TRUMPF



TruLaser Tube

MAKE A CUT
WITH EVERY TUBE

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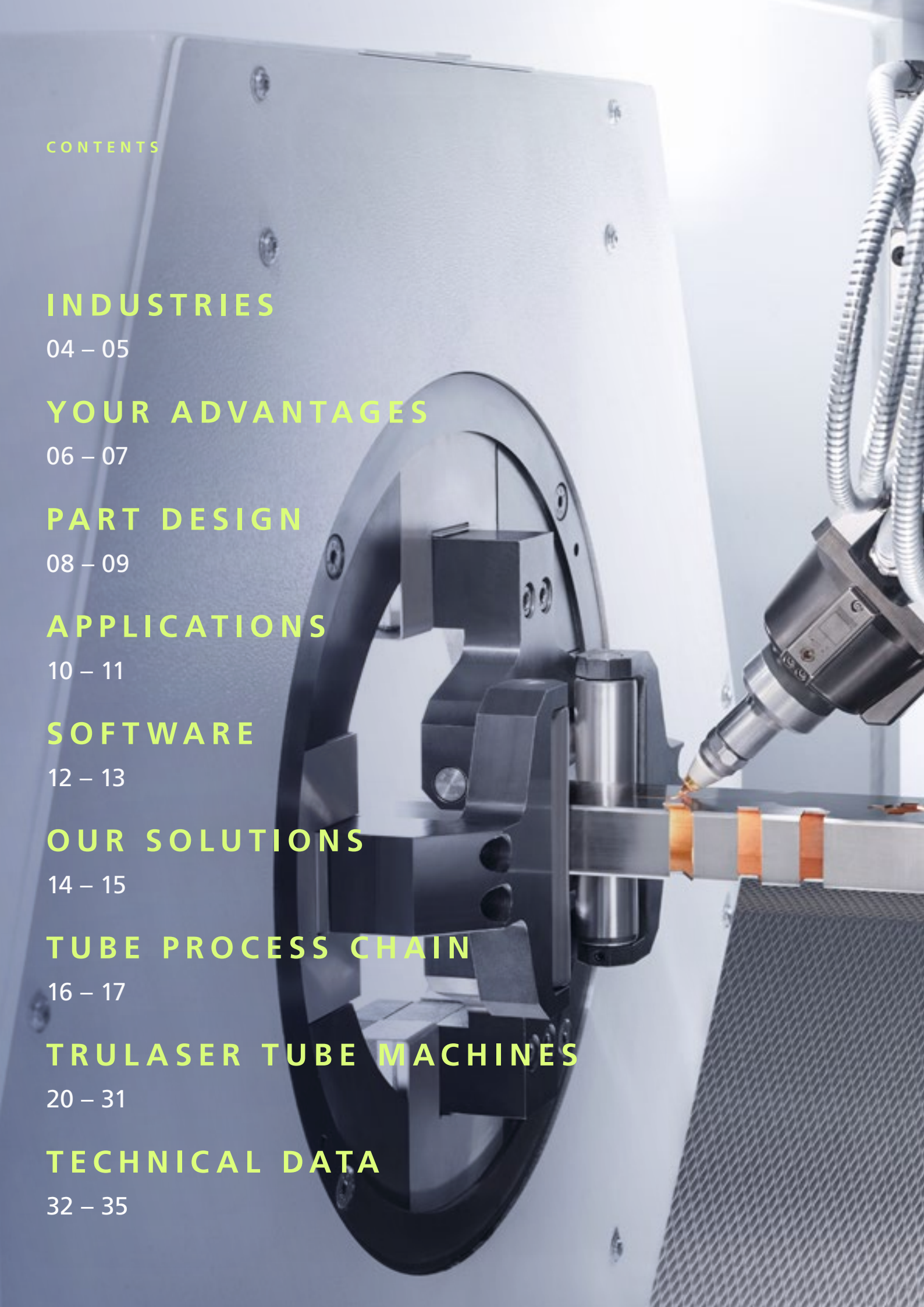
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Simply cut your way through the restrictions



Demands on efficient production are increasing due to factors such as a shortage of skilled workers, high part costs, unplanned downtime, long run-in times, and growing product diversity. Experience a new level of productivity and precision with laser tube-cutting machines from TRUMPF: High machine availability, highly accurate, innovative tube design, and intelligent assistance systems reduce your part costs and rejects. After all, the market for laser-cut tubes offers exceptional opportunities for success, ensuring that you continue to remain a cut above when it comes to future growth.



DIVERSITY

We are living in a world of tubes

What do a delicate designer lamp, heavy-duty steel structures, a combine harvester frame and a scaffold all have in common? They are all produced from laser-cut tube and profile designs. No wonder, because no tool is as versatile and offers as much contouring freedom as a laser. You can find evidence of it in furniture, cars, commercial vehicles, transport, on construction sites, in mechanical engineering and plant construction, in agriculture, in the fitness industry, climate and energy technology, or in retail store fixtures.















»With innovations such as laser tube cutting and intelligent part design, you can increase your competitive edge and drastically reduce your costs per part.«

ADI BUERKLER,
HEAD OF PRODUCT MANAGEMENT – TUBE

LASER TUBE CUTTING

Why use a laser for tube processing?

There is no need for sawing, drilling or deburring: Compared to conventional tube cutting, the laser replaces many work steps. With high precision, it cuts complex contours in materials such as mild steel, stainless steel, aluminum or nonferrous metal. Laser tube cutting offers you numerous design options – and opens the door to new products, customers and orders.

Cut out production costs. Innovative tube designs reduce effort, processing steps and material usage – and thus lower your costs. At the same time, a reimagined design paves the way for entirely new applications and geometries that were previously impossible to realize. TRUMPF part consulting helps you to explore this potential in a targeted manner.

Cut away long run-ins and operator involvement. Even with a batch size of 1, you can produce components effortlessly and directly with precision: Highly flexible, precise machines and perfectly coordinated cutting technology ensure a high degree of automation and cut down on programming effort. Process-stable cutting data directly from TRUMPF ensures consistently good results.

