MESSER
Cutting Systems

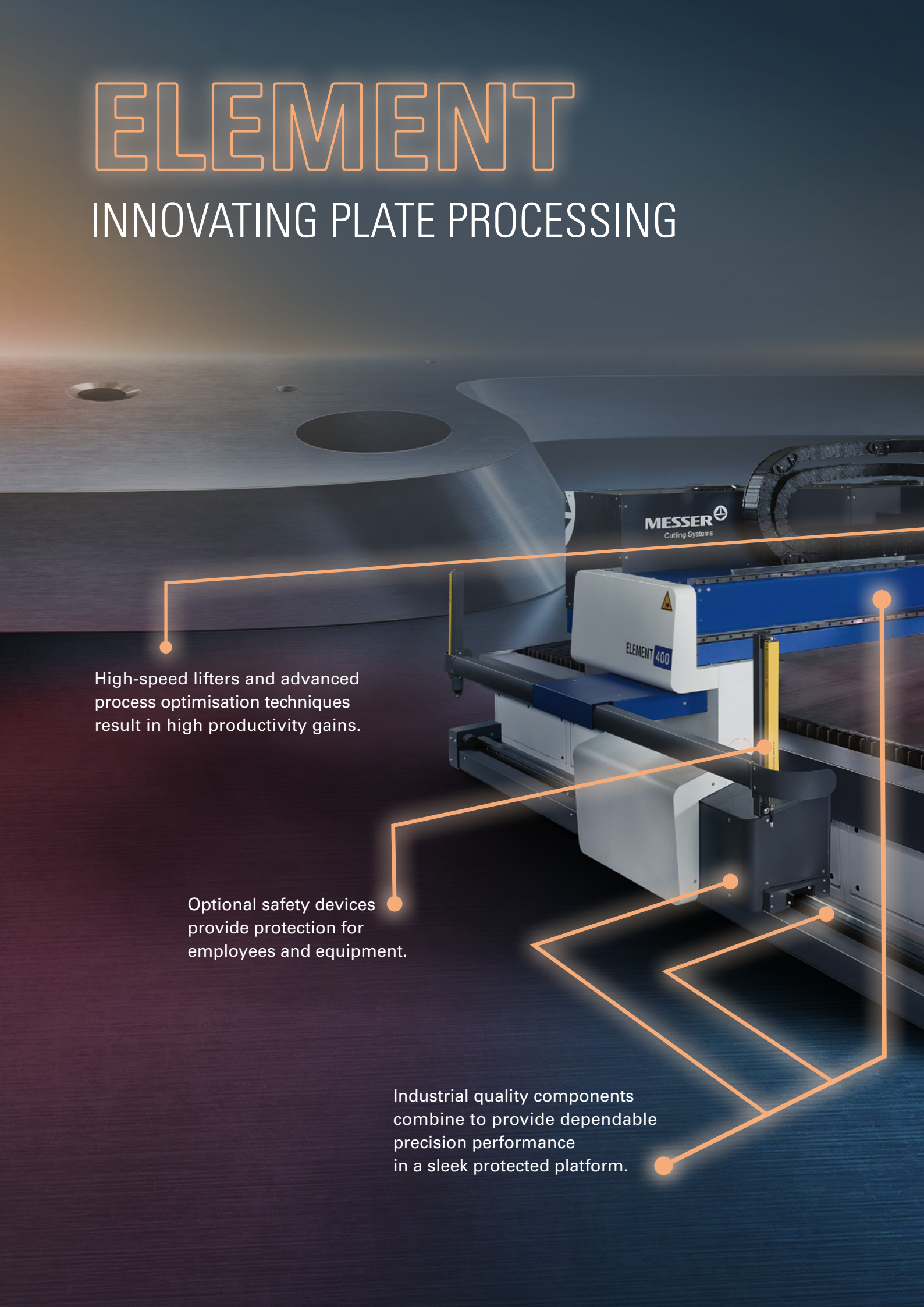
ELEMENT 400
PRODUCTIVITY REDEFINED

Adaptable solutions for the metal processing industry

PRODUCT

ELEMENT

INNOVATING PLATE PROCESSING



High-speed lifters and advanced process optimisation techniques result in high productivity gains.

Optional safety devices provide protection for employees and equipment.

Industrial quality components combine to provide dependable precision performance in a sleek protected platform.

Independent servo driven tools provide versatile processing options. Reduce setup time by spacing or parking multiple tools automatically through the part programme or at the control (optional).

