DANOBAT OVERBECK

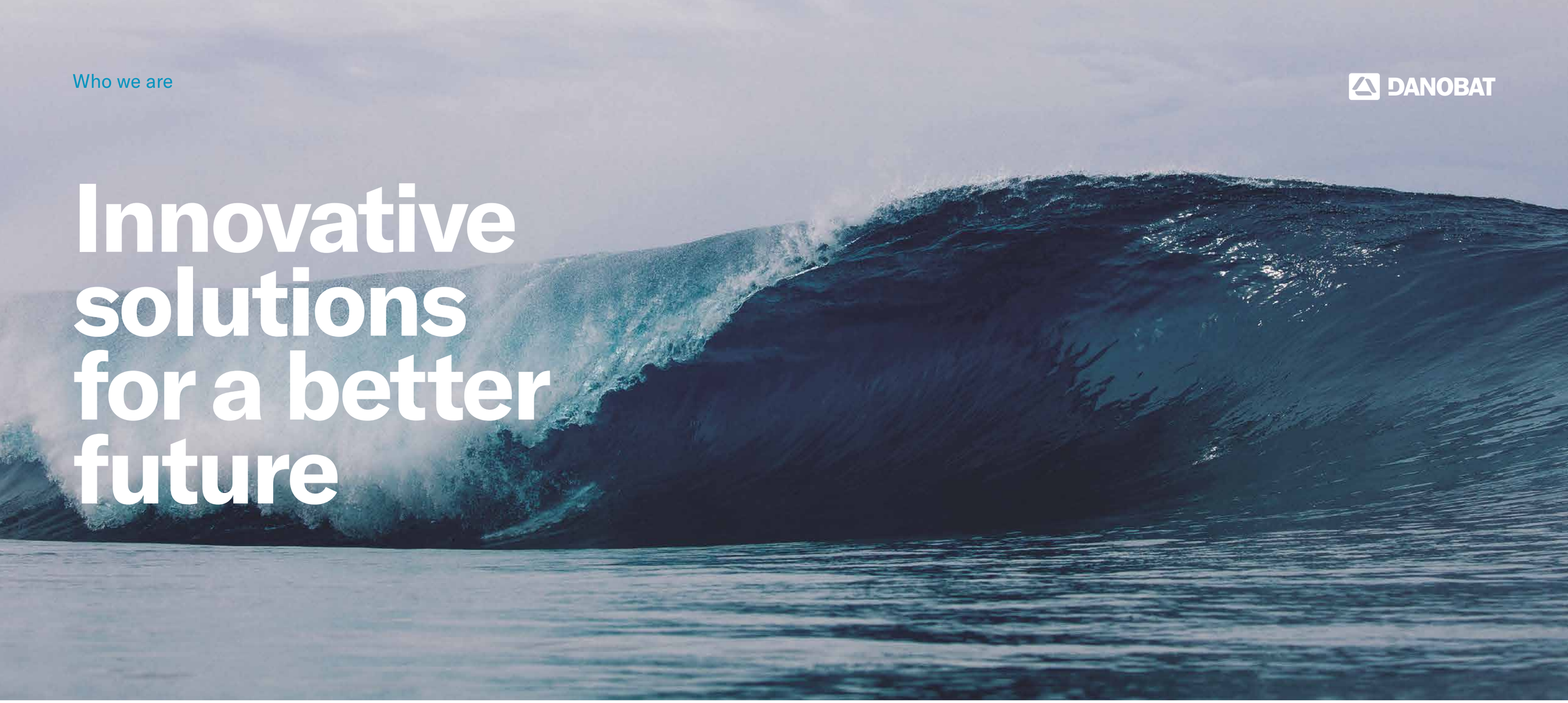
Got a Challenge?

HIGH PRECISION INTERNAL, EXTERNAL & RADIUS GRINDING

ID/IRD/ILD/IED

DANOBAT

Innovative solutions for a better future



At Danobat, we are committed to introducing positive change in people, business and the environments we work in. We do this by developing innovative solutions that enable us to face future challenges.