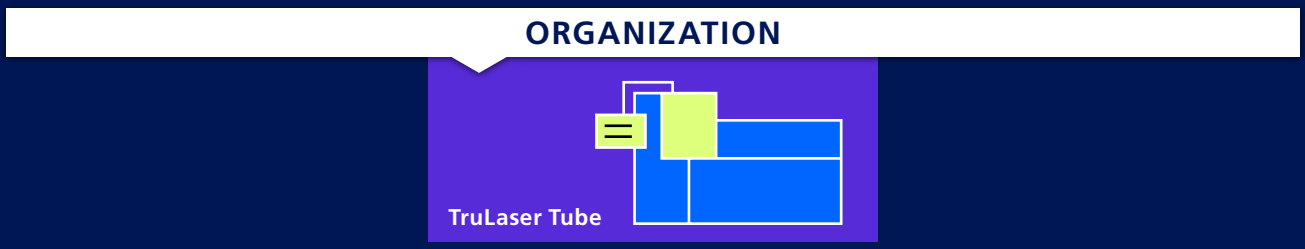
Cut cost pressure. Gain productivity and reduce your part costs. With 12 kW of laser power, you can cut with feed rates up to 300% faster. At the same time, intelligent sensor systems and quality assurance minimize rejects.

Comparison of the work steps involved in laser tube cutting and conventional production

Conventional production



Laser tube cutting



CONSTRUCTION

Innovative design, cut out production costs

Innovative tube designs save time and provide a technical advantage: bending frames reduce the number of parts, positioning aids facilitate assembly. This reduces the effort required for subsequent steps such as welding – and one machine does it all. Our experts will be happy to advise you on how to further optimize your parts.

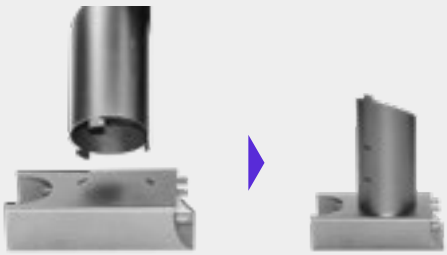
POSITION CONNECT ASSEMBLE



Thanks to bevel cuts of up to 50°, you can process corner connections faster – with optimum material utilization.



Use tube-blank connections for simple fastening, optionally with a simple positioning aid or coding function.



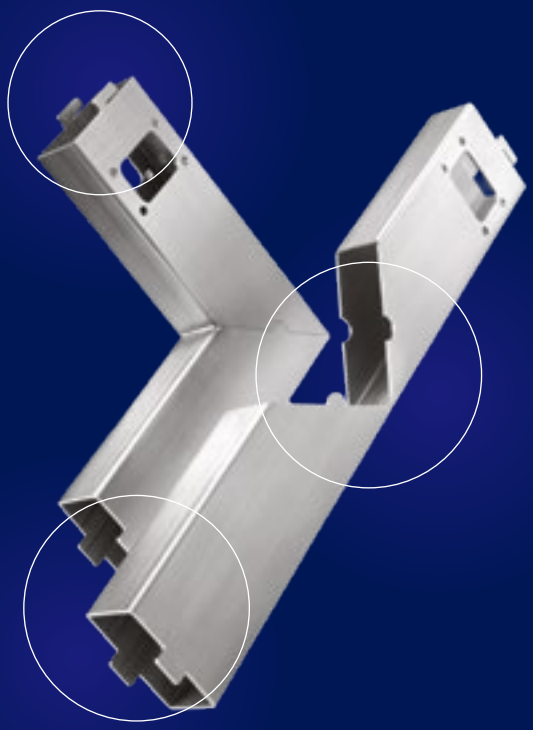
Replace complex welding fixtures with plug-in, dovetail or bayonet connections.



Easily connect tubes together using attachments – the perfect option for load-bearing tube designs.



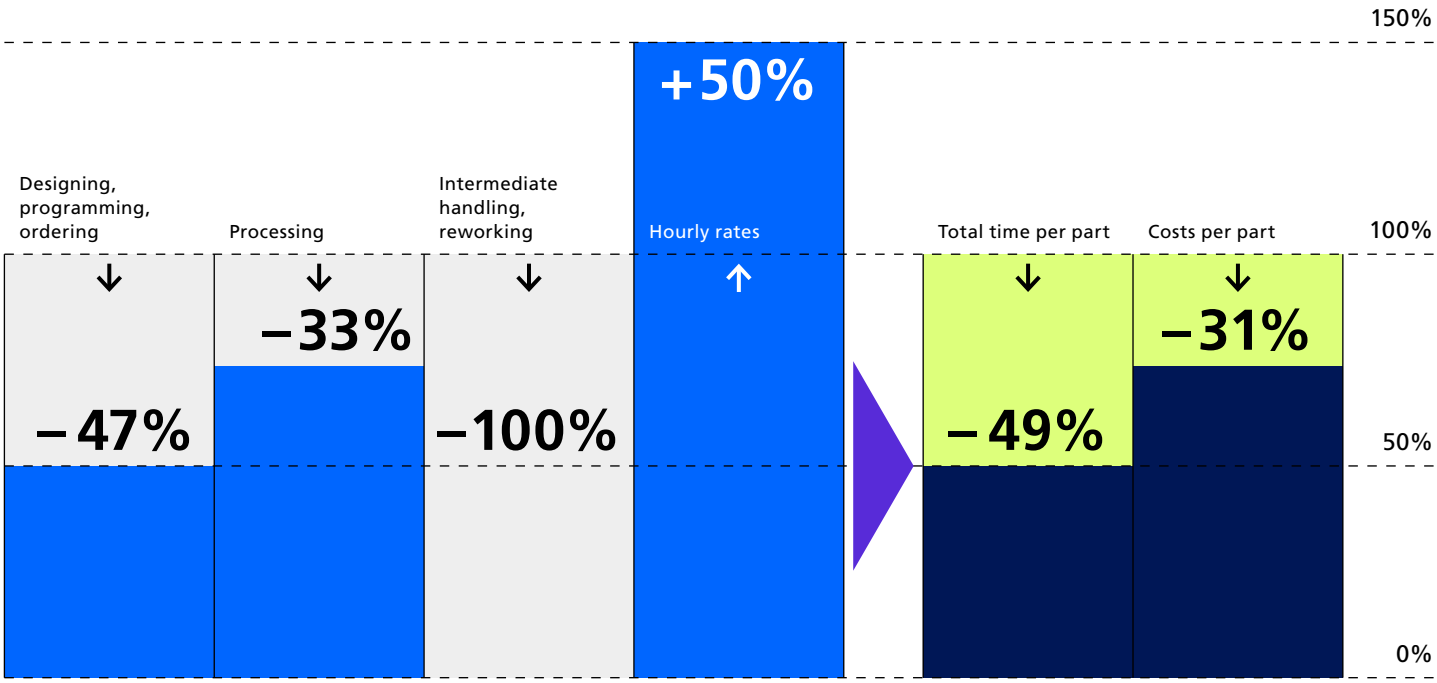
Conventionally manufactured
from two separate parts.



