

# SCARFING

Conditioning







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## Conditioning

**GEGA Scarfing Machines eliminate 100% of all surface defects on slabs, blooms or billets, right from the start, with no need for post-scarfing.**

In order to produce steel products in an impeccable quality it is necessary to remove surface impurities. Cracks and cavities lead to financial damage and are an unseen risk. Most of these defects occur within 5 mm of the surface of the material making flame scarfing the most practical and cost effective solution in preparing the steel for high quality applications. An enhanced productivity and the safety of customer's employees is essential for the development of GEGA Scarfing machines and devices. The equipment meets

European as well as country-specific safety guidelines and satisfies specific customer requirements. For full-surface scarfing in strips, on edges or in specially selected areas, GEGA offers an entire range of high-performance scarfing equipment. The extensive portfolio of scarfing equipment includes the 2- or 4-sided scarfing machines (allowing scarfing of the top and side surfaces in a single procedure), the scarfing manipulator, the strip/band scarfer as well as a machine for special scarfing requirements. In addition, manual scarfing devices, which are developed in close cooperation with users, allow scarfing in the smallest spaces.

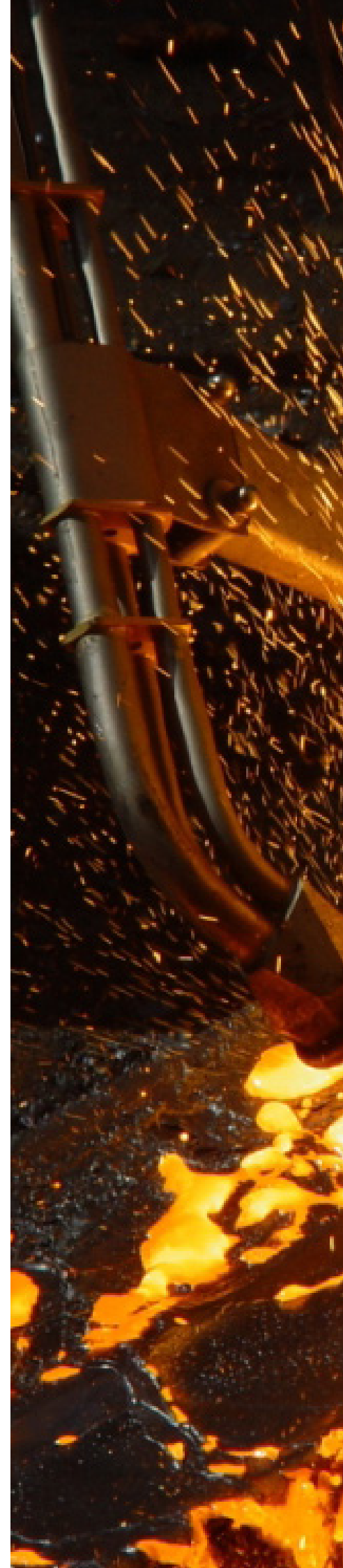
## YOUR ADVANTAGES

- » High standard of quality  
High standard of design complying with latest safety regulations and high quality of execution.
- » Customised solutions  
Wide variety fo scarfing solutions adapted to customer specific needs.
- » Efficient design  
Focused design on economical solution with high performance level.
- » High service  
Unequaled product support and service performance for the customer.

# HAND SCARFING

## **Sometimes manual is the only solution.**

Everyday production, carried out at steelworks, cannot always be fully automated. People are still needed to process materials by hand. To ensure optimal quality and safety in the process, GEGA developed closely with steel works the Safety Hand Scarfing Torch SHF 100 F with scarfing nozzle. Suited to scarfing widths of up to 120 mm, this device can also be used for complete or partial scarfing and for eradicating flaws on the surfaces of raw ingots, blooms, slabs, billets and mouldings made of non-alloy or low-alloy steels. With weighing of just 4,900 grams (10.8 Lbs), it fits perfectly into the hand and can be comfortably operated for extended periods of time. A shorter scarfing nozzle with flat gasket as well as innovative valves improves the oxygen flow. Based on the injector principle, gases are mixed in the scarfing nozzle, a safety design feature which minimizes the risk of flashback to further protect the worker.





