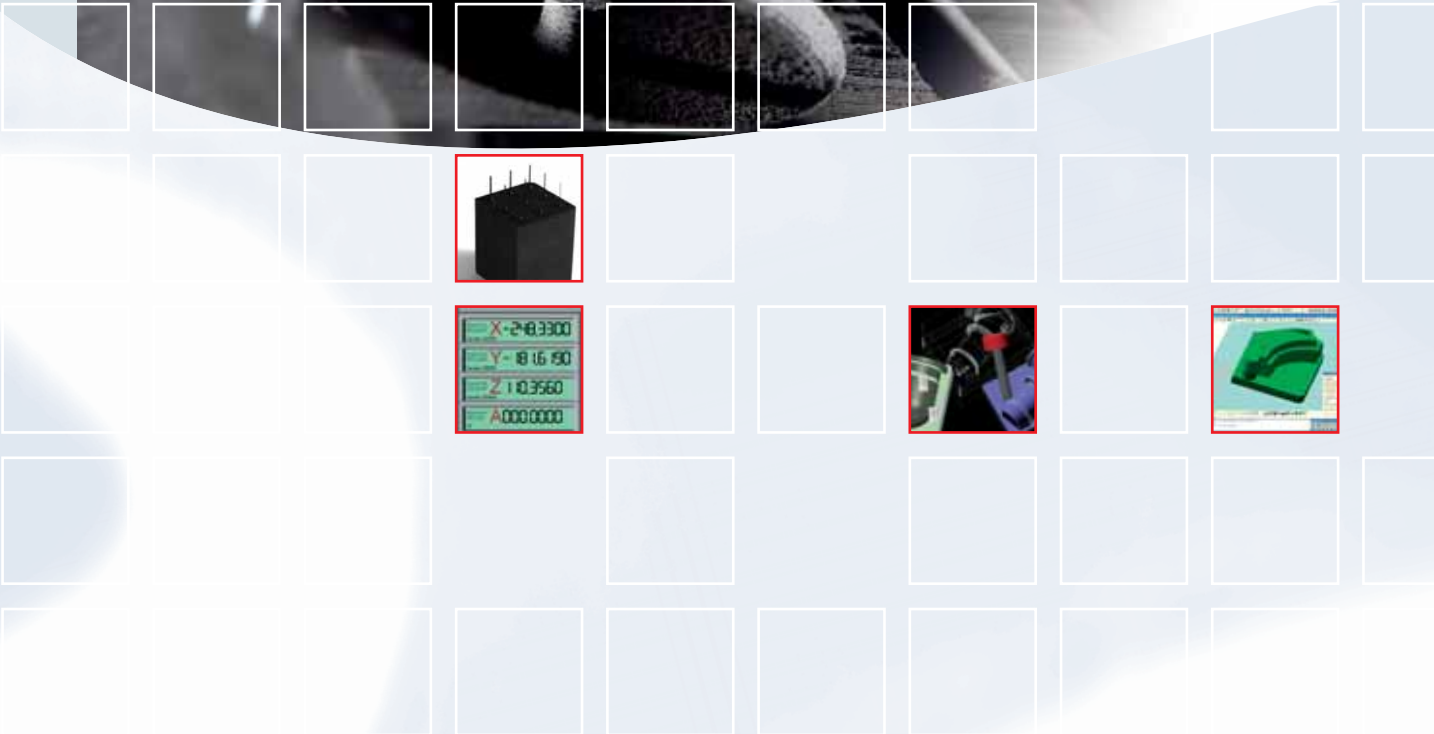


:: fast. precise. clean

GRAPHITE MACHINING USING HIGH TECHNOLOGY CNC MILLING.



isel[®] France *Des composants aux Systèmes*

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Welcome to the world of imes-icore. Productivity and economy redefined!



Customers continually demand shorter production cycle times, higher quality and lower prices. These pressures force companies to improve and rationalize development and production.

imes-icore can show significant economic advantages with the use of an advanced CNC machine to manufacture graphite electrodes for Electric Discharge Machining (EDM).

The imes-icore PREMIUM 4030 μ graphite is based on a unique, highly advanced, reconfigurable CNC machine which has been optimised for milling graphite electrodes.

There are many significant economic advantages from using graphite to fabricate electrodes, but high accuracy is essential.