CNC control designed to improve operator efficiency, eliminate redundancy and to provide remote transparency of important production data.

For over 120 years we have provided quality products and reliable services for the metal processing industry.

The ELEMENT is a flexible processing machine that can be tailored to fit your unique application. A variety of different sizes and tools can be packaged with powerful software to provide maximum productivity and unmatched performance. The ELEMENT seamlessly integrates with multiple material handling systems to complete your metal processing solution.

ELEMENT 400

CARRIER OF SOLUTIONS

PROCESS OPTIONS

Plasma

Several advancements in plasma technology over the last few years allow for precision cutting of mild steel, stainless steel and aluminum. Most recent development has been focused on improved hole cutting and longer consumable life, providing fewer secondary operations and lower operating costs.

The best plasma system to fit your application will include collision protection and will be mounted on one of our high-speed lifters featuring laminar jumps between pierce points. Along with other process optimising features, we can provide higher productivity with all industry standard plasma systems.

PRECISION CUTTING OF FERROUS AND NON-FERROUS

+ **Maximum thickness up to 150 mm (non-ferrous material)**

PROCESS OPTIONS

Oxyfuel – ALFA

For over 120 years, Messer Cutting Systems has provided and developed leading-edge technology for oxyfuel cutting machines which deliver high-quality cuts, reliable service, and considerable savings to the cutting process.

Oxyfuel cutting is the most economical method to produce high-quality parts from mild steel and low alloy steel. The ALFA torch contributes to low operating costs by reducing setup and process monitoring labor. Remote ignition eliminates manual strikers, consumables can be changed without tools, height sensing quickly positions all torches at the optimum cut height to substantially reduce pierce time, and the integrated collision protection allows the torch to cut right to the edge of the plate without fear, thus increasing plate utilisation.

HIGH QUALITY RESULTS IN MILD STEEL AND LOW ALLOYS

+ **Reduce time and labor with multiple torches**

BEVEL OPTIONS

Bevel-R

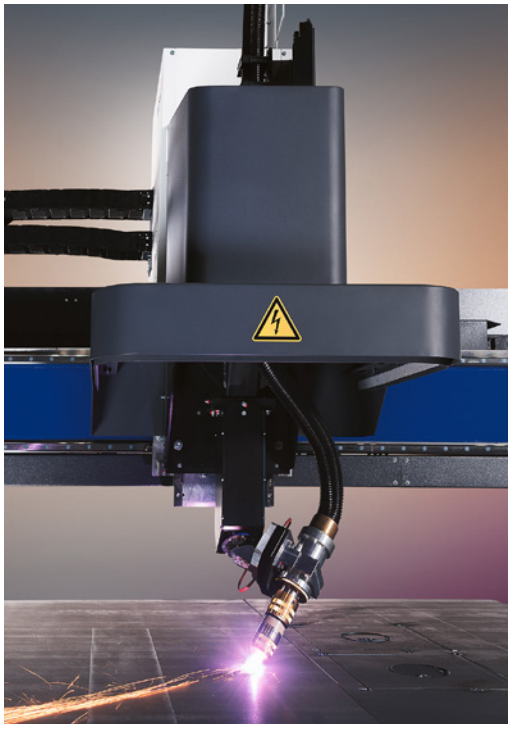
The relatively compact size of this robotic style bevel unit provides excellent results for most weld preparation applications without sacrificing vertical cut quality in everyday use.

Contour beveling is done via five synchronised axes that allow for standard bevel profiles on most parts. Repeatability is maintained via an automatic software calibration routine to align the bevel head over the life of the machine.

Patented collision protection and unlimited torch lead rotation provide high reliability in day-to-day operations.

MOST APPLICATIONS REQUIRING STANDARD WELD PREPARATION PROFILES

+ **+/- 45⁰ bevel angles**
+ **I, A, V, Y, X and K weld profiles**
+ **Interpolation of the bevel angle (change-on-the-fly while cutting)**



BEVEL OPTIONS

Bevel-S

Accurate and repeatable cut parts are created with this unique design that does not require movement of the entire machine. The plasma torch can therefore tilt very quickly, resulting in maximum plate utilisation.

With only two axes required to tilt the torch in our industry-proven skew axis design, precision cutting of small holes to the most complex bevel contours is possible.

Patented collision protection, a simple pneumatic torch lead management system and a few recent enhancements ensure that production requirements are easily achieved.

