μ MIKROMAT

STRATEGY GUIDE

COST ENGINEERING
VALUE ENGINEERING

VALUE **MIKROMAT** ENGINEERING
COST ENGINEERING

You survive in international competition. *You* are reliable, innovative and proficient in international marketing.
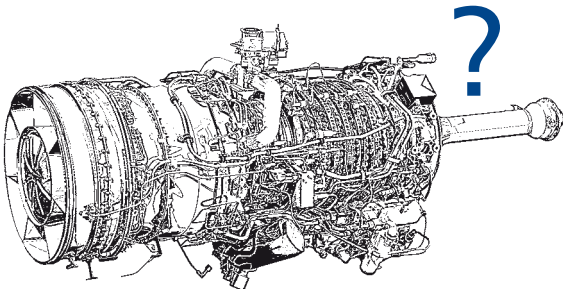
What would be achievable if costs could be reduced and service characteristics increased at the same time?

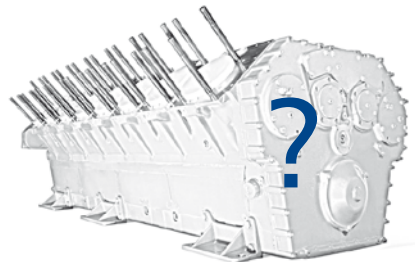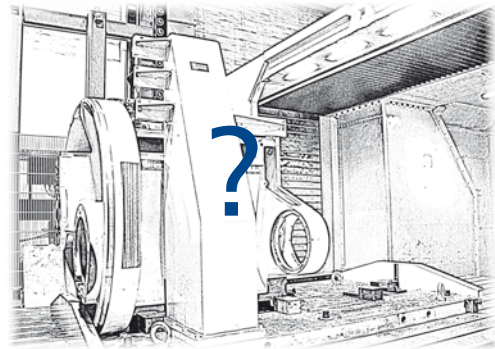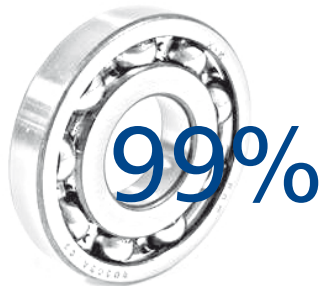The influence of high precision manufacturing in this process is generally underestimated.

MIKROMAT Cost Engineering (MCE) and *MIKROMAT Value Engineering* (MVE) are the key technologies to improving the acceptance of *their* products significantly.

The constant aim is to improve service properties considerably while *reducing production costs drastically.*

The way is the *integration* of MIKROMAT Value Engineering on *your development process.*

If product properties are realized *below* customer expectations, the expected quantity cannot be achieved.

If product properties are realized *beyond* customer expectations, the expected contribution margin will probably not be reached.

Optimization of innovative products -

99%

based on their efficiency to improve product acceptance
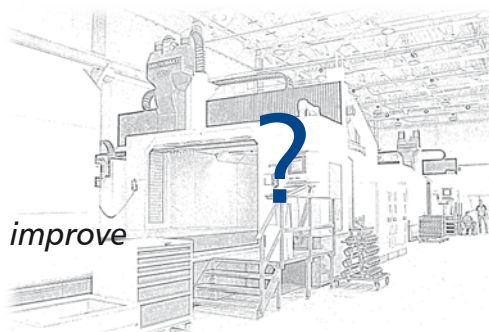
MIKROMAT Cost Engineering guarantees the observance of expected product properties and costs, by which means the marketing target will be implemented.

MIKROMAT Value Engineering
reaches the optimal point of intersection for product properties and costs, so that the *product acceptance* can be optimized.

MIKROMAT is directly testing the conceived specifications and design criteria of your product development and providing technological evidence for the industrial capability.

