KnifeSol

machine knifes & tools solutions

METAL CUTTING

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1. Company Profile:

KnifeSol is a sales and engineering company based in Bucharest, Romania.

KnifeSol works with in-depth metallurgical knowledge and a high level of knowledge of metal cutting technology. We work as a link between our customers and production. Our aim is to increase customer satisfaction by continuously optimizing quality and solving individual problems.

KnifeSol production partner is a long time leading company. He manufacture according to KnifeSol know-how and technical specifications.

KnifeSol uses special ESR materials of the highest quality at competitive prices.

Enterprise Culture

Enterprise **S**pirit /

" Mutually beneficial cooperation"

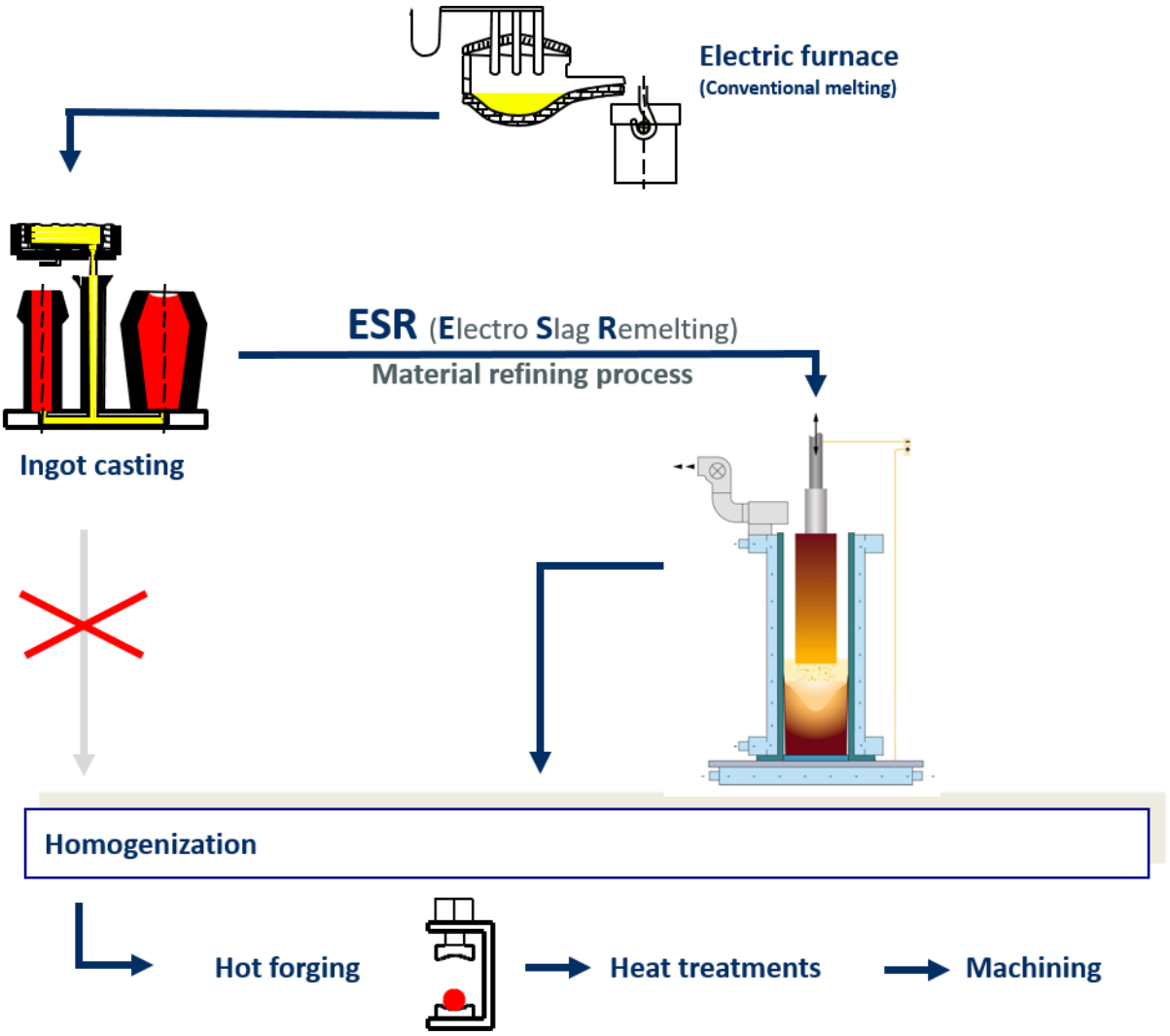
Corporate **P**hilosophy /

" Timely and effective quality "

" We not only supply knives, but also solutions!"

With our experience you will find the best solution for your individual application!

