

TRUMPF

Automation

Keep a tight grip on your production

Well equipped for the future

The dynamic world of production has no place for downtime. So how do you keep pace with the change? Automation is the key, allowing you to avoid mistakes, minimize downtime and best apply your resources.

This brochure is your navigator for the world of networked production, where machines, automation and software work together. Discover intelligent automation solutions, that secure your economically successful future.



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Overcoming challenges with automation

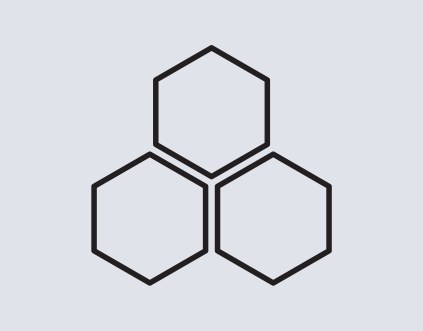
Small lot sizes, a significant variety of products and demanding customers. On this page, we look at the problems that make life difficult for sheet metal manufacturers like you – and how automation can help you change this.





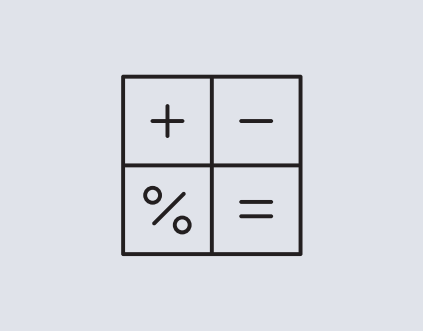
Lack of skilled personnel

Skilled personnel is hard to find. This can be solved through automated processes as well as assistance systems. Integrated know-how and software help semiskilled workers to operate machines safely.



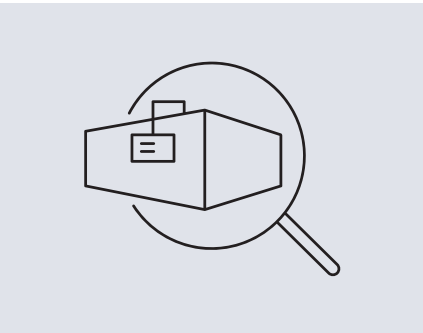
Small lot sizes

How can you deliver a lot size of 1 economically? A smart material flow, automated production processes and efficient intralogistics certainy help; while software helps self-organization on the shop floor and reduces programming time.



Lack of financing options

Fluctuating order status, rising material and storage costs – regular banks tend to react cautiously. With TRUMPF Bank, you have a reliable partner who knows your industry. This gives you more freedom, e.g., seasonal rates or reduced rates.



Lack of transparency and efficiency

Searching for material, setting up and sorting by hand, comparing papers – unnecessary or manual work often causes loss of time and low throughput. Gain transparency on the shop floor with digital support.



High material costs

Delivery bottlenecks and fluctuating prices for raw materials and energy turn scheduling and calculation into a game of chance. In the worst-case scenario, there is a risk of losses. You can improve your situation with affordable storage capacity and flexible credit for materials.