To meet the accuracy requirements of the production process of electrodes path breaking technology issues were considered in the machine concept: HSC (high speed cutting) milling technology (solid machine base, most modern linear motor technology, fastest control technology), dust removal and clamping technology, measuring technique.

PREMIUM 4030 μ graphite has a small footprint to take up less space. It provides emission-free dust disposal. The high-speed CNC milling system has very fast control and is therefore ideal for efficient graphite machining.

THE FREE CONSULTING PACKAGE:



Dust removal units



CAD software



Rotary axis



Electronic handwheel



Milling tools



Cool/spray systems



3D laser sensor



Clamping methods



Tool check



Touch probe



Tool clamps



Main spindle drives



CAM software



Tool clamping systems



Zero point clamping system

The advantages of the i-mes solution:

- State-of-the art technology
- Very high precision => creates graphite electrodes to micron accuracy, also regarding copper electrodes
- Clean => efficient tornado power dust removal system
- Small foot print => suitable for even the smallest mould and tool making shop
- Expandable => upgradable to incorporate automatic loading
- Long-term stability => the heavy granite body and linear motors ensure precision. The linear motors used are superior compare to ball screw spindles
- Payback in a few months => most inexpensive graphite milling system on the market.
- Low maintenance costs.
- Lower power consumption (~ 4 [3 in German copy] kW when interpolating all three axes and a feed rate of 6 m/min with a spindle power of 2 kW at 30.000 rpm
- Full support - installation, training, service and technical advice



GRAPHITE: ELECTRODE MATERIAL OF THE FUTURE

Customers continually demand shorter production cycle times, higher quality and lower prices. These pressures force companies to improve and rationalize development and production.

i-mes can show significant economic advantages derived from the advanced machine to manufacture graphite electrodes for Electric Discharge Machining (EDM) manufacturing.

- :: high speed milling to provide fast and accurate results
- :: high temperature control and stability
- :: low machining forces
- :: easily machinable material
- :: no build-up of ridges or edges
- :: high dimensional stability for superfine definition of ribs and cavities
- :: fewer machining operations and higher efficiency compared to copper manufacturing methods
- :: less material consumption
- :: longer electrode lifespan
- :: dust free emission system
- :: special diamond coated milling tools can improve roughing cycle times by up to 70% compared to copper

The electrode of the future is from graphite - change now!

The move from copper to graphite is an important decision. With proper planning and implementation the benefits can be maximized - increasing yield and reducing time and cost.

i-mes can advise on implementation or on improving current operations. Call the i-mes team to give you professional free advice!

The free consulting package:

- Analysis at customer's premises
- Preparation of an individual, technologically based recommendation
- Costing and pay-back calculations
- Summary of user advantages
- Subsequent ongoing assessment

imes-icore PREMIUM 4030 μ graphite – The choice for graphite electrode milling!

NEW!

**GRAPHITE MILLING
UP TO 5 AXES**

PREMIUM 4030 μ graphite

- :: Solid granite based portal with decoupled Y axis for high accuracy and repeatability
- :: Welded steel frame construction with granite table for highest stability and precision
- :: Bellows cover in all axes
- :: HF spindle motor up to 2.3 kW / 40.000 rpm, HSK 25 tool clamp
- :: Most modern control electronics for HSC machining
- :: Linear motors in the XYZ axis
- :: Power control and electronic components completely integrated
- :: PC control, i-mes 8000 uses a Win XP PC



SPECIFICATION	PREMIUM 4030 μ graphite
design	granite portal with decoupled Yaxis
travel stroke (X/Y/Z) in mm	400/350/200
linear guides	long-term maintenance-free high-load steel profile guides
coordinate table (L x B) in mm	400 x 350 mm to pick up of palett clamping systems (Hirschmann, Erowa, 3R, and many more)
clamping weight in kg	200
dimensions (L x B x H) in mm	1400 x 1220 x 2000
weight in kg	~1000
drive system	linear motor, in all axis
measuring system Heidenhain linear scale system, measuring system resolution in μ m	0,5
repeating accuracy in μ m	± 2
positioning accuracy in μ m	± 5
resolution in μ m	0,5 (lowest travel increment)
main spindle drive	high frequency spindle : up to 2,3 kW / 40.000 rpm
tool changer	16 tool stations
controlling system	integrated path control i-mes 8000 (optional: Heidenhain iTNC 530)



3 axis system
expandable to 4th axis (rotary axis)
expandable to 4th / 5th axis
Linear motor technique

The new **PREMIUM 4030 μ graphite** is a 3 axis HSC milling system extendable up to 5 axes. It is designed for the precise fabrication of small mechanical parts such as micromachining and milling of graphite/copper electrodes.

