EXAKT

CUTTING, GRINDING, THIN SECTIONING IN INDUSTRIAL APPLICATIONS



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Industrial Applications

Technology

› EXAKT Diamond Band Cutting Technology
› Differentiation to EXAKT grinding
› New ideas with EXAKT equipment

Application and Examples

› Different applications

WHAT IS THE TECHNOLOGY

EXAKT DIAMOND CUTTING SYSTEM
WHAT MAKES THE DIFFERENT?

Our System looks different to all other Saw versions in the industry field

The EXAKT saws have features which are unique points and open the possibility for higher quality standards

An EXAKT Saw brings attention and in a demo, of special customer specifications, an amazing feedback

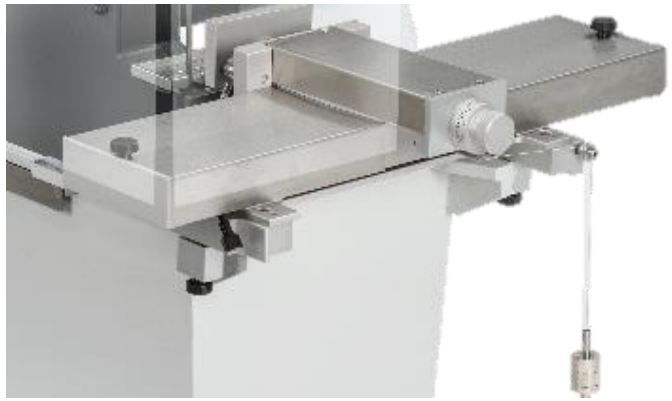


EXAKT comes from another application field and found different solutions for better results

EXAKT has an other concept for solutions in the industry area

EXAKT brings new ideas for killed applications and broaden the customer mind

EXAKT 300/310 CL & CP
PRECISION PARALLEL CONTROL SYSTEM



CL - Precision Parallel Control

› Very low friction with constant feed-force (gravity)

› Sample adjustment in increments of approx. 20 µm and a total distance of 35 mm

› Easy and continuous handling



CP – Precision Parallel Control

› Sample arcing and oscillation (14° / 28° /56°)

› Option: digital automatic system and digital micrometer Positioning

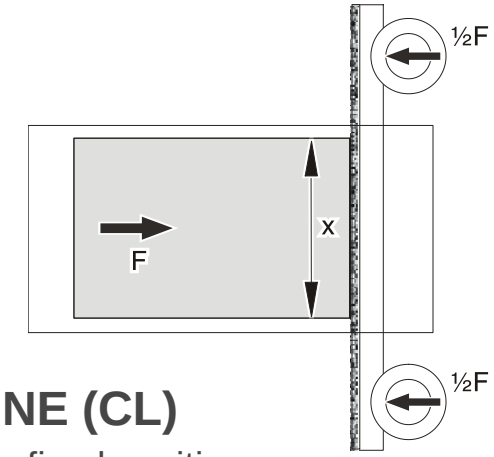
› Very fine surface of the cutting area

› Very strait cutting way

› Time efficient

› Longer living time

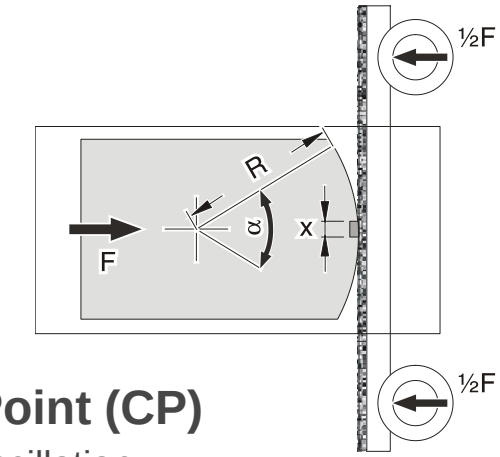
EXAKT 300 / 310
CONTACT POINT (CP) VS CONTACT LINE (CL)



CONTACT LINE (CL)

The sample is in a fixed position

- Linear contact between sample and band
- The more contact between sample and band
  - the more force is necessary to cut
  - the more hydrodynamic friction
- This results in increased wear on the band
- Chips tend to block the diamonds, more frequent band cleaning necessary
- Lower parallelism of the cutting way