Efficient manufacturing using bend connections
and positioning aids with the laser.

Increased technology, reduced part costs

Get straight to the bottom line: thanks to bend connections, recesses and pins,
you can reduce the time needed to make this sample part by 49% and the cost by 31%.



Laser tube cutting with TruLaser Tube

Conventional production (sawing, milling, drilling)

FIXTURE DESIGN

Invest smart, cut costs

Would you like to expand your vertical range of manufacturing, increase your machine utilization or reduce your costs for fixtures? Then you should manufacture fixtures from laser-cut tubes in the future. It’s easier than you think.

Just make it yourself. The design of tube fixtures allows you to tap into an additional field of application and utilize more of your laser tube-cutting machine’s capacity. Get to know the design rules for tube fixtures, and find out how you can optimally design your assemblies through training sessions and consultations. These will allow you to design, adapt, and replicate assemblies quickly and cost-effectively in the future.

A simple, ergonomic solution. A tube plug-in design replaces the entire milling block. The laser tube-cutting machine, including suspension and tolerance compensation, not only cuts the tube cross-section to size, it also equips all parts with joining aids that enable precise positioning. The laser tube-cutting machine also incorporates threads directly in the machine.

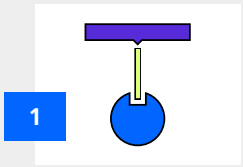


Optimized fixture made from tube.

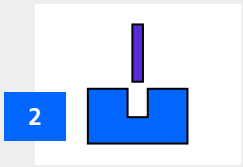


Conventionally milled fixture.

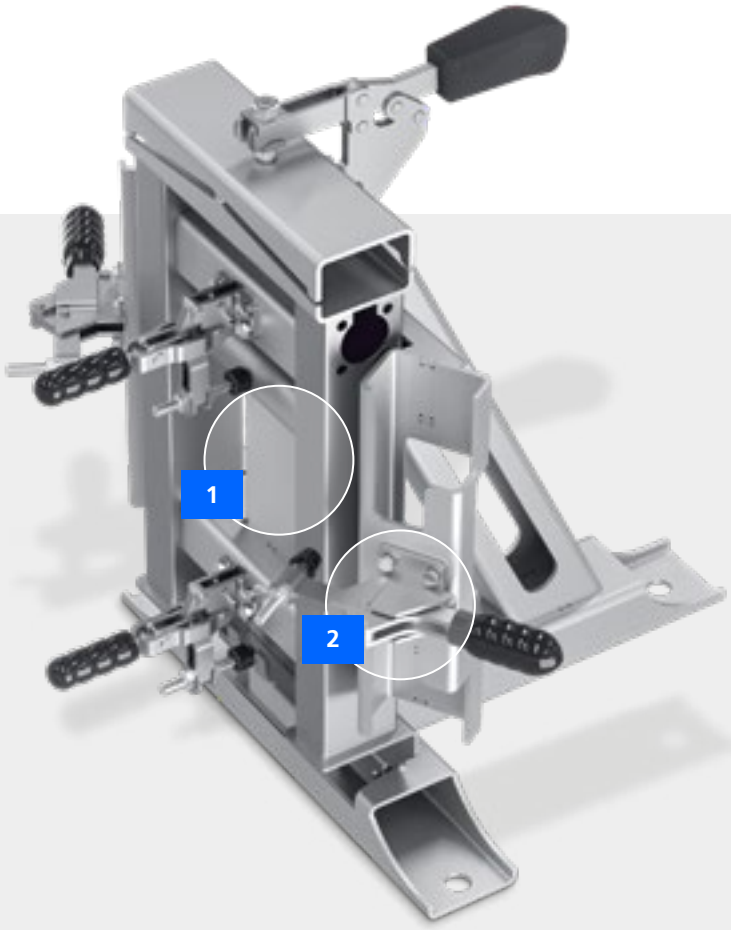
The example shows: While the conventionally manufactured welding fixture has to be laboriously adjusted using clamps, the new design includes a spring effect for tolerance compensation.



Laser tube cutting of the parts including all inner geometries and joining aids in pin form.



Connecting and welding the two single parts together.



Your advantage

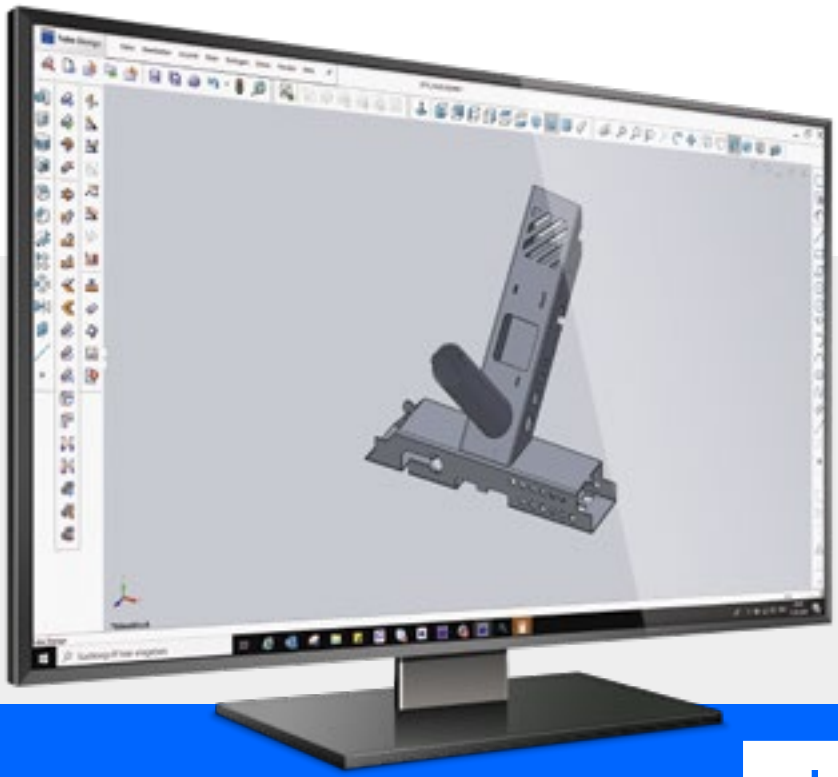
Fewer parts, less effort. Only one clamping device is required in the upper clamping tube. The visible longitudinal sections give the fixture a spring effect and compensate for tolerances in the component. The vertical structure makes the fixture easily accessible and ergonomic. The entire welding assembly is now welded in a single clamping unit, with dimensional accuracy and higher quality. Overall, this reduces manufacturing time, weight and fixture costs.

