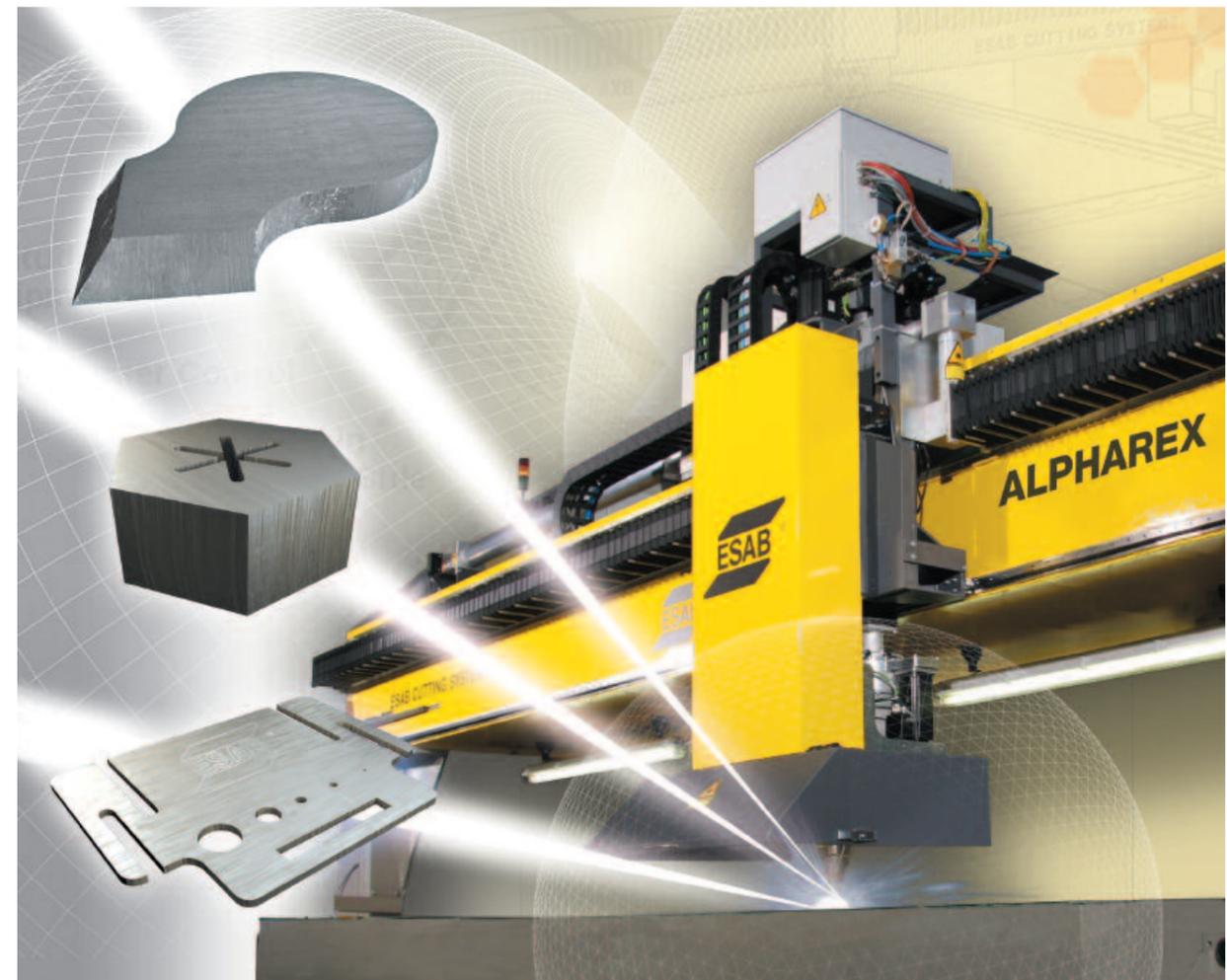




ALPHAREX

LARGE FORMAT CUTTING LASERS
LEADING IN TECHNOLOGY AND PERFORMANCE



Your Partner
ESAB, your Partner
in Welding and Cutting
and Cutting

About ESAB

Almost seventy years' experience of cutting and responding to customers' needs have resulted in an extensive range of products to meet profile cutting applications. Based around the four methods of laser cutting, oxy-fuel

cutting, plasma cutting and water jet cutting, ESAB has developed a range of machines that deliver better cut quality, higher cutting speeds, lower operating costs and allow sophisticated integration into automated production methods.