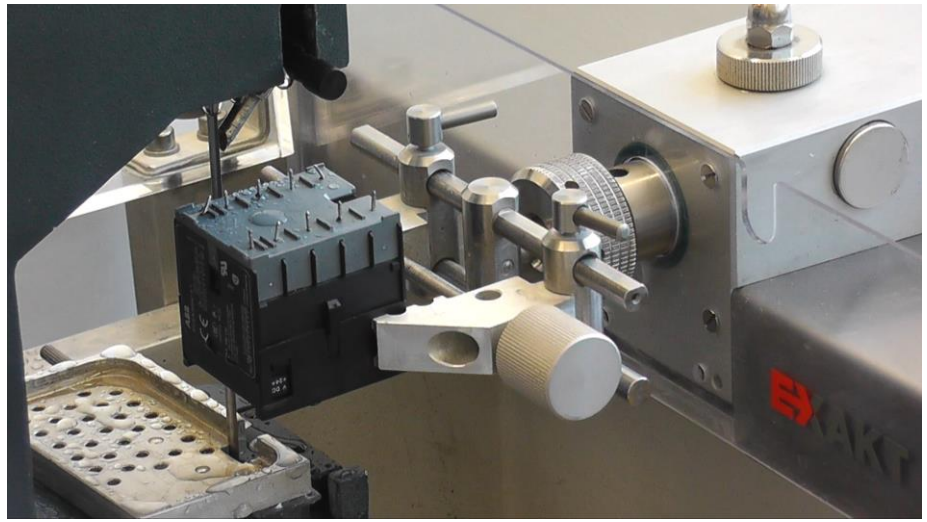


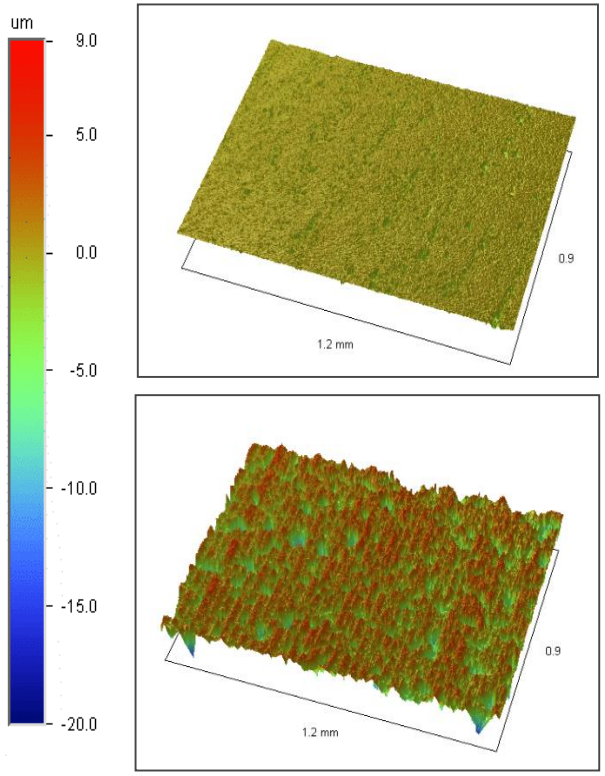
CONTACT Point (CP)