We generate high value technological solutions that improve your competitiveness. We offer resourcefulness and engagement to bring innovative and personalized answers to your different challenges. We are committed to the process and the results from the beginning right through to the end, and adapt to each necessity, offering you assurance and guaranteeing a 100% meaningful experience.

We are experts in the design and manufacture of precise, high added value, customized solutions. Our process has become an attitude and a way of doing things: the Danobat way. Qualified specialists, in-house technology, focused on innovation and of course a corporate culture that places value on people and puts you at the heart of its organizational system.

We boost change

Innovative Solutions

We specialize in producing high value added, innovative technological solutions that help the industry to become more competitive.

Our mission is to provide a solution tailored to your requirements and based on our expertise in the technologies applied to industrial manufacturing, combined with intelligence, commitment, creativity, rigor and professionalism.

- Holistic solutions
- Grinders
- Lathes
- Measuring systems
- Advanced engineering services
- System integration
- Automation

Digital Focus

Digital technology has transformed the way in which we shop, travel and communicate.

We think and act digitally. We are interconnected and so are our production systems and equipment. The latest digital technology is available to you, continuously being developed at Danobat, using our own advanced and state-of-the-art methods, processes and technologies.

- Danobat Digital Suite - Intuitive interfaces
- Data System - Connected machines
- Control System - Digital factory
- Smart Machining - Smart components
- Real-time, remote information
- In-house software for controlling machines, cells and lines

Advanced Services

At Danobat, we offer services and support the industry has come to expect, such as preventive and corrective maintenance strategies, spare parts, remote diagnostics and more. To take it a step further, we always anticipate changes ahead of time to assure our customers stay ahead of the curve.

Accordingly, we provide a broad range of high value added services which are completely customized to meet the challenges faced by you.

- Process simulation
- Production simulation
- Advanced training
- Inspections & quality control checks
- Maintenance service
- Complete spares maintenance
- Software & hardware enhancements
- Process optimization
- Obsolescence management

Innovative Solutions

High precision internal, external & radius grinding

ID/IRD/ILD/IED

Grinding is one of the most demanding processes in the manufacturing of workpieces. Its advantages are the high precision of the pieces created and the excellent quality of surfaces.

This catalogue presents our internal, external and radius grinding machine range, designed in close collaboration with our customers to provide complete, tailor-made solutions for particularly high-precision requirements.

Innovative Solutions

Expertise

We specialize in the development of advanced solutions for the manufacture of high value added components in industries where the most stringent results are required.

We have broad experience in highly complex machining processes and work with companies, that are leaders in their respective fields, to design fully customized solutions.

We cover preliminary engineering work, machining process studies, the technical specifications of equipment, installation requirements and the personnel required to operate machines and production lines.

Comprehensive solutions

At Danobat we offer comprehensive solutions for the partial or complete manufacturing of strategic components such as shafts for electric motors for vehicles to name one example.

In the field of partial integration, we can incorporate ancillary operations into grinding deburring, superfinishing, storage in baskets and on pallets and much more. In the field of full integration, we offer complete machining lines that handle not only grinding but also additional processes and operations to guarantee complete part processing/machining.

Specializing to attain excellence

Our workforce is highly specialized with high level technical qualifications. Our goal is to develop grinding solutions that are best suited for the individual production requirements of each customer.

Our team of experts works closely with customers to co-create solutions tailored to their needs. Each stage of the process development phase is managed and executed in an efficient and timely manner.

Project team

This team has a key role in the success of every project within our organization. It handles every interaction between our customers, field sales, application and assembly teams to assure scope of work, time line as well as quality meets and exceeds the expectations of our customers.

Applications & process team

This team specializes in grinding. Its members are always up to speed with the latest developments and advancements in machine, process and grinding technology. It is responsible to develop and determine the most effective grinding processes to assure all criteria's defined by the customers are fully met.

Equipped with know-how, experience and a variety of tools at its disposal, these experts provide crucial, preliminary process information to our customers such as, process comparisons, cycle time and tool life estimates, machine energy consumption data, life cycle costs and more.