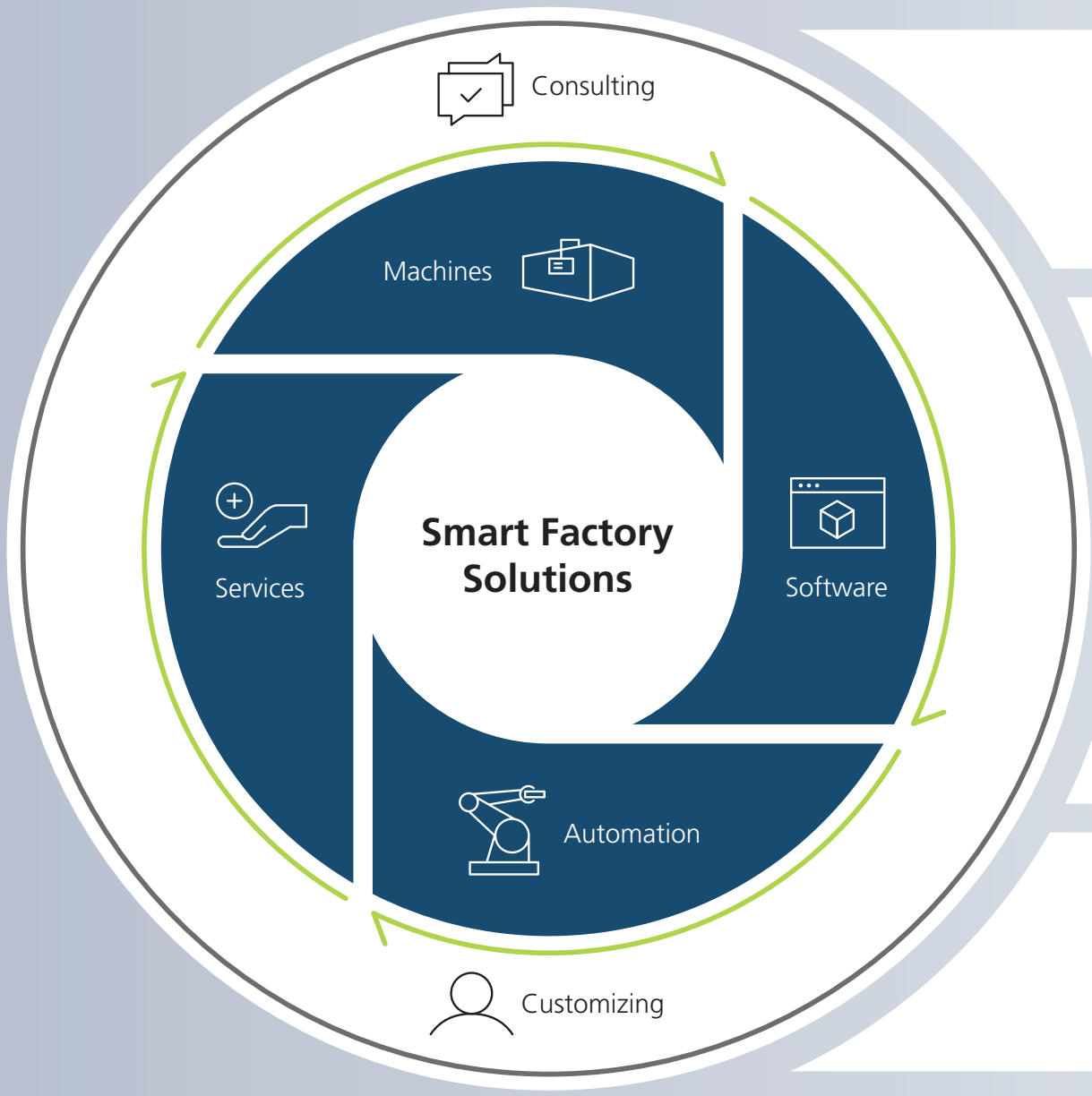
High customer expectations

Today, customers expect competitive prices, immediate information in real-time and a continuous digital information flow. Cost-saving processes for all lot sizes, transparency of capacity and processes as well as automation to sink costs all help to meet customer expectations.

More about Smart Factory Consulting:
www.trumpf.com/s/nb450v

Totally smart production

As a solution provider, we support companies of all sizes on their path to the Smart Factory. Why not use our scalable building blocks for automation and a smart material flow, with the option to scale right up to completely networked production?





We are sheet metal manufacturers ourselves and know the business better than anyone else. In Smart Factory Consulting, we uniquely combine methodological expertise with a deep understanding of technology and processes in the sheet metal industry – for all process steps in your production.