We offer to share our experience in product development, technology development and manufacturing to all customers.
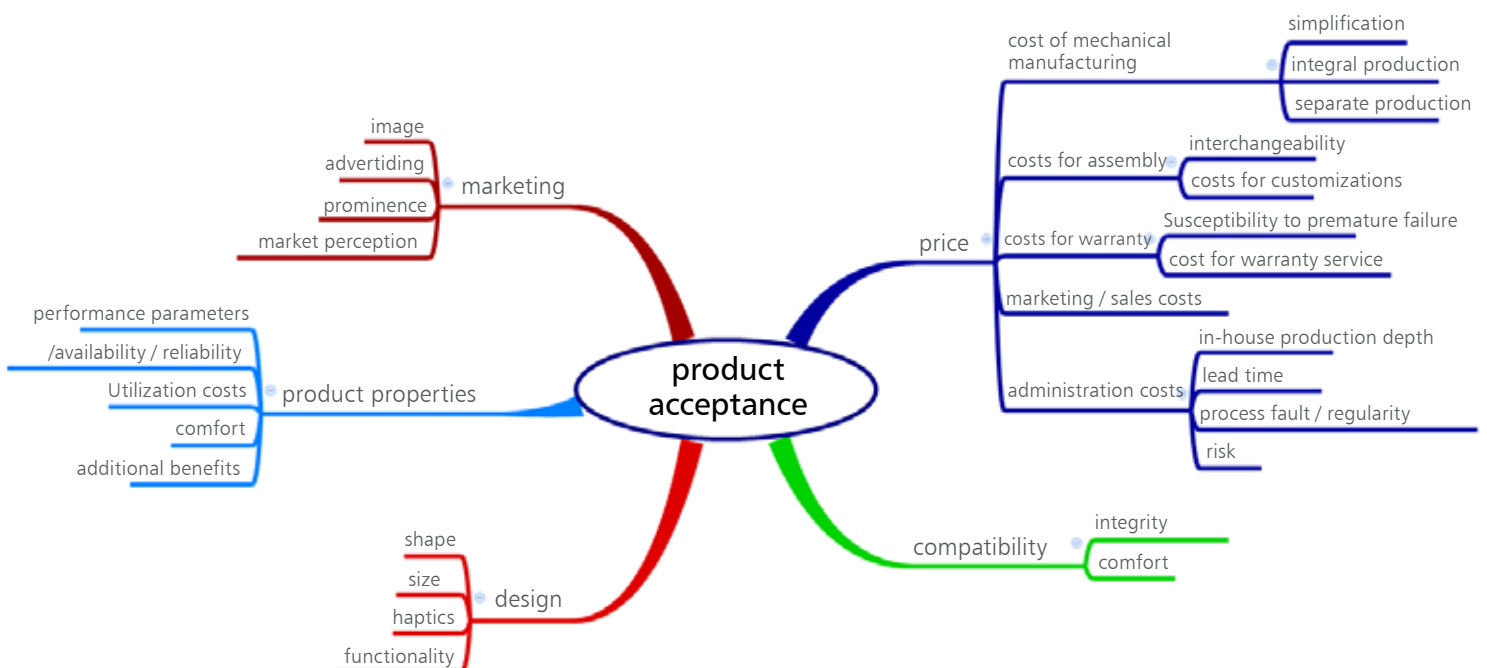
MIKROMAT Value Engineering

involves the whole technological development of:

- theoretical analysis of functionally relevant tolerances of shape, position and dimension deviations
- technological advice on the simplification
- the definition of key tolerances
- the manufacturing of prototypes with key tolerances at the limits of feasibility, combined with the testing of functional effects until further functional improvements are no longer detectable
- the definition of all technological parameters
- the optimization of technology
- the secure and on time volume production