– 80% COSTS

DIGITAL WORKFLOW FOR LASER TUBE-CUTTING MACHINES

Smart automation to cut programming time

Programming Tube takes you quickly and intuitively to the NC program. Powerful automated processes and artificial intelligence reduce the amount of programming required. Easy operation and high-performance software components support your employees throughout the entire digital workflow. With the integrated **3D CAD Tube Design,** you can import common formats and design tubes and assemblies. Innovative tube designs such as bend connections and connecting elements are created at the touch of a button – making assembly and welding easier. The software automatically generates tapping programs including tools and processing sequence.



PROGRAMMING TUBE

Programming system for tube and profile processing

Fast and reliable: automatically program your parts

Easy to learn thanks to modern, intuitive user interface

Direct manipulation: Change edits directly in 3D

Optimize parameters in the running simulation

Store TRUMPF cutting data and rules

Accelerated workflow. AutoRun imports parts automatically, recognizes assemblies and single parts, and generates all relevant production data in the background. Thanks to machine learning based on thousands of real parts, a large part of all orders are programmed fully automatically with TRUMPF AI. This means the NC code and setup plan are available in no time at all, while you always have an overview of run times, consumption values and the programming status.

Easy to use, quick to learn. Programming Tube guides you through the process step by step. The user interface is modern and intuitive, and edits are made directly in the 3D model. At critical points, the software supports users with automation functions, prompts and expert features. This way, every user quickly reaches their goal with consistently high quality.

Design and production from a single source. With the Tube Design module, you approach tube design from the very beginning with production in mind. Based on Solidworks, you can use special functions such as bending frames, hook and pin connections or positioning aids. Programming Tube then transfers this foundation directly into automatic NC programming. As a result, your production benefits from fewer rejects and stable processes.

Part costs calculated at the touch of a button. In combination with TruTops Calculate, NC programs are used to derive part costs. All relevant data for quotations is therefore available at the touch of a button. This saves time and makes your quoting process more effective and more profitable.

You can find more information about Programming Tube on our website: **www.trumpf.info/goctnu**



Oseon combines programming and production control. With Programming Tube you can create your NC programs and setup plans. Oseon, TRUMPF's own production control system, then takes over: Orders, material flow and machine assignment all come together in one integrated system. Programming, order and material data are interlinked. This makes your tube production more transparent, safer – and operates in a continuous flow.

You can find more information about Oseon on our website: **www.trumpf.info/hoad2p**

FUNCTIONS AND HIGHLIGHTS

Sophisticated all along the line

MATERIAL FEED



- **Smart Profile Detection:** Even special profiles are loaded safely and automatically – the sensor-based detection determines the position and orientation and adjusts the cutting program accordingly.
- **SeamLine Tube:** Automatically aligns tubes – detects weld seams or markings, even on the inside, and positions the tube to match the cutting geometry.
- **Swivel-mounted conveyor system:** Produce small lot sizes quickly and efficiently – without removing an existing bundle from the loading unit.

ObserveLine Edge: Process prepunched profiles efficiently: The function automatically recognizes reference edges and precisely aligns the cutting contours to them. Manual measuring and probing is no longer necessary.

CUTTING



- **RapidCut:** Produce material thicknesses of up to 3 mm – up to 30% faster.
- **PierceLine:** Reduce piercing times by 10 to 60% depending on material type and thickness.
- **ControlLine:** Protects the cutting head – constant nozzle spacing even on uneven tube surfaces. The magnetic coupling minimizes the consequences of collisions.
- **AdjustLine:** Reduces waste and material costs – even low-quality material can be cut quickly and easily without expert knowledge.
- **Crossjet nozzle:** Increased process stability and process reliability during piercing.

Conserving cutting gas with X blast: For material thicknesses up to 3 mm: The cutting package X blast with patented nozzle geometry reduces your gas consumption by up to 39% compared to the standard cutting process.

Condition Monitoring: Reduce unplanned downtime through high availability, schedule maintenance with foresight and minimize failure risks.

ScanLine with Quality Pilot: Uses position sensor to measure and compensate for raw material tolerances. Quality Pilot evaluates the raw material quality at the beginning of the process and decides whether and how often ScanLine measures. This avoids unnecessary measuring cycles, saves time and ensures part quality at the same time.

With sophisticated functions and integrated know-how, your TruLaser Tube simplifies the processing of your tubes and profiles in the machine. From loading to cutting and unloading all the way to subsequent processes the goal is clear: to expand your competitive edge.

UNLOADING



- **Order-related sorting:** Sort parts in wire mesh boxes, customer-specific containers or material-friendly and low-scratch on conveyor tables.
- **Longitudinal conveyor belt:** Automated unloading avoids errors, increases machine utilization, significantly reduces the manpower needed, and thus lowers the cost per component.

Laser power up to 12 kW: For the efficient production of medium and high wall thicknesses.

Vision Equipment with Smart View provides complete transparency. Keep an eye on your TruLaser Tube 7000 in real time at all times, no matter where you are.

SIMPLIFY THE SUBSEQUENT PROCESS



- **Bevel cut:** Prepare welding edges optimally – with patented TRUMPF technology for high-quality bevel cuts up to 50°.
- **Technology package for tapping:** Produce threads directly on the machine in a single work step – with NC-controlled spindle unit for thread cutting, flow drilling, tapping, countersinking and spiral drilling.
- **Spatter protection device (round tubes):** Ensures clean insides for round tubes and saves rework.
- **Dot Matrix Code (DMC):** Identify your parts quickly and clearly.

