



CNC Special Machines

The Spectrum



MAKA-Max Mayer Maschinenbau GmbH is an owner-managed company deeply rooted in the Swabian machine building tradition, with a workforce of around 190. MAKA can draw on more than 50 years of experience in mechanical engineering and 25 years of experience in the building of CNC machines, putting it at the cutting-edge of this technology for woodworking, aluminium machining and plastics processing

In addition we also supply solutions complying with the high requirements of the pattern making and casting industry.

Be it manufacturers of motor vehicles, aircraft, rail vehicles, boats, facade construction or of furniture, doors and stairs as well as specialists in the field of deep-drawn components or acrylic glass – top name manufacturers in these sectors all use high-speed machining centres with 5-axis technology for working on aluminium, wood and plastics.

MAKA sets out to provide each customer with a solution of the highest standard that is correct for his purposes in both technical and economic terms.

Company Management and Philosophy	4/5
Company History	6/7
Competence	8/9
Areas of Business	10/11
Woodworking	12/13
Aluminium Machining	14/15
Plastics Processing	16/17
Composites & Pattern Machining	18/19

>Exactly defined targets ask for precise solutions...<



Company Management

The founder of the company, Max Mayer senior, retired from active involvement in 1996, passing on the management of the company to his son of the same name.

Max Mayer jr. now represents the second generation to manage the company.

His first position of responsibility within the company, back in 1975, was as technical head of construction and production.

He played a leading role in pushing the development of the company to bring it into the CNC age.

In 1990 he was appointed to managing director, subsequently becoming the sole managing director in 1996 upon the retirement of the founder of the company, his father.

The executive office is supported by the members of the executive committee, made up of the heads of the individual company divisions:

Dieter Jergon, ppa. (Sales)

Rüdiger Ehrenbeck, ppa. (Finance)

Lars Urban, ppa. (Production)

Gerhard Polzer, ppa. (Services)

Johann Hefler (Electrics)

Ulrich Huber (Construction/Mechanics)



Company Philosophy

Made in Germany, all from one source and closeness to our customers – these are the central pillars of the MAKA philosophy and the cornerstones of our success.

Our 5-axis CNC special machines are continually improved, gaining technical maturity in long-established development processes.

This capability is the result of continuous creativity, since all of our key components are developed by the company itself.

The electrics and mechanics also originate from the company.

Under the service principle of "everything from one source" MAKA after-sales service personnel are available through a hotline service to look after MAKA CNC special machines all over the world – even on Saturdays. Their activities cover the machine's control system and electronics as well as its mechanical parts. Availability of all spare parts is guaranteed for 10 – 12 years, which is a great advantage for customers.

Closeness to our customers is part of the service from MAKA.

Representatives in Germany and abroad have experienced CNC specialists available to advise customers, our comprehensive customer-oriented

consulting service drawing on years of experience and a high level of technical know-how.

The well equipped technology and demonstration centre in Nersingen provides a comprehensive consulting service – on customer's request trials are here prepared and carried out. MAKA can also organize visits to reference projects, if required.

Implementation of the company philosophy is achieved through the work of highly responsible, motivated and creative employees in an environment characterized by a cooperative management style, for whom the customer's interests are the priority.



>There's only one of every idea - and only one MAKA<

The CNC Age

Being quick to recognize the effectiveness of automated workflows, the founder of the company led MAKA into the CNC age at an early stage. Continually developing forward-looking machinery such as the high-speed routing spindle, automatic tool changers and 5 axis technology, MAKA has always been at the cutting-edge of this technology.

Expanding its fields of activity beyond wood in response to market changes, the company now embraces aluminium and plastics as well, using its forward-pointing know-how to establish a global customer base.



Foundation of MAKA GmbH

MAKA GmbH specialises in the import and distribution of standard joiner's machines, plus aftersales service for looking after the machines.

1952



1980

1982

1992

1997



Foundation

The idea that machinery could be used to make joiner's craft work easier was what prompted the founder of the company, Max Mayer sr., to patent the swing chisel mortiser in 1952 and set up the Max Mayer Maschinenbau GmbH.

This has been followed by almost 50 years of experience in machine construction. The original production plants in Neu-Ulm and Nersingen continue to form the core of company operations to this day.

North Germany Branch

The branch in Herford in northern Germany was established in 1982 as the company continued to develop. Over time this branch has added its own demonstration space and replacement parts warehouses and taken on its own fitters.

Representatives in the USA

Start on building up of a network of competent sales and aftersales service partners for aluminium machining, plastics processing and woodworking.