According to the starting situation, value engineering can be used in different stages.
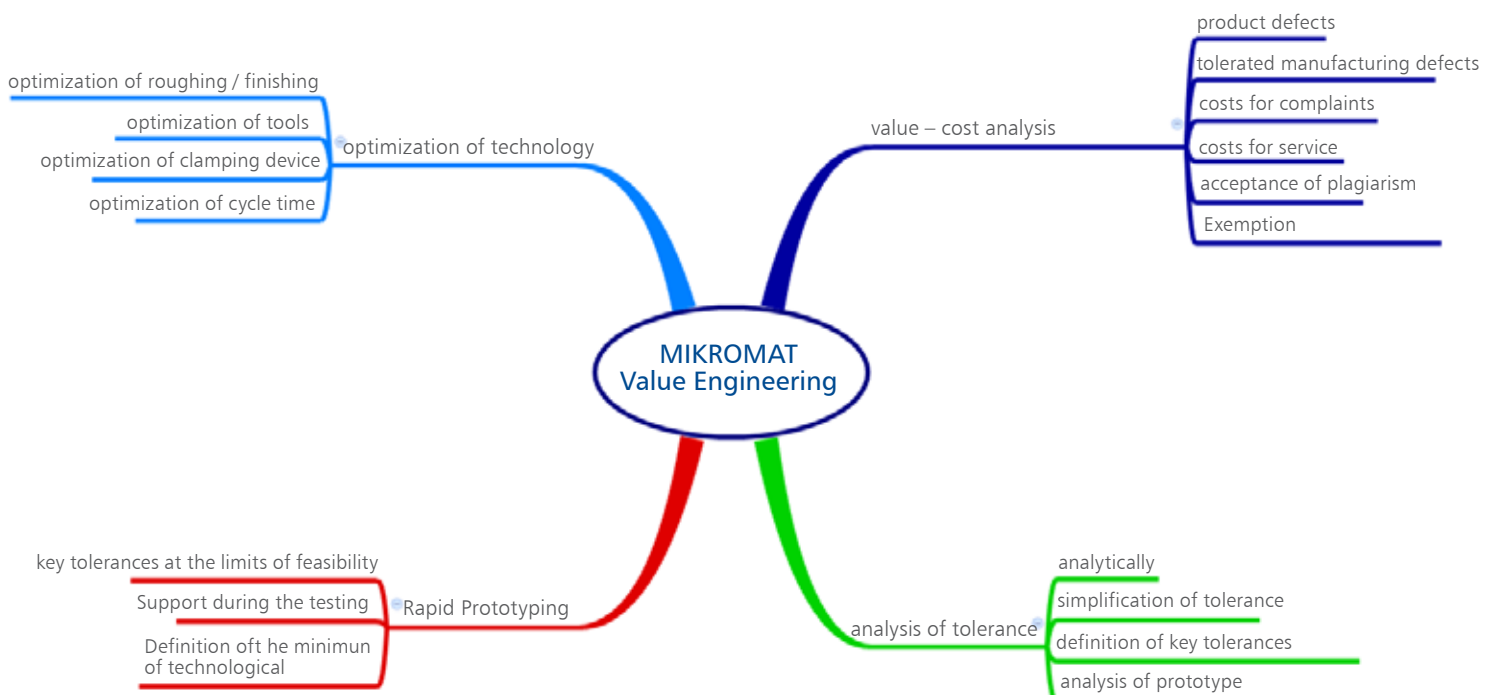
1. Designing of a new product according to the service properties and costs specified by marketing (future development)

2. The development of the new product is done, the design documents are available and the production costs have to be optimized. (Design process)

3. An existing product has to be analyzed for its use value and has to be optimized in costs (supervision of volume production).

As different as the starting point for a Value Engineering is, the most important tool is the *analysis* of current products and processes. This view is divided into:

- Determining the causes of product defects,
- Determining of tolerated faulty machining
- evaluation of the resulting product and process costs
- evaluation of incurred costs for complaints and service
- Determining the acceptance of plagiarism and
- Determining the requirements for high precision technology.

The questioning of specific functions, the effectiveness of the product and the services to be provided for expenses are part of the analysis.

MIKROMAT Value Engineering is your partner in the use value - cost analysis.

optimization of roughing / finishing
optimization of tools
optimization of clamping device
optimization of cycle time
optimization of technology

value – cost analysis
product defects
tolerated manufacturing defects
costs for complaints
costs for service
acceptance of plagiarism
Exemption

MIKROMAT
Value Engineering

key tolerances at the limits of feasibility
Support during the testing
Definition oft he minimun of technological
Rapid Prototyping