Spatter Guard: Simplify your subsequent cleaning process for round and rectangular profiles with the additional Spatter Guard option. This saves rework.

ObserveLine Comfort: Automatically detect punching slugs that have not fallen after the cutting process, thereby ensuring reliable quality control of the finished parts.

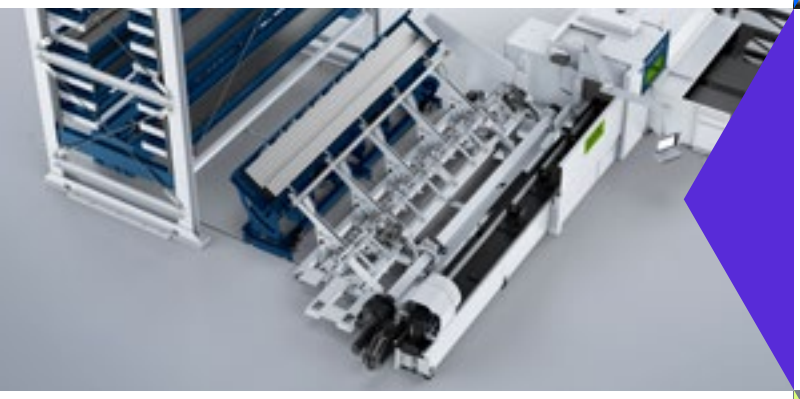
PRODUCTION IN FLOW

Endless possibilities. From a single source

01 STORAGE

Automate factory flow: You save storage space for raw materials as well as search times, improve your store management and benefit from the advantages of strategic material procurement. STOPA and Oseon help you to structure your store and material flow.





02 AUTOMATED LOADING

Load your laser tube-cutting machine fully automatically: Thanks to the tube storage system, you can leave your machine unattended. The machine requests raw material via an interface and is loaded directly from the store cartridges. The material handling effort is significantly reduced.

03 LASER TUBE CUTTING

Freedom of design for complex contours and constructions: The versatile process saves work steps and rework. And it helps you to cut out cost pressure and error rates.





04 AUTOMATED UNLOADING AND SORTING

Avoid errors and costs and reduce staff workload: Unload and sort finished parts automatically via the unloading interface with longitudinal conveyor belt and connect a robot from Starmatik, for example. This reduces both operator involvement and production costs and avoids errors.

Machines, software and automation interlock in an integrated process chain. This creates a stable, efficient overall process – with fewer interfaces, less effort and higher speed. And that's exactly where we come in: MAKE A CUT.

05 TUBE BENDING

Bend large piece-counts with precision: With fully automatic CNC tube bending technology, you can minimize component costs and replace welding and soldering work. This reduces part costs and labor costs in your production. We rely on our solution partner transfluid® for tube bending.





06 3D LASER CUTTING

Inserting trims in bending zones: 3D laser cutting enables precise cutting in areas where this is not possible before bending due to distortion. With a TruLaser Cell in your process chain, you not only expand your manufacturing options, but also produce quickly, flexibly and cost-effectively.

07 WELDING

Automated welding saves rework, time and costs: You can find the ideal system for your requirements with the individually configurable TruLaser Weld laser welding cell. New technologies enable you to create welding programs in just a few minutes.





MAKE A

CUT

WITH EVERY TUBE



VERSATILE

TruLaser Tube 3000



1

ECONOMICALLY

successful, even without full capacity utilization

2

RELIABLE

thanks to robust design and intelligent assistance functions

Easy laser tube cutting – reliable, flexible and cost-effective. Economical laser cutting of tubes up to 170 mm outer circle – even at low workloads.



3

EASY

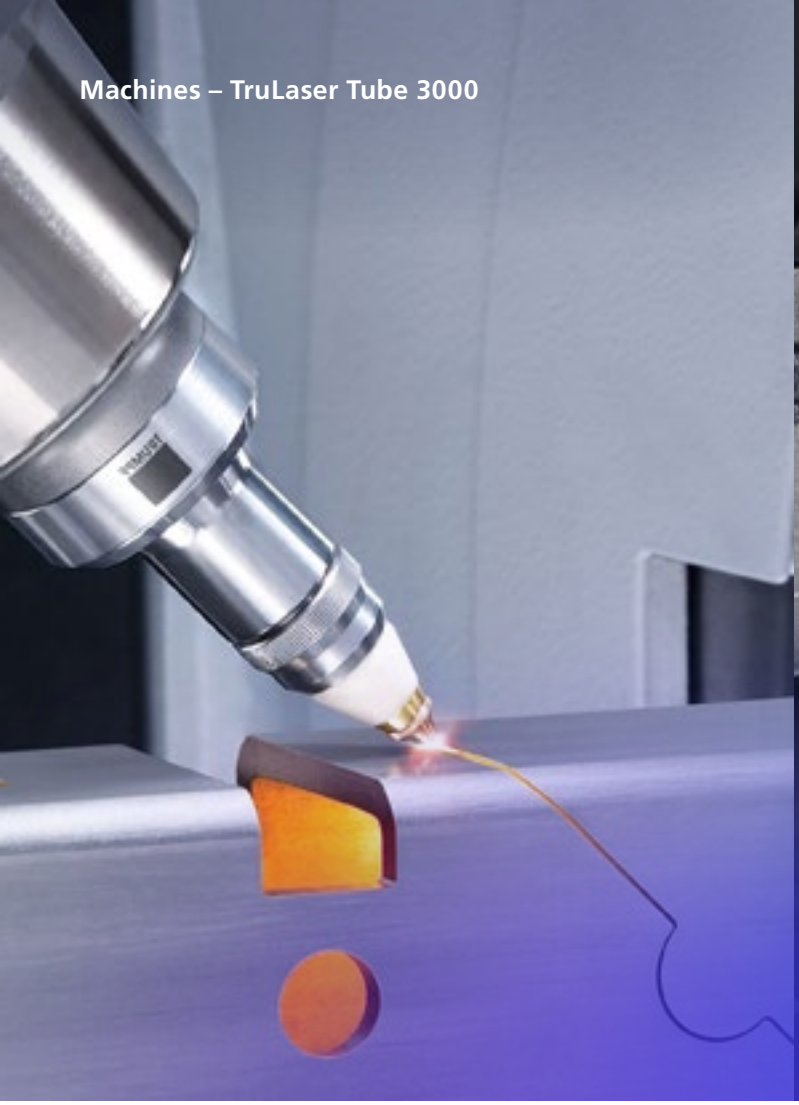
to use and always keeping an eye on the process

4

ACCURATE

and precise when cutting and clamping

You can find more information about the TruLaser Tube 3000 on our website:
www.trumpf.info/5yjsa4





1

ECONOMICALLY

successful, even without full capacity utilization

This machine gives you more control over quality, deadlines and customer projects. This also ensures your economic success – even without maximum capacity utilization.