JOB SHOPS, OEMS AND OTHERS WITH HIGH QUALITY AND HIGH PRODUCTION EXPECTATIONS

+ **+/- 45⁰ bevel angles**
+ **I, A, V, Y, X and K weld profiles**
+ **Interpolation of the bevel angle (change-on-the-fly while cutting)**
+ **Plow bolt and countersink holes**
+ **Picture-frame features**

MARKING OPTIONS

Inkjet Marker

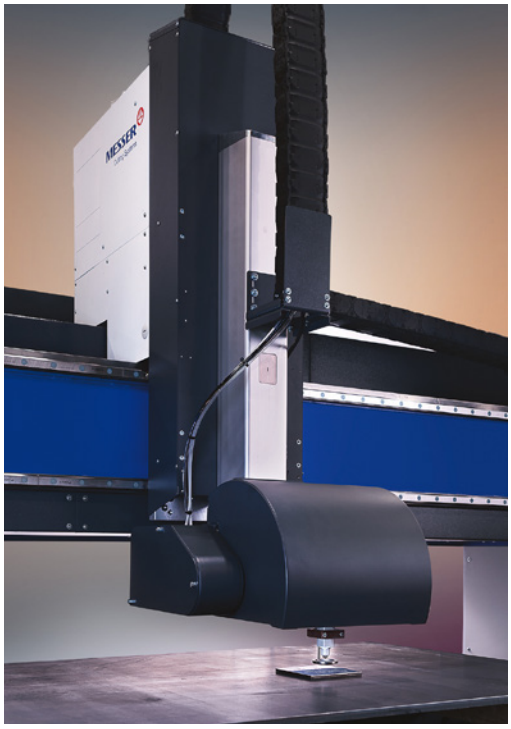
Parts often need non-permanent marking for secondary operations such as layout lines or simple part identification as they move through production. The inkjet marker produces markings that do not damage the plate and are not visible after painting.

Production does not slow down for marking as the marker creates text at speeds of up to 17 characters per second. Available with 7 or 16 nozzles.

Black ink only systems satisfy most requirements while optional hardware can be used with pigmented ink to create higher contrast results for some applications.

NON-PERMANENT MARKING OF TEXT AND LAYOUT LINES

- **+ Dye-based ink MEK (Methyl Ethyl Ketone)**
- **+ Dries in 3–5 seconds**
- **+ Will not wipe off with water**
- **+ Standard text height at 9, 12, 18, 27 mm**
- **+ Optional 45 and 67 mm text**



MARKING OPTIONS

Pin Marker

For applications which require a more permanent mark, the pin marker uses a vibrating stylus to create easily legible characters or layout lines.

In just a few seconds, the robust and low-maintenance marker can create text as small as 10 mm.

The results are visible on a variety of materials, including primed, rusted or mill scale plate. In some cases, the mark may still be visible after painting.

TEXT AND LAYOUT LINES THAT ARE MORE PERMANENTLY VISIBLE

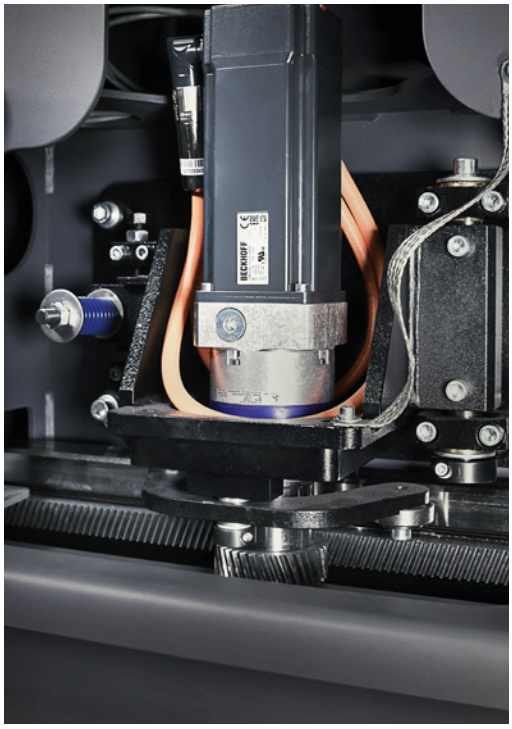
- **+ Clear, physical markings that cannot be easily removed**
- **+ Variable marking depth**

SPECIAL FEATURES

Plate Alignment

A programmer will nest parts as efficiently as possible to get the best plate utilisation. The operator equally is charged with reducing scrap as parts are processed. Multiple times per day, a plate is placed on the cutting table and then matched or aligned to the plate.

