

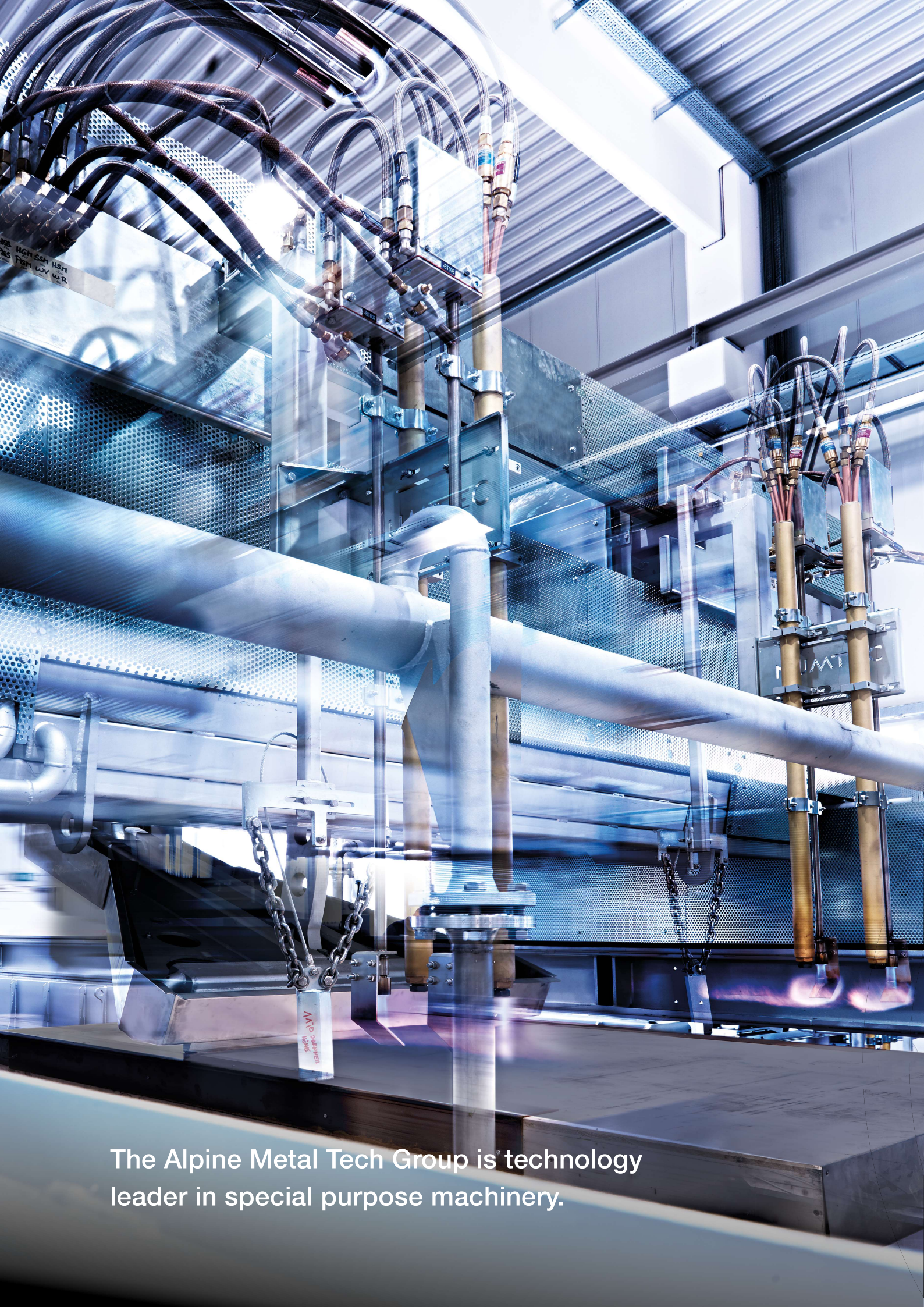


**ALPINE METAL TECH**  
A COMPANY OF MONTANA TECH COMPONENTS AG

# PRODUCT PORTFOLIO

Alpine Metal Tech Group





The Alpine Metal Tech Group is technology leader in special purpose machinery.

# GROUP PROFILE

The Alpine Metal Tech Group is a leading industrial company producing special-purpose machinery for different application areas.

We offer a broad product portfolio for customers in the field of Steel, Automotive and Aerospace. The fourth division Life Cycle Business guarantees a comprehensive and customized service offer for every phase of the product life cycle for the international customer base. Highest quality, as well as customer and service focus are the base for our success. The Alpine Metal Tech Group is a leading company in different application areas. The company develops, designs, produces and maintains custom machines for the steel and automotive industry as well as fire simulators under the seven brands NUMTEC, GEGA, KNORR, MAKRA, AMAKON, MAGNEMAG and

SIMULATION. Our focus lies on the enlargement of the product portfolio by centralized and continuous research and development, as well as targeted acquisitions and one-stop-solutions to reduce the amount of interfaces. Within the group, the brands profit from the synergies and therefore create customer advantages, such as a global sales and service network, the access to research and development resources, cost-efficient engineering and global service and maintenance concepts. The broad product portfolio is distributed and serviced through our local subsidiaries and representation offices all over the world. The headquarters of the international group is located in Regau, Austria. Alpine Metal Tech is part of the group corporation Montana Tech Components AG.



## DIVISIONS



Steel



Automotive



Aerospace



Life Cycle Business



# BRANDS



The brand NUMTEC stands for customer-specific solution in the metal and aluminum wheel industry. NUMTEC machines ensure reliable deburring, marking and reading of semi-finished steel products as well as a smooth casting on the continuous casting platform. In the field of automation during manufacture of aluminum wheels, NUMTEC offers various special applications for the handling, coding, measuring and testing of aluminum wheels. The top quality equipment optimizes

the aluminum wheel manufacturing process and creates the conditions for stable and efficient production with the lowest reject rates and highest product quality in the industry. Leak testing, robot deburring and optical surface inspection on various automotive parts extends the wide portfolio of NUMTEC. Innovative solutions paired with proven technology in the field of special machinery forms the latest business segment Advanced Technology.



GEGA is known as world market leader for autogenous torch cutting and scarfing technology in the steel industry since more than 50 years. A broad range of custom-made solutions are available for different applications. Including torch cutting machines for continuous casting, inline/offline subdividing machines, scrap cutting machines mobile torch cutting machines. Also in the field of scarfing, GEGA provides several solutions, which fit 100% to the customer's needs. To achieve the best possible efficiency

in regard to the torch cutting, a highly developed media technology for gas and oxygen is necessary. The reliable and application orientated GEGA machines cope also with extremely high casting speed in modern multi-strand casting facilities and ensure an efficient process in terms of media consumption, narrow cutting kerfs followed by perfect cutting/scarfing surfaces. GEGA commits also to service our customers during the whole lifecycle of the machines.



The ever-increasing demands on quality and tight tolerances for achieving higher quality assurance in finished steel products have required a growing range of automated quality control technology in the steel production process. Products have to be inspected according to set standards, and all test results have to be recorded. With the brand KNORR, Alpine Metal Tech is a leading provider of flexible, industry-proven, optoelectronic measuring and image processing systems for the contactless, fully automated inspection of the most

complex sections, including rails, beams, angles, round bars, flat bars, squares, and tubes. KNORR's turnkey, nondestructive inspection lines encompass everything from design, engineering, supply, and installation to final commissioning of integrated lines for products such as rails. The lines essentially comprise brushing machines for the removal of loose scales, measurement gauges, straightness measuring units, eddy current testing units for detecting surface defects, and ultrasonic testing units for internal defects.



With the brand MAKRA Alpine Metal Tech offers customer-specific solutions for standardized intermediate working cycles during wheel production. The product portfolio includes clamping devices for save positioning and locking of work pieces as well as the latest equipment for testing

and measuring aluminum wheels. In close cooperation with the automotive industry and leading vehicle wheel manufacturers, an extensive repertoire of measuring and testing systems which guarantees the safety of the finished products world-wide have been developed.



AMAKON is a turnkey provider in the field of conveyor technology and a reliable supplier for numerous industries. We are a competent partner in the planning, engineering and supply of complete conveyor and plant equipment. The business unit material handling has been successfully serving international customers with

material handling equipment and spare parts for existing machines. Our goal is to offer tailor-made solutions and to convince customers with innovative products, high quality, advanced manufacturing techniques and tested technologies.



The primary focus of the brand MAGNEMAG within the Alpine Metal Tech Group is on paint, punch and ink-jet marking technology as well as vision systems - for plate, pipe and other long products. These technologies are suited for the logistic tracking of products and the identification of their quality characteristics in the

further production process. In the field of paint marking technology, Alpine Metal Tech offers with the brand MAGNEMAG high resolution marking systems for applying logos, names, codes, and symbols to enable easy recognition of the steel supplier during and after the production process.



SIMULATION is a world leader in the provision of live fire training facilities. The company is specialized in the supply of live fire training simulators for Civil Aircraft, Local Authority, Industrial, Military, Maritime, Oil and Gas. We provide a range of simulator solutions to help you train for every fire-related eventuality – from tailor-made hot fire training simulators to ongoing maintenance and aftercare. Our service is conducted by dedicated, specialist technicians, who are able to provide rapid on-site maintenance for your new or existing simulator, full midlife

upgrades and refurbishments designed to keep your current system up to scratch, environmental upgrades to ensure you meet all the latest rules and regulations and a fast, reliable, highly responsive call-out service whether you opt for a planned maintenance package or you need us in an emergency. Best of all, we're happy to deliver that service for your existing simulator and facilities. Therefore, life cycle business is an important part within our business.



The brand INTERMATO stands for vertical CNC lathes. In addition to the core business in the machining of light alloy wheels, the innovative and varied products are aimed at the automotive, railway, and aerospace industries. With its brand INTERMATO, Alpine Metal Tech is a leading manufacturer of all-in-one solutions in the field of vertical lathes. The product portfolio, which is designed according to customer-specific requirements, includes machines for machining workpieces with diameters ranging from 100 mm to 6 m.

In the core area of light alloy wheel production, INTERMATO relies on automated production cells. The automation solutions developed in-house, equipped with high-performance machines from our own company, combine maximum productivity, quality and flexibility. Construction, production, software and design made by INTERMATO, as well as the modular machine design, enable the machines to be adapted to individual customer requirements.

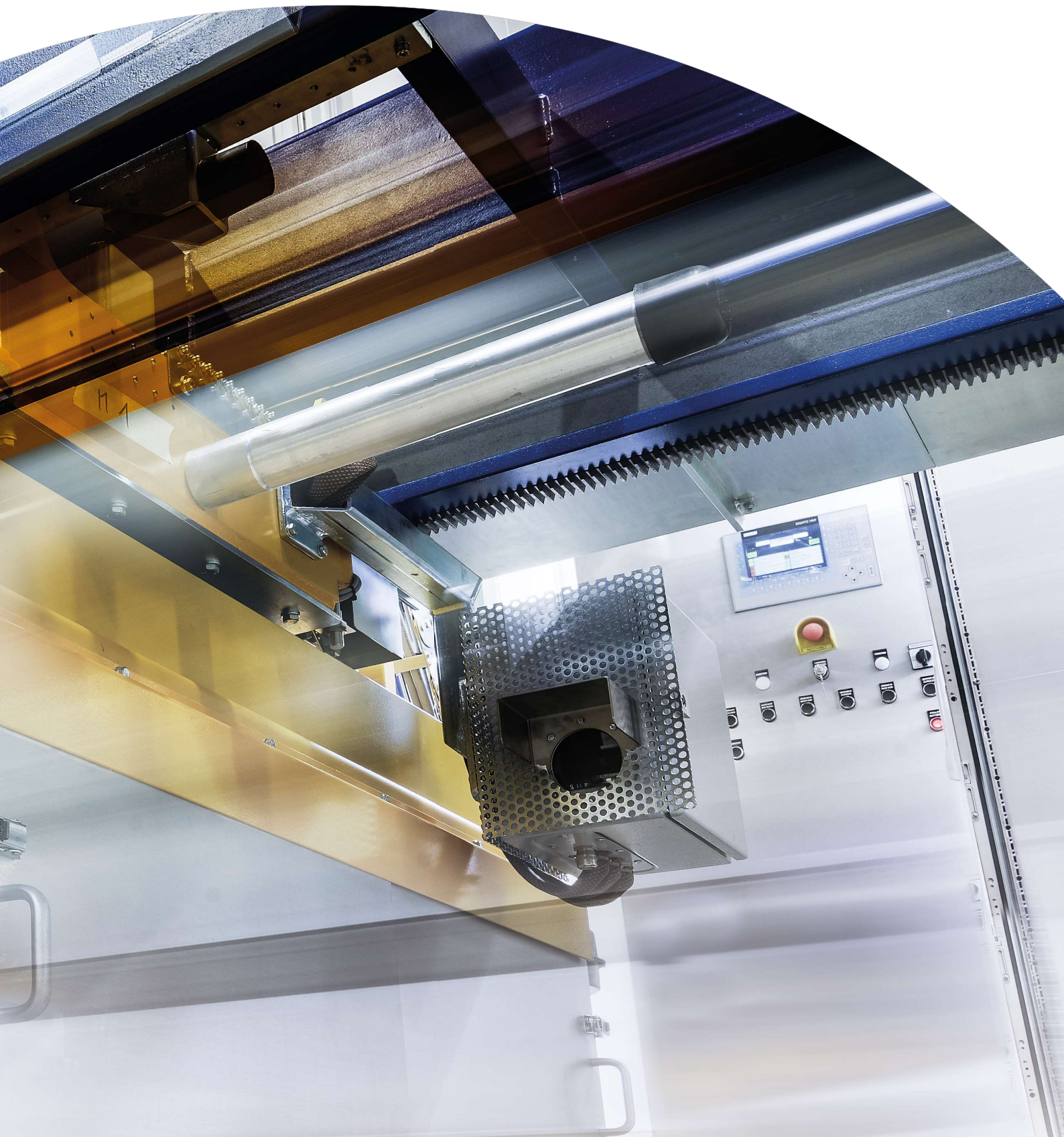
# STEEL

With our product portfolio for continuous casting plants and rolling mills, we support our customers in terms of quality and efficiency in steel production. Our solutions for the casting area as well as for the product identification and tracking are successfully applied on a global level. We also develop and deliver turnkey, fully automated system solutions for non-destructive testing of rolled products. In the area of railway track testing we are technology and market leader. Our experienced Alpine Metal Tech team is a strong partner to our customers throughout the product and plant lifecycle. Our expertise in consulting and engineering, commissioning and service is the key to sustainable project success.

