

The background of the entire page is a collage of industrial machinery, including gears, shafts, and mechanical components. This collage is overlaid with a series of semi-transparent green triangles of various sizes, creating a complex geometric pattern. The text 'INNOVATIVE SPECIAL SOLUTIONS' is written in a large, bold, white sans-serif font, centered in the upper half of the image.

INNOVATIVE SPECIAL SOLUTIONS

The logo for HAGE is located in the bottom right corner. It consists of the word 'HAGE' in a bold, outlined, sans-serif font. A solid green triangle is positioned between the 'A' and 'G', serving as a visual separator and a brand identifier.

HAGE

ABOUT HAGE

MORE THAN 40 YEARS OF SPECIAL-PURPOSE MACHINES

The automation specialists of HAGE have been developing and building impressive high-tech machines since 1982. Our strength lies in solving complex automation issues. We score points by combining different technologies into a comprehensive plant concept.

Every project is a brand-new challenge. We create highly individual machines to meet our customers' needs exactly – and in line with the newest standards of technology. When it comes to innovation, we are always willing to try things others don't do. We stay true to our full-service philosophy and make sure we have full control over every aspect of a project. Our services cover every step from design of the machines, through production, assembly, installation, service and maintenance – anywhere in the world.



Brothers Florian and Stefan are the second generation of their family to lead the company together with Peter Freigassner-Sanchez, now with around 140 employees.

© Otmor Winterleitner



REFERENCES WORLDWIDE

Over the last 40 years HAGE has grown to become a successful international company. There are HAGE machines behind many products of the automotive industry, the railway industry, the construction industry and space flight. They are being used to make car bumpers in China, parts for high-speed rail carriages in Austria and Switzerland, bends for pipelines in Saudi Arabia and tanks for rockets in Germany.

FULL SERVICE

CONSULTING & CONCEPT

Based on our customers process needs, we develop a machine concept that solves all the technical requirements and delivers a highly efficient and profitable process.

FABRICATION

The excellent quality of the parts we produce in-house is assured by our own modern production machines, expertise in innovative processing technologies and highly trained and skilled staff.

CONTROL TECHNOLOGY

While the machine is being assembled, the electrical wiring of the modules is installed, the necessary software is developed, all the functions and work sequences of the machine are tested, before the first sample workpieces are processed.

MAINTENANCE & SERVICE

When problems arise – and especially in the event of breakdowns – we offer rapid response times and flexible, worldwide service so that you can resume production as quickly as possible.

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DEVELOPMENT & DESIGN

Our machine designs focus on space saving while ensuring maximum availability and functioning of the equipment. We create layouts in 3D CAD, prepare detailed drawings (in accordance with standards) of the parts that have to be specially fabricated, and analyse critical components.

ASSEMBLY

The parts fabricated in-house and the parts sourced from outside suppliers come together first in sub-assemblies and then in the precise setup of the whole machine or production line. After successful factory testing, the equipment is split up into modules for transport, ready for rapid installation at the customer's site.

(VIRTUAL) COMMISSIONING

In order to avoid problems and save time in the commissioning process, HAGE regularly uses virtual commissioning.

PRODUCT GROUPS



HAGEMATIC



HAGEFSW



HAGECUT



HAGESPECIAL

HAGEMATIC

PROCESSING CENTRES

HAGE Matic gantry processing centres are made for high-precision processing of large steel and aluminium sections.

HAGE Matic machines are as diverse as the workpieces they process. Beginning from our two basic machine concepts, HAGE Matic Classic and HAGE Matic Flexible, we develop customized machines in close consultation with our customers. Depending on the needs of individual customers, HAGE also supplies:

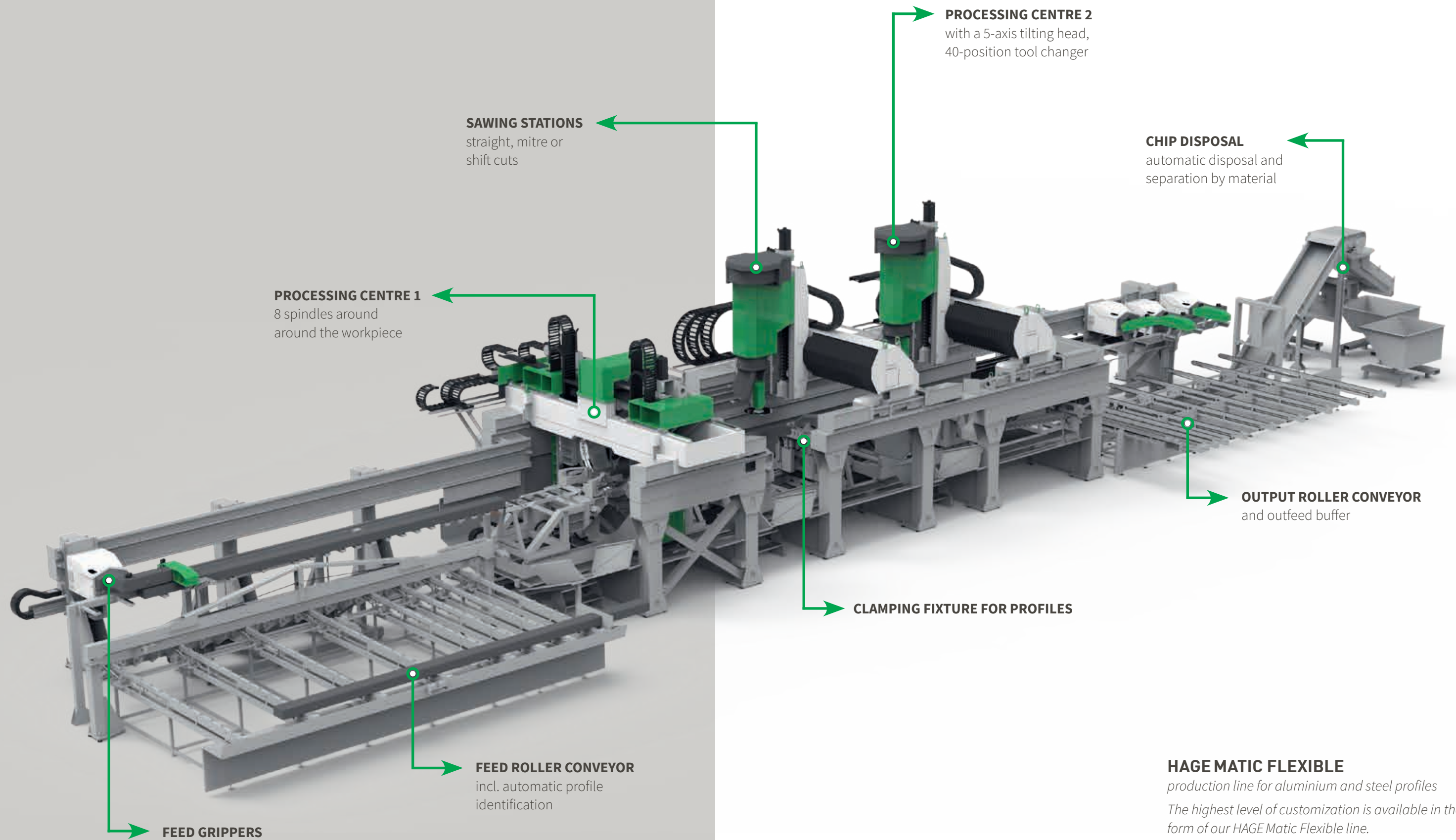
- ▶ Travel paths individually customised
- ▶ Safety and noise control concepts
- ▶ Efficient swarf management
- ▶ Clamping systems
- ▶ NC programmes optimized for specific workpieces
- ▶ Specifications for the machine foundation

HAGE Matic CLASSIC

Milling, drilling, saw cutting, thread cutting: HAGE Matic Classic is a 5-axis gantry milling machine for aluminium and steel sections. Travel distances of up to 100 m and track widths of up to 6 m can be realised. The milling head and spindle specifications are worked out individually.



HAGE Matic CLASSIC
processing centre



HAGE Matic FLEXIBLE

production line for aluminium and steel profiles

The highest level of customization is available in the form of our HAGE Matic Flexible line.

HAGECUT

FOR A CLEAN CUT

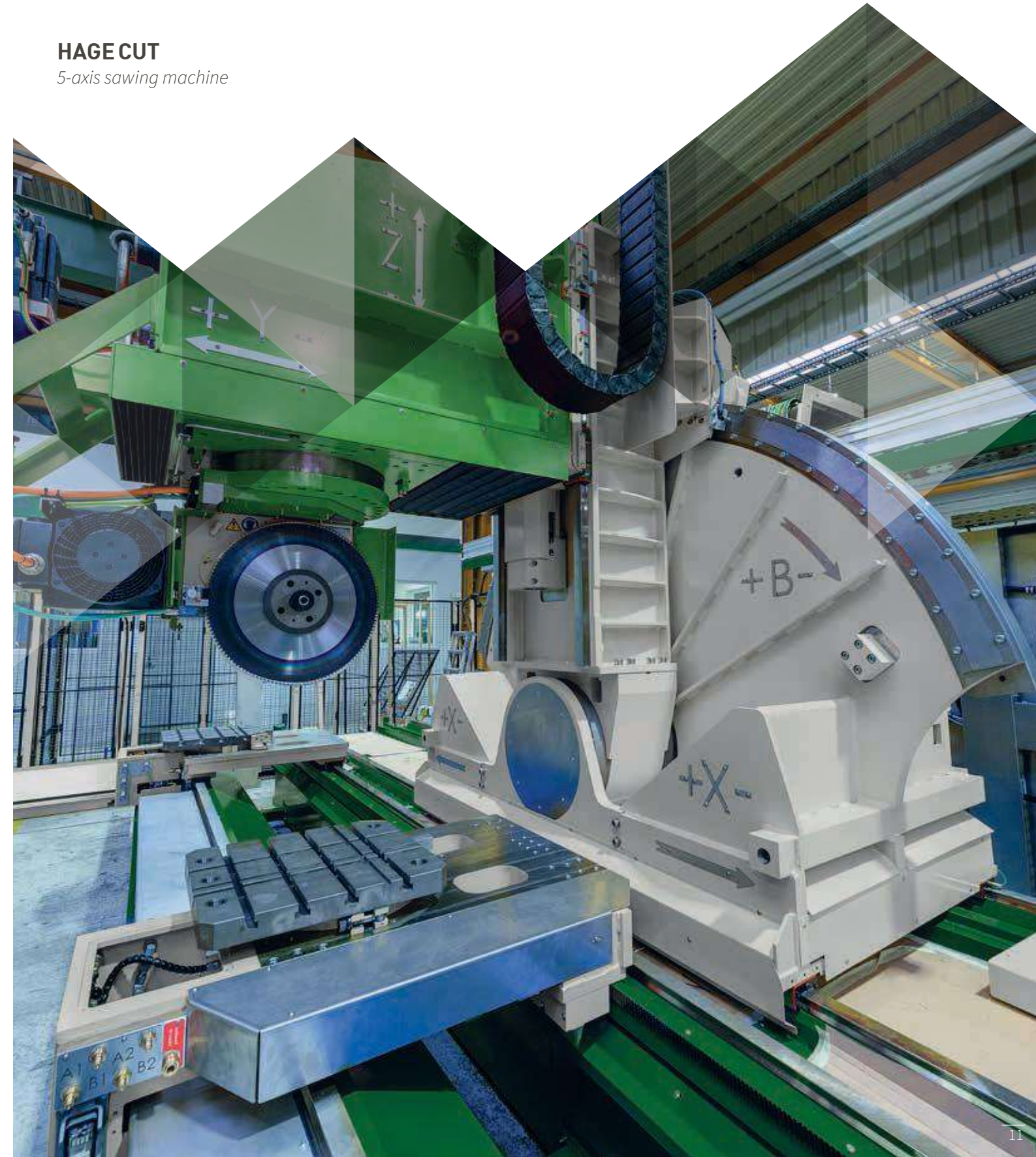
HAGE Cut sawing machines provide high-precision, automatic sawing of different cross-sections and geometries at variable cutting angles. The sawing function can be combined with deburring and punching. HAGECut machines are high-tech, customized saws that can cut the hardest materials.