The bright dot of a laser pointer or the crisp image of the plate edge digitally streamed to the Global Connect allow the operator to quickly capture the location or angle of the plate. This operation can even be automated using an optional laser system to increase productivity.



SPECIAL FEATURES

Motion System

Is the cut edge smooth? Are the holes round? Are the corners sharp? Are the parts accurate? The answer to these questions ultimately speaks to the quality of the machine. An expert operator, optimised cutting parameters, and new consumables will not create a good part if machine movement is rough and the tool does not stay on path.

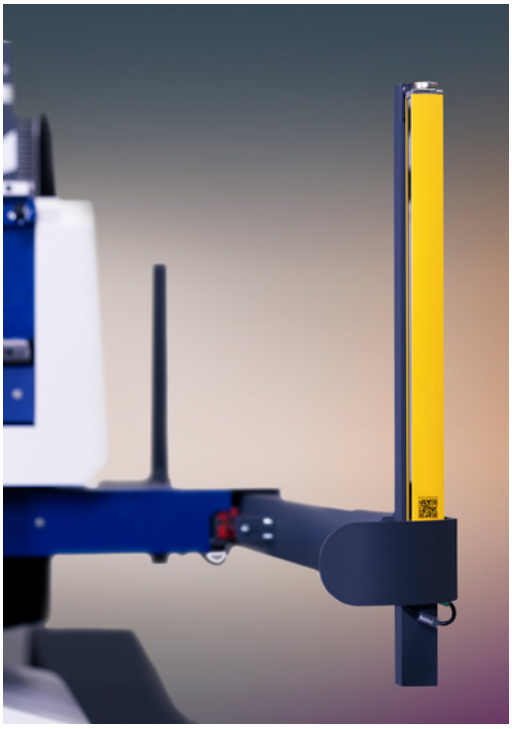
The ELEMENT is built with helical rack and pinions, precision linear ways, and heavyweight rails as a foundation for smooth motion. Large AC servo motors provide exceptional cut part quality by quickly accelerating the cutting tool in and around holes and corners. The operator will hustle to keep up with this machine as it moves exceptionally fast from part to part.

REDUCE SETUP TIME AND ELIMINATE SCRAP

+ **Manual operation with laser pointer or camera**
+ **Automatic operation with laser edge detection system**

PRODUCE THE HIGHEST QUALITY PARTS IN THE SHORTEST AMOUNT OF TIME

+ **Positioning speed up to 50 m/min**
+ **Acceleration rate of 0.04 g**



SPECIAL FEATURES

Safety

Though functional safety technology prevents damage to machinery and minimises downtime, its core job is to protect people. Light curtains positioned on the front and rear of the machine offer protection when loading and unloading the cutting table. These devices immediately stop the machine when an obstruction passes through the viewing field. Additional protection is provided by a unique sliding system that also stops the machine in the event of contacting an obstruction.

Most tools on the machine also offer a level of protection for the hardware itself. For example, all plasma torches feature our patented SureStop magnetic collision sensor which quickly stops the machine and turns the process off. Recovery is simple and production resumes.

Illustration shows special equipment

SPECIAL FEATURES

Cutting table with fume extraction

Fume extraction tables ensure workpiece support and a very effective extraction of the pollutants produced by thermal cutting.

Sectional exhaust ventilation ensures the concentration of the entire ventilation process upon the cutting area and thus uses minimal fan power to achieve complete ventilation of cutting dust and smoke.

Single or multiple channel extraction available for optimised requirements based on the volume of air extracted whilst maintaining the full effectiveness of the fume extraction table.

LEVEL OF PROTECTION FOR THE MACHINE BUT MORE IMPORTANTLY THE OPERATOR

- **Light curtains and other overall machine safety features are available**
- **Internationally certified TwinSAFE on-board**
- **Key switch prevents machine movement during maintenance operations and when performing consumable exchange**

EFFECTIVE SMOKE REMOVAL AND MINIMAL CUTTING TABLE MAINTENANCE

- **Can be used with plasma, oxyfuel and laser applications**
- **Small parts may also be easily retrieved**
- **Table widths from 2,100 to 4,100 mm**
- **Table lengths up to 47,000 mm**

OMNIWIN

Ideal for work preparation

OmniWin is a powerful, easy to use designing and nesting software that saves time, material and costs. It is the ideal tool for work preparation in oxyfuel, plasma and laser cutting with CNC machines, taking over all cutting tasks for order-based production.