## Application Areas

- » Continuous Casting
- » Conditioning
- » Plate Production
- » Coil Production
- » Rail Production
- » CNC Lathes
- » Material Handling





**Alpine Metal Tech is a leading provider in the field of special machinery for the steel industry.**

# APPLICATION AREAS



## Continuous Casting

- » Shroud Manipulator
- » Powder Feeder
- » Preheating
- » Torch Cutting
- » Deburrer
- » Marking Technology
- » Reading & Tracking



## Conditioning

- » Deburrer
- » Offline Cutting
- » Scrap Cutting
- » Scarfing
- » Marking Technology
- » Reading & Tracking



## Plate Production

- » Marking Technology
- » Reading & Tracking



## Rail Technology

- » Marking Technology
- » Reading & Tracking
- » Measuring & Inspection
- » Vertical & Horizontal Lathes



## CNC Lathes

- » Vertical self-loading Lathes
- » Vertical fixed Cross-Rail Lathes
- » Vertical mobile Cross-Rail Lathes



## Material Handling

- » Bulk Conveying Technology
- » Bulk Storing Technology





## Coil Production

- » Marking Technology
- » Measuring Technology
- » Reading & Tracking



# CONTINUOUS CASTING

## SM-S – Semi-Auto Ladle Shroud Manipulator

Reliable handling of ladle shrouds. Features all required movements of ladle shroud. Hydraulic lifting/lowering and turning of shrouds. Maintains constant contact force between shroud and slide gate nozzle and follows typical movements of the ladle once docked. Keeps contact force constant even in case of power outage. Optional automatic lowering function if emergency movement of ladle is required.

### Your advantages

- » Adapters for all common shroud types available
- » Lean solution for retrofitting of simple boom-type manipulators
- » Safety equipment PL d/cat. 3 according to requirements of EN 14753



## SM-R – Remote Ladle Shroud Manipulator

Features remote control of all required ladle shroud movements. Maintains constant contact force between shroud and slide gate nozzle and follows typical movements of the ladle once docked. Includes piping for Argon flushing. Keeps contact force constant even in case of power outage. Automatic lowering function if emergency movement of ladle is required.

### Your advantages

- » No operator in hazardous area due to wireless remote control.
- » Adapters for all common shroud types available
- » Safety equipment PL d/cat. 3 according to requirements of EN 14753



## SM-A – Auto Ladle Shroud Manipulator

Industrial robot controller allows teaching of all required ladle shroud movements and to execute them triggered by the caster control system. Maintains constant contact force between shroud and slide gate nozzle and follows typical movements of the ladle once docked. Keeps contact force constant even in case of power outage. Automatic lowering function if emergency movement of ladle is required.

### Your advantages

- » Shortest possible ladle changing time
- » Automated picking-up of shrouds from magazine and shroud cleaning
- » Safety equipment PL d/cat. 3 according to requirements of EN 14753



## PF – Powder Feeder

Mould powder-dosing feeder for high quality continuous slab casting. Most flexible and reliable solution for fully automated feed and distribution of all common mould granules or powder types. Adjustable to different slab dimensions. Heated container keeps powder dry. An integrated stirrer avoids powder agglutination. Reliable powder transport by non-blocking screw conveyor.

### Your advantages

- » Constant or variable powder feed rate
- » Homogeneous powder distribution by adjustable feeder arm movement
- » Easy integration into existing and new casting lines



## Preheating

Refractory linings used in steel mill equipment come into contact with liquid metal and are required to be initially dried and afterwards preheated to remove any traces of water to prevent hydrogen explosions. It is also necessary to evenly dry and preheat the lining surface to avoid any chilling of the liquid metal which would cause problems associated with running and feeding plus deterioration of the lining.

### Your advantages

- » Uniform flame distribution results in better heating effect
- » Automatic control for efficient use of fuel gas
- » Simple robust design for high operational availability



## BLM – Billet / Bloom Linear-Cutting

The BLM type is suitable for wide billets and blooms as well as rounds and beam blanks. The machine is clamped to the strand by driving synchronously with the strand in casting direction. During the movement the cross-cutting of billets is carried out by linear torches. All components such as bearings, drives, etc. are inside the water-cooled housing and have an optimal protection against the radiant heat.

### Your advantages

- » Linear torch movement for optimized cutting of billets or blooms
- » Efficient water cooling protects all internal components
- » Optional automatic torch height adjustment



# CONTINUOUS CASTING

## BPL – Billet Pendulum-Cutting Light

The BPL type is particularly designed for smaller sections as well as rounds and beam blanks. The machine is clamped to the strand by driving synchronously with the strand. During the movement, the cross-cutting of billets is carried out by pendulum torches. All components such as bearings, drives, valves, etc. are inside the water-cooled housing and have an optimal protection against radiant heat.

### Your advantages

- » Simplified machine design with pendulum drive
- » High operational availability, less maintenance
- » Customized for special requirements



## PMB – Secondary Torch Cutting for Slabs

The PMB type is a secondary inline torch cutting machine which subdivides the slabs after the main cut. Depending on the number of daughter slabs, one or more torch bridges are required. Generally, our inline secondary machine are highly customized and designed according to customer needs. The PMB type is designed with an efficient water cooling system allowing operation temperatures up to 1100°C.

### Your advantages

- » Exact positioning of the torch bridges with direct drive
- » Linear torch movement, either with one or two torches
- » Optional height adjustment allows use with varying material thicknesses



## SSC – Swivel Type Counterweight

The SSC type is mainly used for simple casted products with nearly only one thickness. In case of a change in slab thickness the torch height has to be adjusted either manually or with an additional motorized height adjustment unit. The SSC type is designed with an efficient water cooling system allowing operation temperatures up to 1100°C.

### Your advantages

- » Simplified mechanical design
- » Synchronized movement by pneumatic clamping
- » Optional height adjustment allows different thickness ranges



## SVE – Slab Vertical Lowering Electric Type

The SVE type for slabs convinces with high cutting quality results and is suitable for cross-cutting of slabs with significant variations of product thickness. Because of the special mechanical system, there is no need for a torch height adjustment system with complex mechanics. The SVE type is designed with an efficient water cooling system allowing operation temperatures up to 1100°C.

### Your advantages

- » Nozzle distance preset only once for different slab thicknesses
- » No electrical height adjustment needed
- » Improved cutting quality based on constant nozzle distance



## SVM – Slab Vertical Type

The SVM type is designed for cross-cutting of slabs and blooms in vertical continuous casting plants. The machine consists of a horizontal machine carriage moving vertically between two columns and synchronizing the movement with the strand by pneumatically actuated clamping arms. The SVM type is designed with an efficient water cooling system allowing operation temperatures up to 1100°C.

### Your advantages

- » Unique system, proven over years
- » Design meets the requirements of little space in a vertical caster
- » Designed for the rough environment



## DB-P – Piston Deburrer

The GEGA mechanical deburrer DPS type is used for the accurate removal of burr from slabs. They mainly consist of a piston body with an inclined alignment of pistons and is fixed on two main-frame supports. The body is water-cooled and carries the pistons on which the beard caps are fixed. A 100 % adaptability of the deburring caps on the slab contour is guaranteed by different strokes and a constant surface pressure.

### Your advantages

- » Available design for reversible and non-reversible rollers
- » 100 % adaptability of the deburring caps
- » Perfect adaptation to the slab contour



# CONTINUOUS CASTING

## DB-R – Rotary Deburrer Billet / Bloom

The equipment uses symmetrical hammers made of forged alloy steel and is installed in-line at the caster run-out section. The hammers remove burrs, generated by upstream torch cutting process, through rotary motion and hammer impact on the product underside. The rotor is controlled by a frequency-controlled electric motor connected to a cardan shaft and guided by a bearing block assembly actuated by pneumatic cylinders.

### Your advantages

- » Low operational costs compared to high savings potential
- » Damage minimization to downstream equipment
- » Significant quality improvement of rolled products



## DB-R – Rotary Deburrer Slab

The equipment uses symmetrical hammers made of forged alloy steel and is installed in-line at the caster run-out section. The hammers remove burrs, generated by upstream torch cutting process, through rotary motion and hammer impact on the product underside. The rotor is controlled by a frequency-controlled electric motor connected to a cardan shaft and guided by a bearing block assembly actuated by hydraulic cylinders.

### Your advantages

- » Low operational costs compared to high savings potential
- » Damage minimization to downstream equipment
- » Significant quality improvement of rolled products



## MP – Metal Powder Marking

The Metal Powder Marker was developed to apply clearly visible and long lasting characters, readable from far distance. By using aluminum oxide powder, product temperature up to 1100 °C can be marked without fading. Marking is performed by blowing metal powder through a gas flame for melting it to the surface of the product.

### Your advantages

- » High application temperature
- » High visibility
- » Long durability



## HS – Hot Spray Marking

The Hot Spray marking machine is one of the earliest developments of Alpine Metal Tech and the most popular technology to mark hot products. The cost-effectiveness and simplicity of the marking technology are the main reasons for the long-lasting success of this technology. Marking is performed by blowing liquid metal which is melt in an electric arc between two wires to the surface of the product.

### Your advantages

- » Low production costs
- » High visibility
- » Long durability



## SN – Single Nozzle Paint Marking

Most versatile paint marking solution for slabs, blooms, billets, coils, tubes and rolled products. Available as floor mounted or bridge type machine. Robotic version available for even higher flexibility and functionality. Font heights from 40mm up to 150mm allow reliable product identification. Suitable for product temperatures from -5°C to 1.100°C.

### Your advantages

- » Large characters offer a high visibility even for the crane operator
- » Easy maintenance
- » Continuous line characters advantageous on rough surfaces



## DP – Dot Paint Marking

The Dot Paint marking machine is one of the earliest paint marking developments that has undergone numerous advancements over the years. This advanced technology is capable of marking on products, even at very high surface temperatures, and at high product moving speeds.

### Your advantages

- » High marking speed with up to 1,5m/s
- » Stable paint system due to continuous paint circulation and automatic cleaning cycles
- » Usable at a big range of temperatures, up to 1.000°C



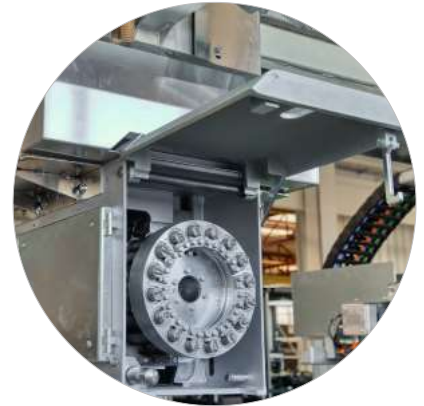
# CONTINUOUS CASTING

## RH – Revolving Head Stamping

The machine is designed for permanent marking of slabs, blooms, and billets in harsh steel plant environments. Pneumatic impact cylinders are used to stamp characters of varying size and number of lines based on customer requirements. The Revolving Head Stamping Machine is a reliable, low-maintenance, and cost-effective solution for steel plants looking for permanent and undestroyable marking on their products.

### Your advantages

- » Long durability, permanent and undestroyable marking
- » Unmistakable and full characters
- » Low running costs



## HP – Heavy Pneumatic Punch Marker

Permanent marking solution for slabs and blooms. Marks alphanumeric dot matrix characters as well as machine-readable codes with a height of 40mm. Suitable for product temperatures up to 1100°C. Ideal complement to Hot Spray or Metal Powder marking solutions.

### Your advantages

- » Low running costs
- » Permanent marking even for steel grades with higher levels
- » Punch pins can be easily exchanged during short stops

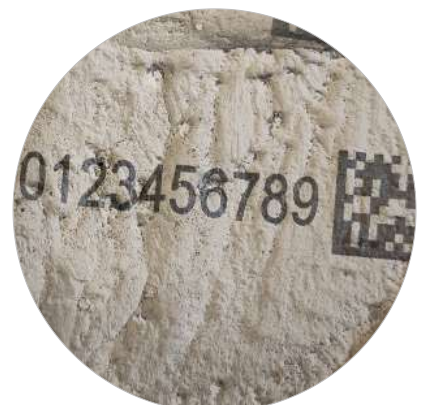


## LM – Laser Marking Machine

Laser Marking is suitable for contrast based marking as well as engraving on hot and cold products. The technology is unmatched in terms of marking resolution and flexibility. Apart from standard characters, which can be marked in many different fonts, it is possible to mark 1D and 2-D codes as well as complex shapes and logos.

### Your advantages

- » Low running costs
- » Extremely flexible – Code, text & logo
- » Automatic OCR reading system available





## LB – Label Marker

The Label Marking Machine is Alpine Metal Tech's solution for applying high information content markings accurately to different product surfaces. With temperature resistance up to 900°C, our Label technology ensures markings that are readable by automatic identification systems, such as Barcodes, Data-Matrix & QR 2-D codes.

### Your advantages

- » Short marking cycles
- » High flexibility
- » High positioning accuracy



## AMTident Product Identification

AMTident is a product identification system that can read IDs from any product, marking technology, or environment. It has three versions - VIS, IR, and 3-D - to work in different environments. The software can recognize 2-D codes, letters, and numbers with its main goal material tracking at any position throughout the entire production line. AMTident stores data for backtracking and quality assurance purposes.

### Your advantages

- » Key process – marking verification/ product identification
- » Data driven analysis – KPIs, closed data gaps, product tracking
- » Cost and Environmental Savings – avoid unnecessary material handling



## AMTinspect Product Inspection

AMTinspect is a line of laser-based measurement systems which aim to increase automation and improve product quality. AMTinspect CI determines coil dimension, strap position, and evaluates coil disc winding. AMTinspect BD generates 3-D surface maps to verify deburring processes. AMTinspect PI, measures plate contours to reduce crop waste for example.

### Your advantages

- » Data and evaluation reports for operators and quality managers
- » Measurement systems are key data providers for improvement processes (Define, Measure, Analyze, Improve, Control)
- » Avoids waste of energy and production capacity





# CONDITIONING

## Hand Scarfing

Sometimes manual is the only solution. GEGA safety hand-scarfing torches enable the user to scarf different products safely, in order to remove surface defects like cracks, inclusions or cavities. The GEGA hand-scarfing torch was developed in close collaboration with steel works, in order to ensure the optimal quality and safety of the user. It can easily be used comfortably for long periods.

### Your advantages

- » Greatest flexibility
- » Highest safety and ergonomic standards for operation
- » Especially designed Gega scarfing nozzles available



## Scarfing Manipulator

The GEGA scarfing manipulator is a multipurpose scarfing installation. The operator can control the manipulator manually from the air-conditioned cabin and flexibly scarf whole slab surfaces, strips, spots or edges (depending on the mounted auxiliary). There are various options possible, like e.g. stationary manipulator, movable manipulator, etc.

### Your advantages

- » Greatest flexibility with highest quality
- » Scarfing by specially designed GEGA scarfing nozzle
- » Design according to latest safety standards



## Strip (Band) Scarfing

It is not always necessary to scarf the whole surface, but individual areas which suffer from surface problems caused by the casting process. Fixed or selective strip (band) scarfing machines by GEGA especially address this common situation in steel plants and are designed to focus on problematic areas like corners or edges. GEGA scarfing machines are available for slabs as well as billets and blooms.

### Your advantages

- » High output, short cycle times
- » Tailor made solutions
- » Efficient design focused on economic solutions



# CONDITIONING

## 2-Side and 4-Side Scarfing Machine

The semi-automatic 2- or 4-side scarfer can either process two or all four perpendicular slab sides at the same time by continuous scarfing. The machine is equipped with special scarfing heads designed by GEGA to achieve high surface qualities. The ability to control each scarfing head separately as well as independent upper and side scarfing carriages makes the scarfing process very flexible.