# SCARFING MANIPULATOR

**The GEGA Scarfing Manipulator is available as an impressive and versatile piece of scarfing equipment.**

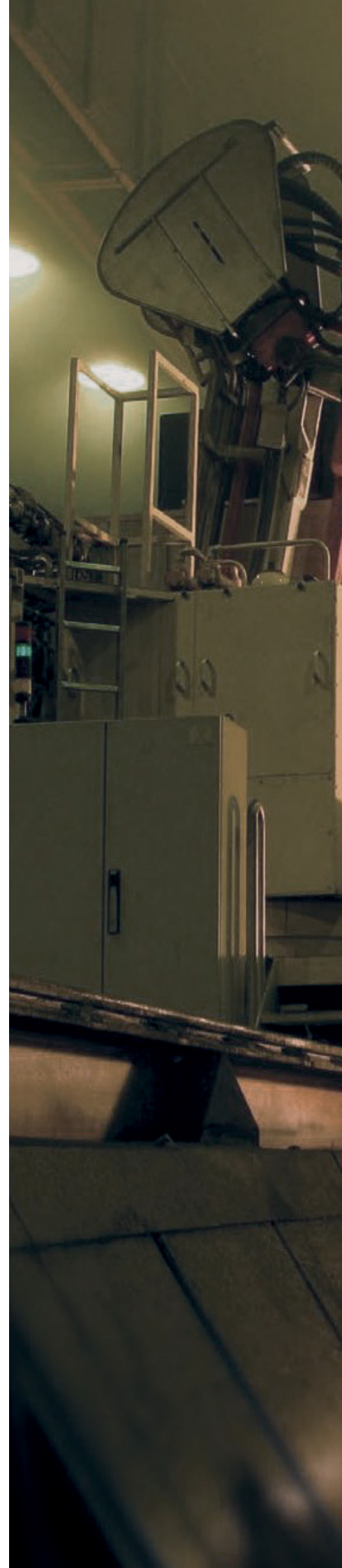
This human operated machine has the flexibility to scarf whole slab surfaces, strip scarf, spot scarf, and/or edge scarf (dependent on ancillary equipment installed.) The Scarfing Manipulator comprises a rotary table and drive, an operator cabin and the hydraulically controlled working arm which carries the scarfing nozzle. The gas-control panel and the supply system for iron powder and the hydraulic assembly are carried onboard or adjacent to the machine.

## Process:

While all GEGA equipment and installations are made according to specific customer requirements, the following is a typical process description for a scarfing manipulator facility:

A slab is placed on a slab transport car whereby it enters the fume extraction building in which the scarfing manipulator is housed. The slab is then inclined to a predefined angle on its horizontal axis on the transport car via a built in hydraulic lift system, so that the scarfing nozzle has the optimal working angle. In this position, the manipulator operator has the choice to address many scarfing needs from spot scarfing to whole surface scarfing of 2 perpendicular sides of the slab. The angle of the slab also eliminates the need for powerful granulation water sprays as the slag falls via gravity into a water filled removal channel below. After processing, the hydraulic system lowers the slab back down to the flat position on the slab transport car, which then transports the slab back out of the fume extraction building. Dependent on customer need, this is when the slab can be taken off the slab transport car and „flipped“ over with a slab turnover device so that the other 2 sides of the slab can be scarfed. In addition, a second slab transport car, parallel to the first but on the other side of the manipulator, can be supplied which enables the manipulator to remain in production on one slab while another slab is being loaded or flipped over.