MAKA Machinery UK Ltd

The branch in England covers the entire range of MAKAs products and completes the European distribution network. The company now has representation through sales partners in all key European countries.

New Developments:

ISO 40 and HSK F 63 router spindles with 12.5 kW – 20 kW power output.

Linear Drives

Laser positioning system
Patent application for
video positioning system

Research Projects

MAKA have been involved in diverse research projects at various universities for many years. This makes it possible to ensure that our technology is always state-of-the-art.



1998

1998

1999

2000

2002



Certification

ISO 9001 certification was essentially just a formality since the MAKAs quality principles of "high technical standards, absolute functional reliability of standard components, precision and long life" were always reflected in production.

Modern design, ergonomics and operational safety can be taken for granted, as can the use of the most modern components of absolute quality.

New Machine Series:

BC 570 gantry-type machining centre for machining large parts with working lengths of up to 20 m

CM 27 for pattern machining

MM 7 for plastics processing

50 years of MAKAs

New machine series are the evidence of continuous development:

MD 6 for the high-speed machining of small components

PE 170 the universal solution for craftsmen

Competence

MAKA CNC machining centres are used not only for the machining of wood, aluminium and plastics, but for pattern-making as well, featuring a diversity of machining functions and flexibility for complete machining in a single clamping.

The advantage of MAKA CNC machines therefore lies in quicker throughput times.

5-Axis Technology

5-axis technology permits the three-dimensional machining of free-formed surfaces and contours plus the multi-sided machining of user-defined surfaces.

These machining centres are renowned for both ultra-fast cutting speeds and great accuracy, and with automatic tool change, large tool holders and a comprehensive range of replacement units there is virtually no limit to their flexibility.

Complete Solutions

MAKA supplies complete solutions. We make use of interdisciplinary teams to solve problems and to provide you with the assistance you require, on a cooperative basis, from pre-sales consulting to instruction and commissioning. Working with specialist partners MAKA can include complete solutions in its performance spectrum, to embrace clamping devices and machining programs that are tailor made for specific customer requirements.

Modular System

All machines can be put together with the machining units tool changers and table solutions of your choice. The key modules for the MAKA machining centre are all developed in-house. Parts or components not manufactured by MAKA itself are supplied by specialist manufacturers thus guaranteeing a high quality standard.

Control Equipment

The control equipment supplied by our partners offers maximum convenience, as demonstrated by new developments such as the mobile, hand-operated console for control and training purposes. This includes a touchscreen and other forward-pointing features.