Thomas Rupp, CEO of TRUMPF Smart Factory Consulting

Automation Systems and Solutions

Automated production processes deliver many benefits: Your production flows transparently and efficiently, your employees can focus on core tasks, thus improving their motivation. What's more, your customers trust you as a reliable supplier.

www.trumpf.com/s/vo0jui

Smart Factory Solutions

Off to the Smart Factory! Our modular solution world helps you to create order in your production and to take the next logical step in technological evolution: structured networking of the material flow, information flow, automation and process optimization.

www.trumpf.com/s/gaxmhp

Smart Factory Consulting

Before you put the project for the future on the back burner, you should bring an experienced pilot on board. An expert who understands the sheet metal process chain first hand, so you don't have to explain. Whether it's about digitalization, factory planning or future plans, we accompany you with your strategic direction and the subsequent practical implementation.

www.trumpf.com/s/hn4xbz

Smart Material Flow

Non value-adding activities take up to 40% of your resources. But it doesn't have to be so. With our intralogistic solutions, you can design your production to be efficient, intelligent and flexibly automated. The basis for this are clear depictions and a digital image of your production.

www.trumpf.com/s/60vz9y

Smart Factory – multiple options, one experienced partner

You, as a sheet metal processor, face an increasing number of product variants and shorter order times. You therefore need a strategy to remain competitive in the future. Doing nothing is not an option. Build on your strengths and see the path to a connected factory as an opportunity. You won't be alone. We know every production facility differs, and therefore also your particular situation and goals. We would love to be your partner on your journey to a Smart Factory. Until your production works the way you want it to.



Getting started

No two production systems are the same. Your introduction to the Smart Factory therefore needs to be tailor-made. Lay the foundations for your Smart Factory using machines equipped for connectivity as standard. Our experienced Smart Factory experts work with you to develop the optimum procedure for your needs. The main objective is to create transparency in production and identify possible optimizations.



Improving gradually

Getting everything under control makes taking the step to automated production worthwhile. Turn your production into a Smart Factory by using automated machines and autonomous manufacturing cells embedded within a production system that increases automation and boosts productivity. Automated production saves space and allows for better utilization of machines.



Entirely connected

The result is an integrated production system from order to delivery. With a complete system, highly efficient production will always be possible in your Smart Factory. Modular solutions from TRUMPF support you and help to give your processes greater transparency, flexibility and, most importantly, profitability. Our experienced Smart Factory experts work with you to develop the optimal Industry 4.0 package for your requirements.

These customers joined us on their journey to networked production

Arcas Ollé, Spain



The biggest challenge for Joan Ollé, product manager at the traditional safe manufacturer, was to deliver products that meet his customers' needs perfectly. In order to meet the growing demand and to increase productivity, he decided on the automation of his new TRUMPF machine park.

Link to customer story:
www.trumpf.com/s/ltiz1p

Heun Group, Germany



The classic job shop modernizes and automates the production step by step, in order to increase the production capacity and to take the pressure off its skilled staff. The digitalization specialist Raphael Willgenss claims: "TRUMPF solutions such as production control and the programming software totally convinced me."

Link to customer story:
www.trumpf.com/s/ri54zk

AEC ILLUMINAZIONE SRL, Italy



The Italian family company produces exterior lighting with a very unique design. In such a competitive environment, speed is of the essence. Alessandro Cini has therefore practically completely automated his production, and the processes from the very first idea right through to the delivery of the finished lamp have been streamlined enormously.

Link to customer story:
www.trumpf.com/s/vxpmzn

MEBAK METALLBAU, Germany



Mebak manufactures many different products from numerous materials. Managing Director Ronny Freitag, therefore, values flexibility. In the compact material buffer for the TruLaser 1030 fiber, he found an automation system that gives his production just the right boost.

Link to customer story:
www.trumpf.com/s/sl14tr

Choose the best – choose TRUMPF

How do you prepare your production for the demands of a networked future? There is no one-size-fits-all solution. Except for the right partner: develop an entire system that is harmonious and matches your production, together with us. Because when machines, software, services, storage, and automation work together in harmony, you can produce quickly, efficiently, and with flexibility, today and in future.

"TRUMPF'S innovative Smart Factory Solutions allow you to implement your digitalized production step by step. With this in mind, no two paths are alike because you can combine the separate parts of TRUMPF Smart Factory Solutions individually."