To ensure our customers and application teams can continuously validate, test and develop processes, cycle times, tool life and more, Danobat's worldwide network of excellence centers, equipped with the latest generation of machine tools and measuring equipment, is available.

The purpose of our centers of excellence is to allow for process development to be conducted prior to making an investment decision, thus minimizing the risk for our customers while shortening the start-up phase when introducing a new grinding process. In addition, these centers of excellence enable us to optimize existing processes currently running on existing customer equipment.

Technical team

The mission of this team is to specify the machine which best suites the project objectives described in the customer's scope of work, including all peripheral equipment such as clamping/ work holding systems, automation, in-process, post-process measuring systems and more.

Innovative Solutions

Grinding machine range

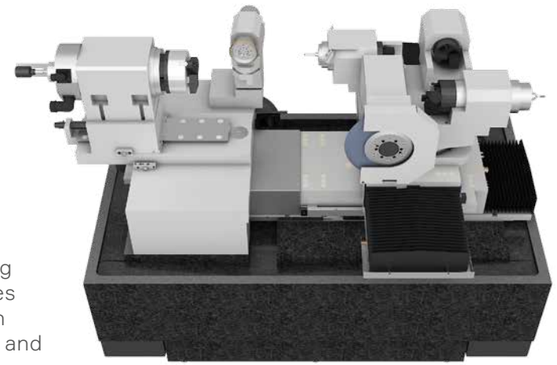
ID

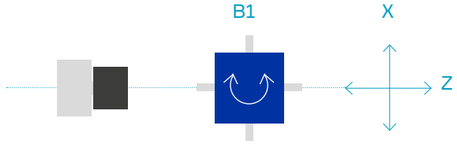
Internal, external and face grinding machine

ID series machines provide high precision machining for internal, external and face grinding of workpieces such as bearing rings, gears, cutting tools, injection elements, non-round discs or discs, hydraulic parts and many more applications.

Individual workpieces or high volumes of production parts can be processed with great efficiency, without compromising versatility, accuracy and throughput.

To maximize the productivity of the ID grinding solution, robotic or gantry-style automatic loading and unloading systems can be integrated.





TECHNICAL CHARACTERISTICS		ID-200	ID-400
Max. internal grinding diameter	mm	100	200
	in	3.94	7.87
Max. internal grinding length	mm	100	200
	in	3.94	7.87
Max. workpiece swing diameter	mm	215	560
	in	8.46	22.04
Max. workpiece length incl. clamping system	mm	200	400
	in	7.87	15.74
Max. workpiece weight incl. clamping system	kg/nm	40/45	80/100//180/300
	lb/ft-lb	88/33	175/70//400/220
X and Z axis stroke	mm	400/200	425/475
	in	15.75/7.87	16.73/18.70

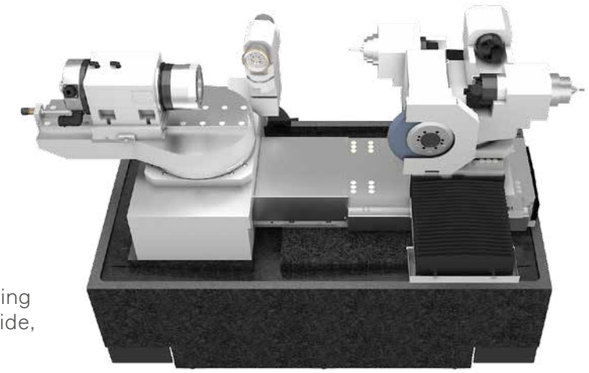
IRD

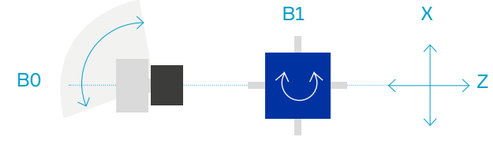
Internal, external and radius grinding machine

IRD series machines are ideal for high precision internal, external, face, non-round and radius grinding applications for a wide range of materials (e.g. carbide, steel or ceramics).