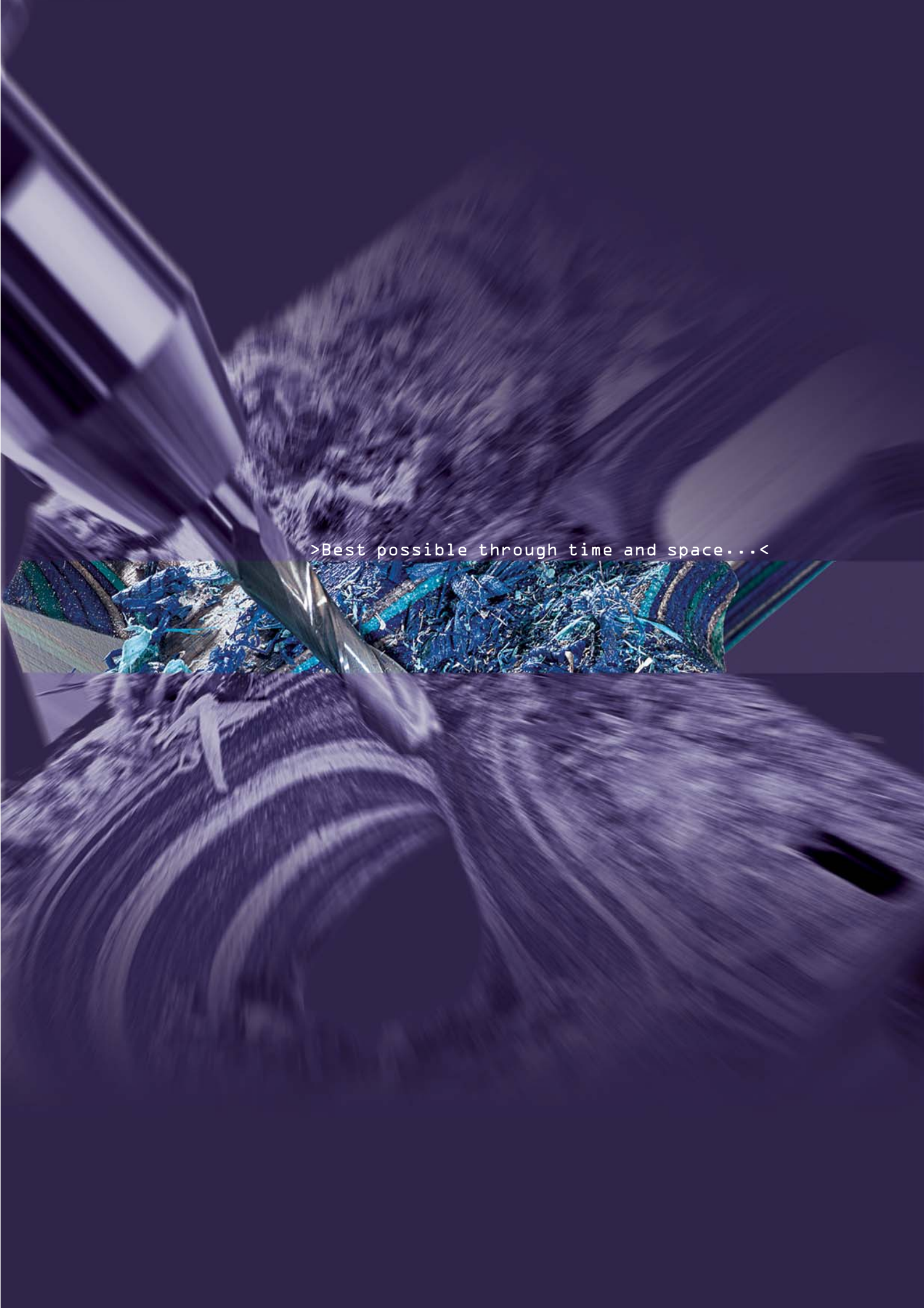
Software Applications

MAKA's system partners supply solutions for all types of machining in 3 – 5 axes, and are capable of meeting all customer expectations with their advanced technical know-how. User prompts with graphic support reduce programming on the machine to the definition of the workpiece only.

Innovations

- Laser positioning system
- Video-POS-System
- Special table solutions &
- Thermoface

are only some of the innovative solutions of the past few years developed by MAKA. Numerous patent applications prove the continuous work on developments.



>Best possible through time and space...<

Woodworking

Be it for machining building elements such as windows, doors and stairs, or for components for furniture manufacturers, interior finishing, vehicle manufacture and wood products – MAKA woodworking machines are used in all these sectors, evidence of MAKA's first-class reputation as a manufacturer of CNC machines.

Aluminium Machining

Market share in high-speed machining of aluminium is increasing all the time. MAKA CNC machines are appreciated by top name manufacturers around the world for motor vehicle manufacturing, aircraft manufacturing, rail vehicle production and commercial vehicle manufacturing. Even aluminium press plants and manufacturers of sanitary articles, windows, doors and facade profiles successfully use MAKA machining centres.

Plastics Processing

Moulded plastics both in the form of deep-drawn parts or reinforced fibre components are another field where manufacturers of ships, aeroplanes, vehicles and large components as well as of acrylic glass, display and filter plates successfully use MAKA machining centres.

Pattern-making

The field-proven machine solutions provide the ideal technology for pattern making and mould making. The 5-axis controlled robot unit combines mobility with the most advanced control systems currently available.

Composites

Rounding off the diverse range of potential applications, MAKA CNC special machines are also appreciated by firms in diverse areas of the non-ferrous metals sector as well as in the compound and sandwich material sector such as manufacturers of caravan parts.

Assembly

Assembly of the machines is divided into mechanics, electrics and functional testing. This permits the use of specialist teams and enables us to produce between 8 to 12 machines each month. Each machine is subjected to rigorous testing before leaving our plant. Special machines always go through acceptance procedures at our plant in conjunction with operation-in-practice tests.

Training and Hand-over

Experienced fitters and project managers are responsible for the installation and hand-over of MAKA special machines at the factory. The machine will be run in and the customer instructed in the use and operation of the technology. Our offering of training covers group training at our company – including practical instruction on demonstration machines – and intensive training courses, which can be held of course on the customer's premises, if preferred.

After-sales Service

The spectrum of activities is rounded off with our competent after-sales service. Our hotline is designed to help isolate trouble and localize faults, and to coordinate assistance through the service team around the world. Comprehensive consulting on tool selection, full-service on the generating of programs and workpiece clamping technology as well as long-term supply of replacement parts round off the service package.