Patrick Bauer, Product Marketing – Automation & Processes

Your experienced partner

>35 years

expertise in the market

>250

successfully realized projects per year

>50

new Smart Factories per year

>6,500

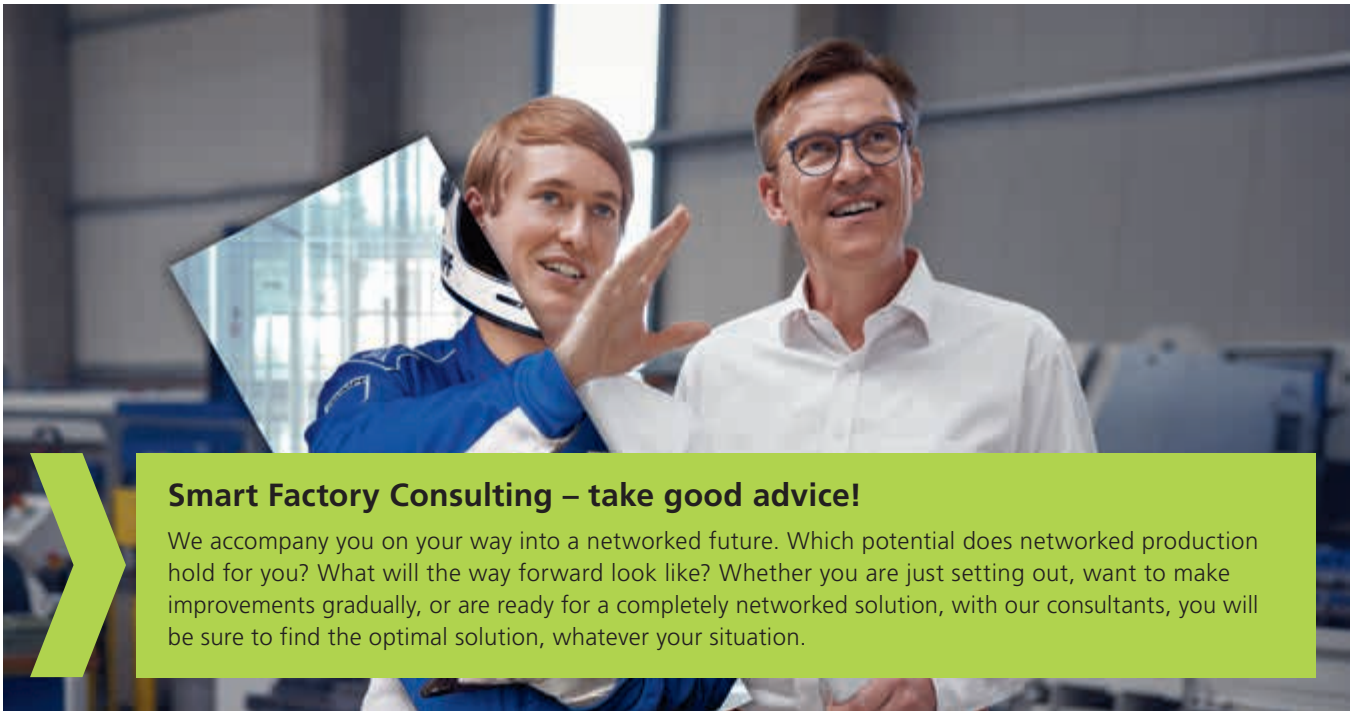
machines connected

>2,500

automated sheet metal processing systems realized worldwide

1

dedicated contact



Smart Factory Consulting – take good advice!

We accompany you on your way into a networked future. Which potential does networked production hold for you? What will the way forward look like? Whether you are just setting out, want to make improvements gradually, or are ready for a completely networked solution, with our consultants, you will be sure to find the optimal solution, whatever your situation.



"Thanks to the modular and adjustable construction, customers are provided with the right solution for nearly every layout and manufacturing philosophy."

Norbert Gruhl, Head of Development Customizing, Neukirch

Automated lasers make a convincing impression

A wide range of modular automation components is available for your TruLaser cutting machines. This means, you get a solution specifically matched to your needs – from the semiautomatic loader to a fully automated machine with a storage connection.

Automation components for your 2D laser machines

Loading

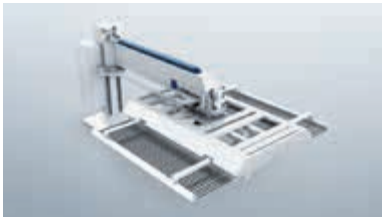
The LoadMaster supplies your machine automatically with raw sheets. It separates sheets safely, which increases your productivity and avoids rejects.