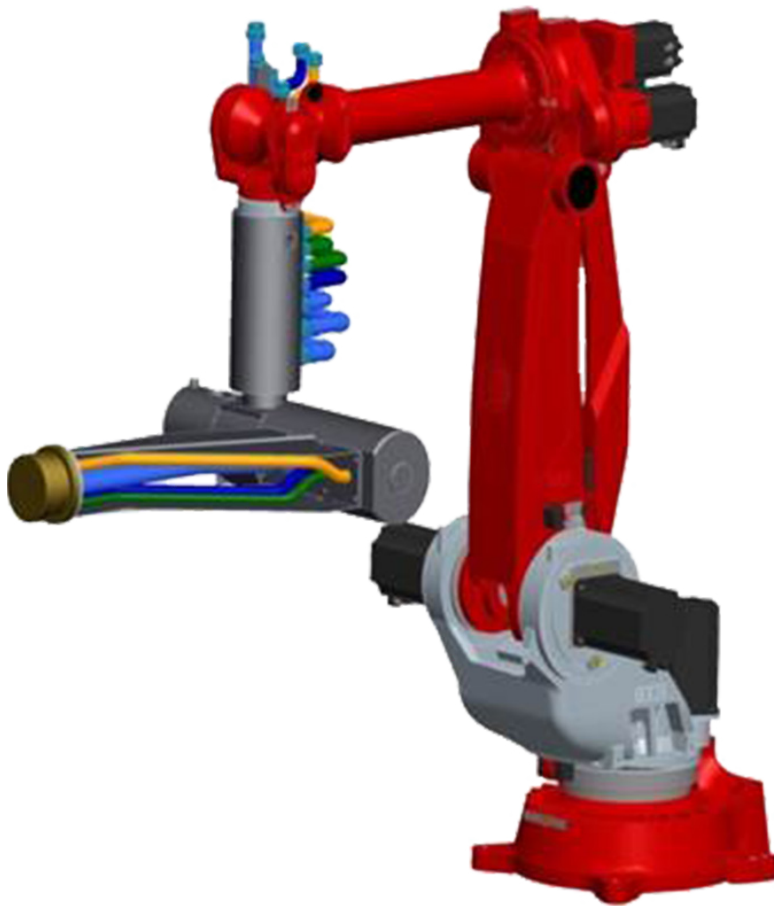
## SCARFING NOZZLE WITH ACTIVATED SCARFING JET



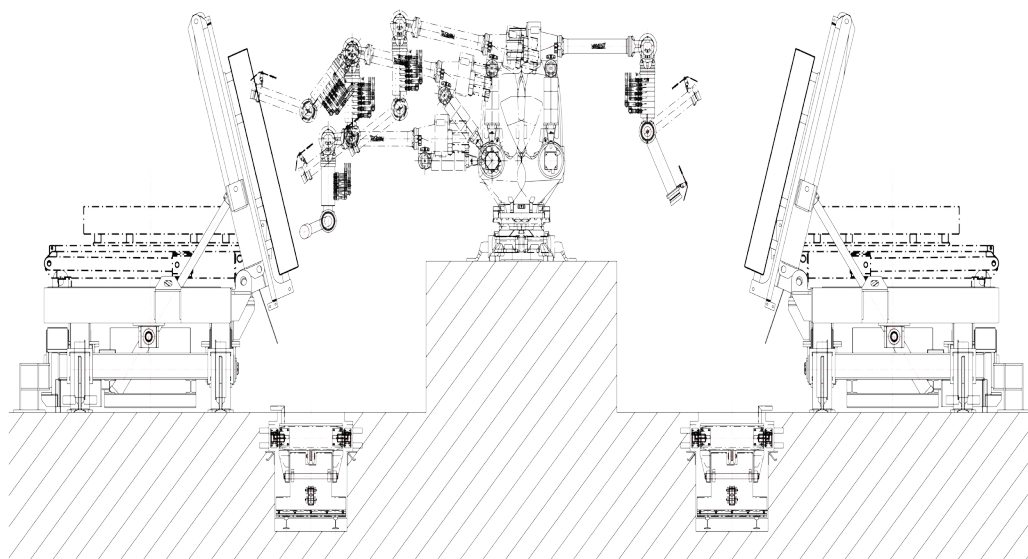




## Scarfig roboter



Robots convince as future development with their high operation safety and higher efficiency. The scarfig robot technology combines all the advantages regarding scarfig flexibility and versatile operation performance of the consacrated scarfig manipulator technology to the accurate, economic and safe performance of a robot system.