The software is both effective and economical – for small productions as well as for just-in-time manufacturing with changing quantities in custom cutting operations.

OMNIBEVEL

The tool for bevel cutting

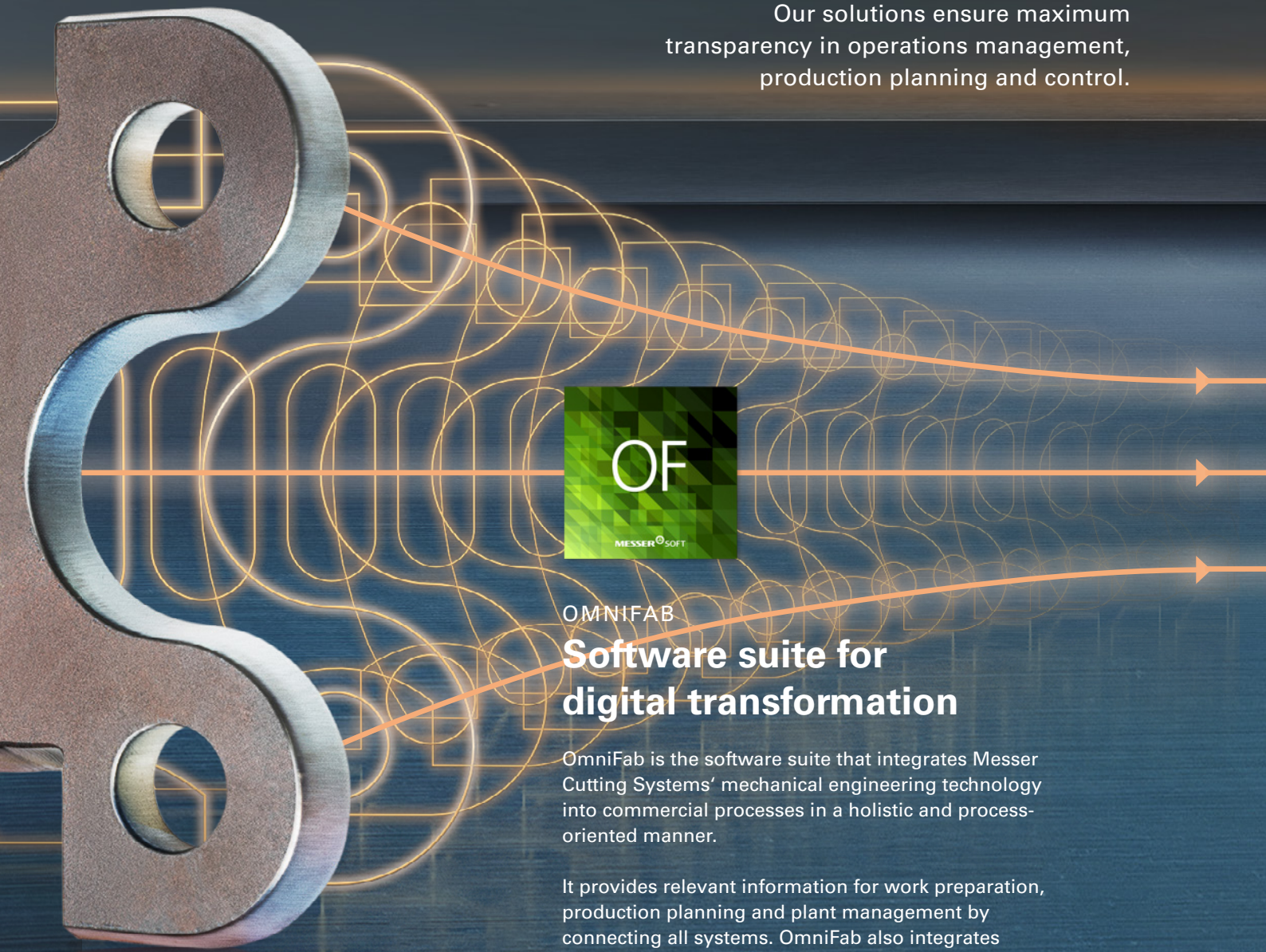
OmniBevel is the software for dimensionally accurate parts and the leading product for bevel cutting. The post-processor module with a graphical, easy to use interface delivers optimal cutting results.

