



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

# DEBURRER

Continuous casting



To reduce downstream maintenance costs and to increase rolled product quality, Alpine Metal Tech offers machinery to remove burrs caused by torch cutting.



# DEBURRER

## Continuous casting

**To produce conventional “semi-finished” goods like slabs, blooms or billets, the endless material produced by continuous strand casting processes needs to be cut by gas driven torch cutting machines. A waste by-product of this process is known as “burr” or “beard” which adhere to the product underside at the cutting surfaces.**

Alpine Metal Tech offers its well known deburring equipment to avoid considerable defects on downstream rollers and to increase the quality of rolled products. Typically the machines are installed inline

at the caster runout section to perform deburring at roller table speed during conveyance of the products. Burrs are removed through rotary motion and hammer impact on the product underside. Alpine Metal Tech designs its machines to withstand harsh environments in steel mills and develops standardized modules to guarantee high reliability and low maintenance work. Our deburring machines generate considerable added value for our customers in terms of decreased maintenance costs and increased product quality.

## YOUR ADVANTAGES

- » Low operational costs compared to high savings potential
- » Inline machine operation and no cycle time extension
- » Burr material can be fed back to the steel production process
- » Significant quality improvement
- » Damage minimization to downstream equipment

# HAMMER DEBURRER

**Alpine Metal Tech supplies two different machine types for slab and billet/bloom production for continuous casting processes. Main machine objective for both types is to increase rolled product quality due to burr roll-in prevention. An important side effect is that also damage/wear to roller table rolls, to reheating furnaces and to rolling mill equipment is significantly decreased.**

In general the deburring machine is operated by a standard PLC (different suppliers possible) with appropriate interfaces to higher level control systems and delivered with a user friendly and self-explaining HMI for machine operation with additional diagnostic and maintenance information.

For safety reasons the area around the deburrer is protected with a sturdy cover which serves to

- » Shield against splintering burrs:
- » Insulate against noise
- » Collect burrs for conveyance to a scrap container

Up to six chain curtains, arranged at entry/exit side, are assembled to the cover frame to provide the best possible sealing during the deburring process. Furthermore, the machine cover contains attachment points for crane handling to provide easy maintenance access. No special tools are required for maintenance works.

The main difference between the deburrer types for slab and bloom/billet production is the lifting medium which is hydraulic oil for slab types and pneumatic air for bloom/ billet types.