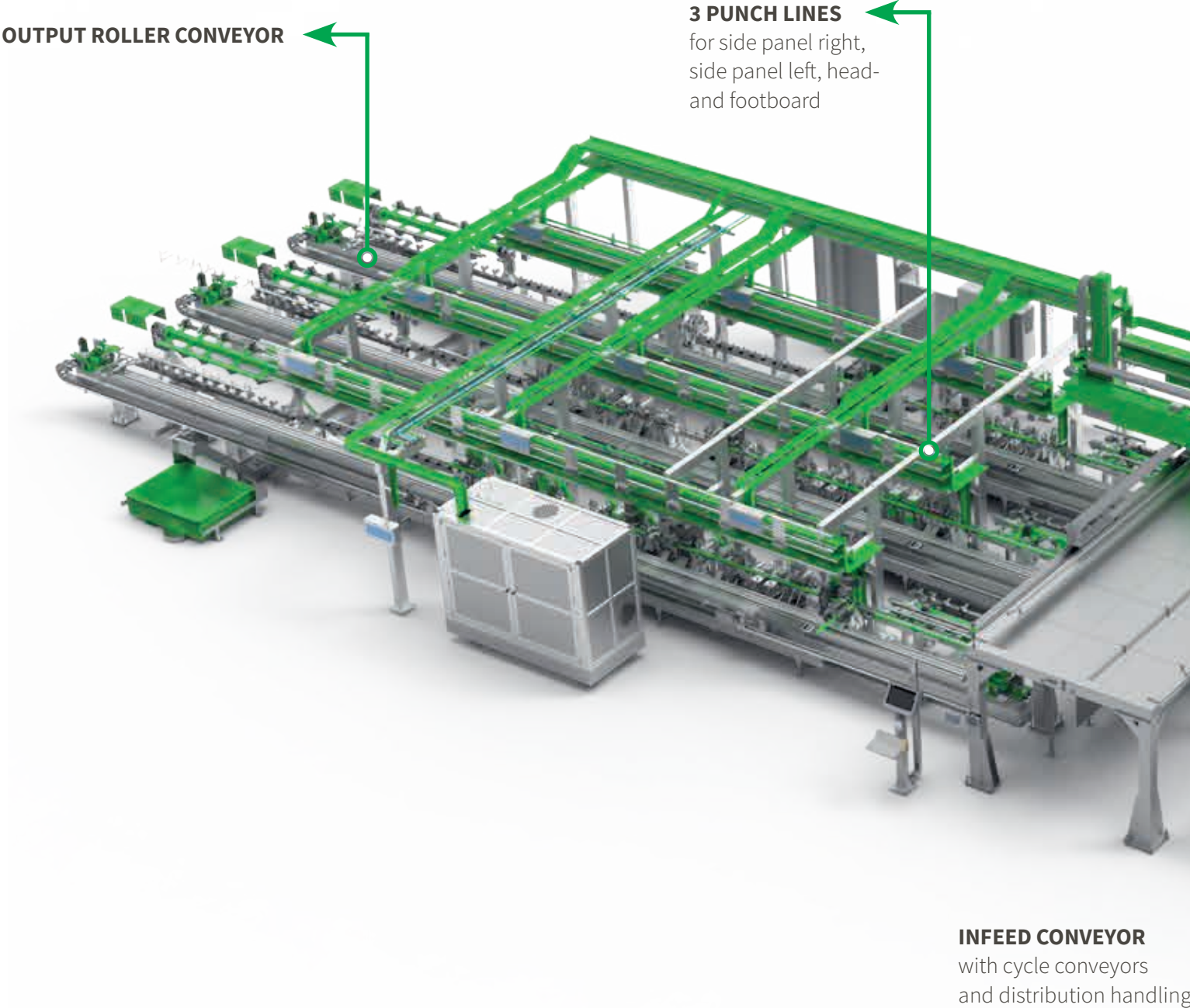
Our HSS and hard metal saws achieve high precision thanks to our innovative clamping concepts and highly robust and stable machine design. The machine layout and technical specifications are always customized to suit the customer's processing needs.