- **LoadMaster**

Loading, unloading, sorting and auxilliary pallet operation

These components load and unload your machine and, if necessary, separate good parts from the scrap skeleton. You also benefit from auxiliary pallet operation.



- **LiftMaster**
- **LiftMaster Linear**
- **LiftMaster Store**
- **LiftMaster Compact**

Sorting

The SortMaster removes, sorts and stacks small and large parts completely automatically.



- **SortMaster**

www.trumpf.com/s/0kv15g



"To enable customers to maximize their productivity with TRUMPF punching or punch laser machines, we adapt our automation to the respective performance class."

Marcus Busch, Head of Development – TruPunch | TruMatic Automation

Automated punching provides strength

For your punch laser or punching machine, you can select from a full range of ideally matched automation solutions. Benefit from the turnkey concepts provided by a full-range supplier – including machinery, automation, programming and production control technology.

Automation components for your punching and punch laser machines

Loading

With the SheetMaster Compact, you can automatically and reliably load raw sheets or blanks.



- **SheetMaster Compact**

Loading, unloading and sorting

The SheetMaster not only loads and unloads your machine, it also sorts your parts safely.



- **SheetMaster**

Sorting

Choose the right component for the reliable unloading and sorting of your parts.



- **SortMaster Compact**
- **SortMaster Box**

Disposal

Your ideal helpers for the safe disposal of scrap skeletons and efficient scrap handling.



- **GripMaster**

Tool handling

Increase the productivity of your machines with the right tool magazine or changer.



- **ToolMaster / ToolMaster Linear**

www.trumpf.com/s/y0juhq



"We have developed a machine that makes fully automated production possible. This is crucial for the competitiveness of our customers."

Torsten Popp, Development – TruLaser Tube

Automated laser tube cutting

Automated, your laser tube-cutting machine reliably produces around the clock – and thus pays itself off even faster. Take advantage of the fully automated material handling offered by the superbly accessible TruLaser Tube machines.

Automation components for your laser tube cutting machines

Loading

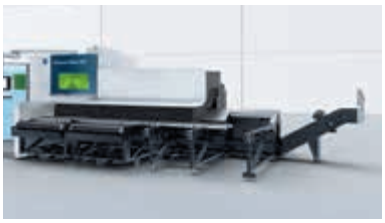
The tube magazine holds up to 4 t of raw material, which the loading unit feeds after a plausibility check.



- **LoadMaster Tube**
- **Tube Store with Store connection**

Unloading

The part removal station unloads and sorts your parts particularly gently and ergonomically.



- **Part removal station**

Disposal

Parallel to production, the scrap conveyor belt automatically disposes of leftovers into waiting boxes.



- **Scrap conveyor belt**

www.trumpf.com/s/ueaw9m



"With a focus on intelligent software and sensor technology, we develop cells that master our customers' complex bending processes smoothly and with high productivity."

Bernhard Fischereder, Director Product Management and International Sales Bending

Automated bending provides relief

Automated bending increases your output and allows you to work economically. With the TruBend Cell, you can produce in multiple shifts with minimal manpower. The consistently high quality saves rework and rejects. Convince yourself of integrated solutions including sensors and software, material flow and gripper technology. Automatic loading and unloading also increase your throughput times for panel bending.

Automated components for your bending machines

Tool handling

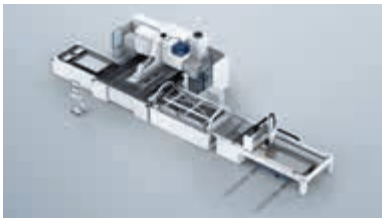
The ToolMaster automatically changes bending tools, thereby increasing the machine utilization rate.



ToolMaster

Material handling

With the turning station, you directly link the loading and bending processes.