The right to make technical modifications and improvements is reserved.



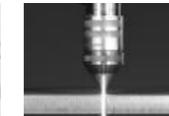
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Machines



Processes



Numerical Controls



Programming



Environment



The ALPHAREX by ESAB Cutting Systems sets the standards for laser cutting machines with large-sized applications up to a 6m cutting width. Equipped with modern cutting lasers, the ALPHAREX performs high-precision cutting

of mild steel, stainless steel and aluminum. The machine concept of the ALPHAREX guarantees first-class cutting results and ensures an efficient production process. The drive via brushless AC-motors combined with high-dynamic

planetary gearboxes allows high acceleration and maximum cutting speed. The well proven guide of the longitudinal and transverse axis provides maximum accuracy of the cut part.



ALPHAREX

Sets the Standard for Precision and Flexibility

As large as you want

Compared to conventional machines, the laser cutting with ALPHAREX offers exciting new possibilities. This combines the cutting of complex geometries in a very short processing time with a constant high quality level with low costs. Short set-up times, maximum utilization of material and a high profitability even with small quantities are just a few examples of the advantages of this technology. The precise design of the beam guide guarantees a constantly high beam quality over the entire working range.



ALPHAREX – Lower Costs, More Productivity

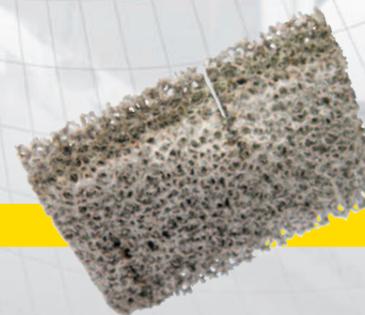
- One machine for cutting, welding and marking
- Completely encased beam guidig system
- Modular design enables easy future upgrades
- Approved and uniform drive concept for all ESAB machines
- Low-maintenance and high reliability due to the monitoring of the focusing optics including automatic switch-off in case of a fault
- Low noise emission and a minimum amount of slag and dirt

Laser Cutting

Laser cutting is a thermal, non-contact separation process using high-energy laser radiation for various materials. Compared to other thermal cutting processes, the heat affected zone is very small. This laser process is used where complex contours and a precise and quick processing time are required.

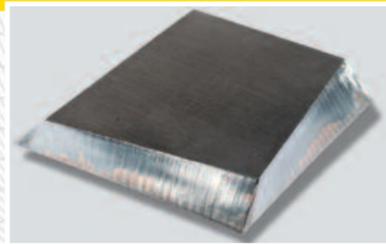
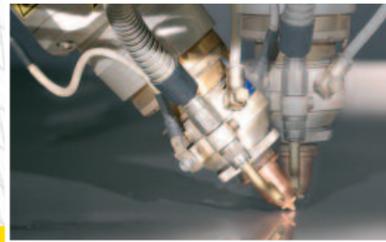
Two cutting techniques:

- The Laser Fusion Cutting – The material is fused by luminous energy and is extracted from the kerf with highly pressurized nitrogen. Oxide-free cutting edges are the result.
- The Laser Flame Cutting – The supply of oxygen generates exothermic energy, which supports the cutting process. This technique is fast and economical.



ALPHAREX

*Guaranteed Future
of your Investments*



Mirror Focusing instead of Lens

For several years, ESAB has successfully been using mirror focusing. The modular concept of the cutting head provides for the use of similar components for vertical and bevel cutting. The patented focal length manipulation allows an adaptive alteration of the Rayleigh length, this allows for a continuously variable adaptive adjustment of the focus geometry for the type of material to be processed and to its thickness.