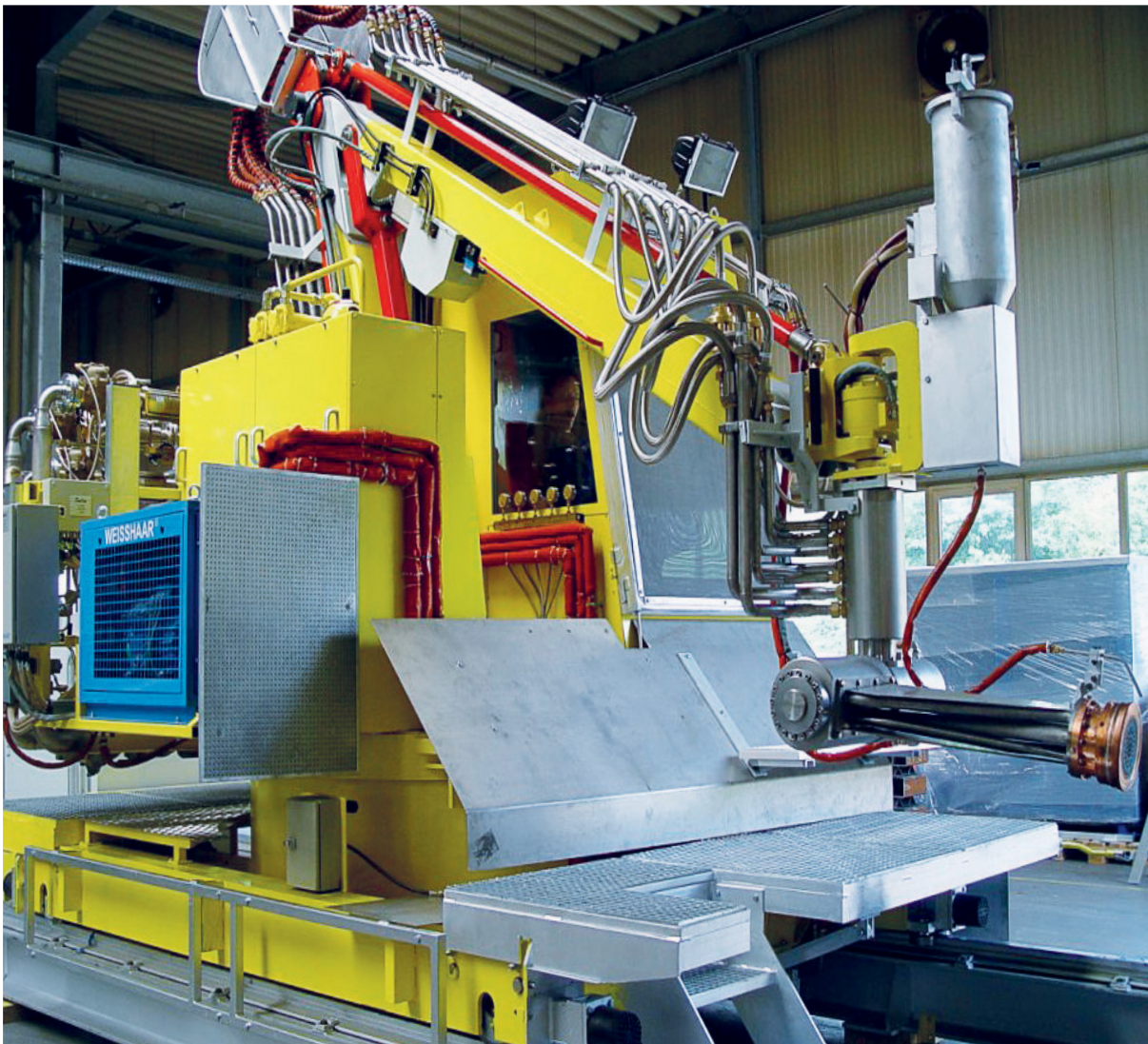
# TECHNICAL DATA

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Capacities	Tonnage per year:	Approx. 500.000
	Slab length:	Unlimited
	Slab width:	Unlimited
	Slab thickness:	Unlimited
	Material temperature:	Up to 600 °C
	Material weight:	60 tons
	Surface scarfed:	Up to 4 sides
	Surface scarf %:	Up to 100%
	Scarfed depth:	Variable based on operator need