2

RELIABLE

thanks to robust design and intelligent assistance functions

You save setup time and avoid operating errors. The machine adjusts itself automatically, prevents collisions using ControlLine and also cuts low-quality material safely with AdjustLine. FocusLine sets the focus precisely – even bevel cuts for weld seam preparation are achieved quickly and precisely.





3

EASY

to use and always keeping an eye on the process

Setup times are minimal; accessibility is excellent. You can conveniently load and unload manually or automatically using a LoadMaster Tube, crane or an unloading unit.

4

ACCURATE

and precise when cutting and clamping

High-precision clamping technology, exact optics setup and precise tube guidance ensure the best part quality. Thanks to adaptive clamping technology, you can process L- and U-profiles yourself.

You can find more information about the TruLaser Tube 3000 on our website:
www.trumpf.info/5yjsa4

EFFICIENCY

TruLaser Tube 5000



1

PRODUCTIVE

and efficient thanks to
solid-state laser and RapidCut

2

SETUP-FREE

thanks to the clamping system
and automatic tube guidance

The multipurpose powerhouse for profiles up to 180 mm – highly productive and efficient. Integrated processes and maximum throughput – from single parts to demanding series production!



3

VERSATILE

and reliable even with special profiles and lesser raw material

4

INTEGRATED

subsequent processes such as tapping

You can find more information about the TruLaser Tube 5000 on our website:
www.trumpf.info/fykc8t





1

PRODUCTIVE

and efficient thanks to
solid-state laser and RapidCut

Thanks to RapidCut, the high feed rates of the solid-state laser come into their own even with smaller contours. This offers the huge advantage of 30% greater productivity for your production process. With a laser power of 6 kW, you cut even medium and high wall thicknesses with maximum efficiency.

2

SETUP-FREE

thanks to the clamping system
and automatic tube guidance

Setup is a thing of the past – the clamping system of the TruLaser Tube 5000 allows you to produce tubes in the entire standard clamping range without retooling. The step rollers automatically adjust to the different diameters of the tubes.





3

VERSATILE

and reliable even with special profiles and lesser raw material

Process a wide variety of tubes and profiles. Smart Profile Detection recognizes special profiles and enables machining without manual intervention. AdjustLine and ScanLine with Quality Pilot ensure the best cutting results even with lower raw material quality.

4

INTEGRATED

subsequent processes such as tapping

With the tapping technology package, you perform machining processes such as flow drilling, tapping and twist drilling directly.

You can find more information about the TruLaser Tube 5000 on our website:
www.trumpf.info/fykc8t

VOLUME

TruLaser Tube 7000



1

UNCOMPROMISING

flexibility across the entire spectrum – from small to large

2

DYNAMIC

including solid-state laser with laser power up to 12 kW and RapidCut

The flagship – uncompromising in all dimensions. Maximum productivity in the entire volume segment from 12 to 290 mm outer circle, minimum setup and programming effort and seamless process integration.



3

ACCESSIBLE

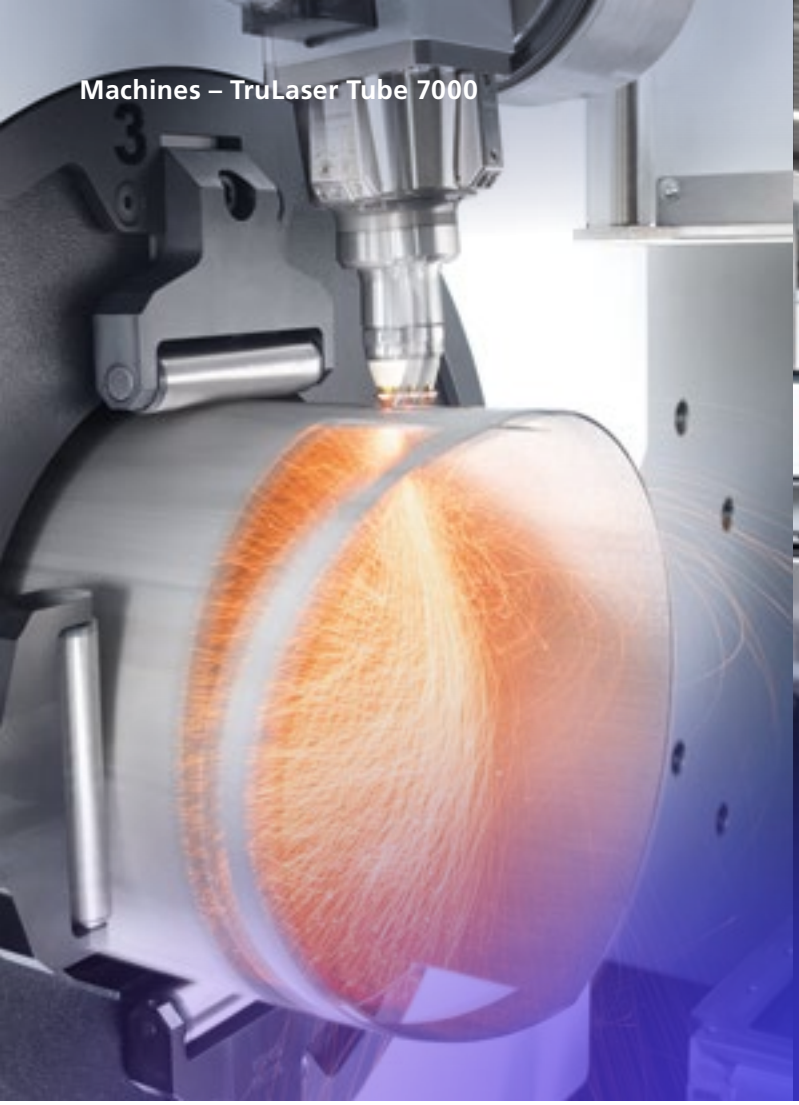
thanks to intelligent beam guards and open machine concept

4

GROUNDBREAKING

through functions from ScanLine with Quality Pilot to Condition Monitoring

You can find more information about the TruLaser Tube 7000 on our website:
www.trumpf.info/g680na





1

UNCOMPROMISING

flexibility across the entire spectrum – from small to large

You can process up to 50 kg/m with your TruLaser Tube 7000: from fine tubes from 12 mm diameter to robust profiles with up to 290 mm outer circle – all with the same dynamics and precision. The finished part length of up to 12.5 m enables optimal material utilization. This way you cover your volume production and open up new applications at the same time.