2. ESR special steels production process:

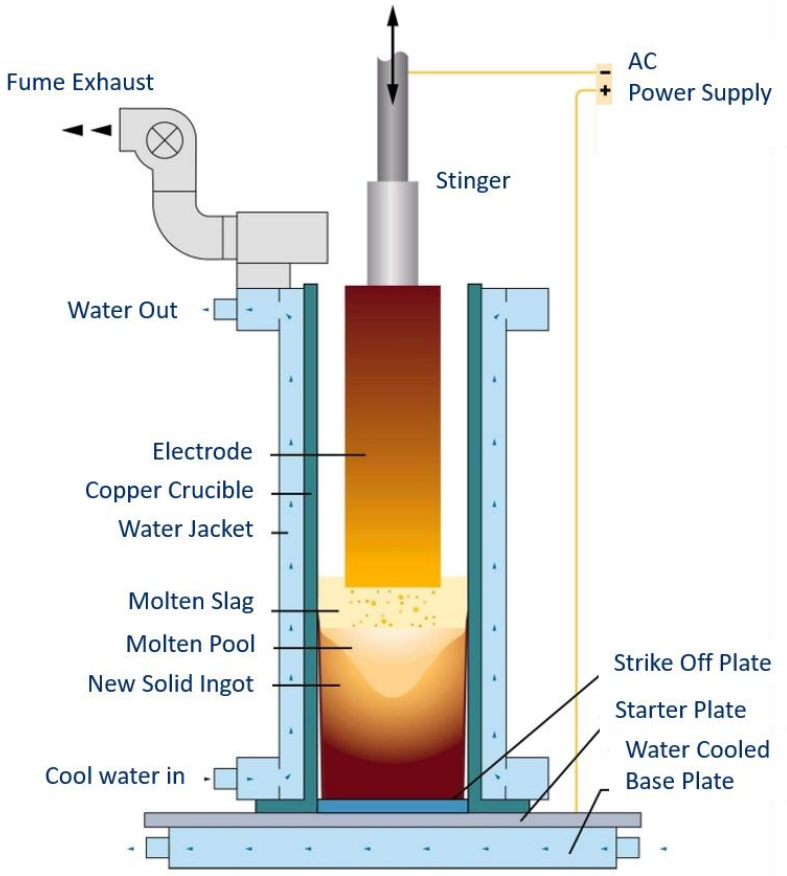


"The ESR remelting process is recognized as the cutting-edge production process for the production of high-performance materials that must withstand high stresses"

*"**KnifeSol** has therefore decided to offer its customers only knives made with ESR remelted materials "*

2. ESR special steels production process:

For the manufacture of the knives, we only use materials that are first manufactured in the conventional melting process and then re-melted ESR. Because the ESR (**E**lectro **S**lag **R**emelting process) achieves a further improvement in the homogeneity and steel purity and increase the mechanical-technological properties of the material.



The steel block obtained by this ESR remelting / refining is very homogeneous and of a high degree of sulfidic and oxidic purity.

What are the main differences between conventionally melted material and steel obtained with the ESR process?