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# STRIP (BAND) & SPECIAL SCARFING

**GEGA is world-renowned for designing and manufacturing custom-made equipment based on specific customer requirements and our scarfing machinery is no exception.**

Many times, a customer will find that the whole surface of the material produced does not need to be scarfed and that the casting process is producing consistent, repeat problems in specific areas only. These situations may enable the design of a piece of equipment that requires significantly less investment in equipment and infrastructure, while at the same time resolves the quality requirements needed for the finishing processes. Some of the special types of scarfing machines that GEGA has manufactured include:

» Fixed Strip (Band) Scarfing Machines

Machines that have a single burner that is fixed in a single position to scarf in a repetitive strips or bands over a problem area.

» Selective Strip (Band) Scarfing Machines

Machines that have a single burners that can be placed in various positions to scarf strips or bands along the material surface. The material also have the option to be passed through the machine multiple times to achieve full surface scarfing if necessary.

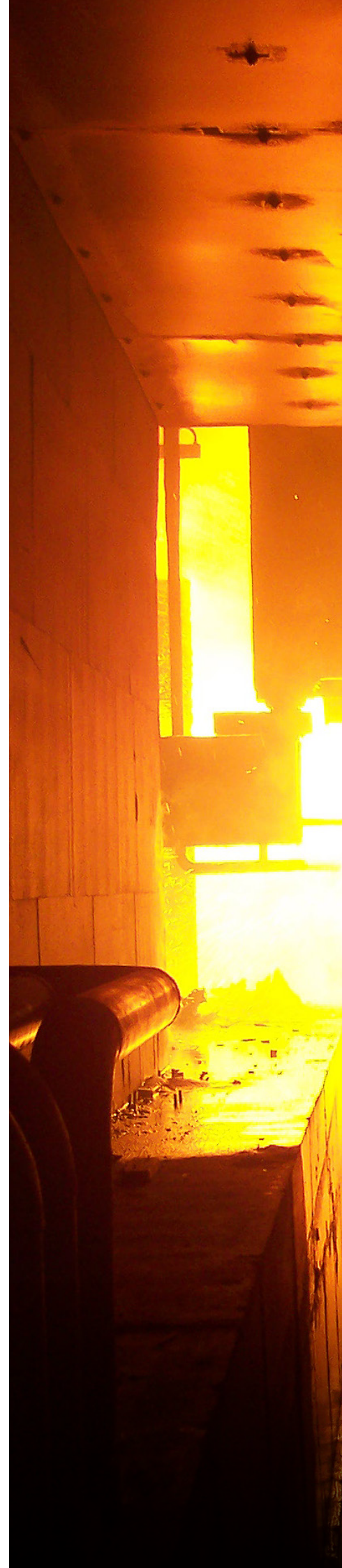
» Corner Scarfing Machines

Machines that focus only on the edges and corners of the material where many quality problems commonly exist.

» Billet or Bloom Scarfing Machines

Machines specially designed to either spot, strip (Band), full surface, or all surface scarf billets and blooms.

For special circumstances surrounding your scarfing needs, GEGA will provide a customer specific solution. GEGA closely analyses exactly specific problems and the end results need to be. In a further step GEGA takes a look at all of the scarfing machines in customer's product line to see which is the most economical fit, but at the same time will achieve the desired results. In the event that a customer has a very specific requirement, GEGA's expert engineers will explore custom made machinery options to establish a solution.