The integration of a swivelling B0-axis with a swiveling range between +91º/-15º and the X- and Z-axis, enables the operator to grind different radius and contours in a 3-axis interpolation mode to achieve the highest accuracy and surface finish quality.

The versatility of the IRD series machine not only allows grinding of form tools and dies, it also is utilized in many other applications such as ball valves, implants, bearings etc. and in service in a variety of industries.





TECHNICAL CHARACTERISTICS		IRD-200	IRD-400
Max. internal grinding diameter	mm	100	200
	in	3.94	7.87
Max. internal grinding length	mm	100	200
	in	3.94	7.87
Max. workpiece swing diameter	mm	215	360
	in	8.46	14
Max. workpiece length incl. clamping system	mm	200	400
	in	7.87	15.74
Max. workpiece weight incl. clamping system	kg/nm	40/45	80/100//180/300
	lb/ft-lb	88/33	175/70//400/220
B0-axis swivelling angle	º	+91/-15	+91/-15
X and Z axis stroke	mm	400/200	425/475
	in	15.75/7.87	16.73/18.70

Innovative Solutions

Grinding machine range

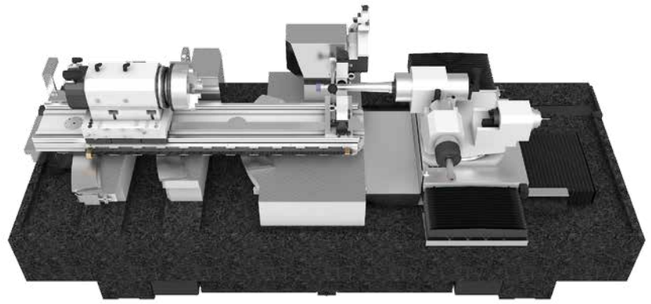
ILD

Internal and universal grinding machine

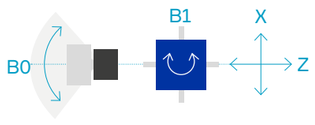
ILD internal universal grinding machines provide high precision machining for internal, external and face grinding of large workpieces.

Depending on the requirements, the machines can be equipped with up to four grinding spindles and a measuring probe.

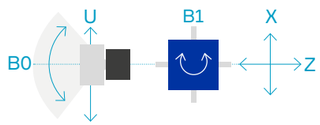
Spindle housings, shafts, tool holders, roller bearings, hydraulic components, aerospace components or machine-tool components can be machined with the ILD series using the latest technology.



ILD CONFIGURATION



ILD-U CONFIGURATION



TECHNICAL CHARACTERISTICS		ILD-400	ILD-600	ILD-700	ILD-700 U
Max. internal grinding diameter	mm	420	420	500	450
	in	16.53	16.53	19.68	17.71
Max. internal grinding length	mm	400	400	400	400
	in	15.74	15.74	15.74	15.74
Max. external grinding length	mm	150	150	400	400
	in	5.90	5.90	15.74	15.74
Max. workpiece swing diameter	mm	600	600	700	760
	in	23.62	23.62	27.56	29.92
Max. workpiece length incl. clamping system	mm	800	1300	500	500
	in	31.49	51.18	19.68	19.68
Max. workpiece weight incl. clamping system	kg	500/500	500/500	500/500	500/500
	lb	1100/360	1100/360	1100/360	1100/360
B0-axis swivelling angle	°	+20/-10	+20/-10	+25/-25	+25/-25
				+90/-15	+90/-15
X and Z axis stroke	mm	450/550	450/550	700/700	420/700/U700
	in	17.71/21.65	17.71/21.65	27.56/27.56	16.53/27.56/U27.56