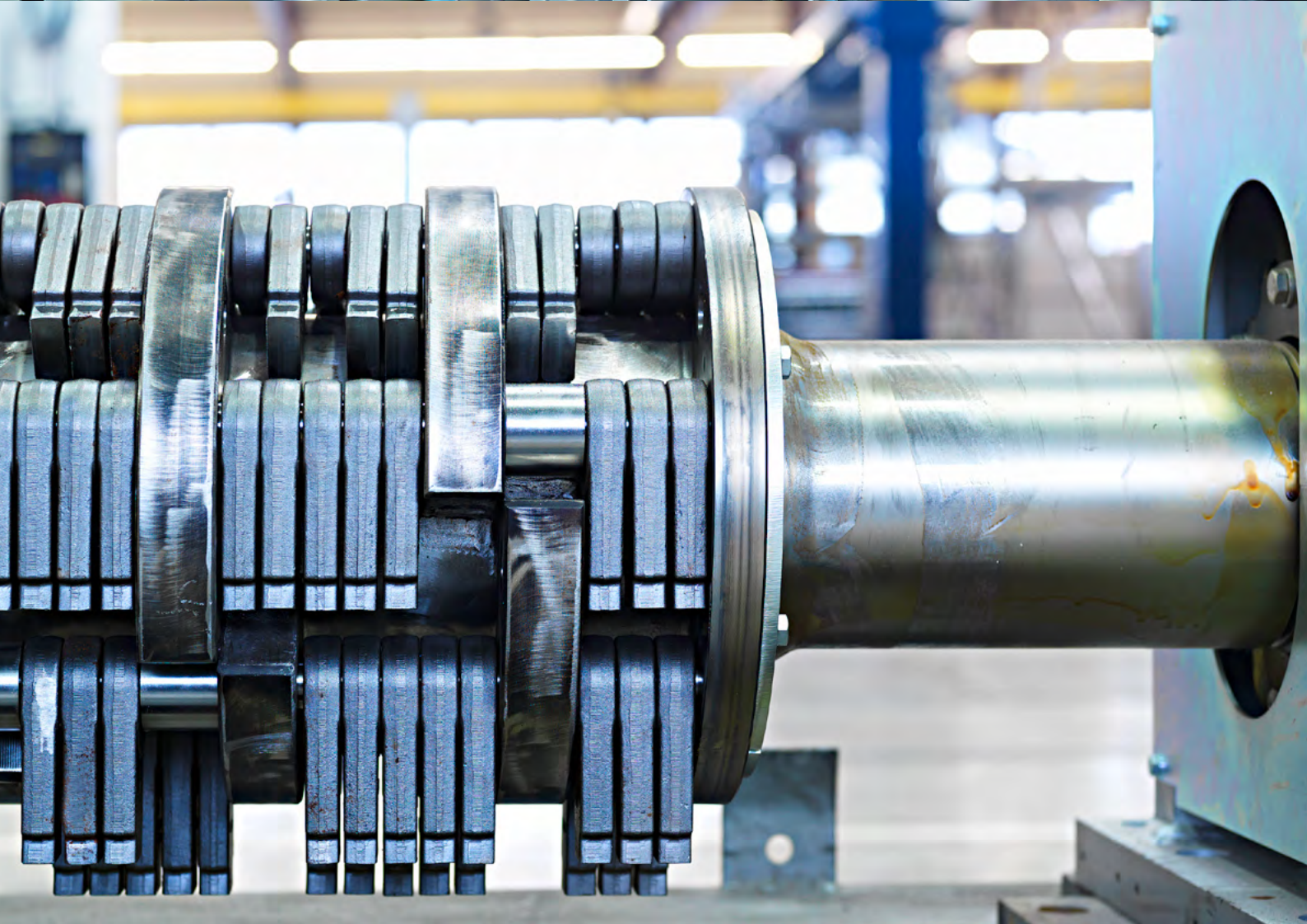
Machine design and options are adapted to site environment and customer needs. Water cooled rotors, height measurement arrangements and burr detection systems are available options.



Slab before deburring



Slab after deburring



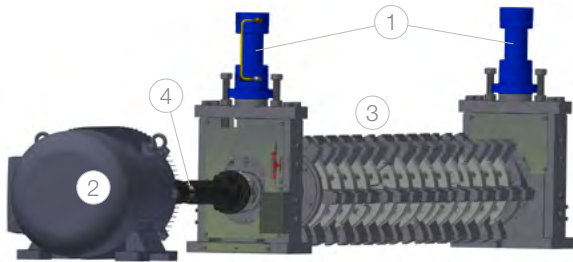
# SLAB VERSION

The deburring rotor of the slab version is designed as shaft with welded split flanges. These flanges serve as inclusion for the hammer axes with the hammers freely suspended mounted around the rotor. The rotor is lifted by hydraulic cylinders when the slab front or slab tail passes by.

Motor driven rotation causes the hammers to extend to the specified deburring diameter. Due to high rotor speed burrs are repeatedly hit and guided to burr containers or burr transportation systems via funnels or chutes.