Turning station

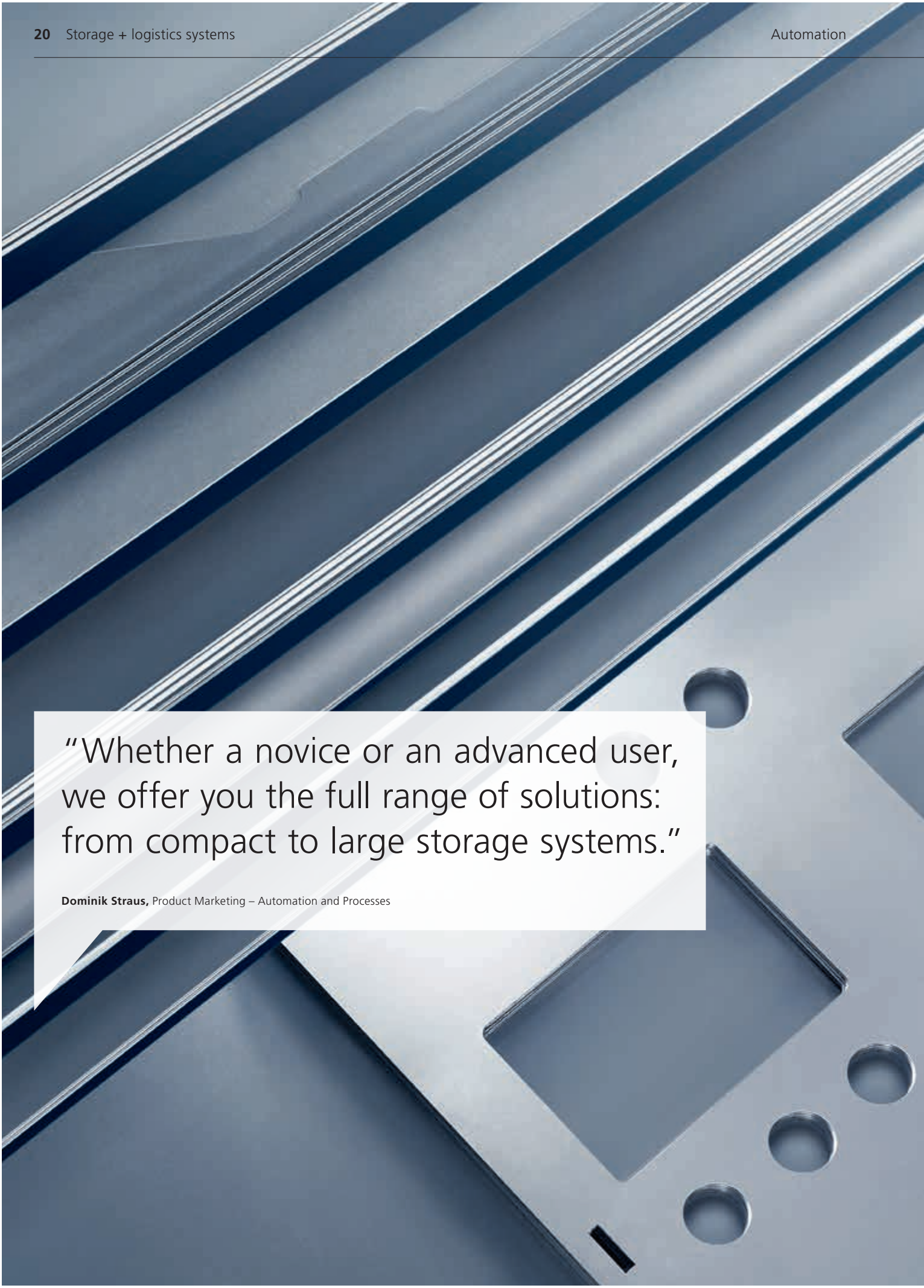
Retrofitting

The Flex Cell bending automation transforms your manual TruBend 7050 in an extremely fast bending cell.



Flex Cell

www.trumpf.com/s/a8nz29



"Whether a novice or an advanced user, we offer you the full range of solutions: from compact to large storage systems."

Dominik Straus, Product Marketing – Automation and Processes

Storing more efficiently

The right storage system improves the material flow and ensures a smooth production process. You make better use of your machines and save space, time and money. The storage and logistics systems from TRUMPF provide you with a modular system of intelligent storage solutions – compact, efficient and flexible.