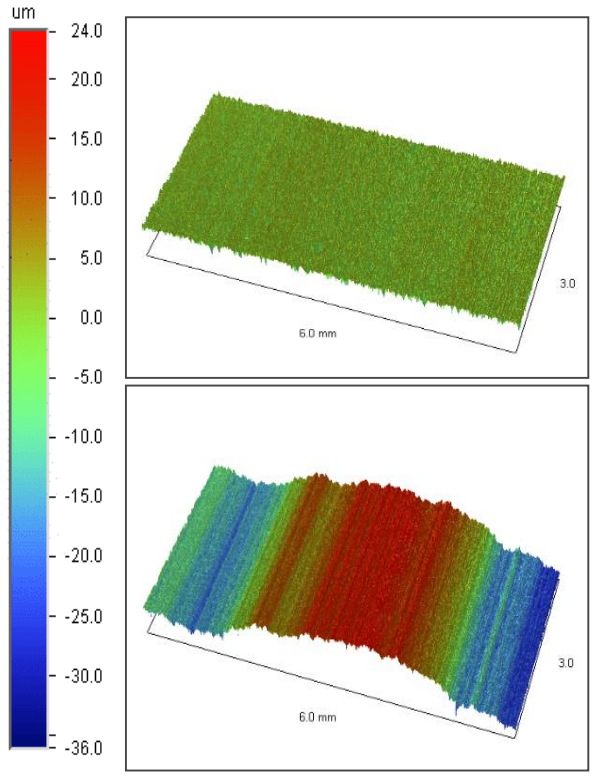
The sample is oscillation

- Punctual contact between sample and band
- Little contact between sample and band,
  - less force to cut
  - Less hydrodynamic friction
- Longer life time of diamond band, up to 10 times
- Up to 10x faster cutting
- Chips do not block the band, less cleaning
- Very smoth and parallel cutting way

EXAKT 300 / 310
ADVANTAGES OF CONTACT POINT (CP)







CL vs CP – What makes CP superior

› Less deformation of the sample

› Better surface quality

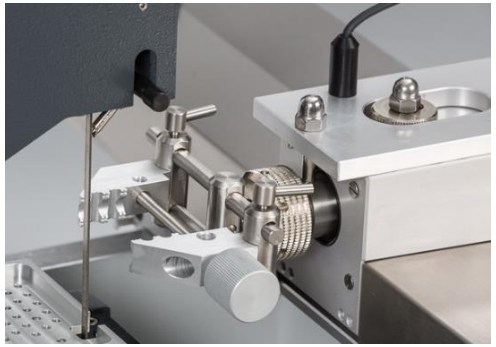
› Much faster cutting process

› Better chip transfer

› Lower thermic impact

› Lower cost per cut

EXAKT 300/310 CP
AUTOMATIC POSITIONING ASSISTANCE DEVICE



Automatic Feed in Steps

› Automatic sample positioning

› Sensors controlled with existing arcing control unit

› Automatic sample positioning in 1 mm steps

› Manual override in 10 µm steps



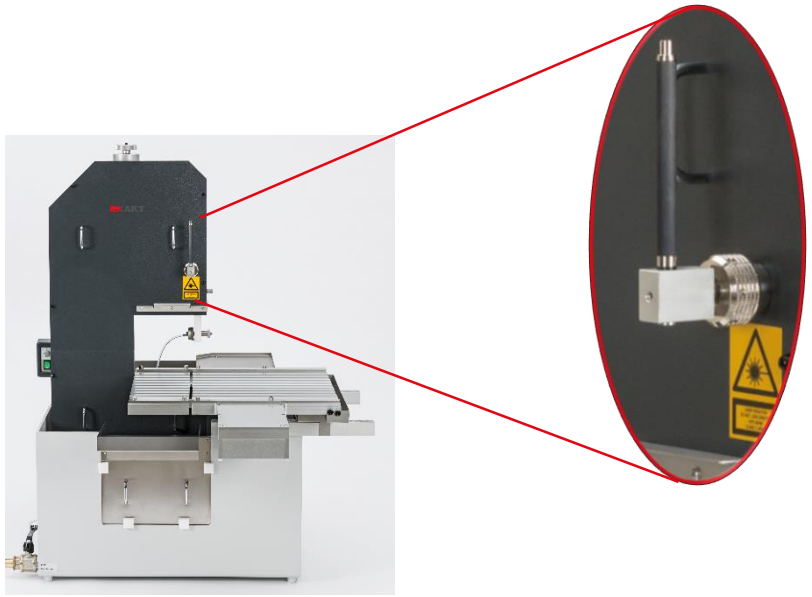
Digital micrometer positioning

› Realistical precision of <20µm

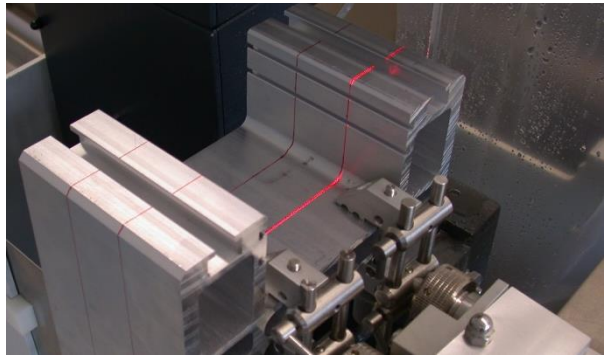
› Handling via magnet on the parallel system