It can be used for straight cuts, cylindrical holes, exact bevel angles and parts with absolute dimensional accuracy. Almost all possible technology parameters and operation details are adjustable.

YOUR DIGITAL WORKFLOW

PRODUCTION DIGITISATION

Our solutions ensure maximum transparency in operations management, production planning and control.



OMNIFAB

Software suite for digital transformation

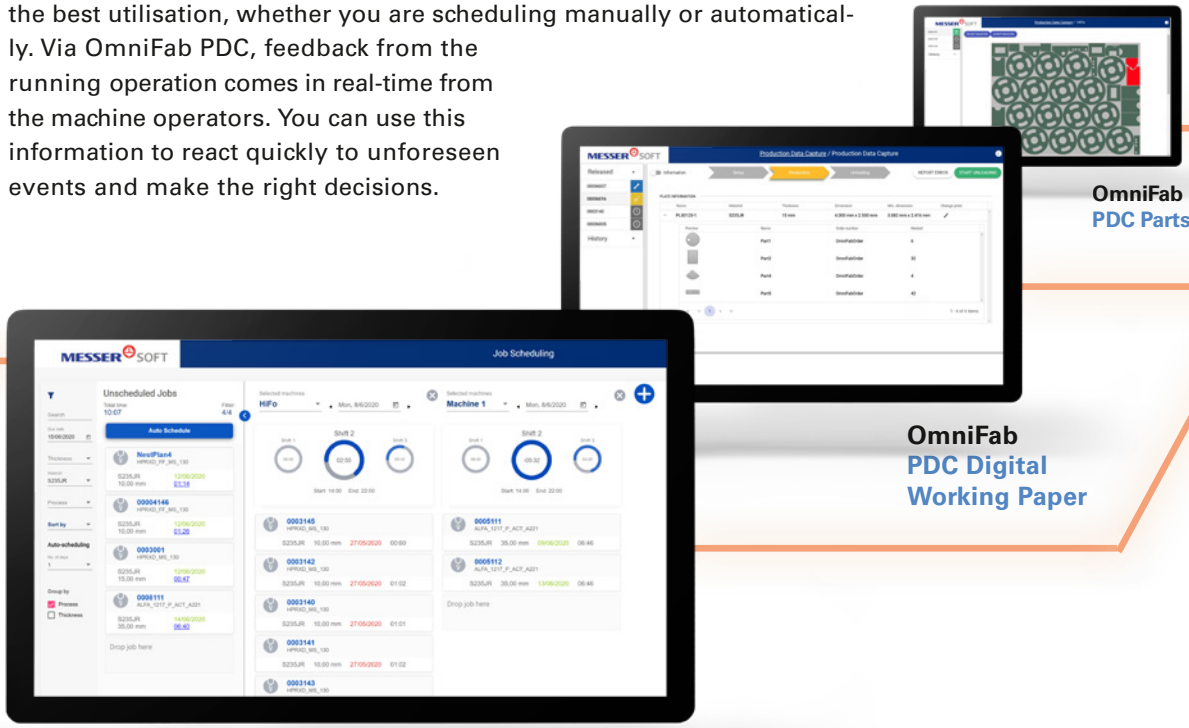
OmniFab is the software suite that integrates Messer Cutting Systems' mechanical engineering technology into commercial processes in a holistic and process-oriented manner.

It provides relevant information for work preparation, production planning and plant management by connecting all systems. OmniFab also integrates material handling systems like loading/unloading stations, towers, material transportation devices and more – even on mobile devices.

GLOBAL CONNECT

Everything at a glance

With OmniFab Job Management, you always have an overview of all jobs. The software ensures the jobs are done on the right machines and with the best utilisation, whether you are scheduling manually or automatically. Via OmniFab PDC, feedback from the running operation comes in real-time from the machine operators. You can use this information to react quickly to unforeseen events and make the right decisions.