### Your advantages

- » High output, short cycle times
- » Scarfing by specially designed GEGA scarfing heads
- » Design according to latest safety standards



## Offline Torch Cutting

GEGA offline machines are suitable for a wide range of tasks like re-squaring of slabs (perpendicular) as well as slitting and cross-cutting of work pieces. Our stationary or movable machines can be designed according to customer requirements and are available in several design types – from cantilever up to portal type. Additionally, our offline machines can be equipped with an oxy-gas deburring system.

### Your advantages

- » Re-squaring (perpendicular), slitting and subdividing
- » Precise laser measurement as well as high quality
- » Available with optional oxy-gas deburring system



## CORTI – Mobile Torch Cutting

The mobile torch cutting machine CORTI is designed to offer the most flexible cutting solution possible. It can be used for subdividing or slitting of work pieces and scrap material as well as emergency cutting device in continuous casting plants. The machine can be customized according to specific requirements for cutting of slabs, billets, blooms or beam blanks, as well as scrap pieces.

### Your advantages

- » Our CORTI cuts more precise than a hand cutting torch
- » Particularly suitable for long cuts (e.g. slitting of slabs)
- » Operator-friendly, optionally with remote control



## Scrap Cutting

GEGA scrap cutting machines are made to cut steel blocks or ingots up to 2,0m. Either cutting scrap up into smaller pieces for remelting or detach bottom-and head-discard of forged ingots, all our machines tackle the big challenges. We offer several designs from a cantilever to a 3-axis portal solution. Additionally, we are also supporting in finding the most suitable peripheral equipment.

### Your advantages

- » Cutting steel blocks or ingots up to a size of 2,0 m
- » Several design solutions available
- » Used cutting system is designed for cutting thick material



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### Your advantages

- » Key process – marking verification/ product identification
- » Data driven analysis – KPIs, closed data gaps, product tracking
- » Cost and Environmental Savings – unnecessary material handling



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### Your advantages

- » Data and evaluation reports for operators and quality managers
- » Measurement systems are key data providers for improvement processes (Define, Measure, Analyze, Improve, Control)
- » Avoids waste of energy and production capacity





# PLATE PRODUCTION

## CJ – CombiJet Paint Marker

The CombiJet Paint Marker was developed to apply clearly visible dot paint markings in high resolution. The machine technology is available in different designs to mark various product shapes and temperatures up to 400°C in harsh industrial environments. The advanced CombiJet technology enables markings for limited space which are readable by automatic identification systems (Data Matrix codes).

### Your advantages

- » Low running costs
- » Reduced cycle time
- » Excellent marking quality



## PP/EP – Punch Marker

The punch marking machines were developed for products which need to have reliable permanent markings. The adjustable punch force of these machine type allows to punch plates with different steel grades in consistent penetration depth. The punch marker can even mark hot products with up to 1100°C.

### Your advantages

- » Low running costs
- » Time saving
- » Permanence
- » Easy Maintenance



## IJ – InkJet Marker

The development of the InkJet Marker enables a small sized marking option for areas with limited space. Due to the need of high resolution marking or machine readable code markings, the InkJet marking technology is based on a printing head and its control unit which executes the marking application.

### Your advantages

- » High quality on high speed
- » Clean handling and stable ink system
- » Easy Maintenance



# PLATE PRODUCTION

## DP – Dot Paint Marking

The Dot Paint marking machine is one of the earliest paint marking developments that has undergone numerous advancements over the years. This advanced technology is capable of marking on products, even at very high surface temperatures, and at high product moving speeds.

### Your advantages

- » High marking speed with up to 1,5m/s
- » Stable paint system due to continuous paint circulation and automatic cleaning cycles
- » Usable at a big range of temperatures, up to 1.000°C



## LB – Label Marker

The Label Marking Machine is Alpine Metal Tech's solution for applying high information content markings accurately to different product surfaces. With temperature resistance up to 900°C, our Label technology ensures markings that are readable by automatic identification systems, such as Barcodes, Data-Matrix & QR 2-D codes.

### Your advantages

- » Short marking cycles
- » High flexibility
- » High positioning accuracy



## LM – Laser Marking Machine

Laser Marking is suitable for contrast based marking as well as engraving on hot and cold products. The technology is unmatched in terms of marking resolution and flexibility. Apart from standard characters, which can be marked in many different fonts, it is possible to mark 1D and 2-D codes as well as complex shapes and logos.

### Your advantages

- » Low running costs
- » Extremely flexible – Code, text & logo
- » Automatic OCR reading system available





## CC – Colour Coding and Colour Coatings

Colour coding is a high effective categorization method which allows the user to recognize meanings faster than clear text. One or more stripes of colour are applied on the coil. This is done by automated spray nozzles according to requested coding position and colour selection. Colour coatings can be realized in all RAL colours, allowing individual markings. Varnish and long lasting finish is available as well.

### Your advantages

- » Simple and effective
- » High flexibility
- » Easy Maintenance



## Combined Marking

By consolidating different technologies, the amount of space required is significantly reduced compared to using separate machines. Moreover, media connections and maintenance areas can all be conveniently managed at a single location, making it easier to install and maintain the machine. Overall, combining various marking technologies into one a package maximizes efficiency and productivity while minimizing the resources required.

### Your advantages

- » Less space required
- » Various technologies - one control system
- » Optimized production flow



# PLATE PRODUCTION

## AMT Eco Clean

The AMT Eco Clean is a fully automated paint filter flushing unit which detects irregularities in the paint lines and interacts with cleaning cycles before any blockages of the paint filter occurs. The clever design of the AMT Eco Clean is selectable as an option for all Alpine Metal Tech water-based paint systems but can also be integrated as an add-on to existing water-based paint systems.

### Your advantages

- » Predictive maintenance
- » Eco-friendly
- » Cost saving



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### Your advantages

- » Key process – marking verification/ product identification
- » Data driven analysis – KPIs, closed data gaps, product tracking
- » Cost and Environmental Savings – avoid unnecessary material handling



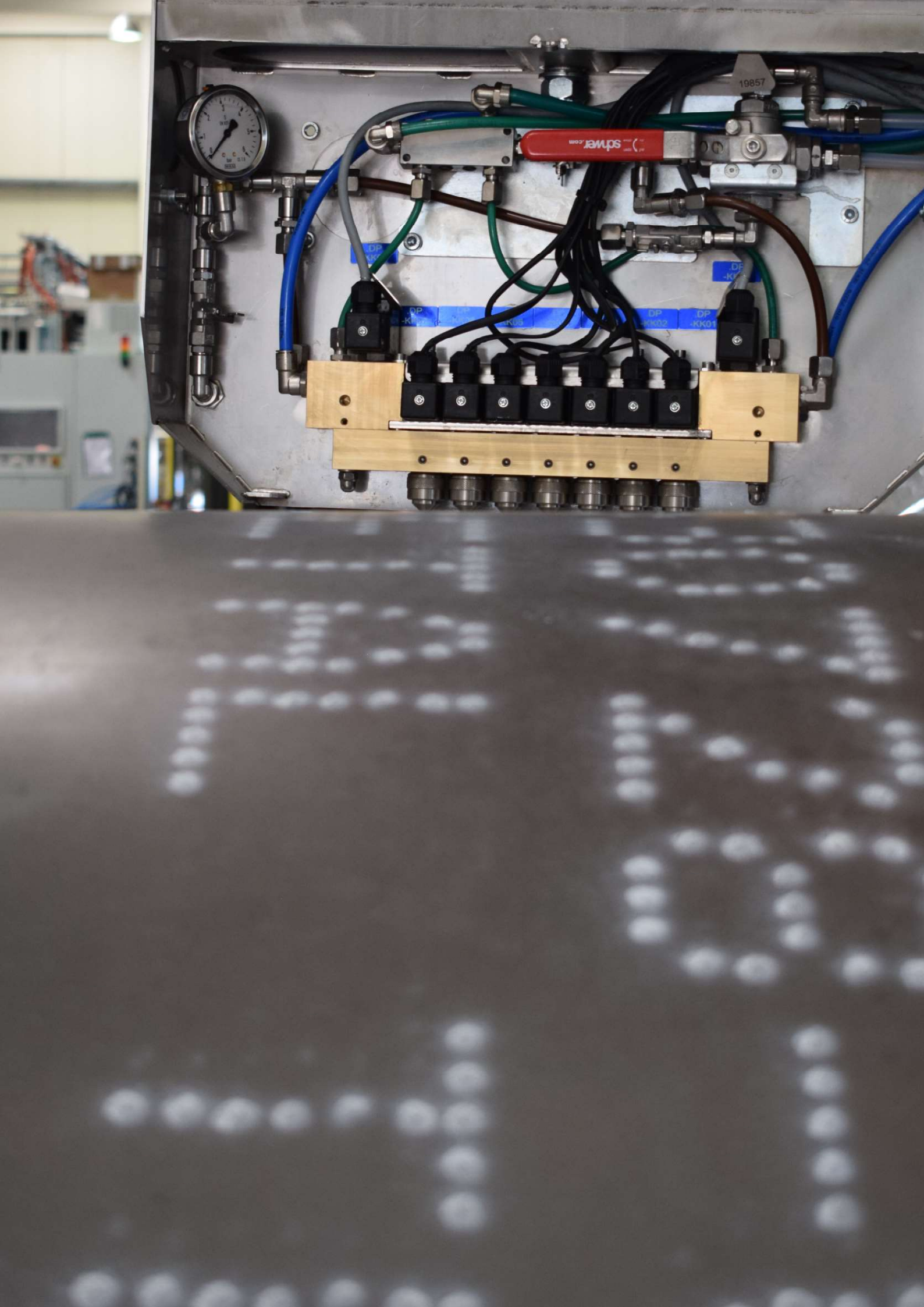
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### Your advantages

- » Data and evaluation reports for operators and quality managers
- » Measurement systems are key data providers for improvement processes (Define, Measure, Analyze, Improve, Control)
- » Avoids waste of energy and production capacity





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# COIL PRODUCTION

## CJ – Combijet Paint Marker

The CombiJet Paint Marker was developed to apply clearly visible dot paint markings in high resolution. The machine technology is available in different designs to mark various product shapes and temperatures up to 400°C in harsh industrial environments.

### Your advantages

- » Low running costs
- » Reduced cycle time
- » Excellent marking quality



## DP – Dot Paint Marking

The Dot Paint marking machine is one of the earliest paint marking developments that has undergone numerous advancements over the years. This advanced technology is capable of marking on products, even at very high surface temperatures, and at high product moving speeds.

### Your advantages

- » High marking speed with up to 1.5 m/s
- » Stable paint system due to continuous paint circulation and automatic cleaning cycles
- » Usable at a big range of temperatures, up to 1.000°C



## PP – Pneumatic Punch Marker

The Pneumatic Punch Marker was developed for coils which need to have reliable permanent markings. The adjustable punch force of this machine type allows to punch products with different steel grades in consistent penetration depth. The pneumatic punch marker can even mark hot products with up to 1100°C.

### Your advantages

- » Low running costs
- » High resolution with up to 4 lines during one linear movement
- » Permanent marking even for steel grades with higher level



## SN – Single Nozzle Paint Marking

The Single Nozzle Paint marking machine was developed to provide continuous line paint markings for different product shapes and less dependency on surface roughness to apply markings readable from far distances. The marking machine is equipped to act in harsh industrial environments up to 1000°C product temperature.

### Your advantages

- » High visibility
- » Easy maintenance
- » Fits for any demand



## LB – Label Marker

The Label Marking Machine is Alpine Metal Tech's solution for applying high information content markings accurately to different product surfaces. With temperature resistance up to 900°C, our Label technology ensures markings that are readable by automatic identification systems, such as Barcodes, Data-Matrix & QR 2-D codes.

### Your advantages

- » Short marking cycles
- » High flexibility
- » High positioning accuracy



## LM – Laser Marking Machine

Laser Marking is suitable for contrast based marking as well as engraving on hot and cold products. The technology is unmatched in terms of marking resolution and flexibility. Apart from standard characters, which can be marked in many different fonts, it is possible to mark 1D and 2-D codes as well as complex shapes and logos.

### Your advantages

- » Low runnings costs
- » Extremely flexible – Code, text & logo
- » Automatic OCR reading system available



# COIL PRODUCTION

## PJ – PaintJet Marker

The PaintJet marking technology is used for coils with a temperature of up to 100°C. The compact and light weight design allows a high quality marking even in limited space areas. The combination of its compact design and the high speed marking technology enables a high usability.

### Your advantages

- » High speed
- » Low running costs
- » Light and small



## CC – Colour Coding and Colour Coatings

Colour coding is a high effective categorization method which allows the user to recognize meanings faster than clear text. One or more stripes of colour are applied on the coil. This is done by automated spray nozzles according to requested coding position and colour selection. Colour coatings can be realized in all RAL colours, allowing individual markings. Varnish and long lasting finish is available as well.

### Your advantages

- » Simple and effective
- » High flexibility
- » Easy Maintenance



## AMT Eco Clean

The AMT Eco Clean is a fully automated paint filter flushing unit which detects irregularities in the paint lines and interacts with cleaning cycles before any blockages of the paint filter occurs. The clever design of the AMT Eco Clean is selectable as an option for all Alpine Metal Tech water-based paint systems but can also be integrated as an add-on to existing water-based paint systems.

### Your advantages

- » Predictive maintenance
- » Eco-friendly
- » Cost saving



## AMTident Product Identification

AMTident is a product identification system that can read IDs from any product, marking technology, or environment. It has three versions - VIS, IR, and 3-D - to work in different environments. The software can recognize 2-D codes, letters, and numbers with its main goal material tracking at any position throughout the entire production line. AMTident stores data for backtracking and quality assurance purposes.

### Your advantages

- » Key process – marking verification/ product identification
- » Data driven analysis – KPIs, closed data gaps, product tracking
- » Cost and Environmental Savings – avoid unnecessary material handling



## AMTinspect Product Inspection

AMTinspect is a line of laser-based measurement systems which aim to increase automation and improve product quality. AMTinspect CI determines coil dimension, strap position, and evaluates coil disc winding. AMTinspect BD generates 3-D surface maps to verify deburring processes. AMTinspect PI, measures plate contours to reduce crop waste for example.

### Your advantages

- » Data and evaluation reports for operators and quality managers
- » Measurement systems are key data providers for improvement processes (Define, Measure, Analyze, Improve, Control)
- » Avoids waste of energy and production capacity







# RAIL TECHNOLOGY

## CJ – CombiJet Paint Marker

Superior Drop-On-Demand paint marking technology for plates and pipes featuring high-resolution characters, machine-readable codes, logos and customized symbols. Font heights from 15mm to 80mm with one marking section. Clusters of up to eight sections render large scale marking layouts possible. Available as bridge type or robot version. Suitable for product temperatures from -5°C to 400°C.