Significant research and development effort has resulted in a highly accurate and repeatable system.

- :: The solid machine base consists of a hard rock granite. The decoupled Y-axis guarantees high rigidity and long-term stability. The individual granite elements are manufactured to a high level of accuracy to meet the requirements of DIN876 / quality 00.
- :: The path breaking linear motor technology, and the incremental measuring procedure, guarantee highest positioning accuracy and high-dynamic movements.
- :: Very fast control technology (High Speed Cutting) guarantees harmonious path movements and a simple user interface at the same time.

THE TECHNOLOGICAL HIGHLIGHTS:



1. Massive natural granite rock base

Natural granite rock guarantees high precision and stability:

- :: high damping (anti-vibration)
- :: high thermal stability
- :: high compressive strength
- :: long-term-stability



2. State of the art linear motor technology

Linear motors provide the only way to provide the essentially high precision:

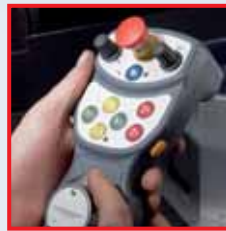
- :: no backlash
- :: no mechanical friction
- :: no wear
- :: no axis tolerance or positioning problem



3. Very fast CNC technology

HSC technology provides many significant advantages:

- :: cycle time < 0,4 ms (optional 0,1 ms)
- :: simultaneous machining with up to 8 axes possible
- :: Look ahead - path control with shock compensation for harmonious fluent movements
- :: sinusoidal accelerations
- :: operating software based on Windows XP



4. Sophisticated accessories

Sophisticated features and accessories provide a complete, integrated and high quality results:

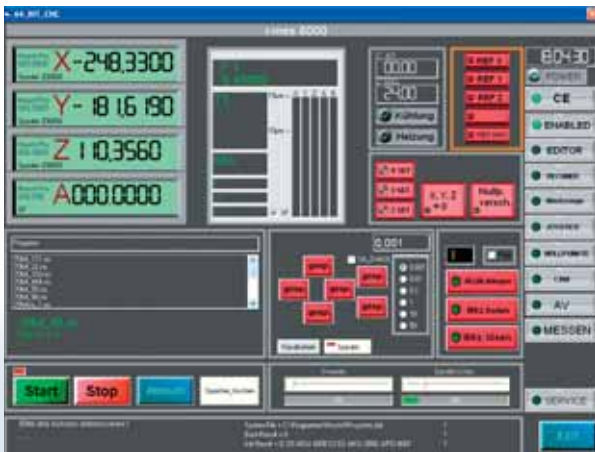
- :: minimum quantity lubrication cooling / spraying unit for copper and hard milling
- :: highly efficient dust removal system
- :: 4th / 5th axis (rotary / swivel axis)
- :: touch probe to teach the workpiece zero points
- :: MARPOSS laser for non-contact tool check
- :: 16 times automatic tool changer
- :: high frequency spindles up to 100.000 rpm
- :: professional CAD/CAM solutions



imes-core application skill – for economical graphite electrode manufacturing!

Simple operation with convenient features

The easy to use CNC control software runs on a PC based on Windows XP. The CNC unit can be interfaced to a network to communicate with other CAD/CAM work stations or data servers. The special advantage is the intuitive menu features which supports daily working with practical functions and navigation.