# TWO SIDED SCARFING

**The GEGA Two Sided Scarfing machines are the best option for customers requiring a semi-automatic piece of equipment that has an exceptional balance between high capacity and low maintenance.**

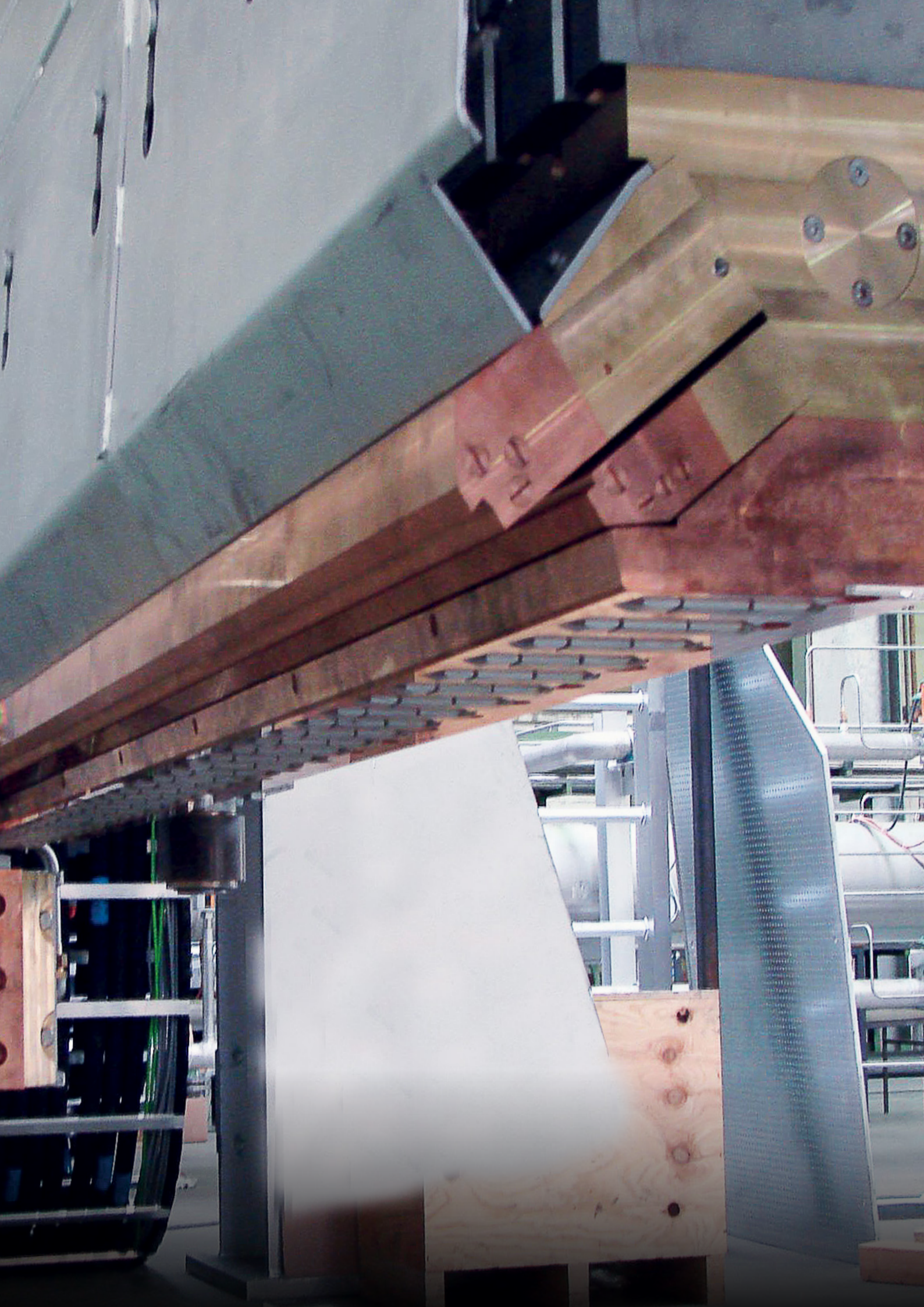
These machines utilize the renowned and robust GEGA Scarfing Burners (Scarfing Heads) that produce an unparalleled finish that is required by stringent rolling mills. The machine's ability to individually control each burner, as well as having separate top and side scarfing carriages offer the customer significant production flexibility and media savings. For those customers who do not require the capacity of a GEGA Four (4) Sided Scarfing machine, these machines require significantly less capacity of the plant's oxygen supply, fume extractions systems, and water treatment plants, which results in a dramatically lower overall investment.