- ▶ Compatible with any workpiece dimensions
- ▶ Thoroughly engineered complete solutions
- ▶ User-friendly operation
- ▶ Integration with upstream and downstream process steps
- ▶ Smart noise protection concept
- ▶ Automatic saw blade measurement
- ▶ Saw cut release
- ▶ Optimized workpiece handling
- ▶ Precise cutting results with HSS and hard metal blades
- ▶ Intelligent machine control

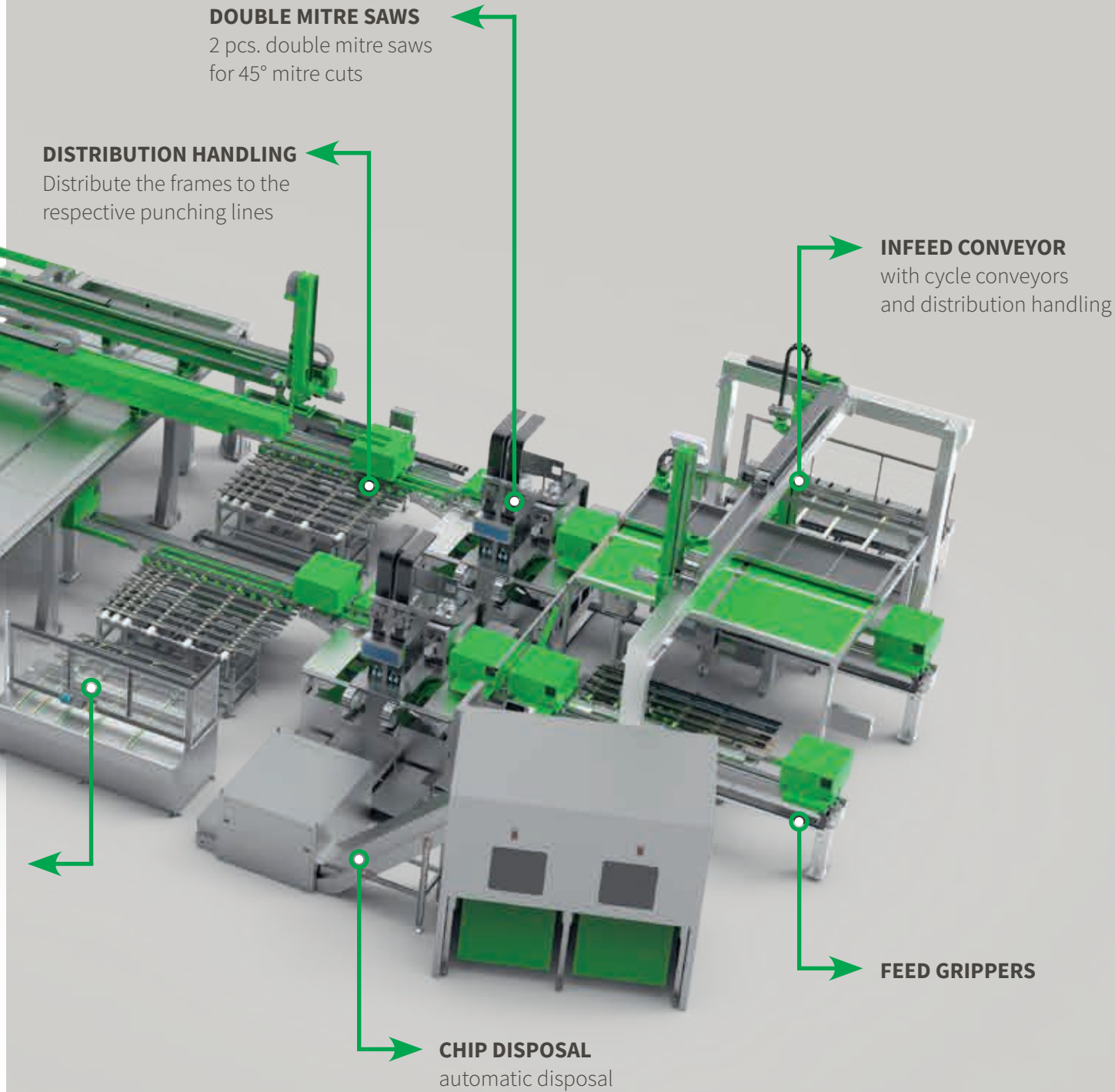
HAGE CUT

5-axis sawing machine





HAGECut saws are designed for full integration into production line concepts with upstream and downstream work steps, such as punching, brush deburring, application of barcodes or parts handling. We developed the HAGECut drive system specially in response to the range of process capabilities our customers ask for. Its special geometry gives the saw blade better access to the workpiece; for example it enables cutting of large workpieces using small saw blades. The result is better cut quality and high work rates.