## Single rotor deburrer

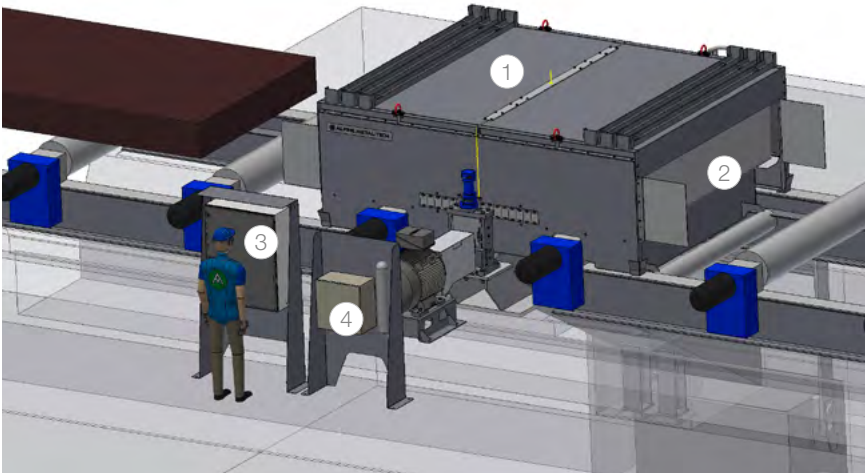


- ① Hydraulic cylinders
- ② AC motor
- ③ Rotor with hammers
- ④ Cardan shaft

## Technical data

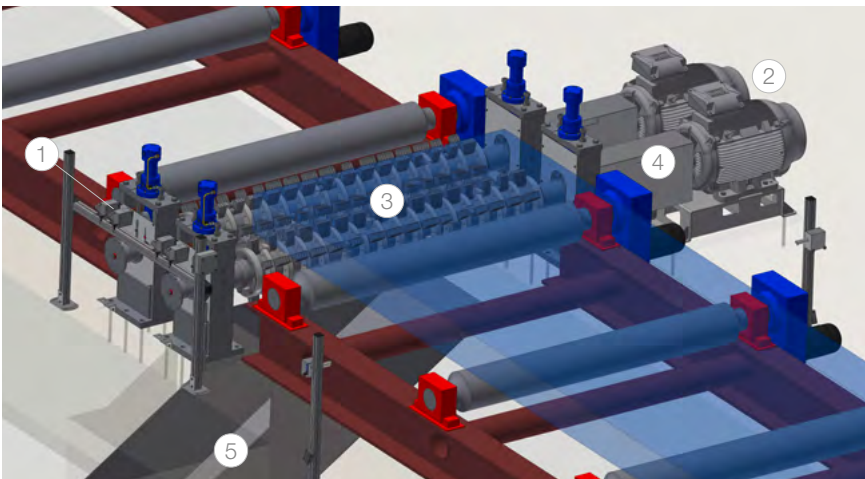
Machine type	hammer deburrer slab	
Temperature range	up to 1.100 °C	
Machine data	rotor diameter	485 mm or 535 mm for wide slab casters
	rotor length	up to 4300mm for wide slab casters
	deburring Range	DR 800mm - DR 3340mm
	rotor rotation speed	approx. 900 rpm
	product speed	up to 30 m/min
Media Data	hydraulic supply	medium: mineral oil or water glycol based oil (HLP, HFC, HFD-U) pressure: min. 120 bar consumption: max. 50 l/min
Options	AMTinspect BD (Burr detection system) servo hydraulic system laser assisted height measurement system, water cooled rotor (for installations close to the torch cutting machine), burr transportation equipment (vibro chute, burr lift)	

## Single rotor deburrer (incl. safety cover)



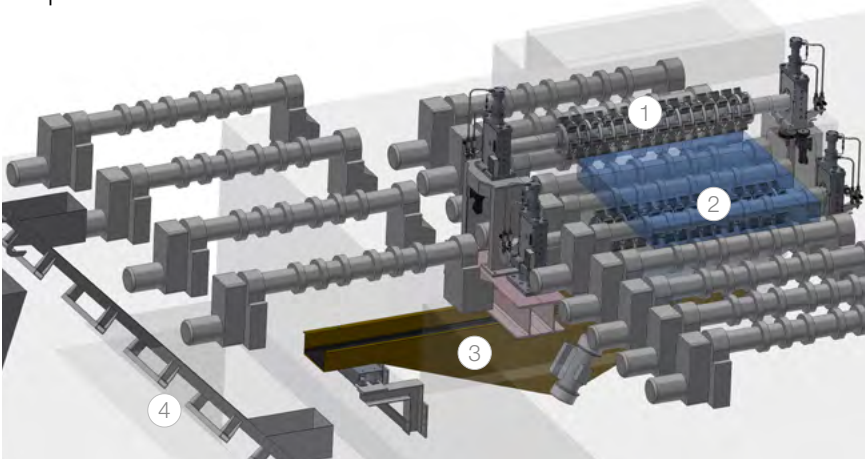
- ① Safety cover
- ② Chain curtain
- ③ Local operation panel
- ④ Hydraulic panel

## Double rotor deburrer



- ① Sensor unit
- ② AC motor
- ③ Rotor with hammers
- ④ Cardan shaft cover
- ⑤ Burr chute

