**
- **Important process parameters at a glance**
- **Supports the user actively through fast and efficient diagnostics**
- **Any changes made to the system can be tracked and reversed in TruControl 2 at any time**
- **Perfect support in the event of malfunctions, Remote Support via TRUMPF Service**

TruFiber G

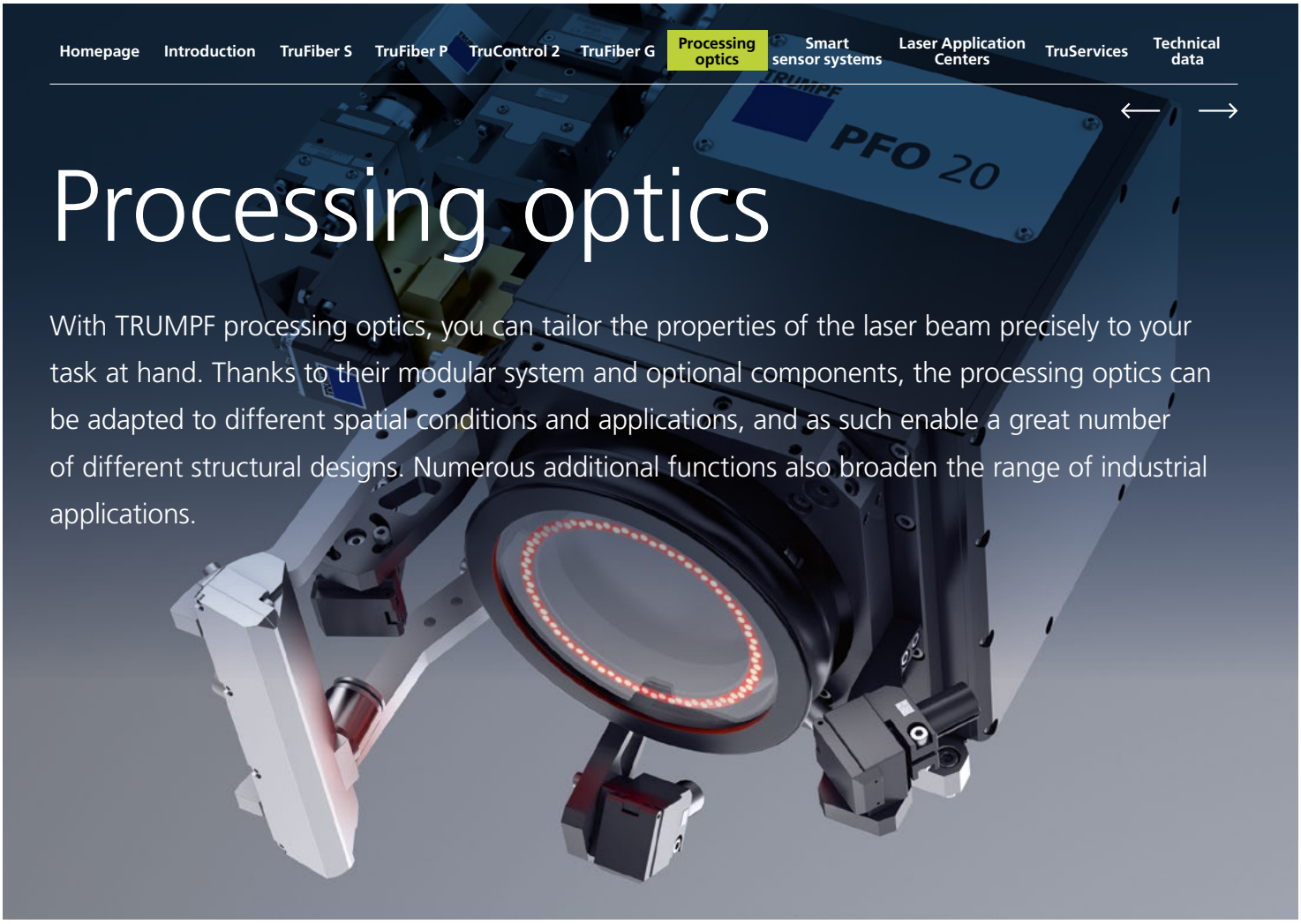
Cost-effectiveness in its simplest form

The TruFiber G Series features multimode fiber lasers with high beam quality and power levels of up to 12 kW. The BrightLine Mode laser variants have power levels of up to 6 kW. With a wide power spectrum and special features such as VariMode and BrightLine Mode, they are a highly cost-effective solution for cutting and welding applications.

Key features

- **Excellent performance at an attractive price**
- **Beam shaping in BrightLine Mode for low-spatter welding (power range 4 to 6 kW)**
- **Highest level of security (PLe) that integrators and users can rely on**
- **User-friendly, web-based control software Laser MC II**

For more information:
www.trumpf.com/en_GB/products/lasers/fibre-lasers/trufiber-g/



Processing optics

With TRUMPF processing optics, you can tailor the properties of the laser beam precisely to your task at hand. Thanks to their modular system and optional components, the processing optics can be adapted to different spatial conditions and applications, and as such enable a great number of different structural designs. Numerous additional functions also broaden the range of industrial applications.

Focusing optics

BEO D70-2

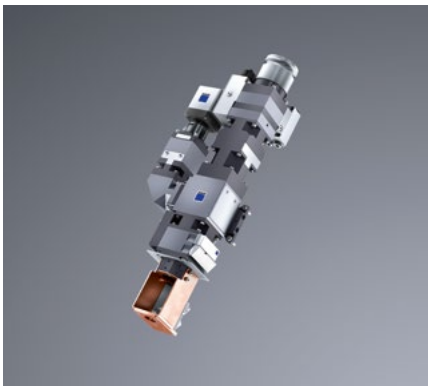