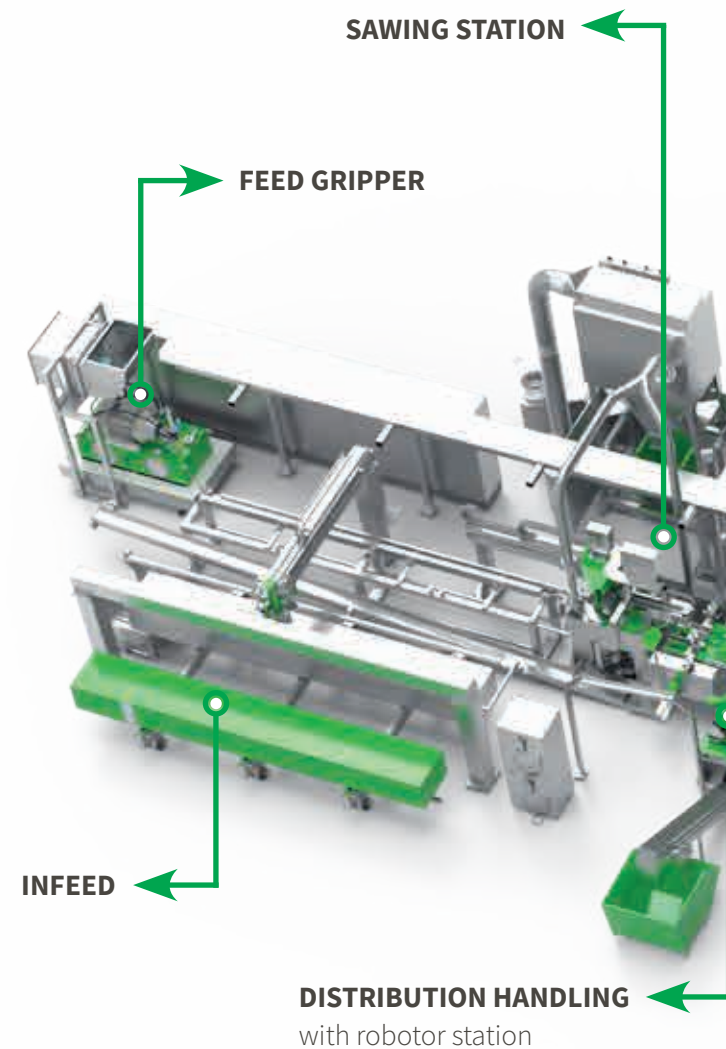


HAGE CUT
steel frame production line

HAGESPECIAL

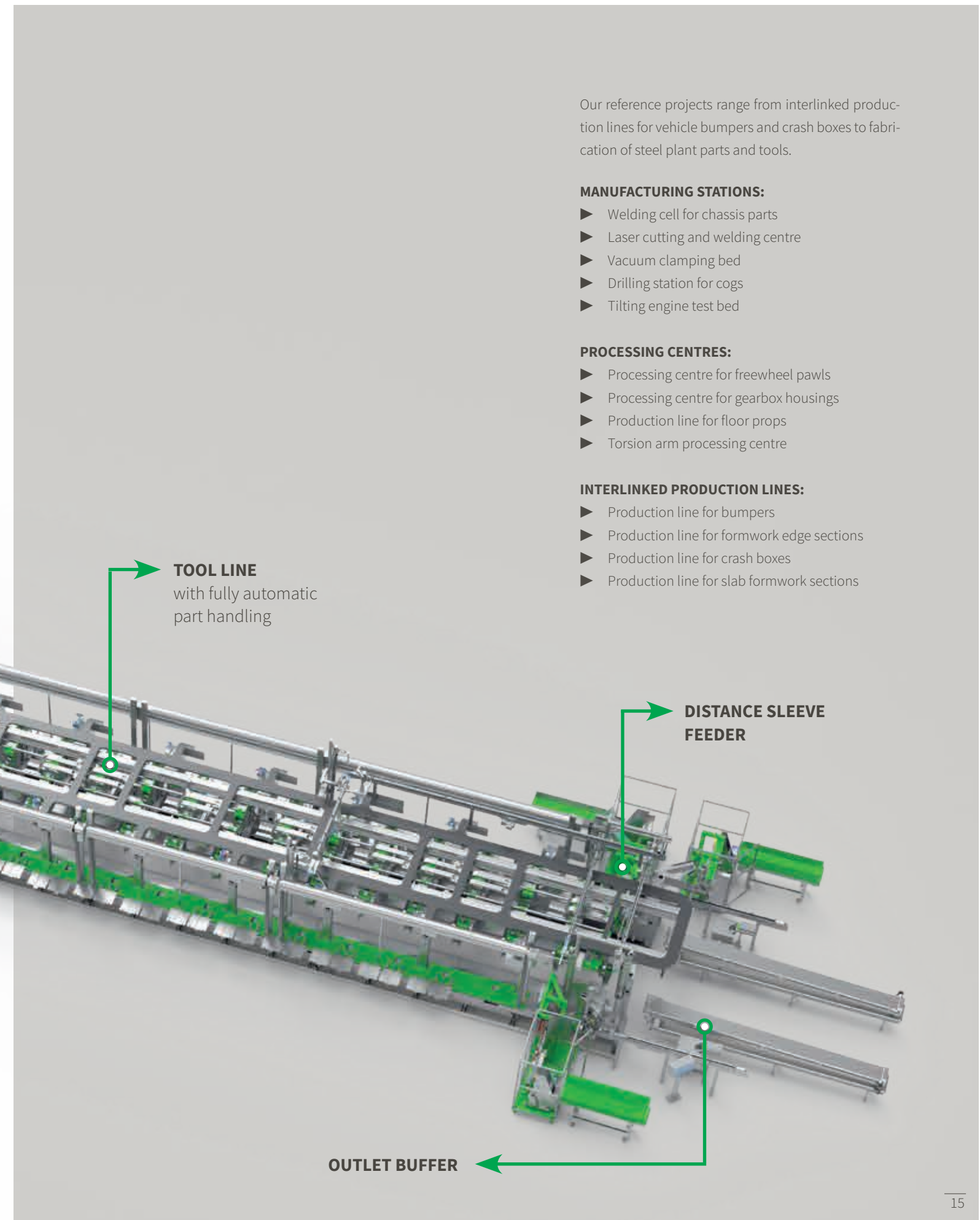
INDIVIDUAL SOLUTIONS

Beyond our product lines HAGEMatic, HAGECut and HAGEFSW there are many fields of production in which our automation expertise is a game winner. Our strength lies in the combination of different processing technologies into complex production systems. We develop completely individual solutions for our customers, combining our experience from 40 years of making machines with the spirit of invention.



HAGESPECIAL PRODUCTION LINE FOR CRASH BOXES

HAGE customizes crash box lines to suit individual customer requirements. For example, they can be made with NC handling and a linear processing line layout. An alternative possibility is to use robotic handling with tools mounted on a rotary table.