This adaption is CNC controlled and permits the adjustment of

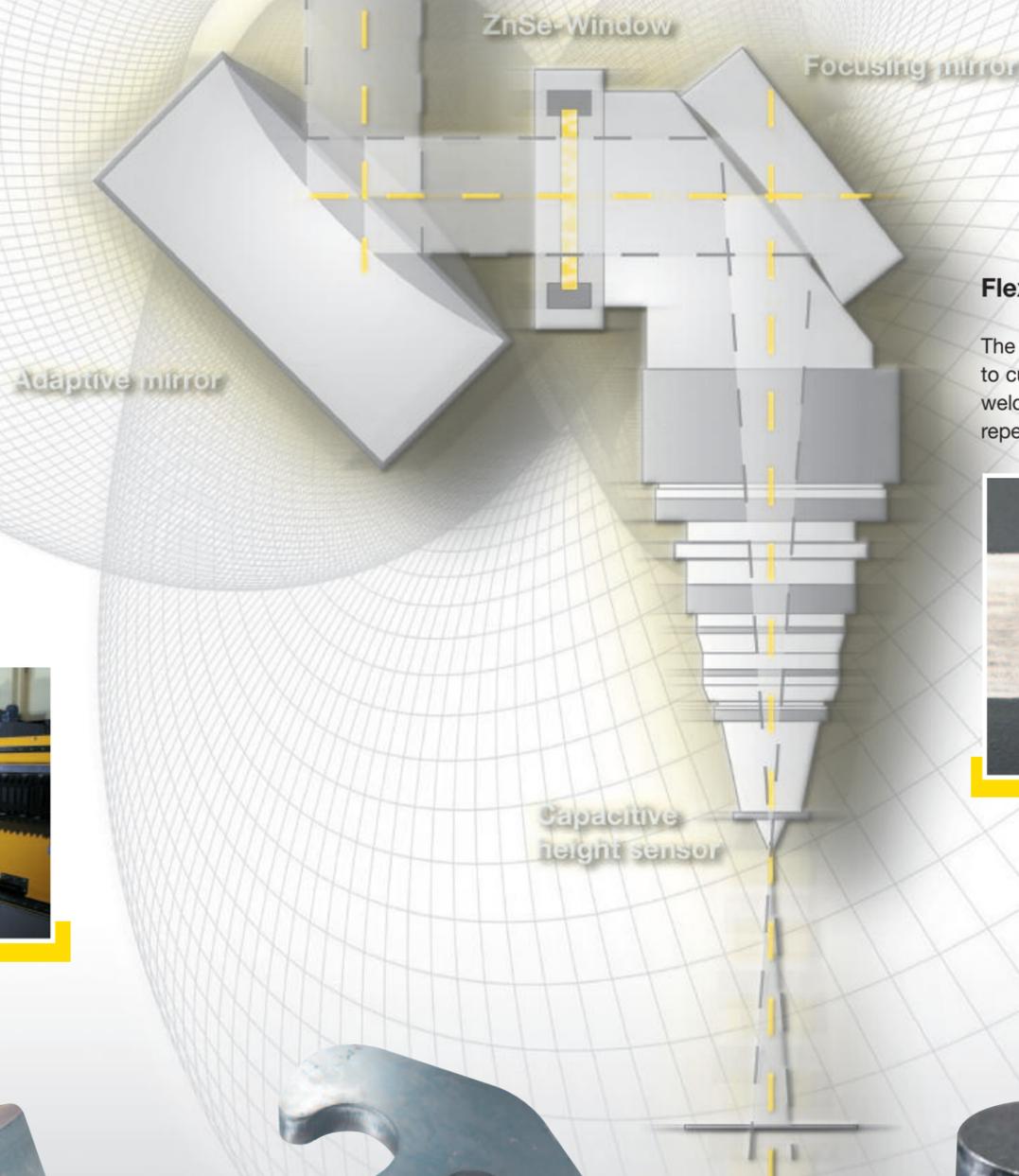
- focus-radius,
- focus-position and
- Rayleigh-length.

No manual adjustments are required. Neither a cartridge nor a head exchange is necessary – therefore it is user-friendlier and easier to handle than conventional cutting heads with lenses. The cutting head is equipped with a capacitive height sensing system. The precision required for the bevel cut is met by a fully automatic calibration of the sensory functions thus ensuring a high accuracy of contour even with variable bevel angles. The safe and reliable collision protection system protects the laser head in arduous industrial use.