analysis of tolerance
analytically
simplification of tolerance
definition of key tolerances
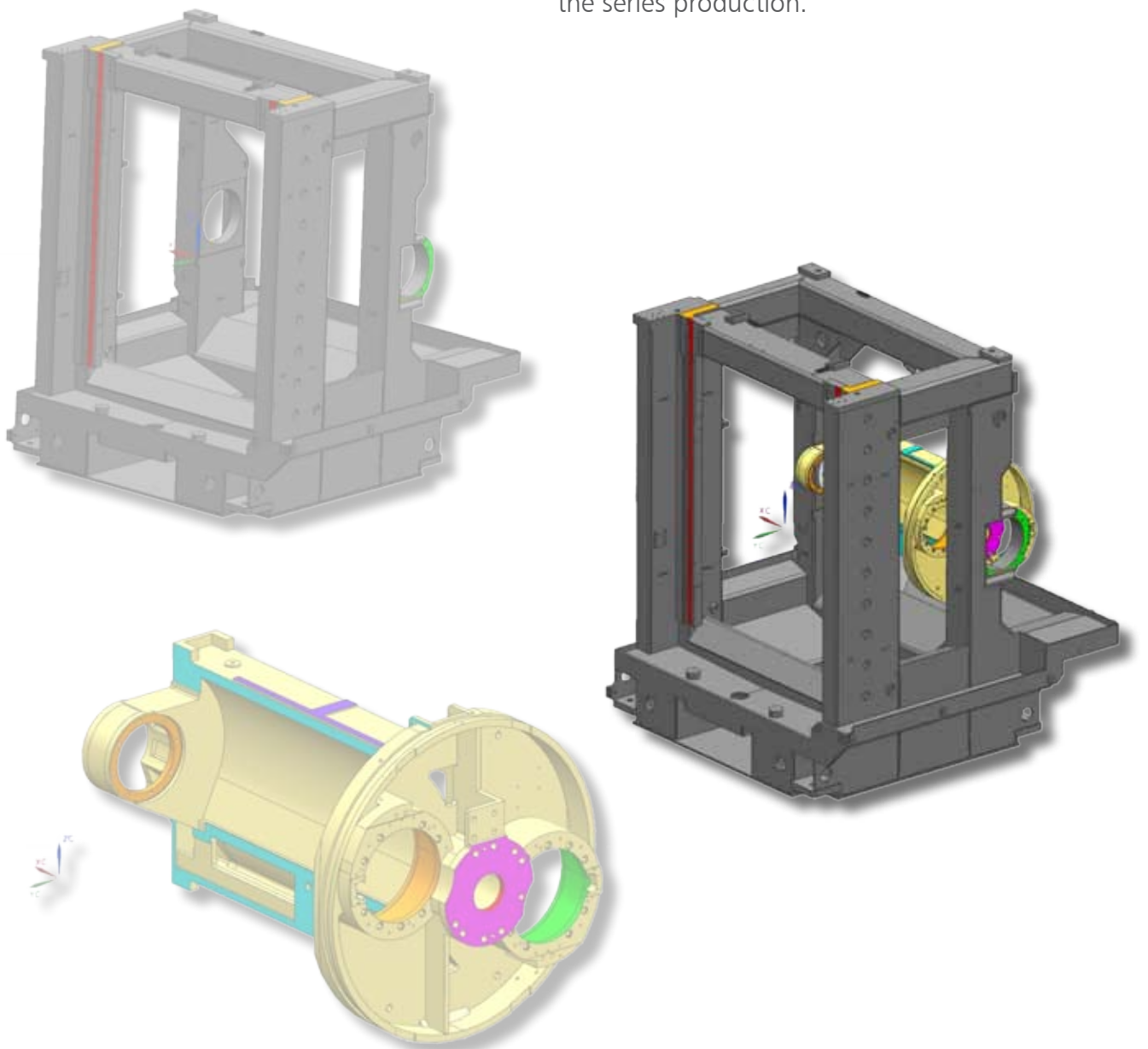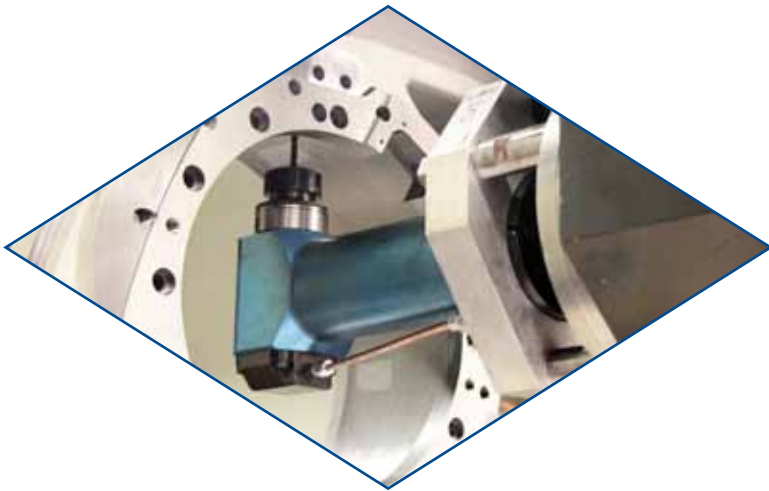analysis of prototype