### Your advantages

- » Reduced paint and air consumption compared to conventional systems
- » Utmost flexibility in defining different marking layouts
- » High speed marking cycles



## PP – Pneumatic Punch Marker

The Pneumatic Punch Marker was developed for coils which need to have reliable permanent markings. The adjustable punch force of this machine type allows to punch products with different steel grades in consistent penetration depth. The pneumatic punch marker can even mark hot products with up to 1100°C.

### Your advantages

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- » Permanent marking even for steel grades with higher level



## PJ – PaintJet Marker

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### Your advantages

- » High speed
- » Low running costs
- » Light and small



# RAIL TECHNOLOGY

## CC – Colour Code Marker

Located at the downstream end of an inspection line the machine marks all previously identified defects at their current position and distinguishes them by use of different colors. Applies color marks for “OK”, “re-inspect” and “rejected” at the end of each profile. Suitable for product speeds up to 2 m/s.

### Your advantages

- » Saves time to locate defects in case of manual re-inspection
- » Applies clearly visible status information
- » Holds up to five different colors



## LB – Label Marker

The Label Marking Machine is Alpine Metal Tech’s solution for applying high information content markings accurately to different product surfaces. With temperature resistance up to 900°C, our Label technology ensures markings that are readable by automatic identification systems, such as Barcodes, Data-Matrix & QR 2-D codes.

### Your advantages

- » Short marking cycles
- » High flexibility
- » High positioning accuracy



## EC – Eddy Current Testing

Automatic in-line detection and reporting of longitudinal and transversal surface cracks on rails and other rolled profiles. Inspection of edges and planar surfaces by segment coils and rotating probes. Certified eddy current probes, amplifiers and data acquisition equipment. Automated engagement and disengagement of all probes. Includes demagnetizing unit. Suitable for product speeds up to 2 m/s.

### Your advantages

- » Minimizes risk of undiscovered surface cracks
- » Inspection according to international standards
- » Easy setup for different profiles



## UT – Ultrasonic Testing

Automatic in-line detection and reporting of inclusions, cavities, tension cracks and laminar defects in rails and other rolled profiles. Certified ultrasound probes, amplifiers and data acquisition equipment. Water Jet and Water Gap probes available. Includes conditioning unit for closed water circuit. Suitable for product speeds up to 2 m/s.

### Your advantages

- » Minimizes risk of undiscovered internal defects
- » Inspection according to international standards
- » Easy setup for different profiles



## SG – Security Gate

Protective device to prevent damages to the downstream Non-Destructive Testing line for rails and other rolled profiles. Measures profile width and height for comparison with dimensions of expected profile. Used to trigger an emergency stop in case of any mismatch. Suitable for product speeds up to 2 m/s.

### Your advantages

- » Can prevent fatal crash of inspection equipment



## BM – Brushing Machine

Installed prior to Non-Destructive Testing machines the Brushing Machine removes and disposes of loose scale, rust and other dirt particles from rails and other rolled profiles. Brushing parameters fully customizable due to multiple and independently controllable units. Features comprehensive condition monitoring. Suitable for product speeds up to 2 m/s.

### Your advantages

- » Improves the overall quality and repeatability of inspection results
- » Reduces cleaning and maintenance effort for downstream machines
- » Rugged and maintenance friendly design



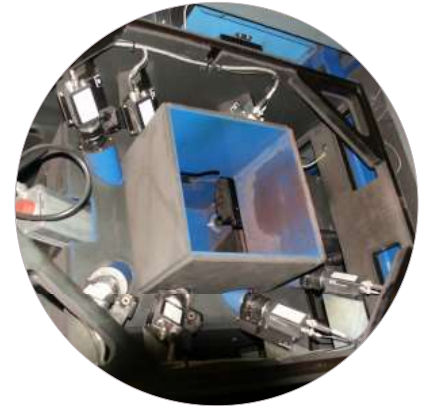
# RAIL TECHNOLOGY

## 3D SI – Surface Inspection Unit

Automatic in-line detection, classification and reporting of typical surface defects on rolled profiles such as rails. Pure optical inspection by high-speed laser triangulation sensors. Suitable for product speeds up to 2 m/s. Also available as combined machine for surface- and profile inspection.

### Your advantages

- » No mechanical wear parts
- » 100% surface check
- » Seamless documentation of product quality

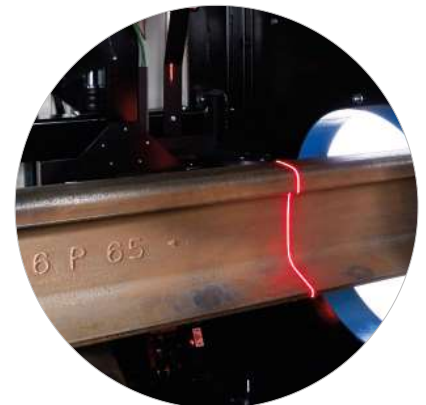


## PM – Profile Measurement Unit

In-line verification of profile dimensions according to standard for rolled profiles such as rails. Pure optical inspection by high-speed laser triangulation sensors. Allows real-time feedback to operator and process control of rolling mill. Suitable for product speeds up to 2 m/s. Also available as combined machine for profile and surface inspection.

### Your advantages

- » No mechanical wear parts
- » 100% profile check
- » Seamless documentation of product quality



## FM – Straightness Measurement Unit

In-line measurement and evaluation of straightness according to standard for rolled profiles such as rails. Pure optical inspection by high-speed laser triangulation sensors. Allows real-time feedback to operator of upstream straightening machine. Suitable for product speeds up to 2 m/s.

### Your advantages

- » No mechanical wear parts
- » 100% check of horizontal and vertical straightness
- » Seamless documentation of product quality



## TG – Transport and Guiding Unit

Proper guiding and conveying of rails and other rolled profiles throughout the entire Non-Destructive Testing line. Minimize transients caused by vertical and lateral movement. Features integrated encoder for accurate length measurement. Suitable for product speeds up to 2 m/s.

### Your advantages

- » Improves the overall quality and repeatability of inspection results
- » Integrates into existing roller table control
- » Rugged and maintenance friendly design



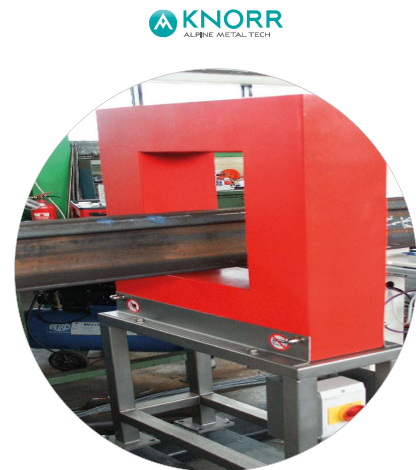
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## Demagnetization Unit

In case the tested rails are handled by a magnetic crane before entering the test line area, a demagnetization unit is recommended. Frame mounted demagnetizing tunnels are principally used for continuous processing to enable the continual automatic throughput of long products. Demagnetizing tunnels are available in a range of capacities, depending on the dimensions and shape of the product to be demagnetized.

### Your advantages

- » Designed according to customers specific needs
- » Used for continuous processing
- » Recommended for handling with magnetic crane



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## AMTident Product Identification

AMTident is a product identification system that can read IDs from any product, marking technology, or environment. It has three versions - VIS, IR, and 3-D - to work in different environments. The software can recognize 2-D codes, letters, and numbers with its main goal material tracking at any position throughout the entire production line. AMTident stores data for backtracking and quality assurance purposes.

### Your advantages

- » Key process – marking verification/ product identification
- » Data driven analysis – KPIs, closed data gaps, product tracking
- » Cost and Environmental Savings – avoid unnecessary material handling



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# RAIL TECHNOLOGY

## VLTF 120 – Vertical Lathe

The VLTF 120 is a vertical CNC lathe with fixed cross rail, a powerful main spindle with high power and torque and one vertical slide RAM type with square section. The machine is suitable for all turning operations that are needed in the wheel factory shop.

### Your advantages

- » Possible integration of C-axis and live tools, in order to perform drilling and milling operation in one machine only
- » Machining of internal diameters of railway machine tyre

 **INTERMATO**  
ALPINE METAL TECH



## VL60 – Vertical Lathe

The VL60 is a CNC lathe with fixed cross rail, a powerful main spindle with high power and torque and one vertical slide with working head. The machine is suitable for all turning operations that are needed in the wheel factory shop.

### Your advantages

- » Possible integration of C-axis and live tools, in order to perform drilling and milling operations in one machine only
- » Can be equipped with comprehensive package of options
- » Reduction of cycle time thanks to workpiece measurement system integrated in the work head

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ALPINE METAL TECH



## VTE 180 FTD – Machining Center

The vertical machining center VTE 180 FTD is a five-axis machining center. It is study and built, in order to perform with high capability and accuracy.

### Your advantages

- » Direct drive motorization allows to work components made of hard steel where maximum torque is required at low table revolutions

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ALPINE METAL TECH



## SRE 150 HD – Vertical Lathe

SRE-150-HD is a heavy-duty double support vertical lathe particularly suitable for the machining operations of railway wheels and for shaped rings in general.

### Your advantages

- » High production machine, designed to operate over three working shifts each day with or without human supervision
- » Can be easily integrated in complex production lines with a fully automatic wheel handling system

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ALPINE METAL TECH



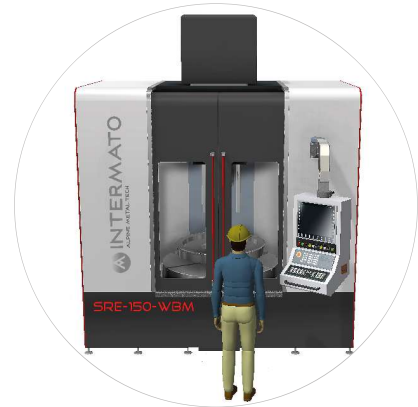
## SRE 150 WBM – Vertical Drilling

The vertical wheel borer SRE 150 WBM has been designed and built with the experience matured in over twenty years in the construction of machine tools for the railway & metro sector.

### Your advantages

- » Compact layout, minimum space required for installation
- » Possibility to include automatic / semiautomatic loading system

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## SRE 130 WST – Horizontal Lathe

SRE 130 WST is a floor mounted reliable horizontal wheel lathe for the machining operations required on wheel-sets disassembled from their bogies. The re-profiling turning operation can be performed for solid wheels or tired wheel treads of worn or new railway and metro wheel-sets.

### Your advantages

- » Pre & post measurement of profiles and diameters
- » Electronic wear measurement system in order to determine the economical depth of cut

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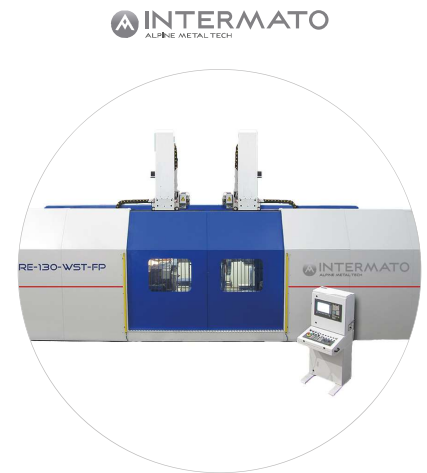


## SRE 130 WST FP – Horizontal Lathe

The machine is equipped with two saddles, provided with a vertical slide for turning the wheel profiles and brake disks mounted inside the wheels or on the axle. Each slide is equipped with a quick-change tools system. As an option, the automatic tool changer can be supplied for each slide.

### Your advantages

- » Heavy duty machine with high material removal capacity
- » Electronic wear measurement system to determinate the economical depth of cut
- » Equipment installation on shop floor level
- » Fully automatic machine control system



## SRE 500 RTA – Horizontal Lathe

The horizontal lathe SRE 500 is a powerful heavy-duty horizontal turning lathe for machining railway axles. The application of this machine can be customized for roughing and finishing operations. The design of the horizontal lathe includes a left and a right turning spindle with high power and torque, double saddle with turret head equipped with Capto C10 tools.

### Your advantages

- » Automatic tool changer for left and right turret
- » Double steady rest
- » The lathe can be easily integrated into complex automatic production lines



## SMT 300/3000 – Horizontal Lathe

The horizontal lathe SMT 300/3000 machine is designed and built for the butting and drilling of railway axles. The design of the machine includes two horizontal spindles which work simultaneously on both ends of the axle. Each operating head can perform milling, centering and drilling operations.

### Your advantages

- » The machine is equipped with a suitable clamping system to accept asymmetrical axles
- » The machine can be easily integrated into complex automatic production lines







# CNC LATHES

## S – Vertical CNC Lathe

The S series presents high-performance vertical lathes with a table diameter up to 1600 mm and is the perfect solution for medium and small machining.

### Your advantages

- » Turning, milling and grinding configurable
- » Modular machine design for high usability



## VBM – Vertical CNC Lathe

The VBM series comprises dual-column lathes with a capacity of up to 7.0 meters diameter, a mobile cross-rail and hydrostatic movements. The movable cross-rail machine is characterized by its wide range of applications.

### Your advantages

- » Extreme rigidity, accuracy and excellent quality of machining
- » Heavy loads allowed on the tables starting up to 120 tons
- » Reduction of maintenance costs and thermo-control of the machine
- » The machines version with 4 working axes is able to halve the cycle time



## VL – Vertical CNC Lathe

The VL series high performance machine presents the perfect match between quality and flexibility at reasonable cost. The VL series of vertical lathes are designed for machining any type of material.

### Your advantages

- » High performance at reasonable cost
- » Combination of turning and milling



## WR – Vertical CNC Lathe

The WR series vertical lathe allows to load / unload the pieces directly automatically, its turning capacity max. is equal to 300mm. The WR vertical lathes can be supplied in the turning version or with motorized tools for drilling, milling and tapping operations, able to work complex pieces with 3 continuous interpolating axes.

### Your advantages

- » Thermostabilized structure, for precision and repeatability to satisfy the most demanding tolerances
- » Electro-spindle in various versions to satisfy every different need
- » Automatic piece loading system
- » Easy insert into pre-existing automatic lines

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## NTM – Vertical CNC Lathe

In the sector of medium vertical lathes, the NTM series is a mono-column lathe with a capacity up to 7 meters with a mobile cross-rail and hydrostatic movements.

### Your advantages

- » Extensively sized machine structure for extreme rigidity, accuracy and excellent quality of machining
- » Important loads allowed on the tables starting from 15 to 120 tons
- » Reduction of maintenance costs and thermo-control of the machine due to machine axes with hydrostatic movement
- » The machines version with 4 working axes is able to halve the cycle time

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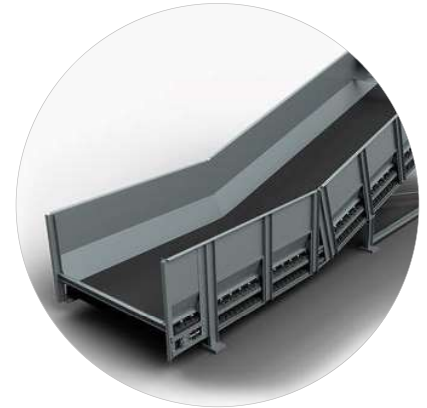
# MATERIAL HANDLING

## AC – Apron Conveyor

AMAKON apron and surface feeders are used in various industries to discharge, transport and dose coarse to chunky and hot bulk materials. Through their robust and low-maintenance design, they are in particular suited for the continuous transport of heavily abrasive materials and for operation under adverse conditions.