Our reference projects range from interlinked production lines for vehicle bumpers and crash boxes to fabrication of steel plant parts and tools.

MANUFACTURING STATIONS:

- ▶ Welding cell for chassis parts
- ▶ Laser cutting and welding centre
- ▶ Vacuum clamping bed
- ▶ Drilling station for cogs
- ▶ Tilting engine test bed

PROCESSING CENTRES:

- ▶ Processing centre for freewheel pawls
- ▶ Processing centre for gearbox housings
- ▶ Production line for floor props
- ▶ Torsion arm processing centre

INTERLINKED PRODUCTION LINES:

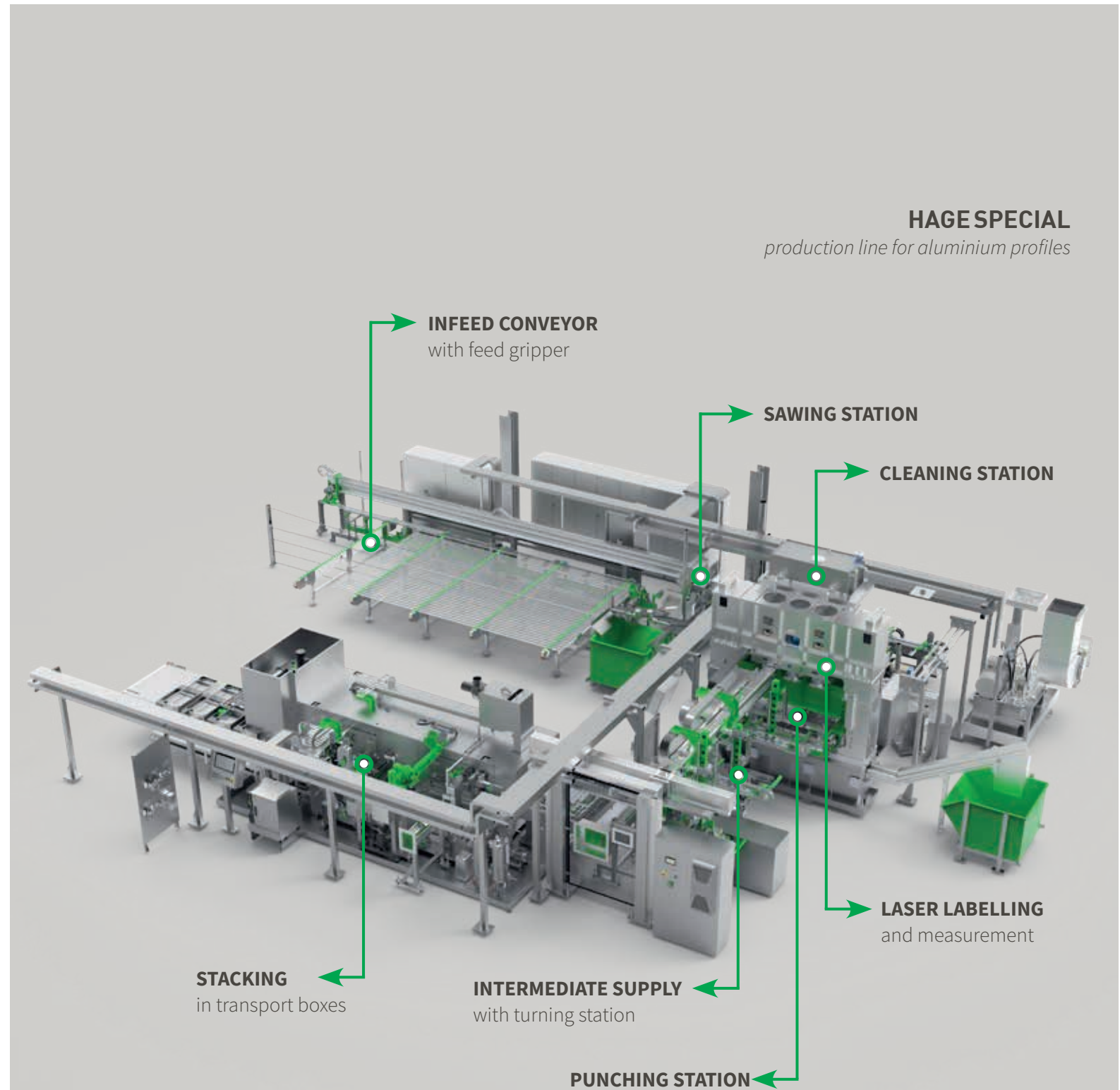
- ▶ Production line for bumpers
- ▶ Production line for formwork edge sections
- ▶ Production line for crash boxes
- ▶ Production line for slab formwork sections