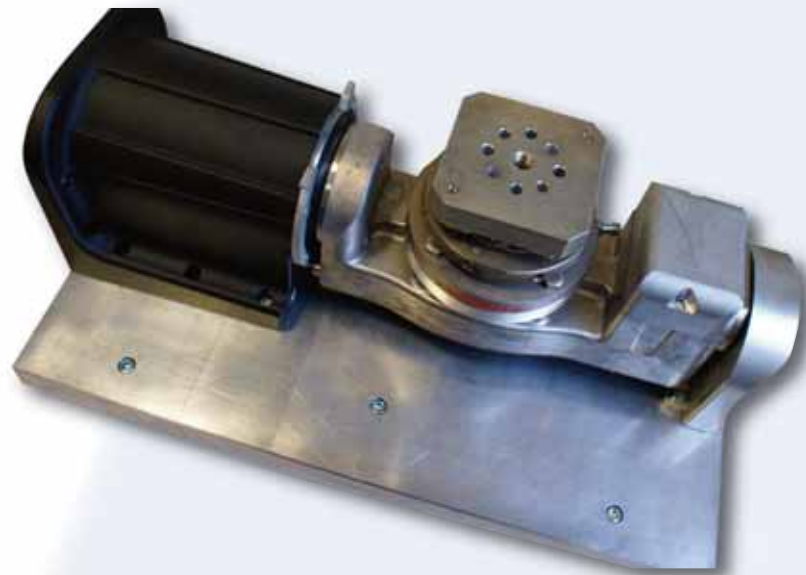


In order to speed up the manufacturing process for an economic electrode manufacturing and to optimize the handling of the CNC system the program offers suitable functions with a highly developed machining:

- :: Zero point administration for various numbers of electrodes
- :: Measuring cycles for automatic tool measuring and controlling of the milling tools during operation
- :: Delta offset for an individual negative allowance programming
- :: Tool administration
- :: Override for feed rate and spindle speed
- :: Optional electronic hand wheel or joystick
- :: Temperature compensated milling spindle Z-axis optionally

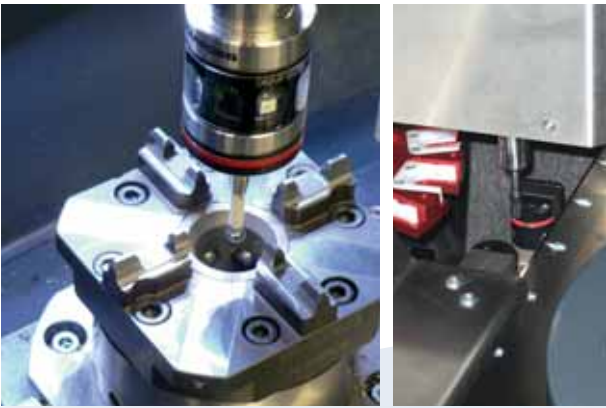
Advantage of 5 axis Technology

The **PREMIUM 4030 μ graphite** can be upgraded to operate 5 axes by using a compact and highly precise **rotary/swiveling unit** which provides the **4th** and **5th** axes). 3+2 axes and 5 axes simultaneous machining can be realized. A three-jaw chuck and a round plate clamping device are both available depending on the application.



Integrated measuring technique increases your productivity

The MARPOSS **OP32** wireless infrared system allows the operator to quickly and accurately determine the work-piece zero point. Setup time and durability can be minimised and accuracy is improved.



The **MIDA LASER** system from MARPOSS provides non-contact tool checking. It provides automatic measurement of milling tools.

- :: Tool break check
- :: Measurement of length and diameter of a tool in highest precision

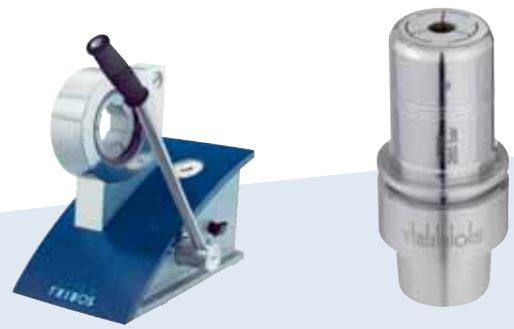
Emmission free dust removal technology

The **PREMIUM 4030μ** graphite is optimized with a tornado suction consisting of an individual cyclone made depending upon application. The graphite machining is thus a completely clean process, and protects the linear guides and the linear motors from particulate matter.



TRIBOS polygonal tool holder for highest run-out accuracy

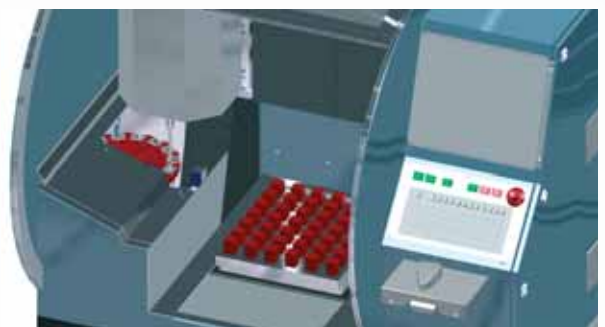
The TRIBOS polygonal tool holders are used for precise cutting at spindle speeds of more than 50.000 rpm. Excellent run-out accuracy (less 0.003 mm) as well as stable mounting result in outstanding cutting performance. Synergy effect: Due to the complete rotationally symmetrical design the lifespan of the high frequency spindle is multiply higher.