## Process:

While all GEGA equipment and installations are custom made according to specific customer requirements, the following is a typical process description for a Two (2) Sided Scarfing Machine facility. A slab is transported by roller table(s) and then carried through the scarfing machine by pinch rollers. For the scarfing process, the slabs travel in the scarfing direction and stop firstly at the scarfing heads. Heating of the slab heads starts. After the ignition temperature is reached, the scarfing oxygen opens and simultaneously the pinch rollers accelerate to the applicable scarfing speed. High pressure water cannons flush the scarfed material from the slab whereby it is carried away to the water treatment facility and the fumes are extracted via the fume extraction system. After one top and one side surfaces are scarfed, the slab will then be transported by the roller table to slab turning device and will be turned over and transported back to the entrance of scarfing machine for scarfing of the other two surfaces.

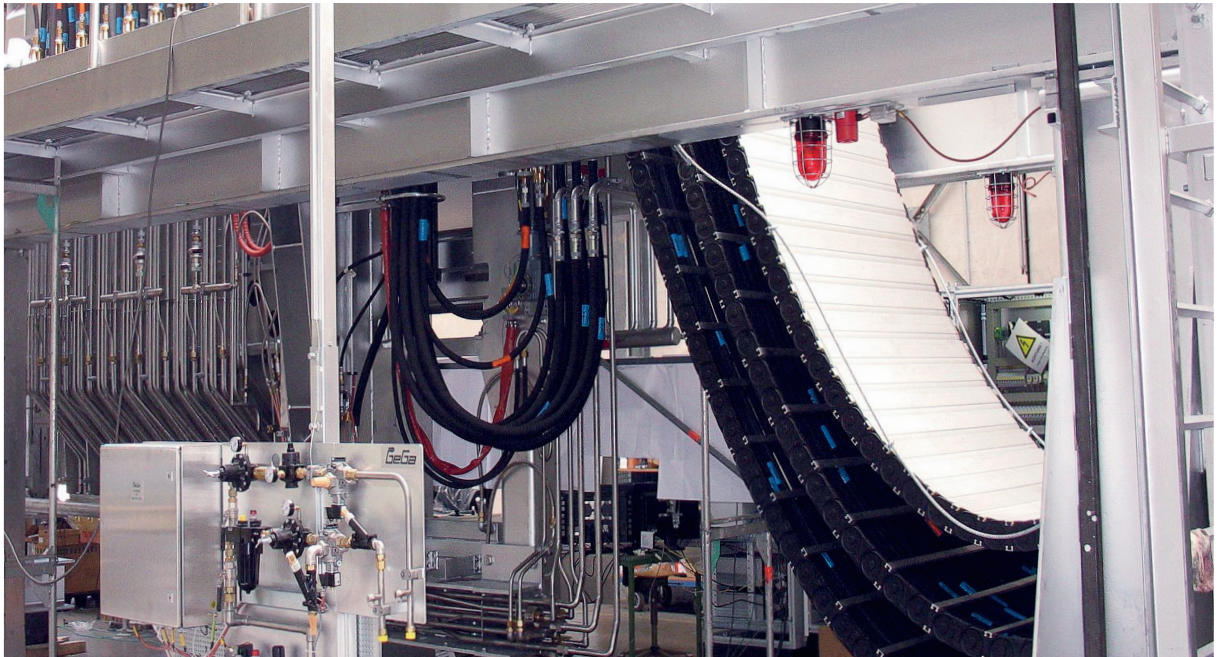




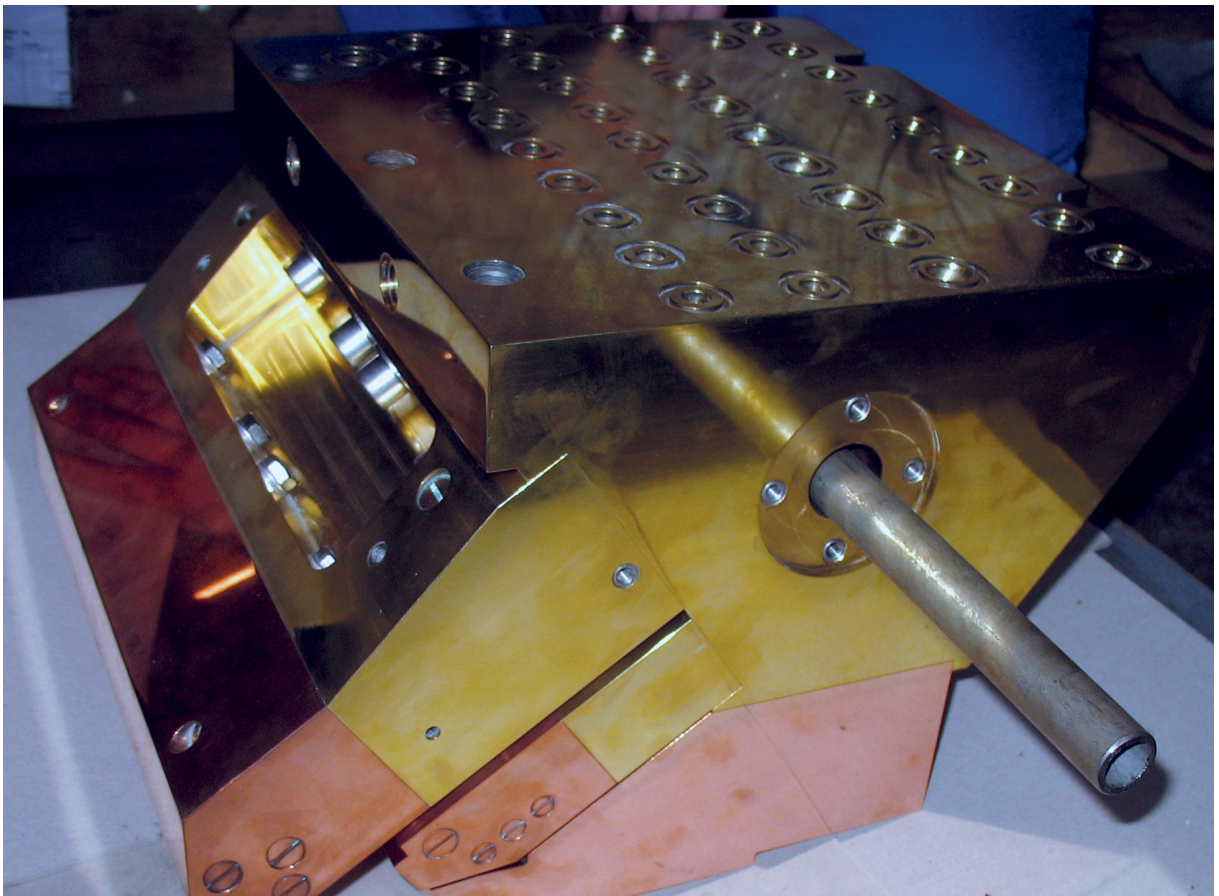




Two side scarfing machine in operation position



Scarfing burner





# TECHNICAL DATA

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Capacities	Tonnage per year:	Approx. 2.000.000+
	Slab length:	Unlimited
	Slab width:	Unlimited
	Slab thickness:	Unlimited
	Material temperature:	20 - 1.000 °C
	Material weight:	Unlimited
	Surface scarfed:	Up to 4 sides
	Surface scarf %:	Up to 100%
	Scarfig depth:	Variable based on operator need

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## Preheating





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