OmniFab
Job Scheduling

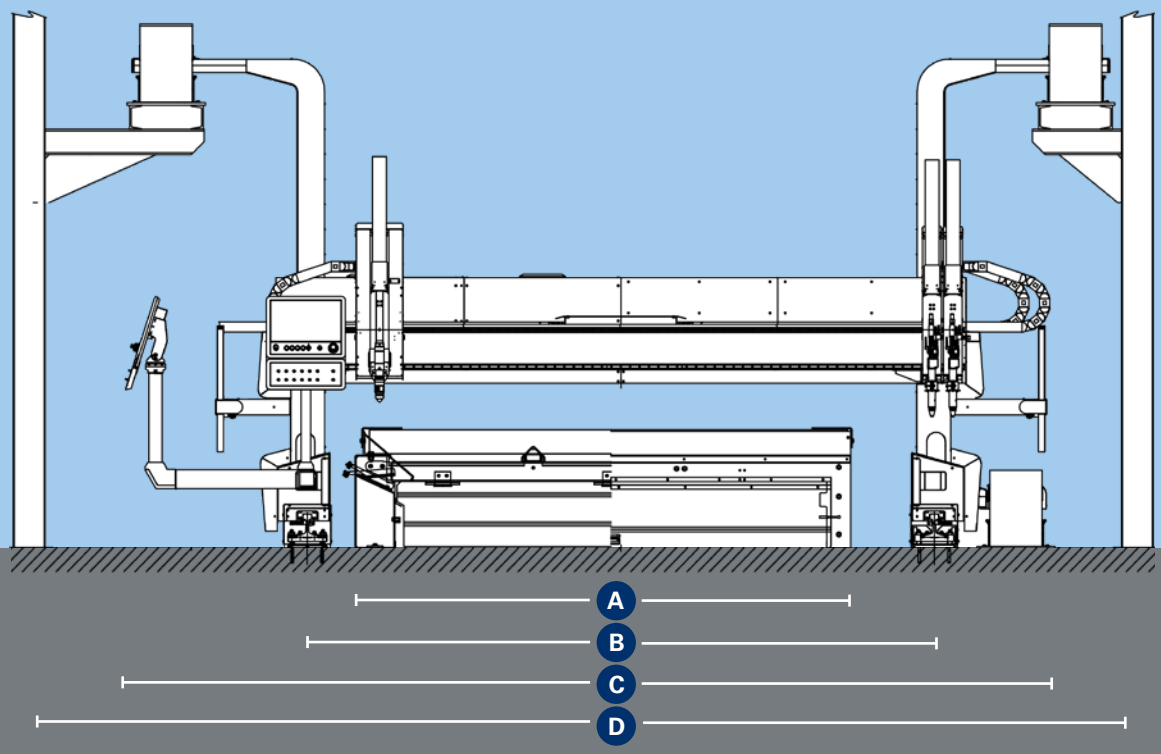
OmniFab
PDC Digital Working Paper

OmniFab
PDC Parts Status

Novice operators become experts.
Programmers control the process remotely.
Maintenance employees prevent downtime.
Production managers know the job status and reduce operating costs.

All of this is possible if you see the CNC control as the connector between production plant, machine and its operator to allow local as well as remote production scheduling. Data transparency to others within the organisation provides key information which is needed to make better business decisions.

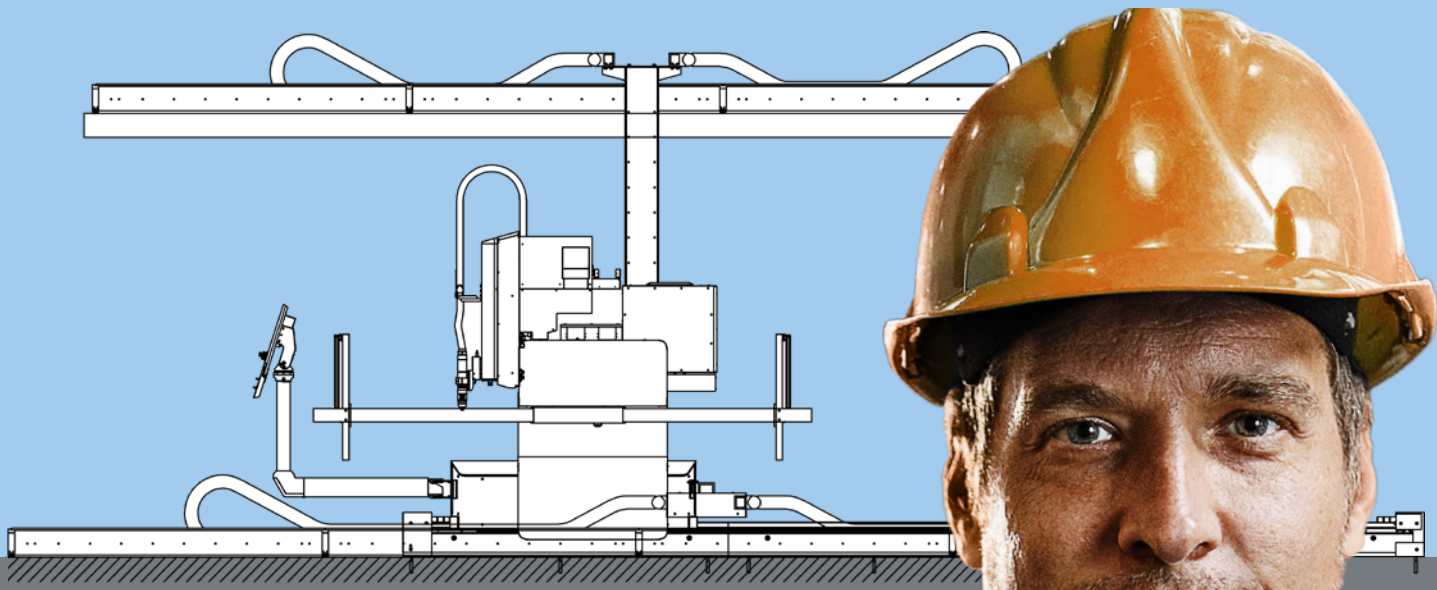
+ Flexible job-centric environment for new operators to learn quickly and experienced operators to excel
+ Job scheduling for improved production flow
+ Quick processing of past or repetitive jobs
+ Local nesting and standard shape library for just-in-time workflow