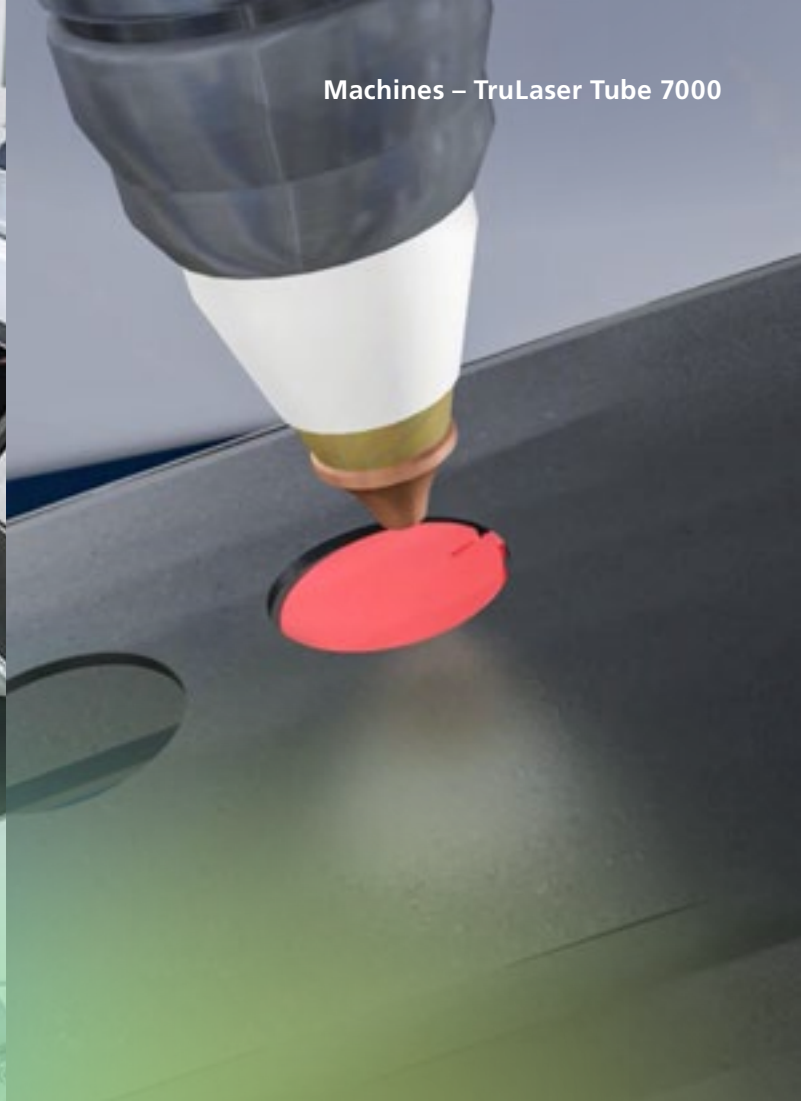
2

DYNAMIC

including solid-state laser with laser power up to 12 kW and RapidCut

Thanks to RapidCut, the high feed rates of your solid-state laser come into their own even with the smallest contours. This offers the huge advantage of a 30% gain in productivity with thin-walled material. You can process medium and thicker wall thicknesses just as efficiently with 12 kW laser power and an increase in feed rate of up to 300%. The high part throughput in both thin-walled and thicker material ranges ensures consistently low costs per component.





3

ACCESSIBLE

thanks to intelligent beam guards and open machine concept

Tube processing by solid-state laser is not only laser-safe with a complete housing – the open machine concept makes your TruLaser Tube 7000 optimally accessible. Load and unload individual tubes quickly and easily from the front. Smaller lot sizes or intermediate productions can be loaded semi-automatically with the swivel-mounted conveyor system.

4

GROUNDBREAKING

through functions from ScanLine with Quality Pilot to Condition Monitoring

With functions such as ObserveLine, 12 kW, lateral air blasting, ScanLine or the automated integration of downstream processes such as flow drilling, countersinking and tapping, you are always one step ahead of your competitors. Condition Monitoring rounds off the package: reduce unplanned downtime, plan maintenance ahead, and minimize risk of outages.

You can find more information about the TruLaser Tube 7000 on our website:
www.trumpf.info/g680na