In the result of the investigation, the individual tasks are generated in dependence of the task for the Value Engineering. Integral parts require extreme precise machining, because adjusting during assembly is impossible. At the other side integral parts reduce the costs for machining (contact surfaces) and in the assembly (adjusting). The most complete summary of components in a few integral parts and the definition of the function-critical tolerances towards form and position deviations, including the sum tolerance calculation, are the quintessential *MIKROMAT Value Engineerings.*

Based on the required demands on the product, we develop the manufacturing technology with maximum achievable accuracy and the necessary quality strategy for the production of the prototype.

The target is to implement a complete prototype production as well as testing of tools and clamping devices on existing machines. Especially with integral parts (combining multiple functions), the benefits of prototype production demonstrate themselves. The production of prototypes allows the consistent examination of the results and the comparison with the requirements of the final product.

The gained knowledge is the basis for optimizing the series production.

Detecting errors early and finding optimal solutions are essential processes for the prevention of complaints. The deviation of the actual functional requirement inevitably leads to the failure of the product.

The **MIKROMAT Value Engineering - Team** is a partner and mediator between product developers and manufacturers.

With 150 years of experience in high precision machine tools, **MIKROMAT Value Engineering** is an ideal commitment-platform for the introduction of new products or products that have to be optimized for volume production.

IThe development department very often requires high accuracies for functionally non-relevant features which complicate the manufacturing process. As a result of these requirements, design deviations have to be approved during processing. However, design deviations may only be accepted if consequences in the design and in technology are carried out. A faulty processing must not be at the detriment of product quality.

The implementation of a **Value Engineering** is an absolute necessary for the definition of the optimal intersection point of product characteristics and production costs. The know-how of programming, manufacturing and quality in the development of new products and the creation of automated information circuits promote

- the early detection of faulty requirements and
- the avoidance of future claims and cost and time-intensive service interventions.

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The communication between design, assembly and service enhances the process of optimization of the products.

MIKROMAT is the world's leading technology for JIG-machining and Value Engineering and allows interested users a risk-free and low-cost entry.

The team of *Mikromat technology development* can improve the accuracy of manufacturing and products only through the analysis of active processes and the resulting measures.

MIKROMAT supports you in project implementation.

The limits of the design principle can be explored and existing parts improved without costly new developments.

The potential of the products in the application can't be identified without the optimization of the whole manufacturing process.

Partnership value engineering in the development of products and processes enables the balancing act between quality improvements on the one hand and reducing costs on the other side.

For manufacturing components in a quality that is optimum for the function, it is necessary to define shape, position and dimensional tolerances and to implement them during manufacturing.

The target is always to reach the tolerance center and not to take advantage of the tolerance field.
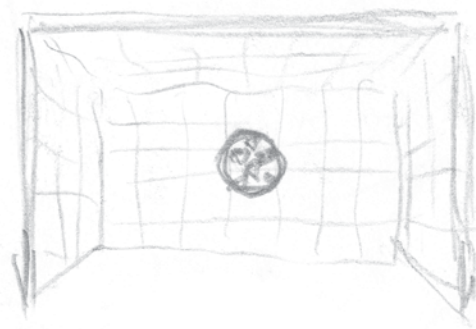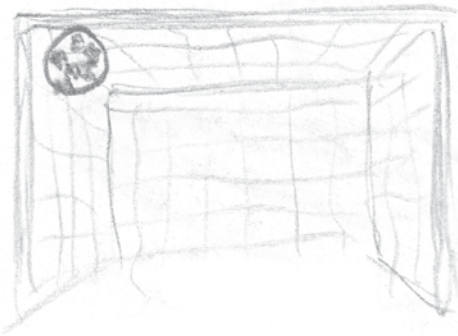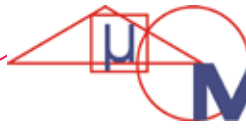
Goal

Manufacturing accuracy

*MIKROMAT Value Engineering -
Your partner for your new product.*

You define the functional and cost target;
we guarantee that it will be achieved.