The BEO D70 was specially developed for laser welding at greater working distances and with a small focal diameter. With the optional Multifocus element, gas-tight weld seams can also be produced. Smart monitoring functions deliver enhanced reliability and process stability.

- **Laser power: max. 24 kW**
- **Laser: TruFiber S, TruFiber P**
- **Laser mode: Multimode**

BEO D50

Robust and compact, the BEO D50 features an enhanced crossjet function. It also boasts additional options such as shielding gas supply through a variety of nozzles and protective glass monitoring unit, making it the ideal processing optics solution for challenging manufacturing jobs.

- **Laser power: max. 8 kW**
- **Laser: TruFiber S, TruFiber P, TruFiber G**
- **Laser mode: Singlemode, multimode**



BEO D35

The BEO D35 is the most compact fixed-focus optical system in the BEO portfolio. Thanks to its robust design, it is suitable for a wide range of welding and cutting applications up to 4 kW.

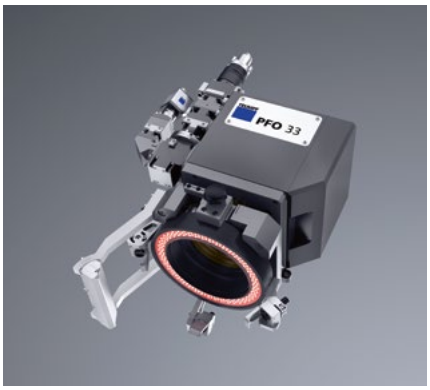
- **Laser power: max. 4 kW**
- **Laser: TruFiber S, TruFiber P, TruFiber G**
- **Laser mode: Singlemode, multimode**

Programmable focusing optics (PFO)

PFO 33

Thanks to lightweight mirrors and an innovative drive architecture, the PFO 33 offers maximum productivity and an extremely dynamic performance. Perfect integration of all the various mechanical and optical assemblies has resulted in a highly robust optics. Options such as the protective glass monitoring unit and real-time contour check make it an extremely reliable manufacturing tool.