### Your advantages

- » Chunky bulk materials, light to heavy fractions
- » High flexibility
- » Maintenance friendly design



## BC – Belt Conveyor

Troughed-belt conveyors, air-supported belt conveyors and sliding-belt conveyors by AMAKON transport large quantities of the most diverse bulk materials over long distances. The product-protecting and energy-efficient transport is especially requested where high conveying capacities are needed to be realized.

### Your advantages

- » Gentle, silent and energy-efficient transport
- » Open or closed and dust-free design
- » Shuttle-, telescopic, slewable and inclinable designs



## BE – Bucket Elevator

Chain – and Belt bucket elevators are the most efficient conveying system for the continuous vertical transport of dusty, grainy and abrasive bulk materials. The individual design allows large conveying heights and capacities. With its self-supporting construction, AMAKON bucket elevators are at all times a space-saving alternative to long and inclined conveying lines.

### Your advantages

- » Conveying height up to 75m, capacities up to 750 m<sup>3</sup>/h
- » Small space requirements
- » Efficient vertical transport suitable for ATEX-applications



## DCC – Drag Chain Conveyor

Drag chain conveyors are the conveying system of choice for enclosed horizontal and vertical transport of various kinds of bulk materials. Additionally, they are well suited for the controlled discharging of silos and bunkers. A modular system allows the ideal adaption to most individual requirements. For special applications, tailor-made solutions are available as well.

### Your advantages

- » Horizontal, inclined and vertical transport
- » Dust-free and odorless transport
- » Fine for coarse and pasty bulk materials

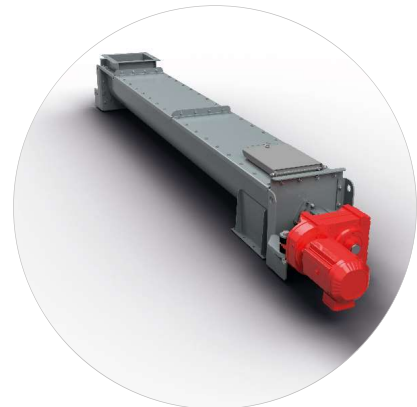


## SC – Screw Conveyor

Screw conveyors are used to transport dusty or pasty bulk materials. As screw dischargers with multiple screws in one common trough, they are utilized in truck unloading stations and feeding bins for discharging and controlled feeding of lighter materials. Our available designs contain transport- and extraction screw conveyors, pipe screw conveyors and screw heat exchangers.

### Your advantages

- » Silent, gentle, dust-free and odorless transport
- » Conveying length up to 20 m
- » Capacities up to 1000 m<sup>3</sup>/h



## SS – Silo Systems

Silo systems by AMAKON are used anywhere where bulk materials are temporarily or long-term stored. Design and materials are chosen depending on the bulk material, the silo volume and the storage period. For the continuous discharge and to avoid eventual bridge building, AMAKON discharge systems or activators are utilized.

### Your advantages

- » Design according to European standards and safety regulations
- » Isolation and Heating systems
- » De-dusting and ventilation systems

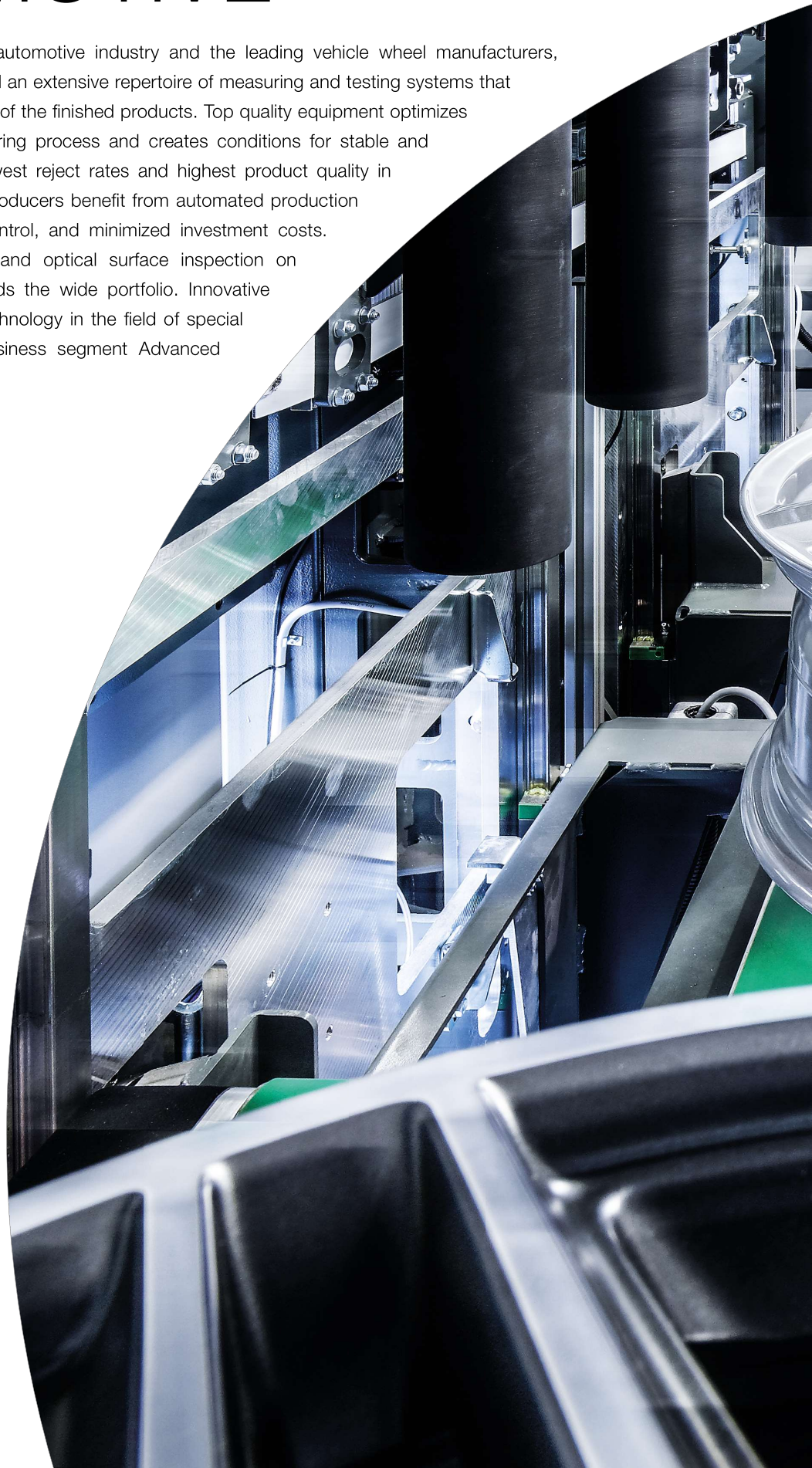


# AUTOMOTIVE

In close cooperation with the automotive industry and the leading vehicle wheel manufacturers, Alpine Metal Tech has developed an extensive repertoire of measuring and testing systems that guarantee the quality and safety of the finished products. Top quality equipment optimizes the aluminum wheel manufacturing process and creates conditions for stable and efficient production with the lowest reject rates and highest product quality in the industry. Aluminum wheel producers benefit from automated production processes, improved quality control, and minimized investment costs. Leak testing, robot deburring and optical surface inspection on various automotive parts extends the wide portfolio. Innovative solutions paired with proven technology in the field of special machinery forms the latest business segment Advanced Technology.

## Application Areas

- » Production
- » Testing
- » Advanced Technology
- » Workholding



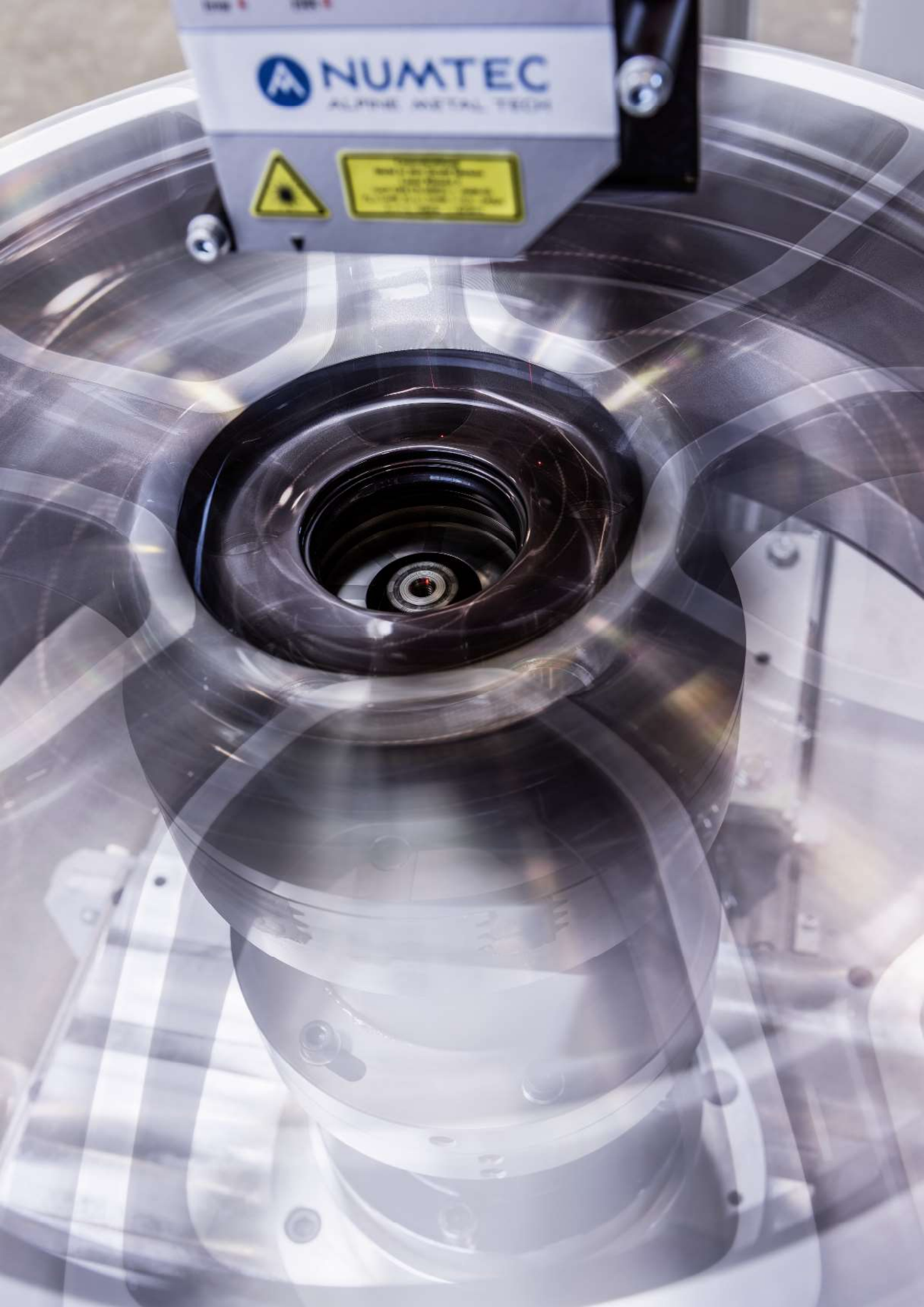


Alpine Metal Tech is a world leading supplier of machines and systems to support aluminum wheel production and testing.



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# APPLICATION AREAS



## » Production

Alpine Metal Tech GmbH supplies machines for the different production steps of aluminum wheels. Our products ensure safe process control by means of bar code or data matrix code, enable customer-specific labeling, remove burrs and sprue points, optimize productivity and quality, facilitate the work process by means of high-level automation and ensure quality before delivery.



## » Testing

The unique testing machines from Alpine Metal Tech GmbH ensure that all the standards, regulations and safety requirements are met by aluminum wheels, inspection organizations (e.g. TÜV) and premium automotive manufacturers. All Alpine Metal Tech testing machines required for the wheel test are covered.



## » Advanced Technology

Alpine Metal Tech is your partner for customized and industry-independent automated solutions. Innovation paired with proven technology in the field of special machinery forms the business segment Advanced Technology. In order to offer the most efficient solution between economic efficiency and technical feasibility, Alpine Metal Tech analyzes existing processes on customer purpose and develops specific solutions. The application portfolio starts from simple pick and place systems and ends at multi-axial optical surface inspection.



## » Workholding

In addition to a robust design, safety and ease of use are key aspects in the design and construction of Alpine Metal Tech clamping devices. Thereby, clear clamping situations, as well as the best possible availability with long maintenance intervals, are in the foreground. With our clamping device development, we face the challenges of the changing requirements of our customers.

# PRODUCTION

## BCU700 – Barcode System

The NUMTEC wheel barcode is a identification system for automation of the wheel transport from casting to the machining area. The code is easily engraved into the side core of the wheel mold and results into a raised code on the casted surface. Reading is done with a special laser based reading systems called BCU700 which ensures a very reliable reading of all wheels during production.

### Your advantages

- » Very high reliability, reading rate over 99%
- » Mold based coding system, independent from wheel design
- » Fully identification and positioning without any teaching



## RP110 – Wheel Rotation and Positioning

The combination of rotation station and unique Barcode scanning system BC700, gives you the ability to improve your production logistic.

### Your advantages

- » Save reading of wheel types and share on the conveyors
- » Individual systems for different wheel types available
- » Short reading time



## MARK410 – Data Matrix Code Marking

The version MARK410 enhances the existing MARK4xx laser marking product line with a special focus on installations in space critical production sites. With its maximal dimensions of only 1300 mm in wheel transport direction, the MARK410 fits in almost every layout. All well-known options from the MARK420 are certainly available also in the new machine version (flow forming, APC system,...).

### Your advantages

- » Genuine serial number – continuous tracking is guaranteed
- » Production errors can be narrowed down (wheel and production time)
- » One-stop supplier



## MARK420 – Data Matrix Code Marking

Alloy wheels will be automatically marked by laser with a unique serial number (DMC) directly after the casting process. Consistent documentation of critical characteristics and a zero-fault demand in production and logistic are the actual requirements. To follow these guidelines, Alpine Metal Tech developed the MARK420 system for full traceability of aluminum wheels through the entire production process.

### Your advantages

- » Each wheel has its own ID -> full traceability
- » Offline wheel teaching and data sharing
- » Fast cycle time (16 seconds per wheel)



## REF300 – Inline Wheel Deflashing

Continuously growing demands in terms of quality, flexibility and productivity in the alloy wheel industry require a flash-free rough casted wheel for automatic production flow. Casting flashes create problems at the transport, X-ray, handling and clamping in the machining cell. REF300 is a machine which is removing inline all the disturbing flashes of the wheel.