- ❖ Improved toughness also in the core due to increased homogeneity and isotropy.
- ❖ Best fatigue strength and excellent tensile strength.
- ❖ Improved purity of steel.
- ❖ Improved knive service life time

*" **Knife**Sol has therefore decided to offer its customers only knives made with ESR remelted materials "*

Forging

Forged ESR materials have a compact internal microstructure and small grain sizes. They have increased mechanical properties. This ensures a longer life of the knives / blades.

Mechanical processing

More than 40 machines are available for machining (lathes, milling machines, grinding machines, lapping machines, drilling machines, etc.)

Heat Treatment

The heat treatment is carried out internally using state-of-the-art equipment. This allows us to guarantee optimal quality. We produce fully hardened knives up to a thickness of 100 mm.

Mechanical finishing processes

More than 35 state-of-the-art machining machines including interior grinding machine, surface grinding machine, CNC grinding machine, polishing machine, EDM wire cutting machine, etc.

Testing

We have first-class equipment to ensure quality and repeatability.
Each knive / blade has a unique production number which allows for reliable traceability.

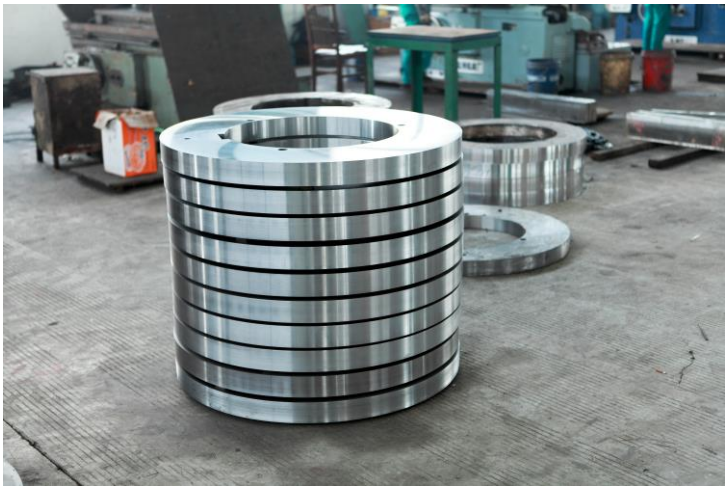
Research and development

The research and development department has various machines for control and testing.
We have developed some new special steels from ESR tools such as KS1 and KS2, which are increasingly valued and demanded by our customers because they have high toughness and wear resistance and guarantee a longer service life for the cutting edge.

3. Circular knives

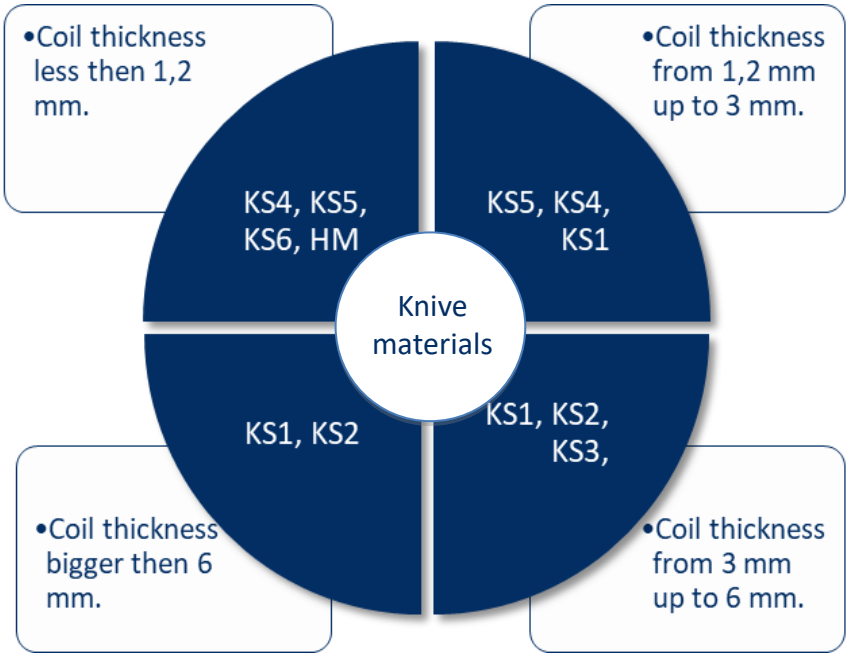
KnifeSol circular knives are only made of special materials (KS1, KS2, KS3, KS4 and KS5) but above all made exclusively with the ESR remelting process. Circular knives made with this technology exceed all performance expectations compared to the conventional products. Our profession is aimed to meet the individual needs of our customers, whether for cutting the heaviest gauge steel or the lightest gauge non-ferrous metal. **KnifeSol** knives are available with ground, fine grinded, lapped or polished surface finishes. These surfaces combined with the intrinsic characteristics of ESR materials increase the life of the knife, allowing you to use a knife that is one step ahead and consequently you will save a lot of money. We can say that the advantage of **KnifeSol** is to provide its customers with knives with added value.