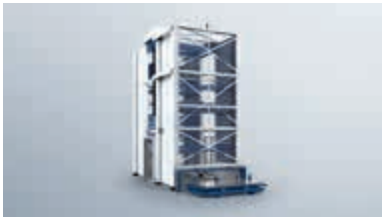
Automation components for your warehouse

Storage and logistic systems

The right storage system improves the material flow and ensures a smooth production process. You make better use of your machines and save space, time and money. With storage and logistics systems from TRUMPF, you have a modular system of intelligent storage solutions – compact, efficient, flexible.



TruStore Series 3000 Compact



TruStore Series 3000



STOPA large-scale storage systems

www.trumpf.com/s/sm6w0f

TRUMPF software

How do you keep the overview of all process steps and maintain a smooth production flow? How do you program more orders in a shorter space of time? As machine engineers, we have been developing software for all areas of sheet metal processing for around 50 years – so that you can develop your production's full potential.

Oseon. Work flows

Produce more profitably with the role-based software for the sheet metal process chain
Are you looking for greater transparency and improved machine availability, not to mention realiable delivery? Then you need proceses that are more efficient and that have perfect interplay. With Oseon, you connect production processes, machines and your employees. How? The software combines MES and WMS functionalities, perfectly designed for the sheet metal process chain. And in addition, it provides easy integration of existing systems such as ERP and CAM. Select from Oseon Go, Grow or Flow the ideal packet for your needs and adapt as business grows.

Enhanced productivity



Digital order management
Flexible entry control and tracking of jobs



Efficient tool and machine set-up
Easy calibration of machines and operating equipment

Reduced search times



Traceability
Control of the material flow incl. the buffer stock

Lower stock levels



Seamless stock management
Simple and automated stock entry

Higher throughput



Optimized order flow
Transparent availability of the workplaces



Just-in-time intralogistics
Optimally guided intralogistics, reduced throughput times

Reduced downtime



Optimal workplace control
Mobile worker assistance

Process optimization



Efficient analysis
Secure data-base due to automatic feedback

www.trumpf.com/s/z30yhn

Quick and easy programming with integrated technical knowledge

Time is money, even for programmers. Faced with many small and often complex orders, your programming has to be significantly quicker – as well as error-free. Software that is coordinated with your system helps you to optimally nest your parts, for example, thereby reducing your material costs. Thanks to integrated technology expertise for the world of sheet metal, you gain time with the programming software from TRUMPF – for new orders.

How you benefit: More profitable production

Improve your performance with a click
Be it bending, punching or laser cutting, just one piece of software can cover the CAD editing and programming of your TRUMPF machines: TruTops Boost. The all-in-one solution enables you to cover multiple process steps and work through them consistently. All of the steps in a job are included, from the 2D/3D part to the finished NC program for bending, punching punch laser and laser machines. At the same time, the software takes into account the dependencies between the cutting and bending technologies, as well as the design and ensures a fast production process. The result is an integrated software with combined intelligence – ensuring that the software and machine are perfectly coordinated.



Software consultation

Faster error-free programming is the objective – which software will get you there? And how does it fit in with your existing systems? The software experts from TRUMPF take their time and answer your questions, keeping their eyes on your very individual requirements.

Automation will pay off for

Regardless of the degree of automation you choose, you will still benefit from the decreasing unit costs and increasing productivity.

Check it out for yourself!
As an example, the calculation shows the four levels of automation for your TruLaser Series 3000 and 5000 and their effects. The best thing to do is to calculate and see for yourself what your economic benefit would be.

NON-AUTOMATED MACHINE

Laser cutter system TruLaser Series 3000 or 5000



INVESTMENT	**Total delivery value** incl. freight, training, software	× 4.5 × 2 × 1.3
COO	Typical service life in years[1]	:
	Operating hours per year (example)	3520[2] :
	System costs per hour	=
	Employee costs per hour	
	Percentage/number of employees per machine	100% 1 ×
	Labor costs per hour	+ =
	Leasing costs for external sheet metal storage per hour	+
	Logistics costs (forklifts and drivers) per hour	+
	System costs + employees + storage + logistics per hour	=
PART COSTS	Productivity (quantity of parts produced) per hour – theoretical	100
	Degree utilization of the system (through material flow) – actual[5]	70%
	Productivity in units – actual	70 :
	Production costs per sample workpiece	=

[1] Usually the useful life of a storage system is longer than that of machines, therefore the actual production costs should be rated lower.

you, too!