### Your advantages

- » Fully deflashed wheels to ensure safe handling and transport
- » No X-ray pseudo faults
- » No more problems with flashes in the chucks



## MD380 – Inline 3-D Wheel Measurement

Fully integrated laser measurement technology creates a complete three-dimensional copy of the design side of a casted wheel. The resolution achieved and the associated level of detail provide not only the possibility of distortion analysis but also information about the condition of the mold or process errors.

### Your advantages

- » Full 3-D distortion measurement
- » Trend analysis of the casting and heat treatment process
- » Cost savings and capacity increase through early ejection of NOK wheels



# PRODUCTION

## CAM220 – DMC Reading System

The CAM220 camera is a reading system for DMC marked wheels with a self-cleaning protection cover. This makes it suitable to any position in production even if regular cleaning is not possible. The system is based on industrial PC equipment and guarantees highest reading rates on the fly with a speed of up to 30 m/min.

### Your advantages

- » Reading on the fly below the conveyor
- » Self-cleaning protection cover
- » Data safety with integrated storage



## ABV – Sprue Point Drilling

The ABV sprue point drilling systems are the best option for the production of high quality wheels in big inch sizes. With the flexible chucking systems the entire production range of wheels can be drilled without any machine setup necessary. The robust and heavy duty machine works with robot loading to a machine throughput of up to 120 wheels/hour.

### Your advantages

- » Improved wheel quality with sprue drilling process
- » Up 14-24 inch production range without machine setup
- » No limitation on sprue area thickness



## ABV300 – Inline Sprue Point Drilling

The ABV300 inline drilling machine is optimized for flexibility, speed and reduced floor space requirement. With the integrated fully automatic tool changer every wheel type can be drilled with its own best fitting diameter which reduces the overall machining time in the mechanical department. The high machining throughput of more than 220 wheel/hour with individual drilling size is setting a new standard in the sprue handling area.

### Your advantages

- » Reduced floor space requirement with inline version
- » Automatic tool change for every single drilling process
- » Machine throughput of more than 220 wheels/hour



## MARK100 – Needle Marking

The MARK100 is a fully automatic system to needle stamp characters onto alloy wheels. It can mark various types of stamps (day, hour, shift stamp, x-ray stamps) on predefined positions at the backside of the wheel. The machine is built as an inline type with a closed housing, no extra loading or unloading process is needed. Due to the use of the NUMTEC barcode system, the wheels can be feed random.

### Your advantages

- » 100% correct positioned and readable markings
- » High availability (self-monitoring needle control)
- » Fast cycle time (240 wheels/hour)



## Robot Cell

Flexible robot cell for fully automatic mixed wheel production in best productivity and wheel quality. Integration of all available CNC machines in our robot cell is possible. Fully automatic measurement machines for distortion, center bore diameter or runout can be integrated including automatic correction of OP1 wheel program.

### Your advantages

- » Flexible machining cells with mixed wheel type/size production capability
- » Integrated measuring machines
- » Improvement of wheel quality with flexible orientation



## MD322 – Distortion Measurement

The MD322 measures mainly the deviation on the front side clamping flange and the hub area. This measurement of clamping flange flatness and subsequent positioning on the chuck for clamping with the least wheel distortion at OP1 improves the overall wheel quality. With MD322 at the entrance of a production cell only wheels within tolerance will be produced and this will increase the output of a cell.

### Your advantages

- » Automatic distortion measurement for individual correction of wheels
- » Operation with fully flexible production lines with mixed wheel types
- » Significant cost saving through quality improvement



# PRODUCTION

## JW Series – Vertical CNC Lathes

The JW series presents high-performance vertical CNC lathes from Intermato especially designed for aluminum wheel machining. This machine series is capable to handle aluminum wheels up to 24" x 13" with perfect dimensional accuracy and surface quality. The JW series is the ideal choice to be integrated in fully automatic and random wheel machining lines, although the single machines can also be used in manual mode.

### Your advantages

- » Lateral chips conveyor available for layout optimization
- » Increase of machining quality due to optimized machine frame
- » Reduction of cycle time due to high-power servo drive

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ALPINE METAL TECH



## AW Series – Vertical CNC Lathes

The AW series presents high-performance vertical CNC lathes especially designed for heavy machining of aluminum wheels in fully automatic and random production lines. The AW lathes are capable to handle aluminum wheels up to 24" x 14" with perfect dimensional accuracy and surface quality.

### Your advantages

- » Short chip to chip cycle time due to direct-driven electro spindle
- » Low machine vibrations → high surface quality and dimensional accuracy
- » High production flexibility – pallet change table offers perfect set-up of individual machining line in accordance with customer production needs

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## CAM120 – Valve Hole Positioning

The valve hole positioning system is part of a highly automated production cell. It is used to find and position the valve stamp from any location for the following drilling operation. The CAM120 is controlled and operated from a MD322 HMI.

### Your advantages

- » Precise determination of the valve position
- » Operation in rough surrounding possible
- » Operation in machining cells

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## CAM100 – Valve Hole Recognition

The valve hole recognition system is used inside the drilling machine to determine the precise angle of the valve stamp and pass it along to correct the drilling operation. With this unit a fully automated machining cell can be realized, which can work with different wheel types at the same time.

### Your advantages

- » Precise determination of the valve position
- » Eliminating handling inaccuracy
- » Operation inside of drilling machines



## Measuring Bench

The measuring bench is designed to measure all relevant and necessary wheel parameters for automatic single wheel machining lines in the most economic way. It validates the center bore diameter and gives direct and immediate feedback to the first turning process and for quality control. Additionally, the cap seat distortion is measured to reduce the scrap rate at second turning process.

### Your advantages

- » Simple design and easy maintenance
- » Ideal solution for automatic line with single wheel operation
- » High-precision measurement



# PRODUCTION

## MD422 – Center Bore Measurement

MD422 are used for 100% process control of center bore (48-85mm) and a-value inside chaotic CNC machining cells. Trend value correction is sent to the lathe to reach center bore allowance. The Wheel is positioned for subsequent drilling with integrated optional camera system and all measured values are available for analyses. The compact design allows integration of MD422 in existing cells easily.

### Your advantages

- » No mechanical wear due to contactless laser sensor
- » Valve positioning with camera system
- » No set up costs, just calibration in regular intervals

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## FW Series – Drilling Machines

The four axis drilling machine series FW is specially designed to perform all necessary drilling operations on common aluminum wheels with high precision and short cycle times. The slim version FW-24-T for limited space is equipped with only one working station. The dual station version FW-24-D reduces the loading/unloading time due to the possibility that the drilling head will be moved from the first to the second station.

### Your advantages

- » High spindle power guarantees short cycle times
- » Torque motor at tilting table for strong and precise tool positioning
- » Special machine design for aluminum wheels

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## MD825 – Design Recognition

The MD825 is a fully automatic design recognition system for cast alloy wheels. The wheels can be recognized directly after machining when the barcode is already eliminated. It can be used in conveyor systems to track and sort wheels or load wheel specific data for production and testing machines.

### Your advantages

- » High reliability due to 3-D model comparison
- » Industrial hardware for rough surrounding
- » Wheel data base up to 10000 wheels

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## MD860 – Modular Inline Testing

The MD860 is an inline testing machine for aluminum wheels and ensures a reliable production process with 100% inspection of all critical wheel parameters at every single wheel. The modular concept allows future expansion of the system. New modules can be integrated later at any position in the system. Furthermore all kind of marking modules are available such as ink-jet, color dot, sticker, pin or needle marking.

### Your advantages

- » 100% inspection of all wheels prior to delivery
- » Modular machine frame and transport system
- » High speed transport with form-fit gripper



## RUNA – Runout Measurement

The inline concentricity and runout measurement module for the MD860 ensures all kind of axial and radial runout parameters including the harmonics. Furthermore wheel width, offset and diameter as absolute parameters can be measured. Depending on the chosen measurements and the position in the production all kind of match point marking systems are available.

### Your advantages

- » 100% measurement of runout parameters
- » Additional hump measurement available



## BOLT – Bolt Hole Measurement

The bolt hole and PCD measurement, as a module for the MD860, ensures 100% measurement of the calotte height, position, concentricity and the pitch circle diameter within 15 seconds. Furthermore the BOLT module can be equipped with an optional cap measurement to check the depth of the cap area.

### Your advantages

- » 100% measurement of all bolt holes, related to the wheel center
- » Full flexibility – combination with WALL module possible



# PRODUCTION

## WALL – Wall Thickness Measurement

The wall thickness measurement module has the capability to measure the real wall thickness on nearly every position of the rim. It measures the angle of the wall and calculates the point to point minimum distance to ensure the best quality especially for weight reduced wheels. The module checks a full circle and up to three different positions on the wheel within a cycle time of 15 seconds.

### Your advantages

- » 100% measurement of wall thickness at up to 3 levels
- » Full flexibility – combination with BOLT module possible



## VALVE – Valve Thickness Measurement

VALVE is the measuring module for the 100% testing of the valve thickness in the MD860 measurement system. The measurement head is mounted on two linear servo axis and can be positioned at the prepositioned valve hole. With a synchronized radial linear movement the area around the valve hole is scanned and the residual wall thickness is measured.

### Your advantages

- » 100% measurement of the valve residual wall thickness
- » Additional measurements of valve hole surrounding



## BORE – Center Bore Measurement

The center bore measurement as a module for the MD860 ensures an inline measurement of the very important center bore diameter. A laser line sensor is taking a 3-D surface scan of the whole center bore area. Fast algorithms provide different options such as least-square and maximum inscribed circle method to fit to the customer's requirements.

### Your advantages

- » 100% measurement of center hole parameters on different levels
- » Full flexibility – combination with CAP module possible



## CAP – Cap Area Measurement

The measurement module CAP is a fully automatic measurement of the cap area to ensure best quality in the production line. The system uses a line scan laser sensor to scan the surface of the cap area. Due to the 360-degree rotation of the sensor the system is able to generate a 3-D surface model of the area where all important parameters can be measured. The big amount of acquired points makes the measurement very stable and accurate.

### Your advantages

- » Measurement of all important cap parameters
- » Full flexibility – combination with BORE module possible



## UBAL – Unbalance Measurement

The two dimensional balance measurement module provides the possibility of static and dynamic measurements. It is completely flexible to measure in any plane and radius of the wheel considering the weight of the valve or tire pressure monitoring system (TPMS). The module is equipped with a self-calibrating unit for precise measurements.

### Your advantages

- » 100% measurement of wheel balance
- » Static and dynamic measurement



# PRODUCTION

## WB24 – Vertical CNC Lathe

The WB24 vertical lathe results from the increasingly stringent tolerance reduction of vehicle manufacturers. The patented Intermato CNC lathe WB24 is developed for balancing wheels which are out of tolerance after the machining process.

### Your advantages

- » Reduced costs due to wheel repairing
- » Higher production capacity due to less wheel re-melting

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## DHS – Sealing Plug Handling System

The sealing plug handling system is used for fully automatic closing of the valve hole prior to helium leak test. In the high-quality production of aluminum wheels, leak testing with helium gas is state of the art technology. As part of the preparation for the helium test, the already drilled valve hole needs to be closed. To ensure a reliable sealing, it is very important that the valve stem plug is pressed with constant pressure into the valve hole.

### Your advantages

- » Short cycle time
- » Mixed wheel production
- » Increased reliability of helium leak test process

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## DES – Sealing Plug Removing System

The DES is used for fully automated removal of sealing plugs which have been applied by the sealing plug handling system (DHS). It secures the reliable removing of the sealing plug directly after the helium leak test and before further production steps. This decreases the wear and the damage of sealing plugs resulting in reduced production costs due to less human faults.

### Your advantages

- » Random production without pre-settings
- » Integration into customer system with common interface standards possible
- » Extended life time of the sealing plugs and reduction of labor costs

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## MD220 – Diamond Cut Measurement

MD220 is used for precise measurement of the front face of wheels prior to diamond cut process to recognize abnormality on the wheels before turning. The machining parameter can be adapted accordingly (shifted and tilted). An optional sensor measures coating thickness to compensate irregularities on the coating process to increase results for skin cut. To serve best results wheel orientation system is available.

### Your advantages

- » Orientation of wheel to serve best results
- » Correction values and paint thickness(optional) for CNC
- » Massive reduction of scrap and rework rate, capacity increase

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## WD – Vertical CNC Lathes

The WD high-performance vertical lathe is specially designed for front face machining (also called diamond cutting) of aluminum wheels after the painting process to receive a high-quality surface finishing. The machining process differs substantially from the already well-known diamond finishing machine. In fact, the quality of the obtained finished surface achieves a rainbow effect very close to the chrome plating process.

### Your advantages

- » Higher surface quality due to precise roller guides
- » Removed toothed belt eliminates vibration on the machine
- » Reduced risk of damaging the painting on the spoke's edges

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# TESTING

## AZN ZWARP – Multiaxial Wheel Test

The multi-axial test machine is used for fatigue and endurance tests on aluminum wheels for cars and light trucks, by rim-rolling them on a coated load drum. Corresponding forces for load, camber and skew will be applied by electrical servo motors and motion control systems.

### Your advantages

- » Measurement of the forces in all directions will be done with load cells
- » Available with 1 or 2 load stations, as standard or dynamic machine
- » Testing according regulations § 30 StVO, AK-LH08, SAE J328, ...



## BUP – Cornering Fatigue Test

The cornering fatigue test is defined as a type of audit for the certification approval and ongoing monitoring of vehicle wheels. The test parameters will be defined from the actual statutory provision and from the wheel load of the test wheel.

### Your advantages

- » Simulation of the rotary bending moment
- » Ending moment can be individually selected from 0.5 to 80 KN
- » Test according wheel specification § 30 StVO, SAE J2562, AKLH08



## EXA-R2/-R2H – Axial and Radial Runout

The EXA measuring machines were developed to make the simultaneous measurement of concentricity and run-out on the inner and outer tire seat possible. Measurement of the following parameters: radial runout inside and outside, axial runout inside and outside, tire seat circumference inside and outside, wheel width, wheel offset, center bore diameter.

### Your advantages

- » Calculation of 1st to 10th harmonic and physical identification for marking
- » Measurement according to E.T.R.T.O. standard
- » Additionally measurement of the hump diameter with the EXA-R2H



## ITB – Lateral Impact Test

The results of accident and collision research demand wheels which preserve and maintain their functions even under the heaviest of loads. The impact test simulates the fracture behavior of the wheels on the front side flange traveling over a defined obstacle.

### Your advantages

- » Test according specification ISO 7141, BSAU, TRIAS 43, SAE J175 ...
- » Easy and quick setup of wheel
- » Option for speed measurement



## RTB – Radial Impact Test

The results of accident and collision research demand wheels which preserve and maintain their functions even under the heaviest of loads. The radial-impact test simulates the fracture and deformation behavior of the wheels on the back side flange traveling over a defined obstacle.

### Your advantages

- » Test according specification, AK-LH08, § 30 StVO and NBR 6752
- » Easy and quick setup of wheel
- » Options for speed and force measurement



## RRH – Radial Fatigue Test

The RRH machine is used for fatigue and endurance testing of wheels by rolling the wheel on a drum under specific radial load conditions. Flexible machine setup between one and four load stations is possible.