HAGE SPECIAL
tilting engine test bed

The engine test bed, in two axes, is used to test the suitability of engines for off-road vehicles. Constructive features include the low-vibration design of the base portal under high dynamic loads

Dynamic system concepts for racing engines and electric cars are also possible.



HAGEFSW

WELDING TECHNOLOGY FOR LIGHTWEIGHT CONSTRUCTION

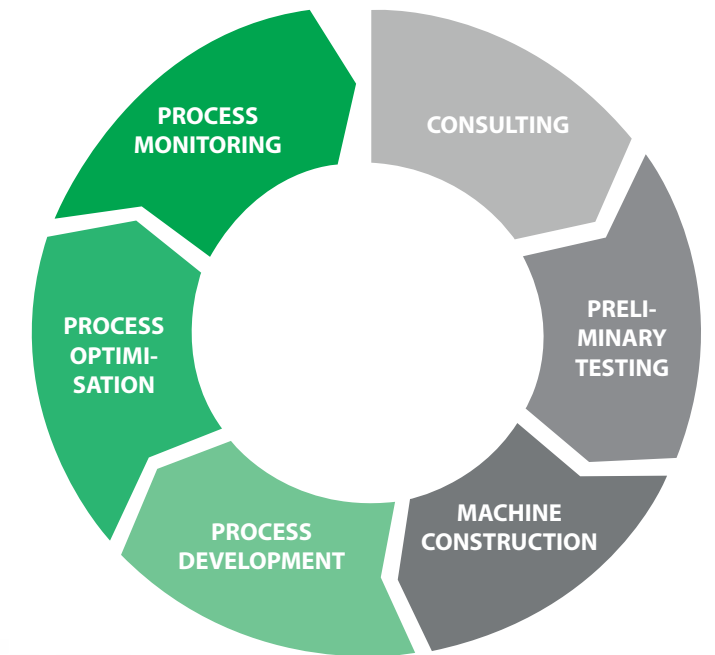
HAGE FSW solutions are based on a basic portfolio of machine concepts that are designed to optimize the welding process. The FSW machines are customized to meet individual customers' needs. Technical innovations such as the use of a rotatable and swivelling FSW-head or FSW-spindles from above and below for simultaneous welding from two sides are integrated into the system concept depending on the area of application. HAGE machine designs focus on achieving very high rigidity and perfect clamping systems.

LOADING AREA
2 loading areas
(left and right)

CLAMPING DEVICES
2 clamping devices
(left and right) for
pendulum operation

HAGE FSW COMPETENCE COMPETENT SUPPORT AT EVERY STEP

Together with our customers, we develop the complete FSW process and accompany them to series production. In our state-of-the-art FSW competence centre, we go one step further by testing components for their feasibility in the FSW process and producing initial sample parts.