PARTIALLY AUTOMATED MACHINE

Laser cutter system TruLaser Series 3000 or 5000

1 × LiftMaster Compact



FULLY AUTOMATED MACHINE WITH STORAGE CONNECTION

Laser cutter system TruLaser Series 3000 or 5000

1 × LiftMaster Compact

1 x TruStore 3030 (double tower) with approx. 30 pallets)



FULLY AUTOMATED MANUFACTURING IN ALL PROCESSES

2 × laser cutting system

2 × LiftMaster Compact

1 × STOPA large-scale storage system (14 towers) with approx. 300 pallets



3520 [2]	4576 [3]	5280 [4]
75%	40%	25%
0.75	0.4	0.25
100	100	200
75%	80%	85%
75	80	170

[2] 2 shifts at 220 workdays per year
[4] 3 shifts at 220 workdays per year

[3] 2 shifts at 220 workdays per year + 30% unattended production.
[5] Increases due to improved material flow.

Flexible financing

Invest in state-of-the-art production technology combined with financial flexibility and security you can rely on. Your benefit: Financing directly from the manufacturer, is tailored precisely to your situation and your market.

Financing machines



Tailor-made financing concepts for every need, whether leasing, installment plan or loan: every third TRUMPF machine worldwide are financed through our offers.

Financing materials



With Trade Finance, you secure more liquidity with full flexibility: The TRUMPF Bank does not interfere with the pricing and payment terms between you and your supplier. Together with us you determine your individual payment term.

Benefits for you:

- You can use first-class solutions at attractive terms and conditions, and with the usual TRUMPF quality.
- Additionally, you get a clear basis for calculation and can increase your financial flexibility.

EMPOWER SUPPORT IMPROVE

TruServices.
Your partner in performance

Invest in state-of-the-art production technology, combined with financial flexibility and reliable security.

Here you will find further information about our financing solutions: **www.trumpf.com/s/92fe54**

Passion is what drives us

Whether it's production and manufacturing technology, laser technology, or material processing – we develop highly innovative products and services for you which are tailored to your industry and which are absolutely proven and reliable. We put everything we've got into giving you a compelling, competitive edge: expertise, experience, and above all passion.

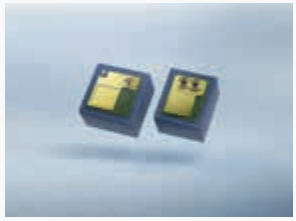
Check out our YouTube channel:
www.youtube.com/@TRUMPFtube



Machines + systems
Laser cutting, punching, bending, laser welding: With custom-fit machine tools, laser systems and automation from TRUMPF, you can master flexible sheet metal and tube processing. Not forgetting our solutions for additive manufacturing.



Lasers
Whether you are cutting, welding, marking or processing surfaces, lasers from TRUMPF are the universal tools for industrial applications – in the macro, micro and nano ranges. In addition, you will get software solutions and benefit from application knowledge and consulting.



VCSEL solutions + photodiodes
Laser and photodiodes from TRUMPF Photonic Components come into their own in numerous applications: in both the industrial and consumer markets and even in optical data communication. In the TruHeat VCSEL systems, millions of VCSELs (Vertical Cavity Surface Emitting Laser) generate infrared heat, which is used for laser heat treatment.



Power electronics
Nothing's hi-tech without a process power supply: With generators for plasma technology, industrial heating, battery inverter systems or microwave amplifiers, you get power at the frequency and performance you need.



Solutions for your future
Take advantage of digital networking opportunities: we partner with you on the path to networked production, delivering pragmatic, economical solutions that make your processes both more transparent and flexible.

TRUMPF is certified to ISO 9001
(Find out more: www.trumpf.com/s/tlz8hk)

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