## Top-end bottom rotor deburrer



- ① Top deburrer rotor
- ② Bottom deburrer rotor
- ③ Vibro plate
- ④ Burr elevator

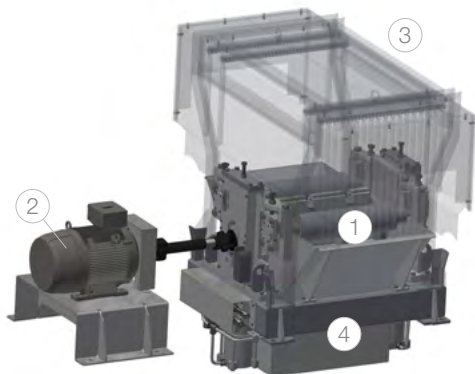
# BLOOM/BILLET VERSION

The deburring system for blooms and billets consists of a rotor with axles and hammers, bearing blocks, a pneumatic driven lifting device (parallelogram design), sensors, an electric rotor-drive and a safety protection cover. The deburring rotor of the bloom/billet version is conceptualized as shaft with welded side flanges, which serve as axle suspension.

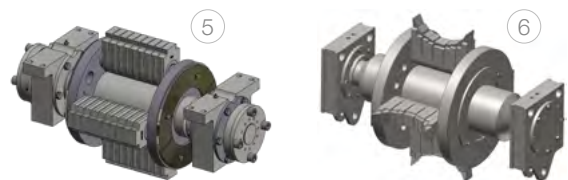
Hammers are mounted freely suspended on four axles installed at 90° angular offset. The hammers have a symmetrical (double edged) design and are manufactured of forged alloy steel. The rotor is assembled to the deburrer base frame with spherical roller bearings. Mechanical touching rolls ensure a stable deburring process even on bent products.



## Single rotor deburrer



- ① Touching rolls
- ② AC motor
- ③ Safety cover with chain curtain
- ④ Machine frame with burr funnel
- ⑤ Deburring rotor for square products
- ⑥ Deburring rotor for round products

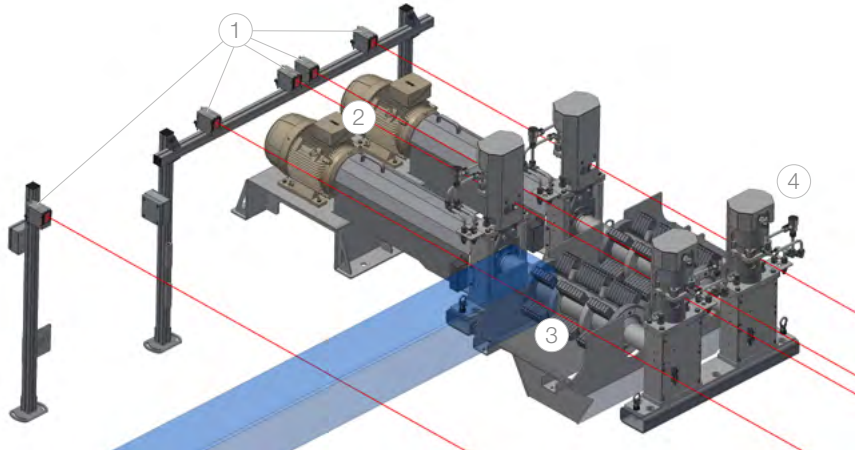


## Technical data

Machine type	Hammer deburrer Bloom/Billet	
Temperature range	up to 1.100 °C	
Machine data	rotor diameter	380 mm or 425 mm
	deburring range billet	DR 0 mm - DR 290 mm
	deburring range bloom	DR 290 mm - DR 800 mm
	rotor rotation speed	Approx. 900 rpm
	product speed	up to 30 m/min
Media data	pneumatic supply	Medium: compressed air Pressure: min. 5 bar Consumption: max. 50 l/min
Options	AMTinspect BD (Burr detection system) Water cooled rotor burr transportation equipment (vibro chute, burr lift)	