Max. outer diameter:	1400 mm.
Max. thickness tolerance:	± 0,001 mm.
Max. parallelism:	0,001 mm
Max. flatness:	0,002 mm.
Max. roughness value Ra:	0,05 µm.



4. Circular knives material selection

The chart below provides an overview of our recommendations on knife materials to use. We will be happy to advise you on the choice of the optimum knife material for your individual needs. It is important to always know which material is being cut, which thickness range must be covered, how high the maximum tensile strength of the material to be cut is and what surface properties it has.

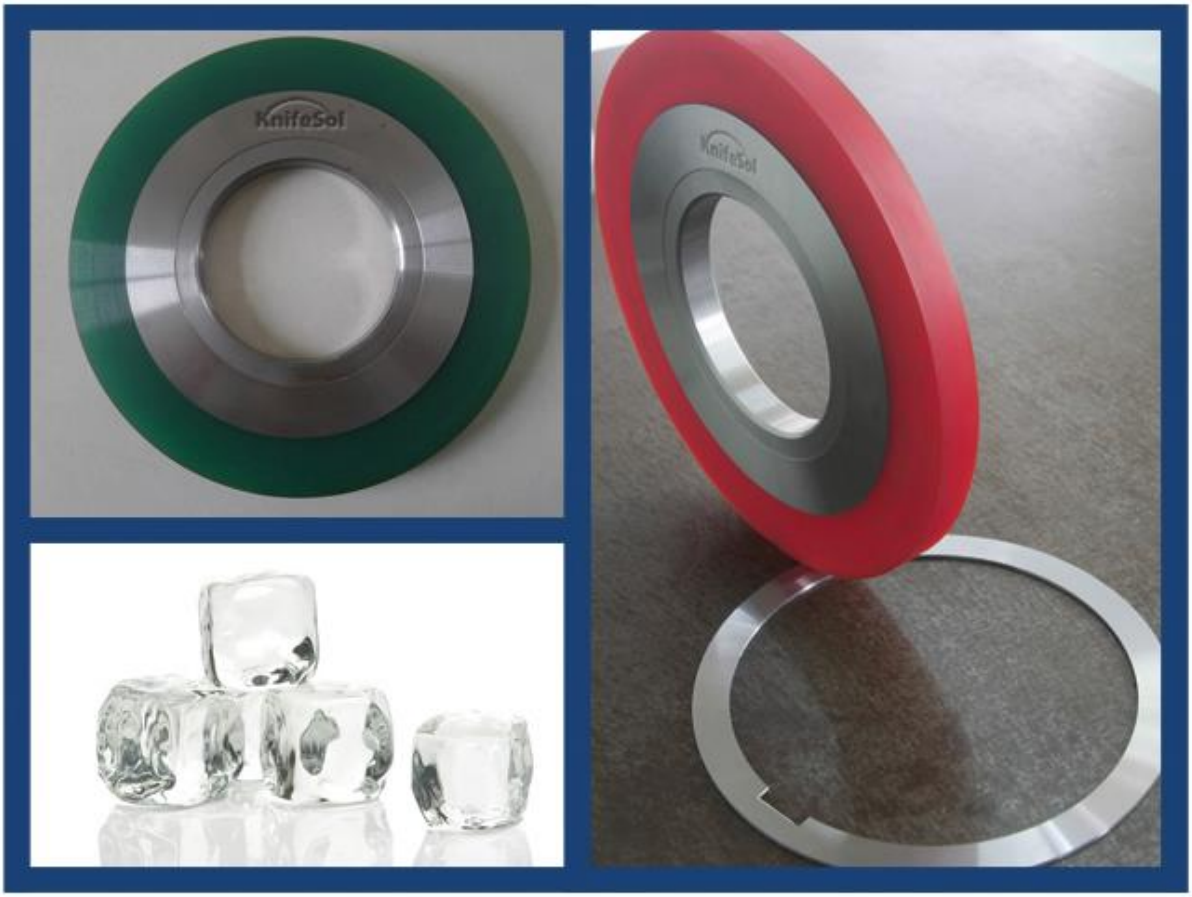


Circular knives hardness ranges of the different materials:

5. Spacers and rubber bonded steel spacers

KnifeSol provides metal spacers and rubberized spacers manufactured with the same tolerances (flatness and parallelism) as circular knives. All spacers are through hardened, so all tools mounted on the shaft (knives, spacers and rubberized spacers) receive the best form stability and associated precision over the entire cutting