› Possible cuts of ~ 100µm

EXAKT 300/310
LASER – AIDED SAMPLE ORIENTATION





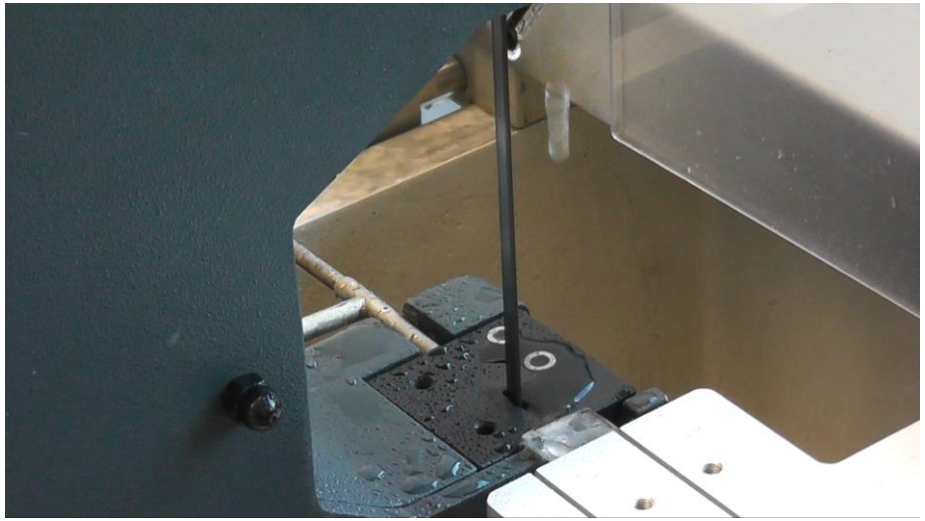


LASER light orientation

› Supports precise positioning of the sample to the cutting band

› Very helpful for difficult orientation of elements

SAFETY FIRST – NO CUTTING DANGER !!!



The safest way for precise cutting

› If you touch the band, nothing will happen to your finger

› Unlike “butcher saws” or other traditional cutting systems, a diamond band is more like a grinder – and safe!

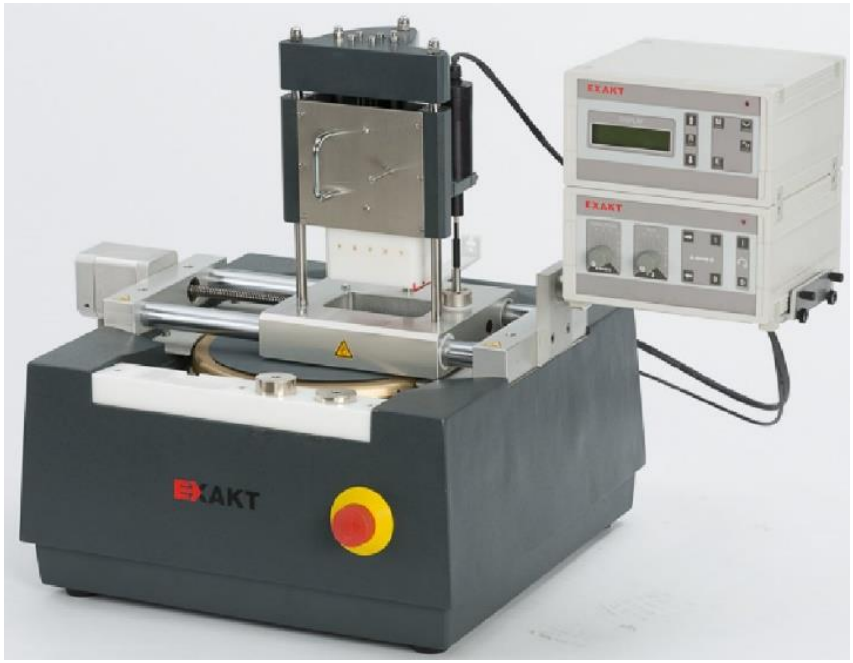
› The effort for safety in industry companies are higher than in institutes

EXAKT GRINDING SYSTEM
WHAT MAKES THE DIFFERENT?