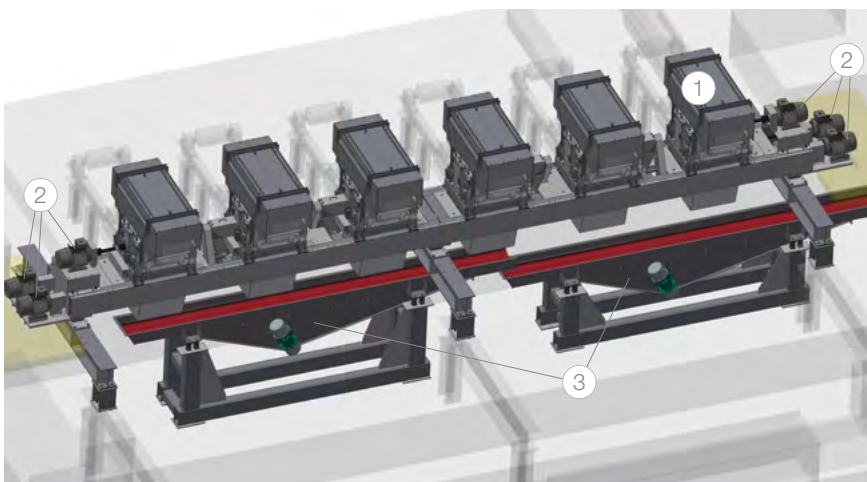


## Double rotor deburrer



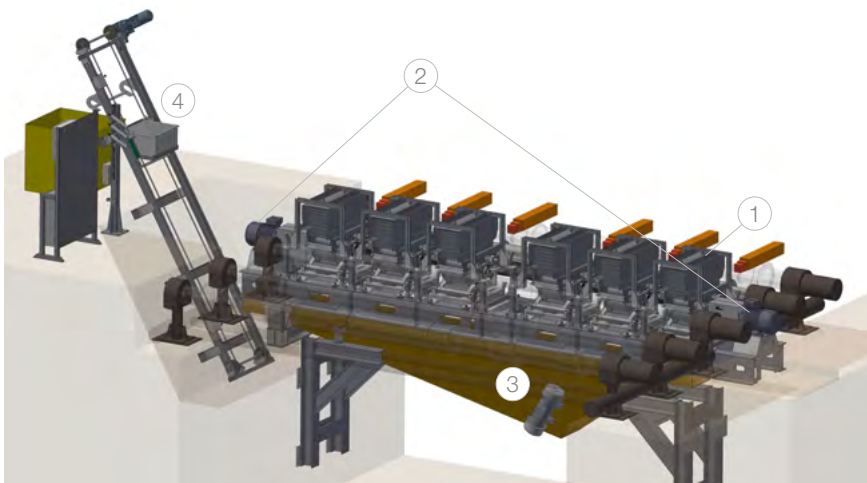
- ① Sensor unit
- ② AC motor
- ③ Rotor with hammers
- ④ Pneumatic lifting

## Six strand billet deburrer



- ① Touching roll deburrer
- ② AC motor /  
Single deburrer drive
- ③ Vibro plate

## Six strand billet deburrer with burr elevator

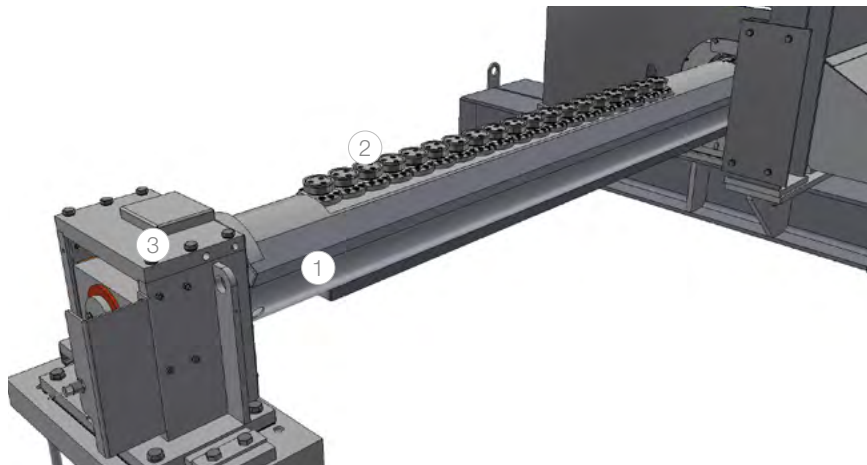


- ① Touching roll deburrer
- ② AC motor /  
Multi deburrer drive
- ③ Vibro plate
- ④ Burr elevator

# PISTON DEBURRER

The Piston deburrer consists of a piston body with an inclined alignment of pistons and is fixed on two longitudinal main-frame supports. The piston body is water-cooled and carries the deburring pistons with fixed beard caps. It can be used as an additional support roll to assure the conveyance of short slabs.