### Your advantages

- » 1 to 4 load stations, individually for passenger cars or truck wheels
- » User friendly wheel change position due to horizontal drum arrangement
- » For execution of all law regulations according § 30 StVO, AK-LH08, ...



# TESTING

## RRV – Radial Fatigue Test

The MAKRA RRV test machine is used for radial fatigue test on aluminum and steel wheels. The wheel will be pressed with an adjustable force against the load drum. Depending on the settings, the load will be applied for a certain amount of distance. Each load station can be run with an individual wheel load and individual test distance.

### Your advantages

- » Space saving horizontal drum axis
- » 1 or 2 load stations
- » Truck loads up to 100 kN optionally available
- » Complete safety enclosure optionally available

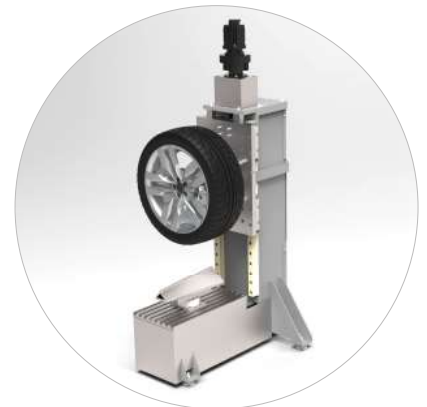


## VSE200 – Pre-Damage & Compression Test

With the VSE200 test machine various pre-damage and compression tests can be done during the development phase of a new wheel design. For various radial fatigue tests of aluminum wheels, a defined pre-damage is requested. The VSE200 can apply this kind of load scenarios according different regulations prior to the fatigue test.

### Your advantages

- » Universal wheel pre-damage and compression test machine
- » Loads up to 90 kN can be applied
- » Possibility for extension to stiffness measurement according new regulation for plastic/carbon wheels



## Handheld Measuring Devices

The automotive industry demands smaller tolerances for the production of vehicle wheels, which requires higher manufacturing accuracy. With the wide range of high-quality handheld measuring equipment, MAKRA offers the right solution for every quality inspection task.

### Your advantages

- » The right solution for every test task
- » Certified manufacturer
- » Long-term experience
- » Consistent quality







# ADVANCED TECHNOLOGY

## ADoC – Automated Deburring of Castings

Casted aluminum parts especially for the automotive industry require high surface quality. Casting burrs, machining flashes or sharp edges are not acceptable at many applications. Alpine Metal Tech with its decades of experience in robot automation, part handling, surface inspection and laser measuring is the perfect turnkey partner.

### Your advantages

- » Fit for use deburring lines
- » Combination of automation and measuring technology for precise and repeatable deburring quality
- » Reduction of manual rework and inspection



## LT – Leak Test Inspection

Casted aluminum parts like motor blocks, e-housings, gear boxes, oil reservoirs or battery housings have to fulfill special requirements in respect of leak tightness within the automotive industry. Full automated turnkey leak testing lines from Alpine Metal Tech ensure that all produced and delivered parts passing through are 100% approved.

### Your advantages

- » Turnkey solution, one partner
- » Modular machine concept, easy extendable, fast integration of new types
- » Reliable leak testing system with high class components also for big volumes



## OIS – Optical Inspection System

In the case of cast aluminum components, blowholes on functional surfaces can be visible after machining. As a result, the part is scrap or the quality for subsequent processes is not achieved and rework is necessary. To ensure that only high-quality products are delivered, Alpine Metal Tech offers a fully automatic optical inspection cell for 100% control during production.

### Your advantages

- » Measurement of different features like bores and plane surfaces possible
- » Flexible machine layout to archive measurement of complex parts
- » Fast cycle times
- » Combination of different sensors, 2-D cameras 3-D laser measurement



## Marking Systems

Unique products and special customer needs require special marking solutions. Alpine Metal Tech is able to supply pneumatic needle marking systems for permanent markings, OCR and DMC markings by using laser marking technology and finished product marking by labeling technology with free text and logo application.

### Your advantages

- » Customized marking systems for unique parts
- » Marking and reading systems from one source
- » Combination of common and special marking solutions
- » Data handling, data storage and interfaces ac. customer requirements



## Reading Systems

Special product surfaces, harsh environment or difficult access to marking position are reasons to use Alpine Metal Tech reading systems. Casted barcodes on aluminum surfaces or OCR and DMC markings inside casted parts are challenges where special reading systems from Alpine Metal Tech achieve best reading rates. Customized data handling, storage and interfaces are part of our business.

### Your advantages

- » Customized reading & lighting systems for unique parts
- » Marking and reading from one source
- » Data handling, data storage and interfaces ac. customer requirements



## Automation & Robotics

Due to many years of experience in special machine construction and high expertise in robotics and automation, Alpine Metal Tech is the perfect contact for customer-specific solutions. The combination of existing technology and know-how forms the basis for a system tailored to your production.

### Your advantages

- » Flexible machine layouts for tight production areas to archive measurement of complex parts
- » Proven technology for fail-safe production
- » Different robot manufacturers possible



# WORKHOLDING

## OP1 UCS4 – Ultimate Clamping System

The UltimateClampingSystem matches the needs for random manufacturing of aluminum wheels during the 1st lathe operation. It allows machining of four different wheel sizes without retooling. Due to the loading ramps, the wheel sizes will automatically be detected and centered. All common wheel designs fit onto the UCS-4 and can be machined perfectly.

### Your advantages

- » Random production of four different wheel diameters
- » Automatic wheel size detection during centering
- » High loading tolerance due to unified loading position
- » Clamping range between 15" and 24"



## OP1 CS112– Single Inch Size

The modular plate chuck is a clamping solution for the highest machining quality of wheels in terms of concentricity and unbalance. The centering is possible on the inside or outside of the outer flange.

Since only one diameter is clamped per change set, the tolerances are in the minimum range. The change sets are preset per diameter, therefore the changeover process can be done fast.

### Your advantages

- » High accuracy at high speeds and large wheel sizes
- » Constant chucking force
- » Self-centering



## OP1 CS111 – Modular Finger Chuck

The CS111 modular finger chuck is the ideal choice for large-scale production. The design of the Ergal body represents the perfect compromise between strength and weight with the possibility to reach high-revolution speed. The clamping system is capable to clamp four different wheel dimensions with the same body by only changing the clamping fingers and adjusting the wheel support and the centering unit.

### Your advantages

- » High-precision self-centering
- » For large-scale production of the same wheel size
- » High rigidity



## OP2 CS223 – Automatic Jaw Chuck

The 6-jaw chuck allows random machining for the 2nd operation (final lathe operation). To do so, the wheel is clamped on the rear flange from the outside. Due to the excellent properties, the automatic chuck is also suitable for diamond cut machining of aluminum wheels. The centrifugal force compensation prevents a loss of clamping force; therefore, the processing of the wheels can be done faster and with higher precision.

### Your advantages

- » Up to eight times higher rigidity for large diameter wheels
- » Centrifugal force compensation enables fast machining speed
- » Constant clamping force and low wheel deformation

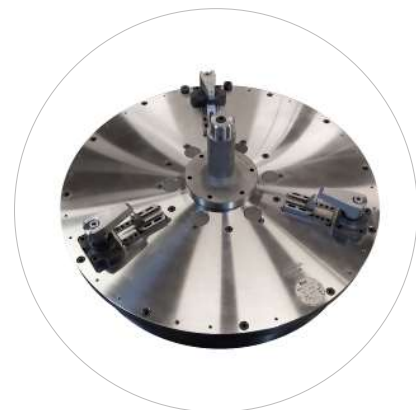


## OP2 CS211 – Modular Finger Chuck

The CS211 modular finger chuck was developed for high precise wheel machining at the 2nd operation. Due to centering the wheel at the very accurate center hole, a maximum overall wheel quality after machining can be achieved. The clamping system is capable for four different wheel sizes by retooling the wheel support and the clamping fingers.

### Your advantages

- » For large-scale production of the same wheel size
- » Highest precision due to centering at the center bore
- » Four possible wheel sizes with same body
- » High rigidity



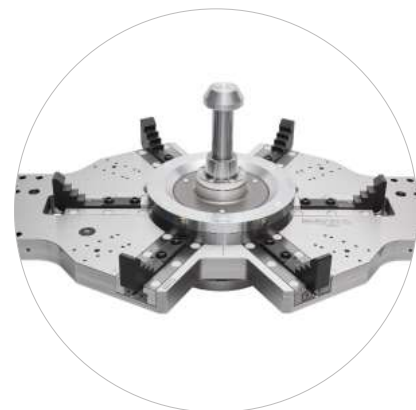
## OP3 CS323 – Automatic Jaw Chuck

This clamping bridge was developed for clamping aluminum wheels during the 3rd operation. The replaceable clamping jaws enable random machining of wheels up to four different sizes without adjustment.

The wheel is clamped from the outside on the rear flange where it has already been machined, so smallest tolerance deviation can be achieved. Due to the flat design, swiveling to the valve hole is possible.

### Your advantages

- » Continuous clamping force
- » Up to four wheel sizes without adjustment
- » Quick jaw changing system



# WORKHOLDING

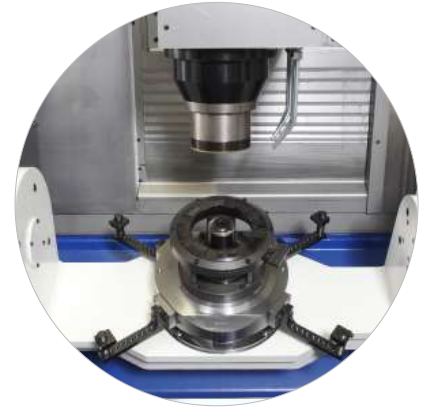
## OP3 CS311 – Extension Collet Chuck

The extension collet chuck represents the basic clamping system for drilling machines. The wheel is clamped by using an expanding collet in the hub hole in order to grant the correct wheel positioning. The chuck body accepts wheels from 13" to 24". In case of wheel model changes, only the central collet and the wheel support ring, which are designed for each wheel size, need to be changed.

### Your advantages

- » Low vibration due to high-precision wheel centering
- » One clamping device for all sizes, low tolerances
- » Quick changing system for central collet and support ring





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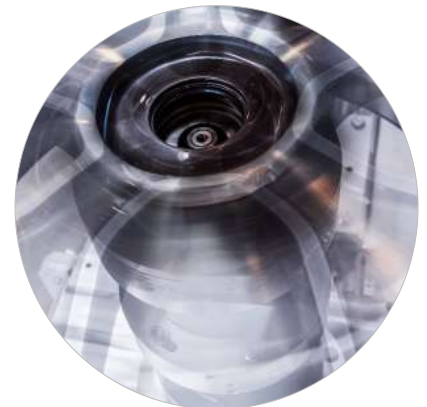
## Clamping Mandrels

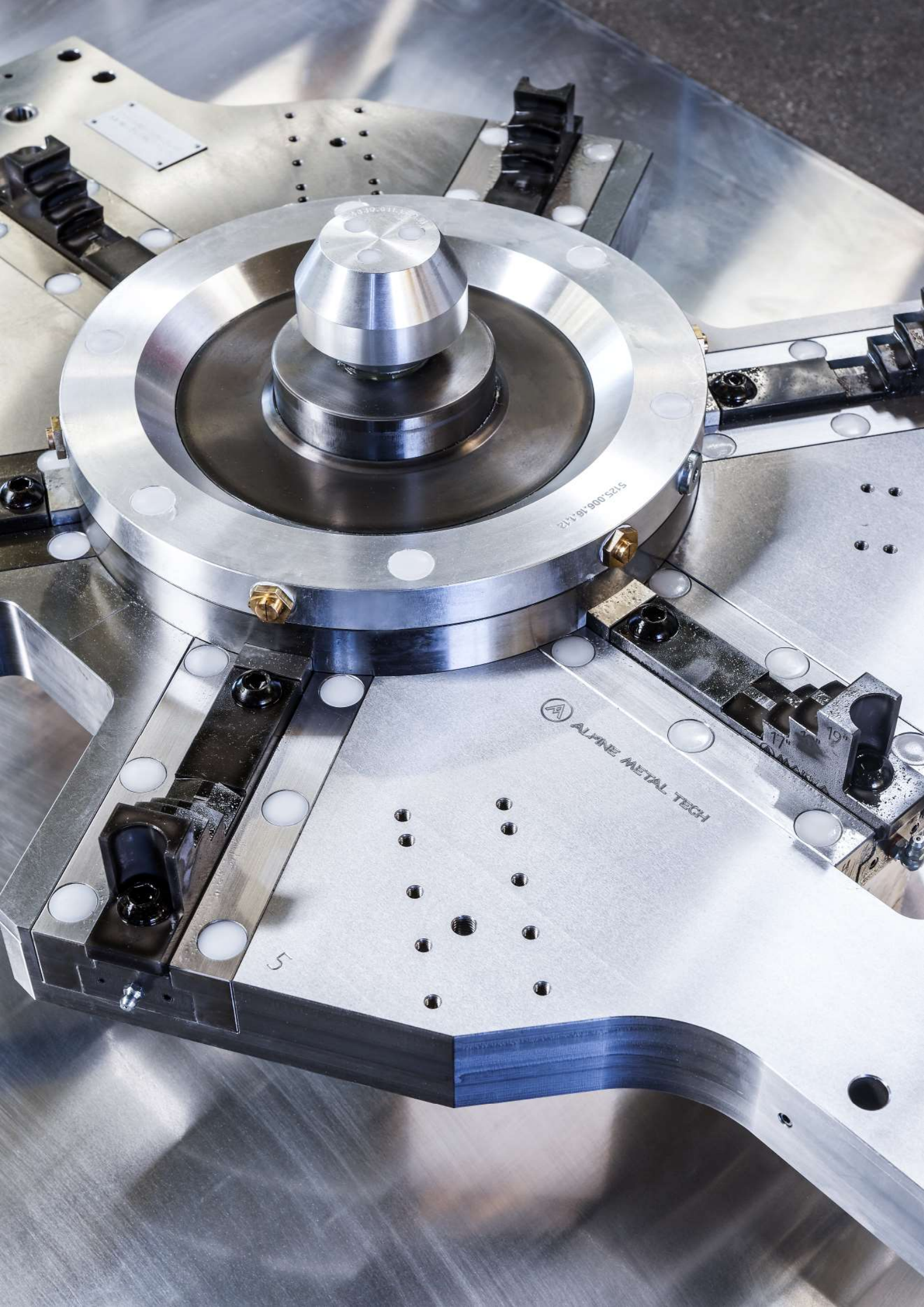
The mandrel chucks are developed for wheel clamping in the center bore. Due to the high precision and small clamping sizes, they are best suited for measuring, OP2 and OP3 operations and diamond cut. Optionally, center bore measurement is available.