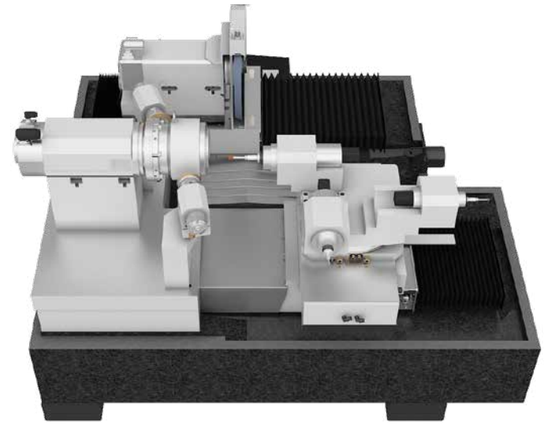
IED

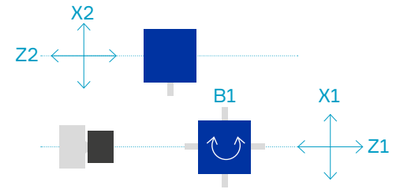
Simultaneous internal & external grinding machine

The IED simultaneous grinding machine provides the fastest production times of any grinding machine in the Danobat-Overbeck range of products.

Contingent on workpiece characteristics that permit simultaneous grinding, the grinding tools can be mounted on two separate cross-slides. Therefore, internal and external diameters and faces can be ground simultaneously, guaranteeing the highest quality.

To maximize the productivity of the IED, it is typically integrated with robotic or gantry-style automatic loading- and unloading systems.





TECHNICAL CHARACTERISTICS		IED-400
Max. internal grinding diameter	mm	300
	in	11.81
Max. external grinding diameter	mm	250
	in	9.84
Max. workpiece swing diameter	mm	300
	in	11.81
Max. workpiece length incl. clamping system	mm	250
	in	9.84
Max. workpiece weight incl. clamping system	kg/nm	80/100//180/300
	lb/ft-lb	175/70//400/220
X1 and Z1 axis stroke	mm	220/550*
	in	8.66/21.65*
X2 and Z2 axis stroke	mm	320/450*
	in	12.6/17.71*

** Reference measurement may vary*

Typical IED grinding applications include gears and injection components, pump elements, tool holders (SK/HSK) or machine parts in general.

Innovative Solutions

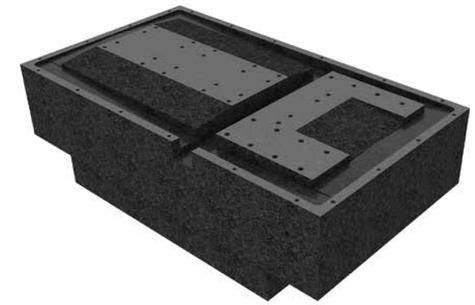
Core technology

Precision assemblies

Precision assemblies such as grinding spindles, workheads, tailstocks, direct drive B-axis etc. are assembled by highly trained and experienced assembly specialists.

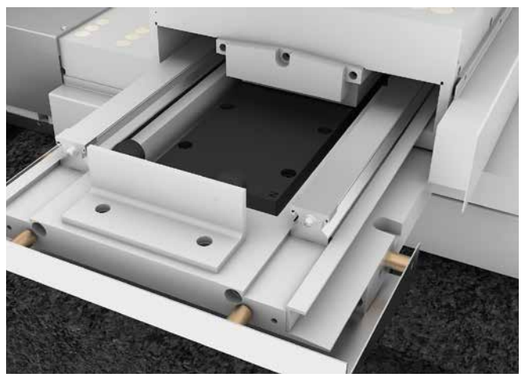
Components are assembled in a temperature controlled clean room environment. Well documented processes and sign-off protocols allow for exact traceability and assure component interchangeability if ever needed.

Measurements taken throughout the assembly process are well documented to assure functionality, quality and traceability throughout component's life cycle. Each assembly is undergoing rigorous start-up and running tests prior to integration to the machine.