>A MAKA is as individual as your fingerprints ...<



First-class quality and high standards of safety are essential in the woodworking industry and MAKA fulfil these requirements to the highest degree. Based on more than 50 years of experience, MAKA has achieved a first-class reputation in the machining field throughout the world. Renowned manufacturers of doors, stairs, windows and other building elements are among our customers.

Design

The machine design depends on the field of application and the component dimension. In addition to the compact mobile gantry solution we can also supply dynamic, set-up-friendly and forward-pointing machining centres with tandem tables, stationary gantry and mobile tables. Non-production times for clamping, clearing and resetting are therefore reduced to a minimum.

Machining of stairs

Each automatic stair machine from MAKA can be used as a routing, sawing and drilling centre for the production of stringers and steps. The machining centres are used to process parts for classical housed stringer stairs with or without string wreaths, saddle stringers and matching steps, posts, handrails and covering for newel stairs, plus many special types of stairs.



The MAKA philosophy: Complete machining with a single clamping

This technology with gears free from backlash in the pivoting and swivelling axis allows full mobility in three dimensions. The routing head moves around the workpiece and offers complete machining operations with one single clamping guaranteeing both the careful machining of sensitive surfaces and a level of accuracy that work sequences requiring reclamping cannot match.

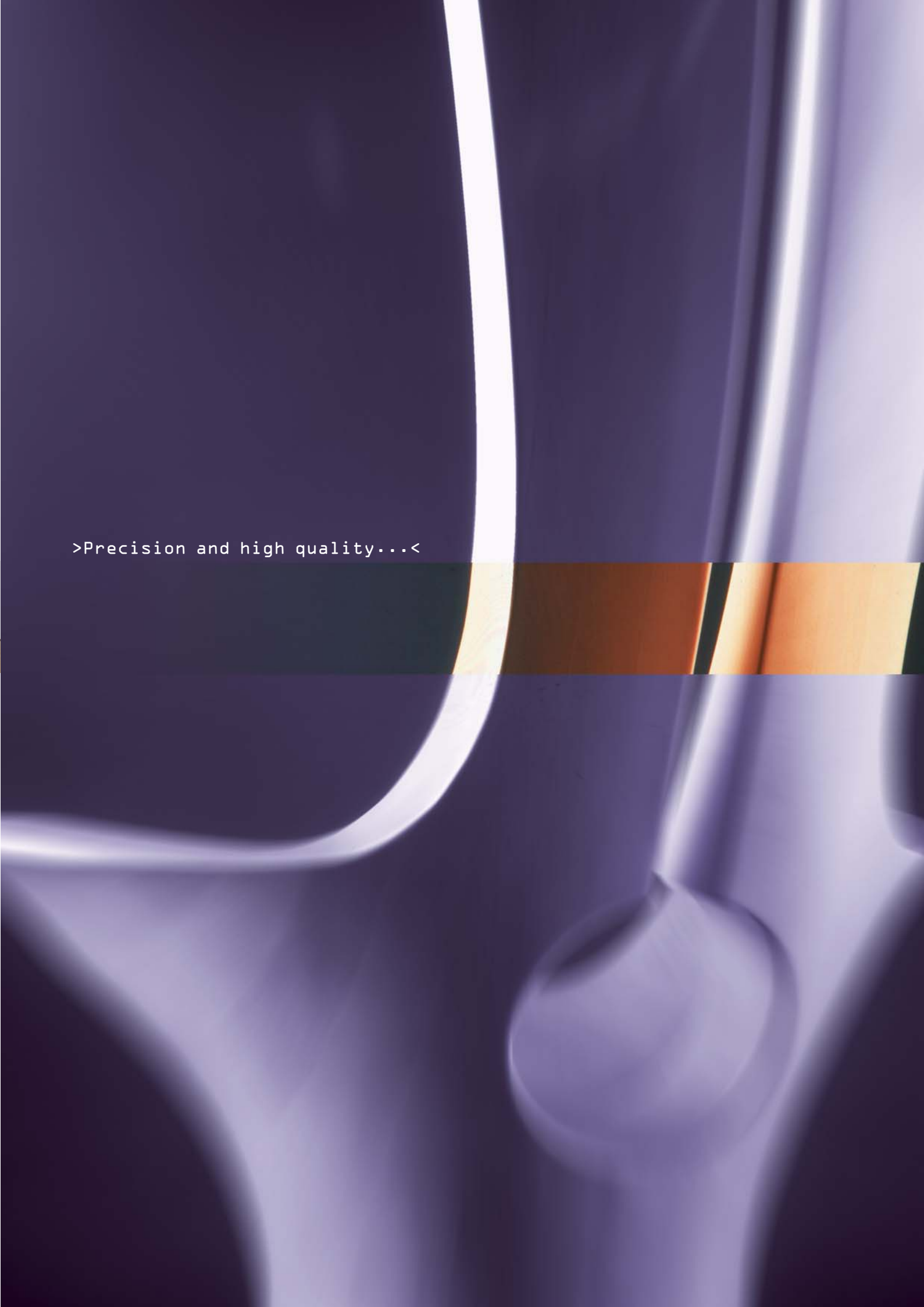
Machining of windows and doors

The entirety of machining operations for doors and windows are precisely performed by MAKA CNC special machines. The high-duty machining centres, partially equipped with 2-channel technology, concentrate all demanding machining jobs on one single workplace executing them with accuracy and high speed.

Furniture making and interior finishing

Three-dimensional finishing is a frequent requirement for designer furniture, interior finishing of three-dimensional forms and complex building elements such as doors and wood products.

Whether for craft businesses or for suppliers of components to furniture makers, MAKA 5-axis machining centres are used for the processing of facades, interior finishing elements, technical parts, seats, worktops, ornamental parts, furniture handles or other wood products.



>Precision and high quality...<

Aluminium Machining

High-speed machining of light metals has been a reality with MAKA CNC machines for many years now. They permit perfect, routing, drilling, boring and cutting of extruded profiles and technical parts of every type. The machines can be used for a great variety of jobs thus offering a wide range of functions and high flexibility. All aluminium high-speed centres of MAKA are of special design and specifically suited to the requirements of light metal machining.

Fields of application