- **Laser power: max. 12 kW**
- **Laser: TruFiber S, TruFiber P**
- **Laser mode: Singlemode, multimode**



PFO SF 20/33

The small-field scanner features lightweight mirrors and an innovative galvo architecture that enables high-frequency mirror movements. The remote control unit makes the small-field scanner compact and allows it to be flexibly adapted to a wide range of applications.

- **Laser power: max. 12 kW**
- **Laser: TruFiber S, TruFiber P**
- **Laser mode: Singlemode, multimode**

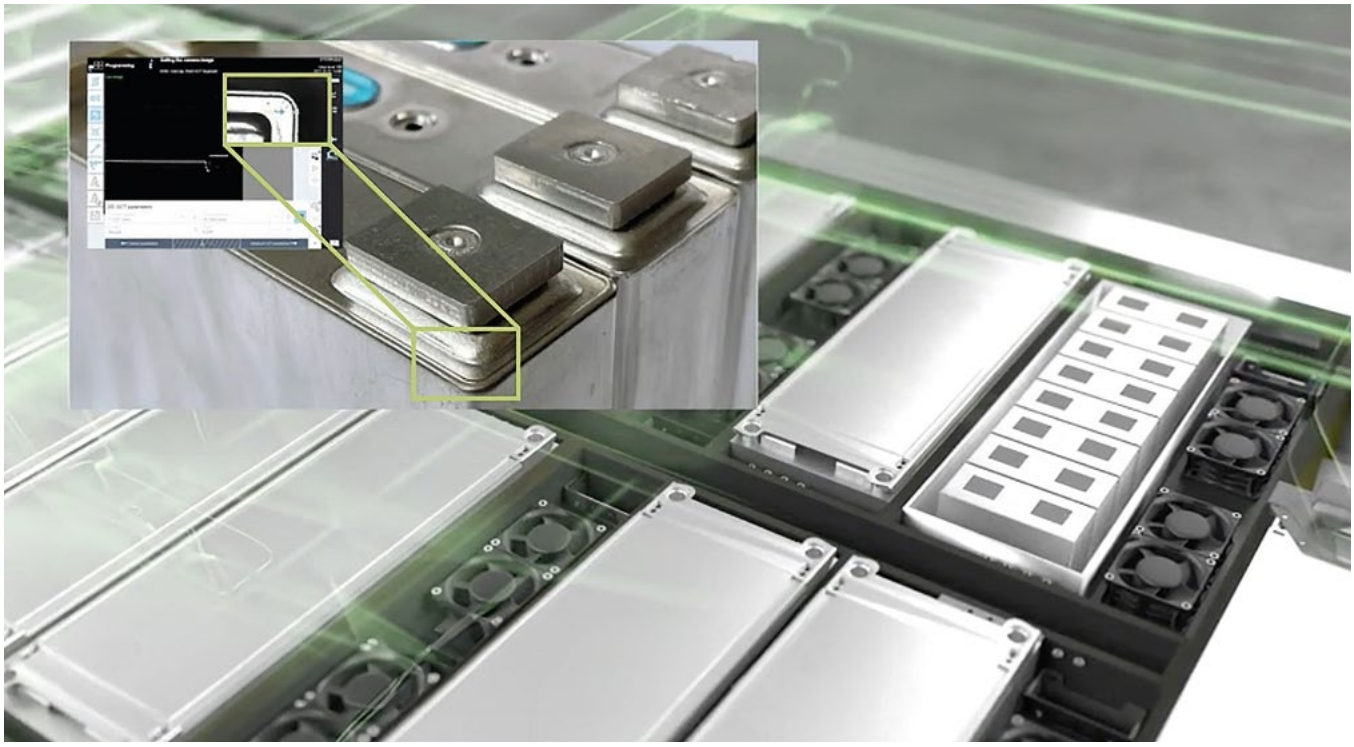
PFO 20

With up to 6 kW of laser power and a 100% work cycle, the PFO 20 sets the benchmark in the 20-mm aperture class. The scanner optics uses the same digital drive architecture as all the third-generation PFOs and therefore converts the full laser power into productivity, whether for surface processing or difficult welding jobs.