MIKROMAT Technology Development

The qualified team of Mikromat technology development and a fully equipped technology center (production preparation, machines in temperate environment, measurement) are ready to take on your job.

MIKROMAT Technology Centre			
Process	Description	Processing area	Accuracy
Precision boring and milling	MIKROMAT BkoW 1000	X = 1200 • Y = 1000 • Z = 900	+/- 0,003
	MIKROMAT 12V 5D	X = 2200 • Y = 2150 • Z = 900	+/- 0,003
	MIKROMAT 12V	X = 2700 • Y = 1900 • Z = 1050	+/- 0,003
	MIKROMAT 20V	X = 5200 • Y = 3400 • Z = 1250	+/- 0,003
	MIKROMAT 20V	X = 5700 • Y = 3400 • Z = 1250	+/- 0,003
	MIKROMAT 40VF	X = 14700 • Y = 4600 • Z = 2100	+/- 0,003
Grinding	MIKROMAT 60 SC	X = 1000 • Y = 800 • Z = 550	IT 4
	MIKROMAT 3G	Ø 250 x 300	IT 4
	MIKROMAT 15G	Ø 340 x 1500	IT 4
Measuring	MMZ - G	X = 3000 • Y = 6000 • Z = 2000 + 700	

Peter Schillhahn:
Head of Product Management

Deep involvement into the development process, economically achievable precision and 100% commitment are the guarantors for successful value engineering. You have my word for it.

Kai-Uwe Wirth:
Quality Management

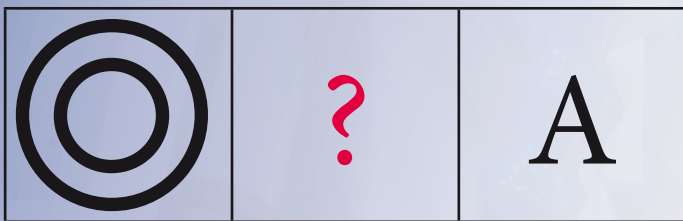*To reach excellent quality together and in the mind of our customers is the task of our daily doing.*

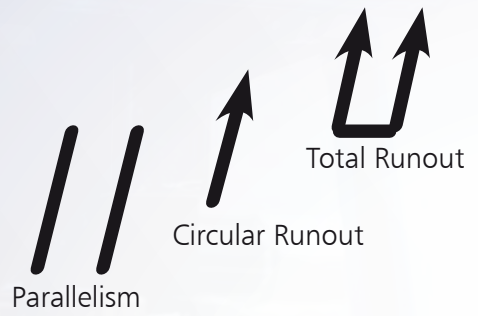Dipl.-Ing. (FH)
Andreas Rabe:
Sales Manager

The high demands at technical devices today require highest level of Precision at machining.

Accurate for this is MIKROMAT worldwide well known.

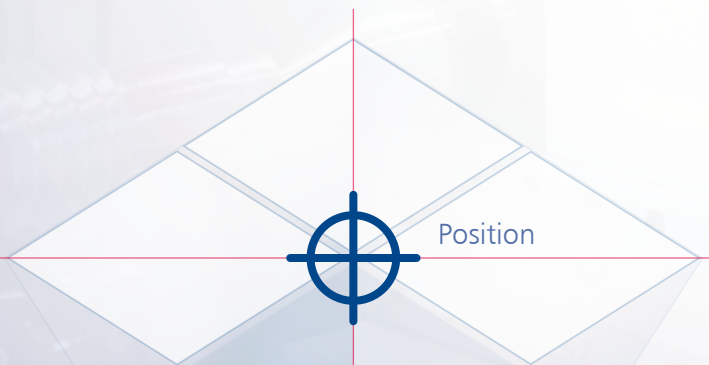*Communication between you and our Job Shop at high level, maximal reachability and best reliabilty I warrant.*

150 years

years

The productive µ

MIKROMAT

◎	**?**	A

Concentricity

Parallelism

Circular Runout

Total Runout

Angularity

Roundness

⊥	**?**

Squareness

The productive µ.

Straightness

Position

Cylindricity

Flatness

EN