MAKA CNC special machines do service where expectations are high: spaceframe technology for modern medium-class motor vehicles to sports cars, aircraft manufacturing, rail vehicle production, wagons and commercial vehicle superstructures. Even the aluminium press industry and manufacturers of sanitary articles, windows, profiles for doors and facades use a MAKA if they are out to achieve the best results at low machining costs.

The CNC control systems

come with a perfect robot operating system. Programs are quick and easy to create even for complex three-dimensional routing movements, permitting first-class results for machining profiles, panel-type materials and structural elements for motor vehicles. Interfaces to professional programming systems make it easier for demanding customers to modify and manufacture parts as and when necessary.



Complete machining with 5-axis-technology

This technology with gears free from backlash in the pivoting and swivelling axis allows full mobility in three dimensions. The routing head moves around the workpiece and offers complete machining operations with one single clamping, guaranteeing both the careful machining of sensitive surfaces and a level of accuracy that work sequences requiring reclamping cannot match.

Design

The machine design depends on the field of application and the dimension of the components: Besides mobile Gantry and stationary Gantry we also offer the bridge type design for oversized components. The customer has a choice of various table solutions, units and clamping devices. The high-speed aluminium machining centres thus perfectly match any individual requirement.

Safety Standard

Due to the special arrangement of the central working unit, i.e. at the rear side of the gantry of machining centres with stationary gantry, a safety area is created that can be easily and effectively separated from the workshop environment by means of few safety guards.

Special equipment

Minimum quantity cooling lubrication, cooling of tools and a solid chip collection system are only some examples proving how MAKA CNC special machines can match the specific customer requirements. The installation of a sound-insulating cabin offering a noise reduction of 20 dB (A) or even more, can as well be realized as the use of a tool coding system or a tool management system.

>...exact and reliable<



With the newly developed 5-axis machining centres MAKA now has a solution for the demanding customers of the plastics processing sector as well. Moulded plastics both, in the form of deep-drawn parts and carbon-fibre reinforced or glass-fibre reinforced parts is a field where specialists of many different sectors are convinced of the flexibility and precision of the MAKA CNC special machines.



5-axis complete machining

5-axis technology is designed for the complete machining of each work-piece. This increases machining flexibility, since no other special tools, angular heads or auxiliary equipment is required. This in turn has the advantage of permitting all-round machining with the full use of the main spindle, without the need to interpose the machining unit.

All the routing and drilling on moulded parts and boards of thermoplastic or duroplastic materials and high-resistance foam blocks is carried out in an automatic work sequence.