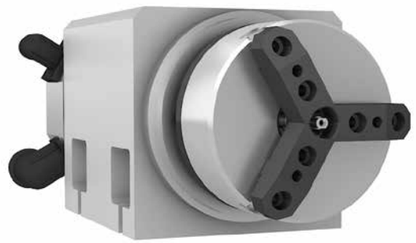
Natural granite machine bed

- Machine bed made of natural granite, the optimal material for achieving the highest accuracy and the best surface quality
- Natural granite offers considerable advantages over cast iron or polymer composites in terms of precision for many grinding applications



Linear motors

- Linear motors ensure highly dynamic, frictionless transmission of power to the X- and Z-axis, allowing excellent results when form-, contour- and non-round grinding
- Fast, precise movements assure the highest productivity and quality
- No wear parts, maintenance-free
- High precision through active temperature control measures



Workheads

- Designed, manufactured and assembled by Danobat-Overbeck, resulting in highest precision and long service life
- Modular designs to suite any application
- Selected materials and design to optimize temperature control and performance
- Easy integration and adaptation to a variety of clamping and work holding systems

Grinding spindles

- Top quality spindles
- High precision bearings with oil-air lubrication or lifetime grease lubrication
- Direct drive, frequency controlled spindle motor with materials selected to optimize temperature control and spindle performance
- Constant surface speed controlled through frequency drives
- Independent, close-loop temperature control circuit and efficient liquid-cooling system

Innovative Solutions

Core technology

User-friendly software

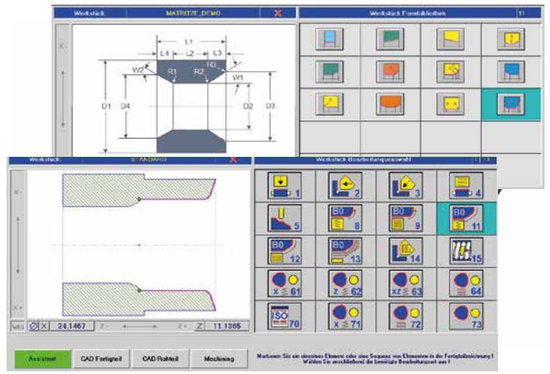
Pre-set, user-friendly standard cycles to easily program grinding processes in dialogue mode. Clearly arranged programming menu and help functions for efficient machine set up and operation.

Programming during grinding process, dialogue-guided and integrated DIN/ISO programming.

Integrated library to manage work piece and grinding wheel programs. Re-grinding function for time optimized grinding corrections and off-sets. Integrated dressing programs for pre-defined and freely definable grinding wheel profiles and contours.

Non-round grinding operations

- Complete integration of non-round software into standard Danobat-Overbeck software, allowing limitless combinations of grinding cycles
- Parametrisable templates, e.g. for polygons, eccentrics, squares, diverse punches as well as customer-specific forms can be saved in a graphic catalogue
- After selection of the template, only a few specific parameters of the form have to be entered and the form program will be generated automatically



CAD machine module and simulation software

- Danobat-Overbeck software module for efficient programming of grinding cycles for manufacturing of workpieces with easy and even complex contours
- Assistant for step by step creation of a finished part drawing from the definition of stock removal of the rough part, up to a complete machining plan for manufacturing of finished parts
- Operation via keyboard or touchscreen
- Collision control and process time calculation

Thread grinding operations

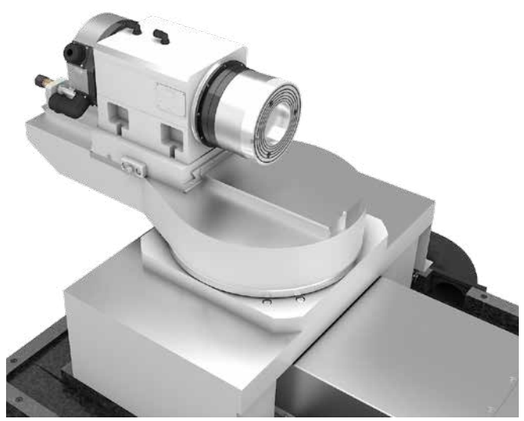
- Grinding of ISO-metric and UN threads with parallel axis grinding approach
- Automatic calculation and correction of profile error that naturally occurs when thread grinding in axis-parallel mode
- Automatic generation of optimized dressing program, taking wheel diameter and dressing tool into account