- **Laser power: max. 6 kW**
- **Laser: TruFiber S, TruFiber P**
- **Laser mode: Singlemode, multimode**

Smart sensor systems

Smart process sensor systems from TRUMPF monitor the quality of your operation, providing you continuously with data and controlling the process according to your specifications. Easily integrable in your optics, lasers or systems, our sensors help save you money by stabilizing production processes, preventing rejects and avoiding the unnecessary use of excess laser power.



VisionLine OCT Detect

VisionLine OCT Detect from TRUMPF is a camera-based image-processing system for use with cutting and welding applications. It combines a camera and optical coherence tomography (OCT) within a single unit. This generates 3D data that can be used for positioning and for checking the features of your component, irrespective of how it is illuminated or clamped. Using this data, the working distance to the component or to the clamping fixture can be measured, as well as any height differences in the component – to determine, for example, whether hairpins in an electric motor are of a different height. Suitable distinguishing features can be selected from a template library for use in a great variety of applications. This enables you to get the best out of your process and thereby the best for your component.

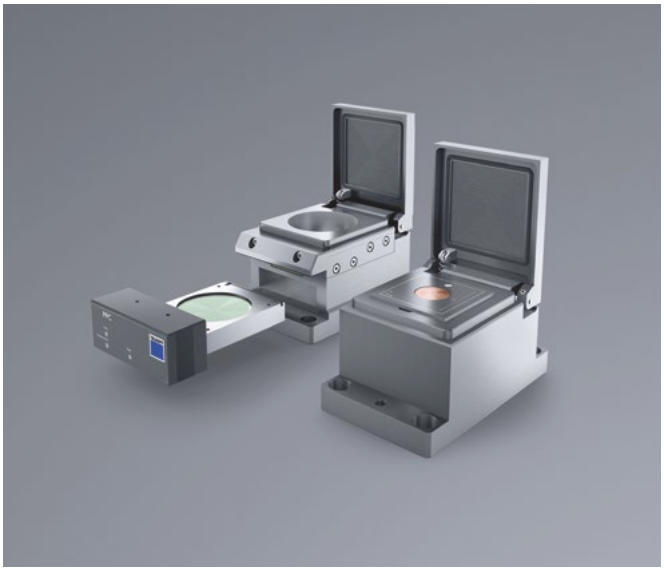
VisionLine Detect with AI Filter

By combining VisionLine Detect and the EasyModel AI training tool, you can optimize your production with AI. This improves feature detection and makes your process less susceptible to external influences such as dirt on the fixture, reflections from the component, difficult lighting conditions or fluctuations in upstream processes.

EasyModel AI is a cloud-based AI training platform that makes it easy to label data, even without programming knowledge. Powerful AI models can be created using just a small amount of training data. These can be used with the AI Filter option with VisionLine Detect.

VisionLine OCT Check

VisionLine OCT Check ensures the precise and reliable monitoring of welding depth. The use of optical coherence tomography (OCT) enables you to perform a process synchronous Quality Assurance – e.g., the measurement of vapor capillary depth during deep penetration welding. On the basis of this real-time data, you can then make informed decisions regarding process control. The geometry of the solidified weld seam is measured using an additional OCT scan.



CalibrationLine Power|Focus

CalibrationLine checks at regular, individually definable intervals whether the laser power and the focus position on the workpiece correspond to the actual laser control settings. If required, CalibrationLine realigns the program, using the TruControl software to correct the laser power and the focus position in the X, Y and Z axes. This ensures highly reproducible results.