Our System looks different to all other Grinding versions in the industry field

The EXAKT grinding system is one of the most precise grinding system of the world (for an realistic low price)

The grinding system has features which are unique points and open thin sectioning of samples in a new higher level



EXAKT comes from another application field and found different solutions for better results and quality

EXAKT has an other concept for solutions in the industry area

EXAKT brings new ideas for killed applications and broaden the customer mind

EXAKT 400 CS
DECOUPLE AND STRONG SYSTEM



› The construction of the grinding system is absolutely independent and the most strongly (warp resistant) of the world

› The decouple frame system is prepared for high sensible and finest qualtity results of ~3µm



› In comparison a standard industry grinding machine with an fixation arm and more tolerance in grinding force

EXAKT 400CS
AW 110 PRECISSION GRINDING



- The AW 110 sensor system is the exclusive system which allows to grind on the position like you want.
- The Sensor systems measure the real way of the grinding process
- No calculation like time and force

EXAKT 400 CS
ADJUSTMENT PRECISSION

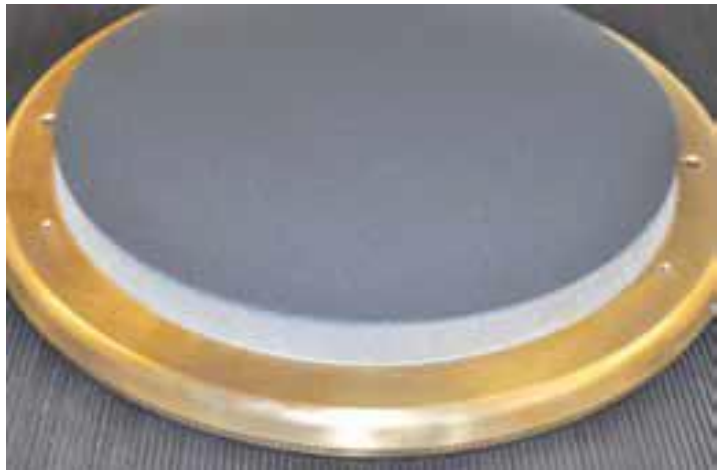


The vacuum head is a complete independent idea and unique of the construction

› Simple positioning of the sample on a slide

› Precise adjustment about grinding to the right plate level

› Perfect cooling and cleaning of the sample in the grinding process



Precise down to the µ and variable handling

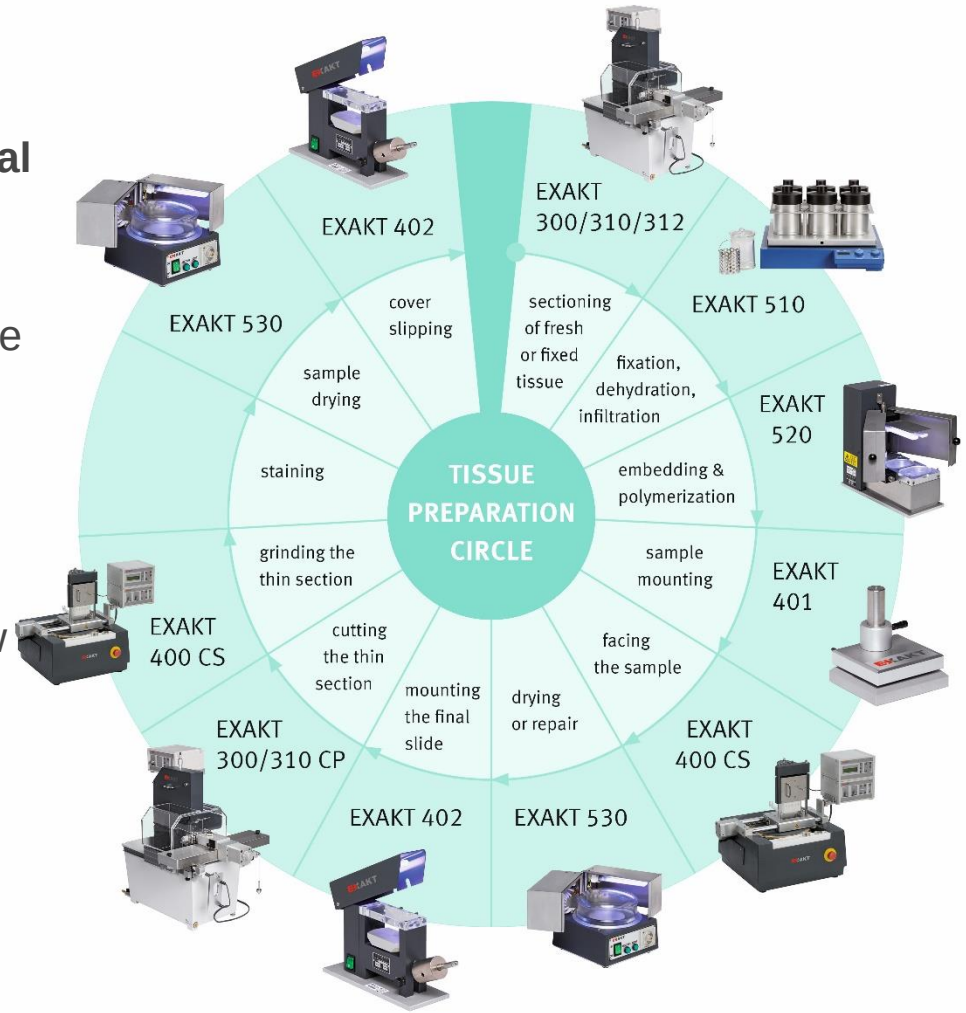
› The sytsem has the possibility to bring the performance of ~3µm with an adjusting plate