CNC controllers

all the CNC systems come with a perfect robot operating system that can create even highly complex three-dimensional routing movements quickly and easily, irrespective of whether ultrasonic cutting units or machining routing units are used. RTCP functions and an "inclined plane" setting are included as standard and the highly powerful control computer ensures that the complex programs are processed without a hitch.



Fields of application

Manufacturers of motor vehicles, large-scale patterns, ship- and boat building, they all appreciate these centres proving absolute precision. These CNC special machines are equally suitable for use by specialist suppliers of aircraft interior finishing and automotive components suppliers such as instrument panel manufacturers as well as by firms involved in deep-drawing and by manufacturers of acrylic panels, display panels and filter panels.

Design

The machine design depends on the field of application and the dimension of the components: Besides mobile gantry and stationary gantry we also offer the bridge-type design for oversized components such as parts for wagons and yachts. The customer has a choice of various table solutions, units and clamping devices so that the machining centre can be designed exactly to the special requirements.

Programming

The programming device is the automatic machine itself. With the aid of the hand-operated controls the operator takes point measurements from a specimen piece using a tracer pin. He "teaches" and the SPLINE function of the control system connects the points to the desired cutting contour, even when these are taken at random from free-formed surfaces. This approach permits considerable cost-savings to be made.

It can be taken for granted that MAKA offer powerful CAD/CAM systems for programming, plus scan systems for two dimensional parts that enable you to get from the specimen piece to the CNC program.



>You do well with a MAKA...<

**Three dimensional design,
development and implementation**

MAKA machining centres with 5-axis technology make it possible to work on objects in three dimensions. Be it deep-drawn patterns, master patterns or prototyping patterns all these demanding applications can be handled. Materials that can be machined range from machinable foams,

Design

The machining centre in compact design with stationary gantry and mobile tables offers the ideal technique for patterns and moulds. The tandem table version permits you to work on an alternating basis whilst giving you the option of joining the two tables together to form a large surface. Depending on the application and on the dimension of the workpiece the centre can also be offered in bridge-type design for the machining of large-scale components.

5-axis complete machining

5-axis technology is designed for the complete machining of each workpiece. This increases machining flexibility, since no other special tools, angular heads or auxiliary equipment is required and cuts out the need to transfer between different working positions and the need for reclamping, saving time and increasing speed.



through typical pattern-making materials to light metals for special applications.

Fields of application

Manufacturers of motor vehicles, rail vehicles, caravans, commercial vehicles and of large-scale patterns appreciate the versatility and precision of MAKACNC machining centres. These machines are equally used by specialists for aircraft interior finishings and automotive components suppliers such as panel manufacturers.

The customer has a choice of various table solutions, units and clamping devices so that the machining centre can be designed exactly to the special requirements.

The torsionally resistant design of the pattern making machining gives them the rigidity of a machine „cast in one piece“. The classical concept of the machines with stationary gantry with the X-axis assigned to the working unit and the Y-axis assigned to the machine table is the best qualification for dynamic and precision.

This in turn has the advantage of permitting all-round machining with the full use of the main spindle, without the need to interpose the machining unit, up to 32 tools being used for the routing, sawing and drilling sequences in the process.



>In great shape with MAKA...<

Headquarters

MAKA – Max Mayer
Maschinenbau GmbH
Flurstrasse 34,
89233 Neu-Ulm, Germany



CNC Special Machines

Design, Administration and Sales

Am Schwarzen Graben 8
89278 Nersingen, Germany
Tel. +49 (0)73 08/813-0
Fax. +49 (0)73 08/813-170

Production plants

Spindle and Parts Production, Repairs

Flurstrasse 34,
89233 Neu-Ulm, Germany

Machine Installation

Am Schwarzen Graben 8
89278 Nersingen, Germany

Branches

MAKA – Max Mayer
Maschinenbau GmbH
Ackerstrasse 40,
32051 Herford, Germany
Tel. +49 (0)52 21/1774-0
Fax. +49 (0)52 21/1774-10

MAKA Machinery UK LTD
Stafford Park 17
Unit 19, Queensway Link I.E.
Telford TF3 3DN
Great Britain
Tel.: 00 44/19 52-27 00 06
Fax: 00 44/19 52-27 00 07

European representation

Belgium – Denmark
Finland – France
Greece – Netherlands
Norway – Austria
Poland – Portugal
Sweden – Switzerland
Czech Republic

Overseas representation

in the USA

www.maka.com

A stylized, semi-transparent globe is visible in the bottom right corner of the page, showing the outlines of continents and oceans in a light blue and white color scheme against the dark blue background.