FSW WELDING STATION
3 FSW welding heads above

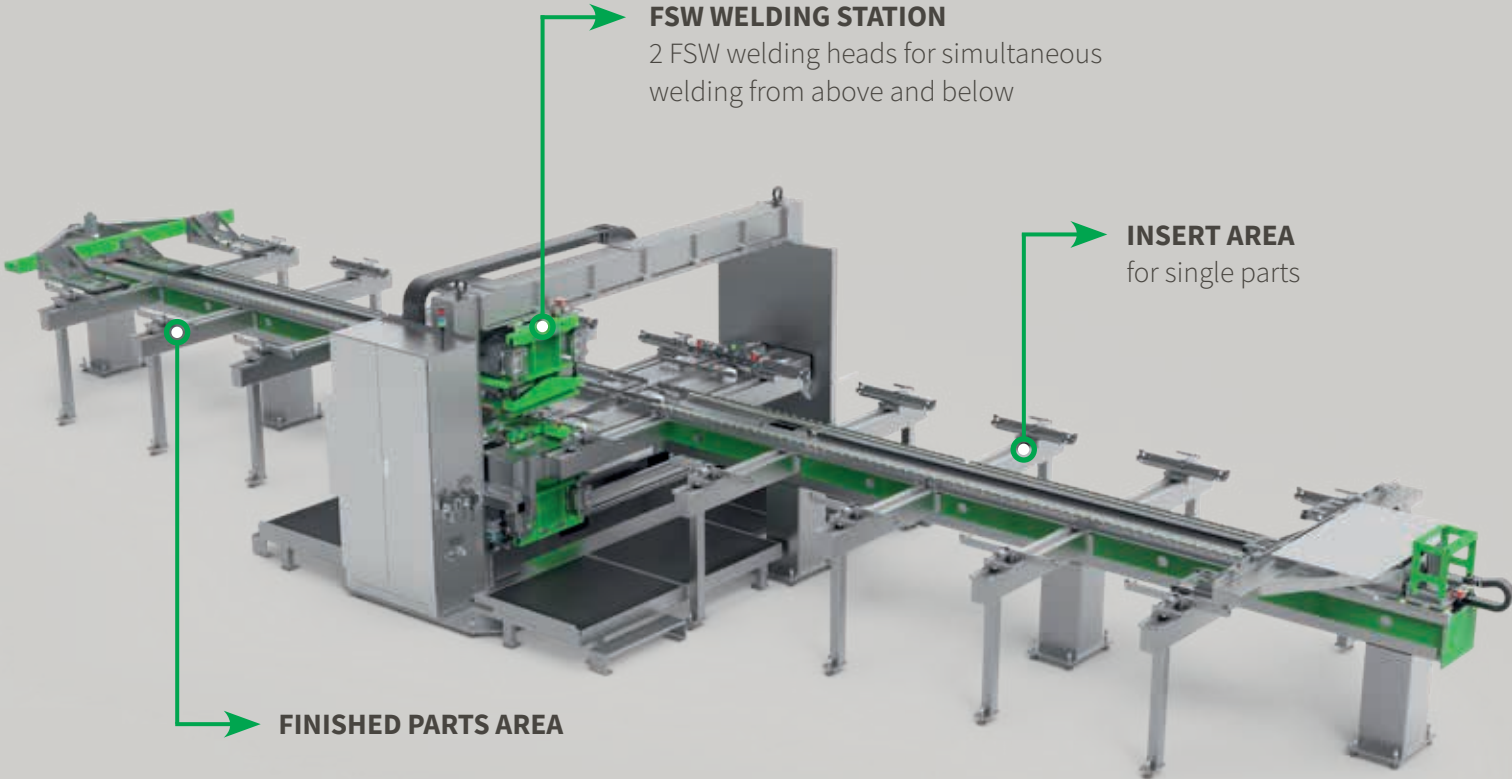
ROBOTER
for automatic
component loading

FSW WELDING STATION
3 FSW welding heads below

HAGE FSW MACHINE
*for battery floors in shuttle
operation*



HAGE FSW MACHINE
for battery floors



HAGE FSW MACHINE
*for aluminium floors or side walls
in continuous flow*

BENEFITS OF WELDING WITH FSW

FSW is used mainly for lightweight vehicle construction for the railway, automotive, aerospace and shipbuilding industries as well as in industrial process equipment.

- ▶ High welding speeds
- ▶ Fully automated process monitoring and control
- ▶ High weld strength
- ▶ Minimal welding distortion due to low heat input
- ▶ High reproducibility
- ▶ No filler materials or shielding gas needed
- ▶ Simple process
- ▶ Welding of mixed materials possible

HAGEFSW COMPETENCE CENTRE

In every project we carry out for our customers, our ambition is to achieve a process that yields precisely dimensioned workpieces and excellent welding. We know precisely how challenging it can be to integrate a new technology into an existing manufacturing process. HAGE technology experts test workpiece specifications for feasibility of FSW welding, study geometries, processes and parameters, develop suitable clamping concepts and produce prototypes, parts for functional testing and pre-series products. So that you can be sure that you have chosen the right welding procedure!

HAGE FSW MACHINE IN OUR IN-HOUSE COMPETENCE CENTRE

- ▶ Development and demonstration platform
- ▶ Contract manufacturing
- ▶ Geometric testing
- ▶ Process and parameter studies
- ▶ Position- and force-controlled welding
- ▶ Development of clamping systems
- ▶ Prototype production



TECHNICAL DATA:

- ▶ 8-axes FSW processing centre
- ▶ 2-FSW units for simultaneous, opposing welding
- ▶ FSW spindle incl. retractable pin axis (RPT, floating bobbin,...)
- ▶ automatic tool changing system for FSW tools with retractable pin
- ▶ max. component size (LxWxH): 10 m x 5 m x 1,5 m
- ▶ max. working range (LxWxH): 7 m x 4,5 m x 1 m

welding penetration depth: ≤ 150 mm
welding force: ≤ 130 kN
feed rate: ≤ 80 kN
torque: ≤ 2.100 Nm



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