› The individual grinding paper is fixed by centrifugal water transmission

EXAKT EQUIPMENT
FOR THIN SECTION PREPARATION PROCESS

Individual solutions for special applications and problems of handling

- Mounting and measuring of the glue thickness
- Repair of defect samples
- Handling of dehydration, infiltration, polymerisation and individual process steps in low quantity sizes
- Vacuum and drying for better quality results



Special applications and professional handling about our cooperation Partner Morphisto

APPLICATION AND EXAMPLES

RUBBER PROFILE



Qualitiy control in running production

› Time effective principal for cutting

› No edges and damages in different kind of rubber and metal material

› Parallel cut for sharp monitoring on a projector

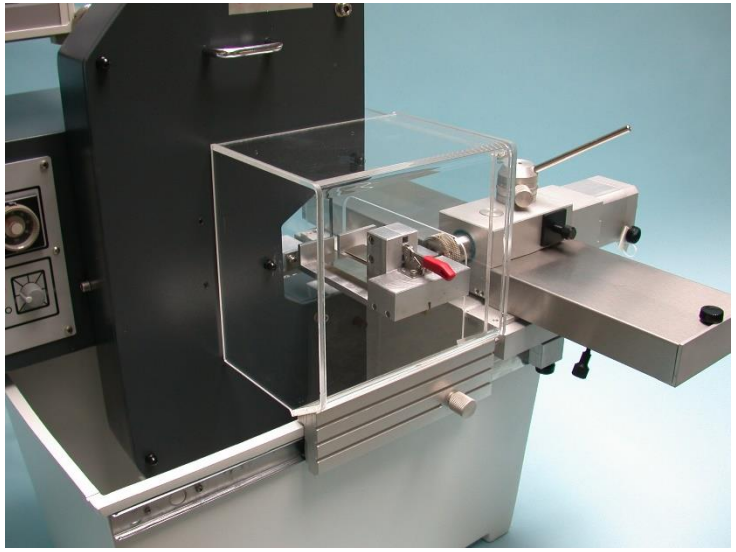
› No risk of safety handling

› Tuff and stable process in a production area

› No finishing (grinding) necessary

› High quantity of samples

We prefer the EXAKT 300/310 CP-Profile



COMPOSITE MATERIAL



Cut of different material combination

› Sensitiv process for all kind of material

› We don´t cut with a sharp and rough band

› We grind with a diamond coated band

› CP-mode reduce the shear and cutting force to a small point

› The material surface and the interface will be sharp an clear

› It is not necessary to finish the sample with high efforts

› Sometime no embedding necessary

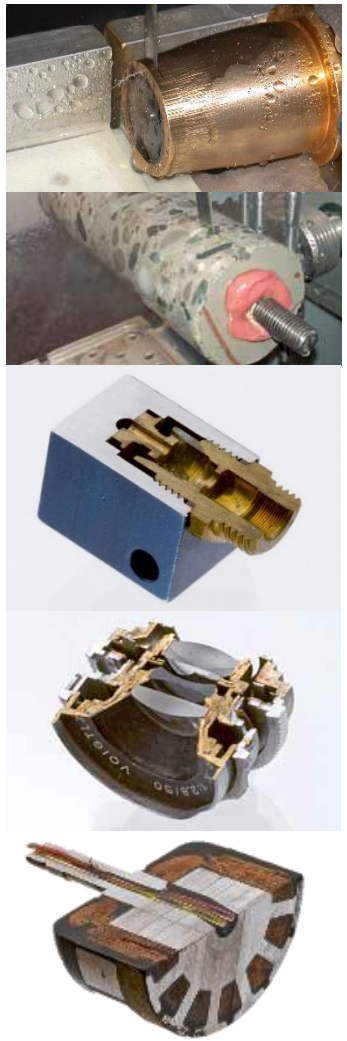
› Precise orientation of the cutting way about laser orientation and individual fixing unit

In combination of the application we prefer EXAKT 300/310 CL/CP





CONSTRUCTION COMPONENTS



Cut of hard material combination like steal, titanium, ceramic; metallographic application

› Sensitiv process for all kind of material

› No high stress for the sample

› CP-mode reduce the shear and cutting force to a small point

› The material surface and the interface will be sharp an clear

› No smearings

› It is not necessary polish the sample for the analyses

› Sometime no embedding necessary

› Precise orientation of the cutting way about laser orientation and individual fixing unit

› In case of the quality the time is not so important