system required in the shaft assembly. Deformation due to handling errors is counteracted in the best possible way thanks to the through-hardened material. This allows for a longer life for the spacers.

We offer two types of rubber, nitrile rubber (Buna N) and polyurethane. The choice of the type of rubber depends on the materials you work with.



KnifeSol supports you in choosing your rubber type:

Surface finish of the material to be worked	Polyurethane	Buna N / Perbunan
Hot / cold rolled	🟡	🟢
Pickled / black	🟡	🟢
Zinc surfaces	🟡	🟢
Galvanized surfaces	🟡	🟢
Aluminium	🟢	🔴
Copper / Brass / non-metallic alloys	🟢	🔴
Stainless Steel	🟢	🟡
Painted surfaces	🟢	🟡

🟢 Recommended 🟡 Possible 🔴 Not recommended

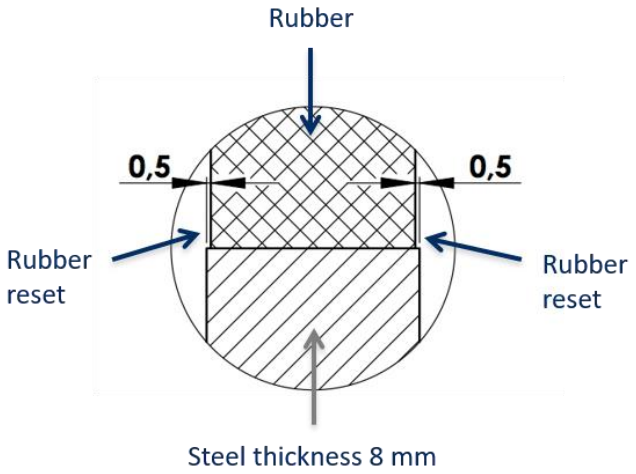
Basically:

- If possible, avoid polyurethanes on oiled surfaces.
- Use polyurethane on sensitive surfaces.

KnifeSol provides rubber bonded steel spacers with recessed rubber respect the metal core, to eliminate the deformation forces due to the natural deformation of the rubber during the driving / cutting process.