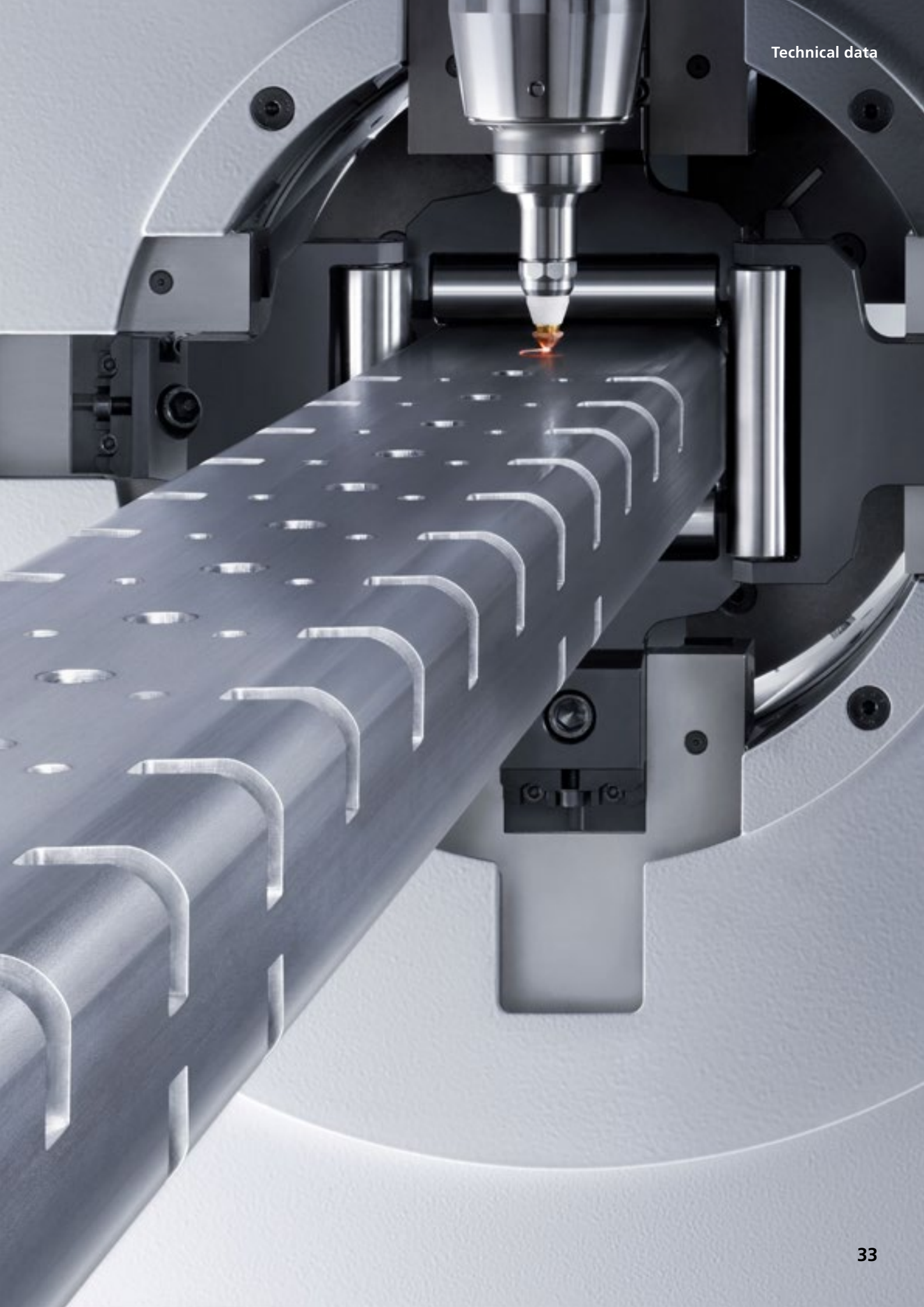
SPECIFICATIONS

Technical data

Here you will find the technical data of our TruLaser Tube machines as well as an overview of the availability of the intelligent functions.

Laser data		TruLaser Tube 3000	TruLaser Tube 5000		TruLaser Tube 7000	
		TruFiber 3001	TruFiber 4001	TruFiber 6001	TruFiber 6001	TruFiber 12001
Max. power	kW	3	4	6	6	12
Average power input in production	kW	9	10	10	10	
Max. material thicknesses						
Mild steel	mm	8	10	14	14	20
Stainless steel	mm	6	6	10	10	15
Aluminum	mm	6	6	10	10	15
Copper/brass	mm	4	5	5	5	5

Content subject to change without notice. Only specifications in our offer and order confirmation are binding.



Available functions/options	TruLaser Tube 3000	TruLaser Tube 5000	TruLaser Tube 7000
AdjustLine	■	■	■
Dot Matrix Code	■	■	■
Compressed-air cutting	■	■	■
Conveyor system	■ (nonswiveling)	■ (nonswiveling)	■
Magnetic coupling/ControlLine/ FocusLine	■	■	■
ObserveLine Comfort and Edge	■	■	■
PierceLine	■	■	■
RapidCut	■	■	■
ScanLine		■	■
Cutting package X blast		■	■
Unloading automation interface with longitudinal conveyor belt		■	■
Interface tube store with a storage connection	■	■	■
Bevel cut	■	■	■
SeamLine Tube	■	■	■
Smart Profile Detection		■	■
Sorting function unloading point			■
Spatter Guard	■	■	■
Spatter protection device			■
Technology package for tapping		■	■

TruLaser Tube 3000		
Max. outside diameter of round tube	**mm**	**152[1]**
Max. outer circle diameter of rectangular tube	**mm**	**170**
Max. unprocessed material length for automatic loading	**mm**	**6500 | 8000[3]**
Max. finished part length	**mm**	**3000 | 4750[3] | 6500[3]**
Max. workpiece weight	**kg/m**	**18.5 (120 | 148[4] kg total)**
Available lasers		**TruFiber 3001**

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TruLaser Tube 5000		
Max. outside diameter of round tube	**mm**	**152[1]**
Max. outer circle diameter of rectangular tube	**mm**	**180[2]**
Max. unprocessed material length for automatic loading	**mm**	**6500 | 8000[3]**
Max. finished part length	**mm**	**4500[3] | 6500[3] | 8000[3]**
Max. workpiece weight	**kg/m**	**25 (162.5 | 200[4] kg total)**
Available lasers		**TruFiber 4001 | TruFiber 6001**

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TruLaser Tube 7000		
Max. outside diameter of round tube	**mm**	**273[5]**
Max. outer circle diameter of rectangular tube	**mm**	**254**
Max. unprocessed material length for automatic loading	**mm**	**6500 | 9200[3] | 12500[3]**
Max. finished part length	**mm**	**6000[3] | 6500[3] | 8000[3] | 9200 | 12500**
Max. workpiece weight	**kg/m**	**40 | 50[6] (260 | 368[4] kg total)**
Available lasers		**TruFiber 6001 | TruFiber 9001 | TruFiber 12001**

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[1] Round tubes ∅ 152–170 mm: manual loading optional.
[2] Rectangular tubes up to ∅ 180 mm optional (standard 170 mm); side length > 152.4 mm only manual loading.
[3] Please contact us for larger versions.
[4] Weights vary depending on the type of load – please enquire individually.
[5] Automatic loading up to 254 mm outside diameter.
[6] Optionally available.

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

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