We prefer the EXAKT 300/310 CP



GLAS/CARBON FIBER MATERIAL



Cutting and grinding for new and research of hightec material (glue/fiber structure, bubbles, damaging areas)

› Cutting process without edges artefacts and damaging areas

› No temperature stress for the sample

› Analysing after the cut is possible in cross section

› Thin sectioning with EXAKT equipment and grinding system with quality on a new level

› Measurement about glue layer is absolutely new principal

› Precise orientation of the cutting way about laser orientation

We prefer the EXAKT 300/310 CL, 311 and 312 and for thin sectioning the EXAKT equipment



GEOLOGY, STONES AND CRISTAL PRODUCTS



Cutting in research for very fine structure and surface

› Cutting process with CP-mode for an effective time and high quantitiy troughput

› Low hydraulic stress in the cutting area and very fine surface without cracks and broken areas

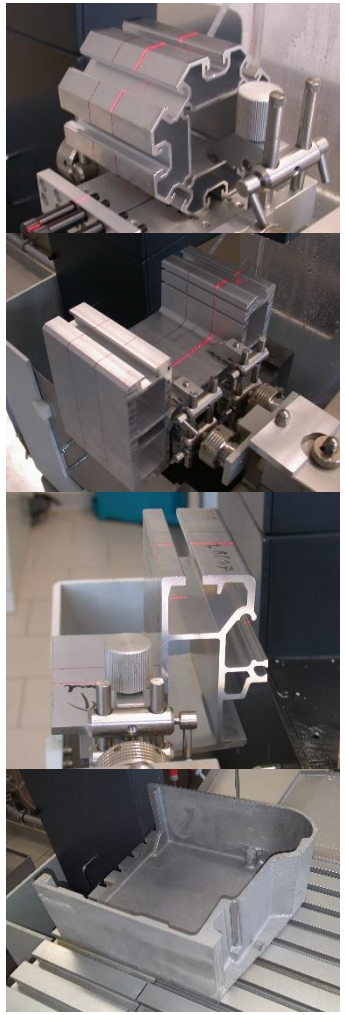
› The time for lapping and polishing steps will be reduced.

› Precise orientation of the cutting way about laser light and micrometer watch

We prefer the EXAKT 310 CP



ALUMINA



The application for alumina profile and alumina production; with bubbles and sensitive results

› Even more force and stress for the sample, even more tread packings and edges in the cutting area

› Low hydraulic stress in the cutting area and good cooling of the sample

› Structure of the surface and tread packings from the material will be visible

› Precise orientation of the cutting way about laser light

We prefer the EXAKT 300/310 CP with fine coated diamond band



SENSITIV, BREAKABLE AND FILIGREE MATERIALS



The applications for specialities

› Sensitive cutting process with fine coated diamond bands reduce the force and stress for the sample

› Brilliant surface areas and no breaking areas

› No sharp edges about grinding step of the band sides

› Reducing of the final breaking point

› Efficiently culling and cleaning of the cutting material and diamond band

› Flexible and new ideas of clamping and fixing of the samples

We prefer the EXAKT 300/310 CL and 312



EXAKT

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