Rubber bonded steel spacer thickness	Rubber reset
Thickness < 10 mm	0,5 mm on each side
Thickness > 10 mm	0,7 mm on each side

An example of rubber reset in rubber bonded steel spacers:



6. Long shear blades

KnifeSol blades are only made of special materials (KS1, KS2, KS3, KS4 and KS5) but above all made exclusively with the ESR remelting process. Blades made with this technology exceed all performance expectations compared to the conventional products. Our profession is aimed to meet the individual needs of our customers, whether for cutting the heaviest gauge steel or the lightest gauge non-ferrous metal. **KnifeSol** blades are available with ground finish. These surfaces combined with the intrinsic characteristics of ESR materials increase the life of the blade, allowing you to use a blade that is one step ahead and consequently you will save a lot of money. We can say that the advantage of **KnifeSol** is to provide its customers with blades with added value. Long shear blades up to a length of 6000 mm are manufactured.

7. Scrap Chopper Knives

KnifeSol Scrap Chopper Knives are made from special ESR-materials such as KS1 and KS2. All manufacturing steps, including forging and heat treatment, are carried out in one company. This ensures the best structure and the best mechanical properties for the knives, optimizes the quality and extends the life of knives.

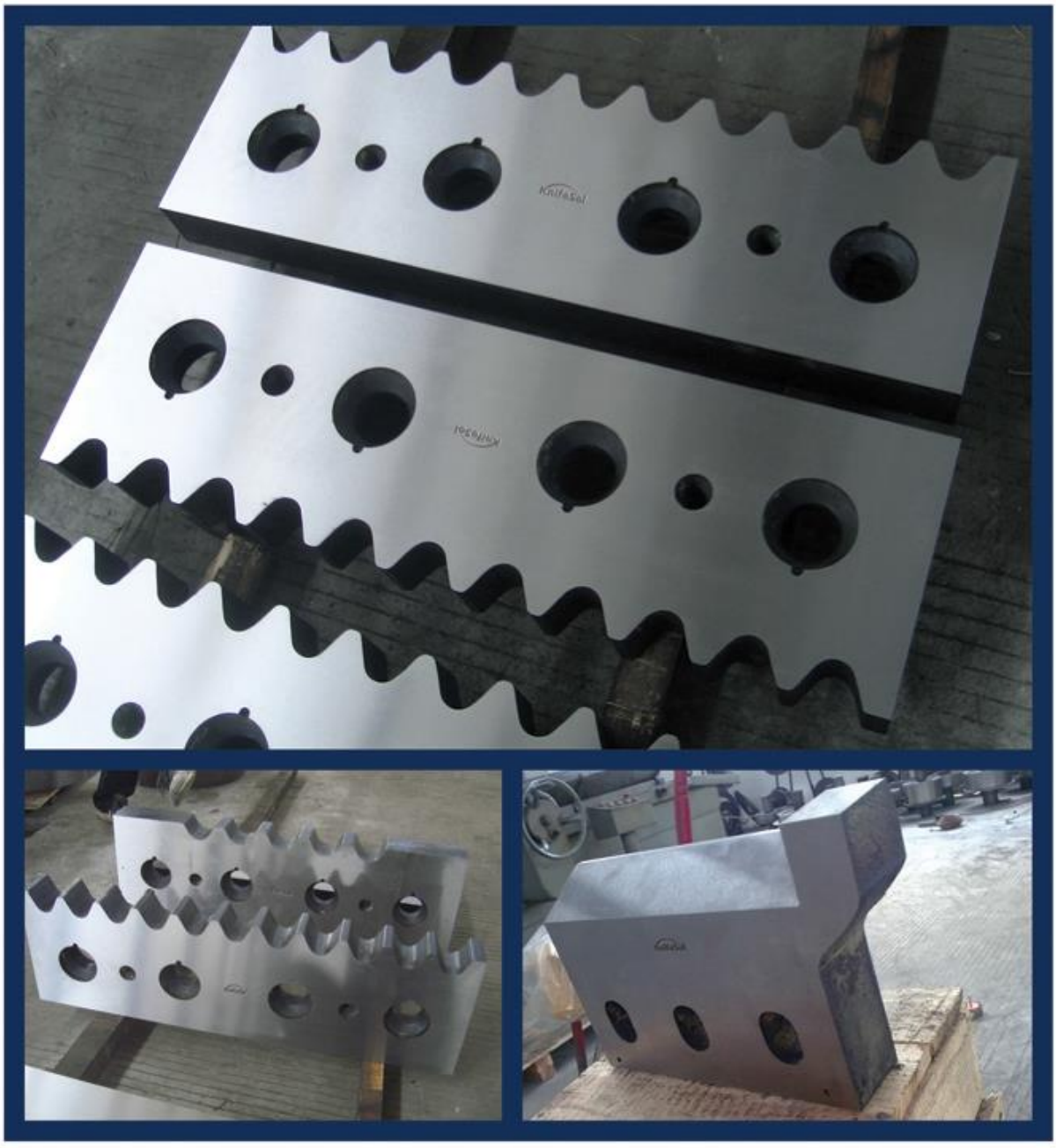
The news that the durability of our scrap cutters is unattainable to our competitors is now widespread, since we forge every single piece in addition to the use of noble ESR materials.