The piston operation (double acting movement) is controlled by compressed air or nitrogen. Due to constant pressure control and different piston strokes the deburring caps perfectly fit to the slab contour. Cold or bent slabs can be processed as well as the pistons allow strokes of up to 70 mm. The media station for pressure regulation and shut-off is installed next to the Piston deburring machine. To start the deburring cycle the piston body is rotated to its working position. The extended pistons cut off burrs at the slab front while the slab is moved in reversed direction. For tail-deburring, the slab is further directed in transport direction. A pendulum pusher device can be used to ensure the necessary slab movement during the deburring operation.



- ① Piston body
- ② Pistons with deburring caps
- ③ Bearing block

## Technical data

Machine type	Piston deburrer	
Temperature range	ambient to 1100 °C	
Machine data	piston stroke	60 mm / 70 mm
Media data	hydraulic supply	medium: mineral oil; pressure: min. 160 bar peak consumption: 150 l/min (for approx. 20 sec.)
	pneumatic supply	medium: compressed air; pressure: 4 – 6 bar peak consumption: approx. 290 Nm <sup>3</sup> /h
	water supply	medium: industrial water; pressure: 4 – 6 bar peak consumption: 4.0 m <sup>3</sup> /h

# OPTIONS

## Burr collection / transport

Typically, removed burrs are collected by burr funnels and guided to containers via burr chutes. These mechanical components will be adapted to the installation situation and the site specifics. Alpine Metal Tech offers electrically controlled burr transportation systems which consist of a vibration plate to convey the burrs underneath the roller table and, if applicable, burr lifting equipment. The burr conveyor is designed according to site specifics and guarantees automatic transportation to defined transit points.

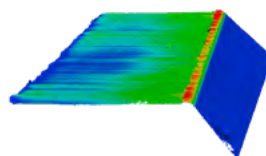
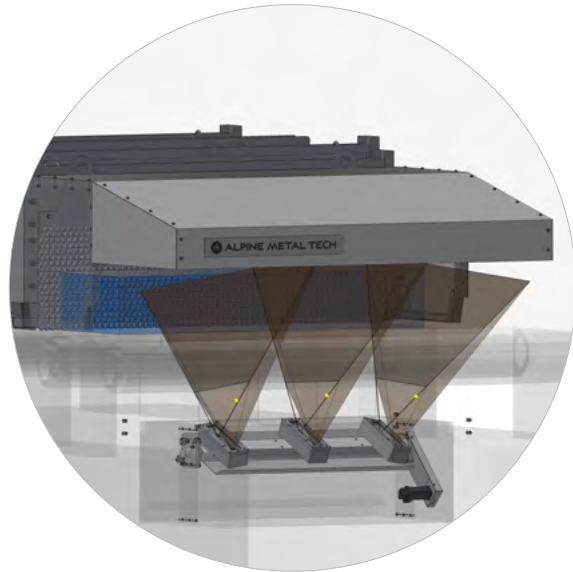


## Burr detection NEW INNOVATION

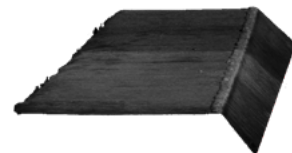
Alpine Metal Tech provides burr detection systems as part of its product inspection portfolio to offer direct deburring process verification. Depending on product size (slab, bloom, billet) one or more laser line profilers scan the product surface during conveyance for defects and for deviations between nominal and actual product data. A three-dimensional surface map will be generated and processed to calculate specific product parameters and to identify the quantity and dimension of burrs.

An important add on is that dimension and bending parameters can be determined based on the same surface data set which can be used as valuable feedback for the casting process.

Alpine Metal Tech product inspection systems follow a strict database design to store raw and result data accordingly. The direct feedback of the burr detection system closes the data gap in highly automated production systems and keeps the production efficiency at highest level. Operators and line or production managers are in notice of product quality at all times to further optimize their production processes and adjust maintenance accordingly.



3D slab scan with the burr highlighted in red



3D slab grey value representation

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