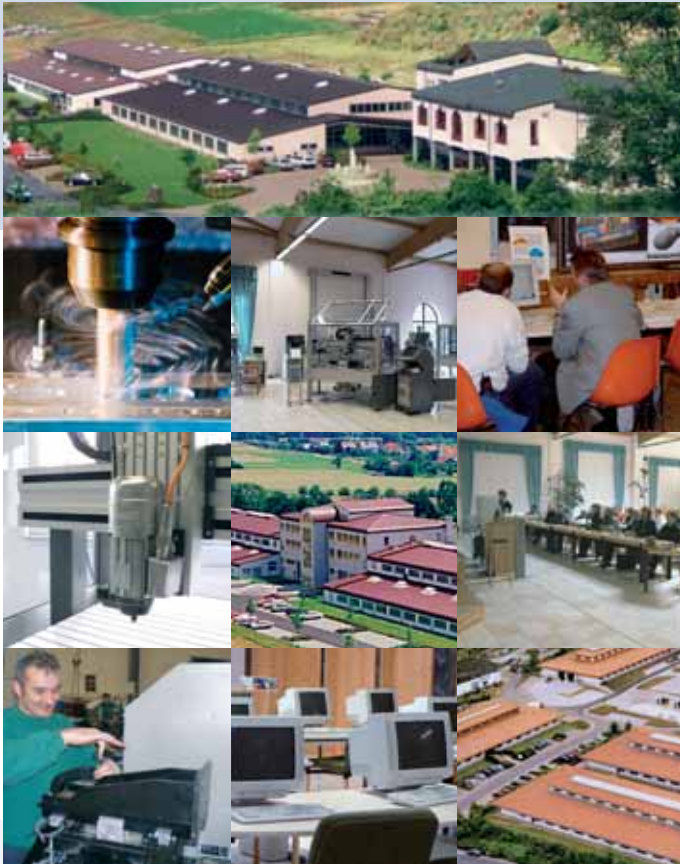


Clamping device with manual pump for a clamping process less than 20 seconds. There is no need for any heating up or cooling down process compared to the shrinking technique. Individual Zero Point Clamping System

Individual Zero Point Clamping System

The **PREMIUM 4030μ** graphite is compatible to any common zero point clamping system: The electrode holders and changing systems of Hirschmann can be likewise integrated like the systems of Erowa, System 3R and further manufacturers. By the high and rigid X-cross portal the resulting passage height is optimized to machine high electrodes and long bars / ribs up to a height of 100 mm.





i-mes has a clear position in the CNC milling machine market. The general intention is to provide plug and play system solutions exactly suitable for individual customer related requirements offered at a brilliant cost performance ratio.

The i-mes milling solutions are identified by three major characteristics:

- :: High technology
- :: Distinctive
- :: Cost-effective

To fulfil these three important characteristics i-mes milling machines are configured from three building blocks - the mechanics, electronics and software, integrated into a modular concept which provides high variability.

Although i-mes milling machines can be configured for various different individual applications there are six areas for which i-mes provides off-the-shelf solutions. These six areas industry sectors are:

- :: Plastic and foam fabrication
- :: Precision mechanics and micro machining
- :: Graphite machining
- :: Fabricating and engraving of promotional and gift items
- :: Model and mould making
- :: Jewellery and goldsmith handcraft

The reconfigurable modular system technology enables i-mes to respond to many different machining challenges.

Just call imes-icore!

Team Graphit
Competence Partner

In order to use all advantages of the treatment of graphites, the precise machine does not only play a role. Also the selection of the suitable graphite grade and the appropriate diamond-coated milling tools is decisive for the total result.

The companies imes icore, GTD, Westphal CAD and Hufschmied, all four experts in graphite treatment, help you step by step to change-over to the trend-setting treatment of graphites.

Do you have doubts, that your present sinking EDM machine doesn't work with graphite or would you like us to make you sample electrodes? No problem! We would like to help you - and - free of charge! Challenge us!

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Competence in CNC & DENTAL-Solutions

HUFSCHMIED
ZERSPANUNGSSYSTEME