Unmanned Work Shifts

Compared to other technologies the laser process requires no short-term consumable parts. Therefore unmanned shifts are possible.

The ALPHAREX is equipped with a "window break detection system". The sensor detects dirt on the focusing optic and switches the beam off immediately.

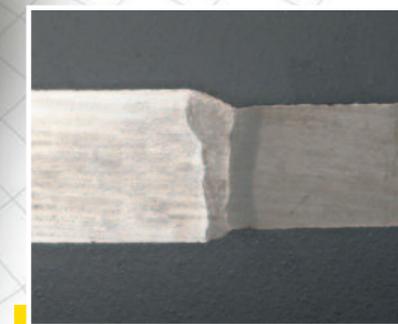


Cutting Quality

Generally, the cutting edge is so accurate that no extensive finishing is necessary. The laser does not have any wear parts which influence the part's geometry. The first piece of the batch is as precise as the 1,000th piece. This means that small as well as large batches can be economically produced. Due to the well focusable laser beam and the associated high feed rate, the heat affected zone is extremely small.

Flexibility

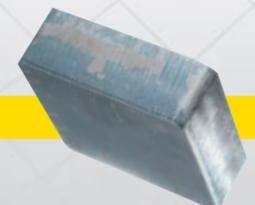
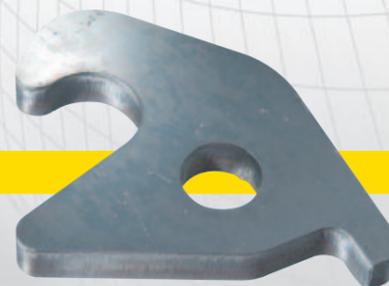
The ALPHAREX enables you to cut, mark and optionally even weld with ultimate precision and repeatable accuracy.



Precise cutting

Laser cutting does not have a physically caused angle, thus enabling smooth cutting edges with minor angular deviation and small kerfs typically from 0.25 mm to 0.6 mm.

This makes sharp-edged internal corners, square cutting edges even with small holes and intricate geometries possible. The laser allows you to carry out bevel cutting, X-, Y-, K-cuts are managed without any difficulty. The rectangular, parallel cutting edges allow common cuts and even allows you to cut over the kerf. The ALPHAREX enables you to realize new design options using large metal sheets without restrictions in geometry.



ALPHAREX				
Rail width	mm	5,000	6,000	7,000 8,000
Cutting width (vertical)	mm	3,000	4,000	5,000 6,000
Cutting width (bevel)	mm	2,500	3,500	4,500 5,500
Table height	mm	700		
Cutting length*	m	< 40*		

*cutting length of more than 40m available on request
positioning accuracy, measured according to VDI 3441 +/- 0.15mm
laser protection class according to DIN EN 60825-1 class 1

On-board travelling Laser

Unlike conventional laser cutting machines whose laser is fixed, the laser of the ALPHAREX is travelling on-board the gantry. This provides the advantage of a consistently high processing quality over the entire working range.

This concept enables ESAB Cutting Systems to offer laser cutting systems for very large dimensions (up to 6m in width, up to 40m in length*).

ALPHAREX

With Safety for a Perfect Process Control

Safety

PRO-LAS 1® is an on-board laser guard system, which intelligently combines efficiency with safety.

In combination with the ALPHAREX it was tested by the trade association and has been certified as a class 1 laser device.

It reliably protects from leakage radiation. With the PRO-LAS 1® the ALPHAREX can operate in ghost shifts, at night or on weekends without staff. The traveling on-board design enables loading and unloading during the cutting process. A high utilization, long operation times combined with low personnel costs and the protection of the staff justify the investments in this installation.



Maximum Efficiency due to Laser Process Control

The ALPHAREX is equipped with optical sensors for detecting the different states of the laser process. The sensors detect the end of piercing, control the cutting speed and recognize a loss of cut.

This results in fewer rejects and a constant quality. The processing time is reduced through the consequent application of the maximum cutting speed.

Numeric Control

The CNC control unit allows for the direct control of all the cutting parameters. An innovative software with an integrated cutting data base permits the highest possible quality that can consistently be reproduced. This ensures low costs and a high productivity.