8. Shear blades with special profile and for flying shears

KnifeSol supply shear blades with special profile and for flying shears for hot or cold shearing (e.g. for cutting reinforced concrete rods, etc.) made with special materials obtained from the ESR remelting process. All production steps, including forging and heat treatment, are carried out in one company. This ensures the best structure and mechanical properties of the blades, optimizes quality and extends service life. We are able to meet all the plant requirements and needs of our customers.

Application and designs:

Fly shear blades are mounted on a Fly Shear Machine that is one of the major parts in rolling mill. The flying Shear is used for cutting metal bar, rebar, wire and rod that come from the rolling mill at full speed and that cannot be stopped during the cutting process for cutting the product in various custom lengths and the cut must be effected “on the flying”.

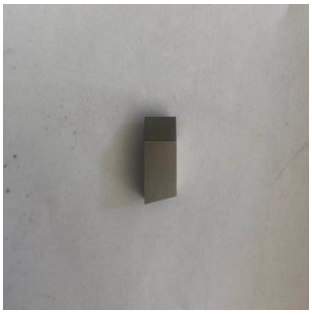


9. Tube cut off knives / Guillotine blades

KnifeSol supplies tube cut off knives engineered for long-life and a burr-free cut. We supply tube cut off knives using high speed steel material, hardened at core and finished with mechanical processing to the required dimensions and precision in accordance to your technical specifications. The main characteristics of the guillotine blades are flatness, hardness, wear resistance and toughness. Therefore we supply cut off knives TiN coated to increase the tool life, since TiN coating (Titanium Nitride) has the intrinsic advantage of increasing surface hardness and reducing friction, thus increasing tool life up to 2 - 3 times than an uncoated guillotine blade. We supplies cut off blade for the most popular machine brands in the market including Alpha, Eagle, Haven, Pines, T&H Lemont, Yoder, and more.

10. Tube chip breaker knives

KnifeSol supplies chip breaker knives made in special ESR tool steels, forged and hardened at core. The chip breaker knives cut the chip during the mechanical processing of removing the excess of weld from the welded tube or pipe, minimizing the heat build-up. **KnifeSol** supplies tailors made chip breaker knives.



11. Seminar for slitting lines operating personnel

KnifeSol have developed a seminar based on our many years of consulting experience and the diverse needs of our customers. We know which factors an optimal cut depends on and which factors influence the lifetime of the knives. Do you want to increase the quality level? Contact us!

„ We not only supply knives, but also solutions! “

With our experience you will find the best solution for your individual application!