Beam	A Maximum Table Width	B Machine Rail Gauge	C Machine Working Width	D Overall Machine Clearance
3,000	2,100	2,600	4,700	5,700
3,700	2,600	3,100	5,200	6,200
4,000	3,100	3,600	5,700	6,700
4,400	3,600	4,000	6,100	7,100
5,000	4,100	4,600	6,700	7,700
5,400	5,100	5,000	7,100	8,100
6,400	5,600	6,000	8,100	9,100

Standard features

+ Cutting widths 1.600 mm to 4.100 mm
+ Cutting length up to 47.000 mm
+ Machine motion accuracy; <0.1 mm accuracy; <0.1 mm repeatability,
+ Cuts material up to 300 mm
+ Cuts mild steel, stainless steel, aluminum
+ Positioning speeds up to 50 m/min
+ Reinforced steel weldment construction with high rigidity beam
+ Enclosed powertrack in both axes
+ Floor or H-Beam installation
+ Up to six torch stations (maximum two plasma stations)
+ Up to three torch stations will cover full rated cutting width
+ Global Connect, Windows® based with easy-to-use operator interface
+ Stand alone or right- or left-hand mounted control console with tilt and swivel for operator comfort
+ Virtual Service™ remote consultation and diagnostics
+ SureStop collision sensor with easy and accurate reset
+ Advanced oxyfuel technology provides consistent piercing and faster cutting
+ Meets all safety requirements



Optional features

+ Plasma Bevel Units: Bevel-R and Bevel-S
+ ALFA or MS 932 oxyfuel torches
+ Advanced oxyfuel technology
+ with Omniflow automated gas regulation system
+ Auto torch spacing
+ with programmable torch selection
+ Plate markers: Plasma, Inkjet Marker and Pin Marker
+ Digital video camera
+ Automatic plate alignment
+ Laser pointer
+ IoT 4.0 (Machine Insight)
+ Programming and nesting software
+ Light curtain and pull-cord safety devices
+ Operator glare curtain
+ Zoned exhaust tables
+ Messer Cutting Systems dust collection system
+ Material handling systems
+ Visual Service adds a sense of sight to the troubleshooting process

WHAT WE STAND FOR

CREATING SOLUTIONS BEYOND MACHINES

Messer Cutting Systems is a global supplier of cutting edge technology for the metalworking industry.

With over 900 employees worldwide in over 50 countries, we maintain a constant dialogue with our customers to achieve sustainable user-oriented innovation.

Our portfolio embraces the themes PRODUCT, DIGITAL, SERVICES, AUTOMATION and KNOW-HOW. We will live up to our claim "creating solutions beyond machines" not just with the most modern cutting systems and solutions for oxyfuel technology.

Appropriate services and training, our own software applications as well as the integration of solutions from our technology partners, e. g. in the field of automation, complete the machine to give forward-looking total solutions.

Our know-how combined with our customer-oriented attitude and actions have made us the worldwide partner of choice for innovative total solutions on all aspects of cutting systems for over 120 years.

Messer Cutting Systems India Private Limited

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THE MESSER EXPERIENCE