### Variants

- » 8-jaw chuck for measuring  MAKRA
- » Fixed centering device  INTERMATO
- » Collet chuck with clamping sleeve  MAKRA
- » Collet chuck with centering pin  MAKRA

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17" 19"

# AEROSPACE

Simulation is specialized in the supply of live fire training simulators for Civil Airports, Local Authority/ Municipalities, Industrial Industries, Military, Oil and Gas, and Maritime. Our goal is to design, and build customized simulators that are developed together with our customers to ensure an optimum solution for the training of firefighting and rescue personnel. Simulation's dedicated, qualified and experienced team accomplishes turnkey solutions through a close collaboration with the end user, innovative concepts, outstanding quality of products and after sales services/maintenance that is second to none.

## Application Areas

- » Aircraft Simulators
- » Structural Fire Simulators
- » Oil and Gas Fire Simulators
- » Additional Fire and Training Simulators







We provide an extensive range of simulator solutions to help you train for every fire and rescue scenario.

# APPLICATION AREAS



## » Aircraft Simulators

The ARFF (Aircraft Rescue and Fire Fighting) industry requires very specialized products that replicate the challenges faced in emergencies involving aircraft. Our custom-built aircraft simulators range from the largest wide body aircraft to the smallest general aviation airplanes. Customers get to work with our company to decide the complexity level of the simulator as well as the training scenarios that they ultimately want to accomplish.



## » Structural Fire Simulators

Structural fire trainers provide the means for firefighters to train in an environment that replicates the challenges and complexities of a structural fire, but in a safe, durable, and repeatable manner. From a single flashover trainer to a multi storied complex, Simulation's training structures can be customized in any way imaginable and can be constructed to utilize either Class A or Class B fuels for combustion.



## » Oil / Gas Fire Simulators

The extreme fire loads and challenges experienced in firefighting in the oil and gas industry are replicated through the heavy-duty simulators that we design and manufacture. Our full scale or reduced scale props and trainers include simulators for every aspect of the industry including drilling rigs, storage, transport, refining, pumping and distribution. This enables our customers to become proficient in firefighting the unique challenges faced in the different areas of the plant.



## » Additional Fire / Training Simulators

Live fire training simulators are an invaluable firefighting and rescue tool in countless other areas. Our custom products include fire simulator props for all types of vehicles, fuel spills, household and commercial fires. Also, many non-fire related simulators are available for haz-mat, confined space, and many types of specialized rescue scenarios. Unique and cutting-edge solutions are also available for the forestry service that replicate the unique challenges faced by wildland fire fighters.



# AIRCRAFT SIMULATORS

## Large Frame Wide-Body Aircraft Simulators

Simulation provides realistic live fire training for wide body aircraft such as Boeing 747, 777, 787, 767, MD-11, Airbus A380, A330, A340 and A350. Immersed into this realistic environment are the options for a multitude of different live fire scenarios both internally and externally, providing the most realistic training in the world for firefighters and rescue crews.

### Your advantages

- » Completely customizable with an endless list of options
- » Hybrid designs possible replicating multiple aircraft
- » Unparalleled realism of engines, doors, and components



## Mid Size - Narrow Body Aircraft Simulators

Simulation's narrow body aircraft fire simulators provide realistic live fire training for mid-size aircraft such as Boeing 737, 757, or Airbus A320. This model is the most popular choice as it is found operating at most commercial airports. In addition, hybrid designs are a common option where a single simulator is a blend of two or more types. It is even possible to add single components from smaller commuter aircraft.

### Your advantages

- » Completely customizable with an endless list of options
- » Realistic dimensions of simulator and components
- » Dual fuel option for ultra-real burn or clean burn



## Small Regional Aircraft Simulators

Our regional aircraft models provide realistic live fire training for smaller commercial aircraft such as ATR72 / DHC Dash 8/Q400, CRJ Series or Embraer models. An endless list of options and combinations exist to make each simulator customizable to each customer's requirements and budget. Besides having the regional aircraft in a fixed position, we also offer simulators of this size in a mobile version, which is ideal for training across multiple jurisdictions.

### Your advantages

- » Hybrid design based on multiple aircraft types
- » Heavy gauge steel for long life
- » Mobile option available for trailer transport



## Small General Aviation Simulators

The small general aviation fire simulators provide realistic live fire training for smaller private aircraft in both the piston and jet categories. A limitless list of models are available for manufacture including popular choices from Cessna, Piper, Beechcraft, and Lear. Each simulator is customizable to each customer's requirements and budget. Simulators in this category are also available as a fixed installation or mobile on a trailer.

### Your advantages

- » Choice of fire locations and cabin set-up
- » Lightweight trailering possible on mobile units
- » Ideal for smaller airports or limited budgets

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## Helicopter Simulators

The helicopter simulators provide realistic live fire training for both civil and military applications. Each simulator is customizable to each customer's requirements and budget. Exacting engineering and design elements replicate the sizes and dimensions of the real aircraft, which enable firefighting and rescue crews to be trained to the highest level possible. Simulators in this category are also available as a fixed installation or mobile on a trailer.

### Your advantages

- » Realistic dimensions of simulator and components
- » Heavy gauge steel construction for long life
- » Mobile lighter weight options for trailering

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## Military Aircraft Simulators

The military aircraft simulators provide realistic live fire training for any fixed wing or rotor craft model utilized by militaries throughout the world. From fighter jets, to transport planes, from attack helicopters, to tilt rotors, our exacting engineering and design elements replicate the sizes and dimensions of the real aircraft. Weapons and munitions can also be integrated into the simulator in order to train on emergencies simulating live ordnance.

### Your advantages

- » Mobile option for smaller aircraft models
- » Hybrid designs based on multiple aircraft types
- » Special integration of weapons and haz-mat

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# STRUCTURAL FIRE SIMULATORS

## H-Block Simulator

The Simulation H-Block fire trainer is recognized as being the ultimate single-story fire training unit. Designed to exacting engineering and performance standards, the H-Block was developed to allow multiple aspects of fire training to occur in a single, yet compact unit, such as flashovers, backdrafts, single/multiple fire suppression, ventilation, mazes, search/rescue or confined space. All of the fire evolutions are conducted with Class “A” burn materials.

### Your advantages

- » Heavy duty construction of proprietary design
- » Safe and real demonstration of backdraft
- » Temperature monitor system for safety of occupants

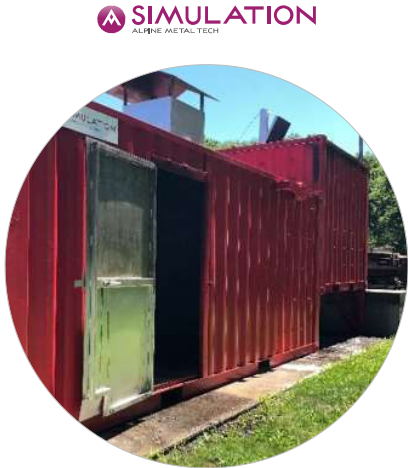


## Flashover Simulator

Flashovers are a common and deadly occurrence in the growth phase of a structure fire, yet they are difficult to detect without the correct training. Learning the tell-tale signs and the techniques to prevent a flashover are critical skills. Using a proprietary system of baffles, vents and louvres, the intensity of the Class “A” fire inside the unit can be modified so that the firefighters can witness the different fire phases in a controlled manner.

### Your advantages

- » Standard, Heavy-Duty or Mobile version available
- » Engineered for performance and longevity
- » Easy loading doors for Class A burn materials in burn box



## Maritime Fire Training Units

Simulation designs and builds maritime fire training units that replicate the unique challenges posed with fighting fires in a ship. Special areas include bridge and engine rooms, as well as pump rooms and berthing. Dimensionally correct hallways, passageways, stairways and doors unique to a ship present additional challenges to firefighter access and mobility. Class A or B fueling systems are available.

### Your advantages

- » Realistic doors, hatches and interior dimensions
- » Confined space and haz-mat integration
- » Heavy duty burn areas for long life



## Fire Training House

Our customized fire training houses can be constructed to simulate residential structure fire scenarios. Working with our customers, we can design the structure to replicate the type of housing predominant in your fire district. Multiple construction methods can be utilized which are best suited to your needs and an endless array of interior props can be integrated dependent on the required level of realism.

### Your advantages

- » Customized to the type of dwellings in your area
- » Class A or B fueling options
- » Ventilation, mazes, confined space options



## Multi Level Training Complex

Simulation designs and builds customized multi-level fire and rescue training facilities to realistically simulate the challenges present in larger dwellings, commercial or industrial buildings, and high rises. These larger simulators enable more complex evolutions where the officers and firefighters can be challenged with multiple fires, fire extension through multiple floors, high angle rescue, and complex ventilation scenarios. Unique hazards in your community can be integrated into the unit for training specific to your environment.

### Your advantages

- » Customizable for the hazards in your area (class A and B options available)
- » Internal and external high angle challenges
- » Reconfigurable confined space and maze options



## Mobile Compartment Fire Training Unit

Simulation designs and builds customized 20ft and 40ft ISO container mobile fire and rescue training units. The units are designed to realistically simulate a variety of internal layouts such as domestic, industrial and maritime.

### Your advantages

- » Customizable for the hazards in your area
- » Fast track solution for fire and rescue training – quick set up time, no infrastructure requirements



# OIL AND GAS FIRE SIMULATORS

## Pipe Gantry

Simulation's identically replicated pipe gantries found in most refining and distribution plants, give the firefighters a realistic extinguishment challenge with these unique structures. The elevated position of the fire along with the horizontal spread aspect presents a level of unparalleled realism. The Class B computer controlled fire enables the instructor to challenge the trainees in multiple aspects of extinguishment.

### Your advantages

- » Customizable gantry size and height
- » Heavy duty steel construction for long life
- » Advanced PLC control for safe yet real training



## Petrochemical Fire Training Rig

Our customizable petrochemical fire training rig can be customizable to the type of infrastructure found in any particular refinery plant. The included components, height, floors, size, number of fires, location of fires, and intensity of fires are limitless. The computer controlled system enables realistic fire spread. Multiple fires can be engaged as the fire intensifies, giving the trainees exposure to the heat and fire load experienced in an actual refinery fire.

### Your advantages

- » Limitlessly custom structure and components
- » Pre-programmed or custom fire scenarios
- » Extreme heavy duty construction for fire loads



## Wellhead Unit

Wellhead simulators are constructed of the same piping and flange components found in actual wells. Working with the customer we manufacture heads that are of the same size and diameter found on their specific sites. In addition, design elements for fire size/intensity are integrated to account for specific pressures and volumes that may be experienced at a particular site.

### Your advantages

- » Actual wellhead size and dimensions
- » Variable fire intensity/volume
- » Heavy duty realistic construction





## Storage Tank Training Facility

Simulation manufactures oil and fuel storage tank fire training simulators that offer the most intensive and realistic tank fire scenarios available. From full scale mock ups through smaller scale units, the computer-controlled fire loads will test the students and trainees. Advanced foam application techniques and fire-fighting tactics will be challenged in an extremely realistic environment.

### Your advantages

- » Actual or smaller scale tanks
- » Multiple fire scenarios
- » Advance computer controlled fire spread

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## Pressure Vessel

Pressure vessel fire potential exists not only in a refinery environment but are commonplace in residential and commercial settings. Larger tanks containing propane or other pressurized fuel present significant risk of BLEVE during fire impingement. Simulations replicated pressure vessels with variable intensity fire loads train the firefighters to safely cool and extinguish the fires and teach awareness of BLEVE threat.

### Your advantages

- » Variable sized vessels for individual needs
- » Excellent BLEVE risk training
- » Computer controlled fire intensity

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# ADDITIONAL FIRE/TRAINING SIMULATORS

## Vehicle Fire Trainers

Simulation designs and manufactures a wide range of vehicle fire simulators including cars, trucks, buses, or any other vehicle upon request. The heavy duty constructed simulators closely replicate the actual vehicle being modeled and are designed for long life and safe operation. Stainless steel options are also available for extra longevity and strength.

### Your advantages

- » Safety systems and remote controlled operation
- » Options for transportable units
- » Extrication component options

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## Domestic and Commercial Fire Props

Fire simulation props are available for integration into any of our fire training or structures or as standalone simulators for firefighter training. While Simulation will customize any requested solution, some of our most popular prop requests include beds, kitchens, couches, dumpsters, gas meters, BBQ grills, garbage cans, and spill fires. These units are controlled utilizing our remote control system and LPG fuel supply. Many of the props are portable and mobile and can be transported via a customized trailer with integrated hoses and LPG fuel system for easy set-up.

### Your advantages

- » Wide range of realistic dimensioned props
- » Optional trailer with integrated fuel/hoses/power
- » Custom props upon request

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## Forest and Wildland Fires

Simulation is the only company in the world to offer a realistic and intensive live fire simulator solution for forest fires and wildfires. Our proprietary system integrates a high level of technology and specialized props to enable training of ground, vehicle and aerial forces. Each system can be designed for multiple vegetation, tree and growth patterns with countless scenarios to continually challenge even seasoned firefighters. More information upon request.

### Your advantages

- » The only realistic forest and wild fire simulators
- » Completely customizable for any district
- » Ground, vehicle, and aerial fire training

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## Haz-mat and Confined Space Training

Hazardous Materials incidents and Confined Space rescue require very specialized training equipment to address the exceptional risks involved. Simulation designs and constructs custom trainers and simulators that challenge rescuers skills and abilities while maintaining a safe environment. Many of these units can be either fixed or transportable dependent on the fire department's needs.

### Your advantages

- » Fixed or transportable simulators
- » Variable complexity scenarios
- » Heavy duty construction for long life

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# LIFE CYCLE BUSINESS

With over 7000 references worldwide Alpine Metal Tech has a large number of machines in operation which are supported by comprehensive service packages through local service centers close to the customer. Our service packages comprise machine service, provision of spare and wear parts, supply of consumables as well as modernizations of our machines throughout the whole product life cycle. A high availability as well as a long-term machine life and low operating costs are targets that we have defined for our Alpine Metal Tech Life Cycle Support. Our global, flexible and competent team handles requests in the shortest time possible. We are looking forward to your request.

## Application Areas

- » Spare Parts, Wear Parts
- » Consumables
- » Service, Maintenance
- » Revamps, Modernization



**The Alpine Metal Tech supplies a standardized solution package of products and services.**

# APPLICATION AREAS



- » Spare Parts
- » Wear Parts

We are the first contact point to provide original spare and wear parts. In this connection, the individual parts can easily be replaced according to a plug and play principle. We offer individual framework contracts adjusted to customer's needs in order to guarantee availability of the parts.



- » Consumables

In the field of consumables it is especially important to utilize original parts in order to guarantee a smooth and reliable operation. Our framework contracts enable timed delivery to prevent downtime.



- » Service
- » Maintenance

If repairs are necessary in the life cycle of a machine, our experienced service technicians will take care, whether in house or at your production site. We will find the appropriate individual solution for you. In order to guarantee a safe and reliable operation of your machine, a maintenance at regular intervals is necessary to prevent downtimes in advance.



- » Revamps
- » Modernization

Revamps are modifications on existing machines and plants, which are necessary due to new defined requirements. Our consistent documentation for all our projects enables us to easily perform a modification. Due to continuous development, we constantly offer new possibilities to improve existing machines.



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