Laser Application Centers

In our Laser Application Centers around the world, we provide advice on all the issues relating to processes, materials, fixtures and design. Thanks to our extensive laser portfolio, we can test your applications directly on a wide range of laser processing systems and find the best solution for your needs. Visit our Laser Application Centers to discover the latest lasers, laser machines and innovations from TRUMPF laser technology.

Draw inspiration from our product demonstrations – either live in the Laser Application Center or in a digital presentation. Our application experts are on hand to provide detailed advice and develop solutions tailored to your needs.

Our Laser Application Centers offer much more besides: as powerful R&D centers, they will work together with you and your ideas to develop new products and technologies.

TruServices. Your Partner in Performance

To ensure you continue to benefit from your lasers over the long term, we also offer a comprehensive range of services. We can help you create the optimal setup for your manufacturing process, get the very best out of your TRUMPF laser and adapt it in line with changing requirements. Whatever the process – together, we will find ways to maximize your added value on a lasting basis.

OPC UA interface

The bidirectional OPC UA interface gives you the option of connecting your own software to your laser. Using this standardized interface, you can access process and device data in real time and also control the laser. In addition, the laser can also be controlled using the OPC UA interface.

Smart View

Easy-to-read dashboards give you an overview of the current status of your laser. This enables you to independently monitor system status and any occurrences, and in so doing generate greater process transparency.

Condition Monitoring

Let TRUMPF experts and algorithms monitor your laser. At the first sign of anything abnormal, we contact you proactively. This helps avoid unscheduled downtimes in your production operation.

Quality Data Storage

Process-synchronous data storage and visualization of individually selectable data generated by your lasers, connected optics and process sensors. This data remains exclusively in your possession.

Technical data

TruFiber P

		TruFiber 300x P	TruFiber 400x P	TruFiber 600x P	TruFiber 50x–200x P
Laser power	W	3000	4000	6000	500–2000
Typical power stability	%	±1			
Adjustable power range	%	2–100			
Typical beam quality	mm· mrad	4			Singlemode: 0.3 Multimode: 2
Available LLK diameter	µm	100			Singlemode: 25 Multimode: 50–100
Wavelength	nm	1080			1071
LLK length	m	up to 30 (dep. of power and beam quality)			Singlemode: 10 Multimode: up to 30
Dimensions (W × H × D)	mm	600 × 1025 × 950			448 × 520 × 970
Cooling water temperature	°C	25 ±2			18–30
Ambient temperature during operation	°C	5–45			

TruFiber S

		TruFiber 300x S	TruFiber 400x S	TruFiber 600x S	TruFiber 900x S	TruFiber 12001 S
Laser power	W	3000	4000	6000	9000	12000
Typical power stability	%	±1				
Adjustable power range	%	2–100				
Typical beam quality	mm· mrad	2				4
Available LLK diameter	µm	50–600				100–600
Wavelength	nm	1080				
LLK length	m	up to 50				
Dimensions (W × H × D)	mm	600 × 1325 × 950				
Cooling water temperature	°C	25 ±2				
Ambient temperature during operation	°C	5–45				

TruFiber G

		TruFiber 3001 G	TruFiber 6001 G	TruFiber 12001 G	TruFiber G 2-in-1 (4001–6001)
Laser power	W	3000	6000	12000	4000–6000
Typical power stability	%	±1			
Adjustable power range	%	2 – 100			
Typical beam quality	mm· mrad	4			
Available LLK diameter	µm	100			100 (core) | 600 (ring)
Wavelength	nm	1080			
LLK length	m	20			
Dimensions (W × H × D)	mm	600 × 895 × 1150			
Cooling water temperature	°C	25 ±2			
Ambient temperature during operation	°C	5 – 45			

TRUMPF is certified to ISO 9001
(Find out more: www.trumpf.com/s/quality)

TRUMPF Laser- und Systemtechnik SE
www.trumpf.com