Jig grinding operations

- Grinding of e.g. complete bores/contours off-center line or forms that center or forms that require non-continuous rotation of the workhead spindle, e.g. segment grinding
- Face side keyways, precise reference hole
- HSK – T-slot grinding/milling

Innovative Solutions

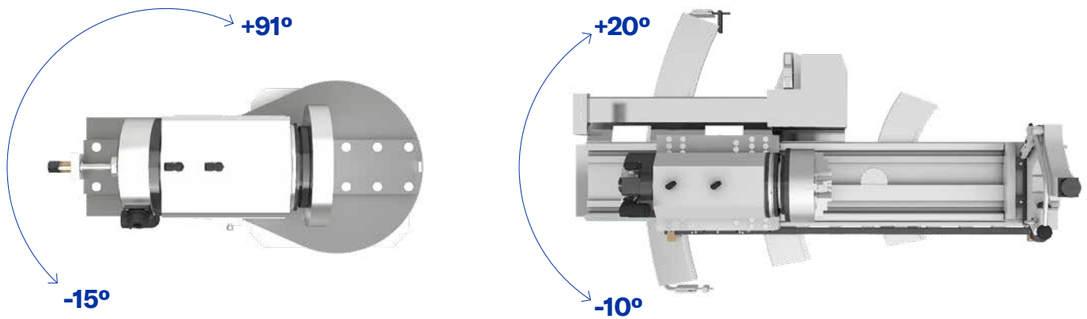
Versatility

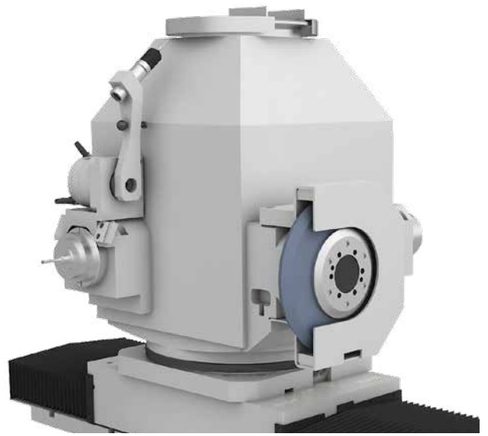


Workhead

- Danobat-Overbeck design with no wear parts
- Direct driven via torque motor
- The system is built for high precision workpiece shapes/forms and surface qualities
- Including B0-transformation of workpiece coordinates

CONFIGURATIONS

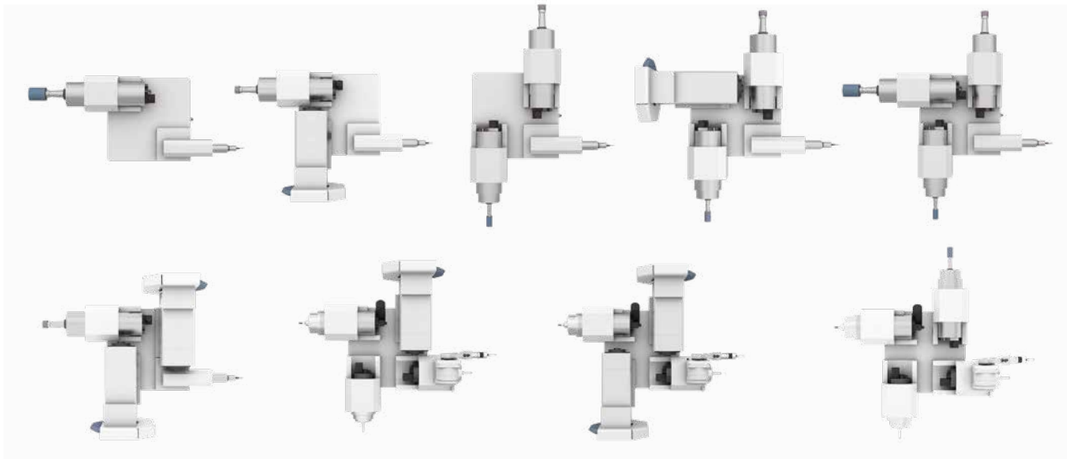




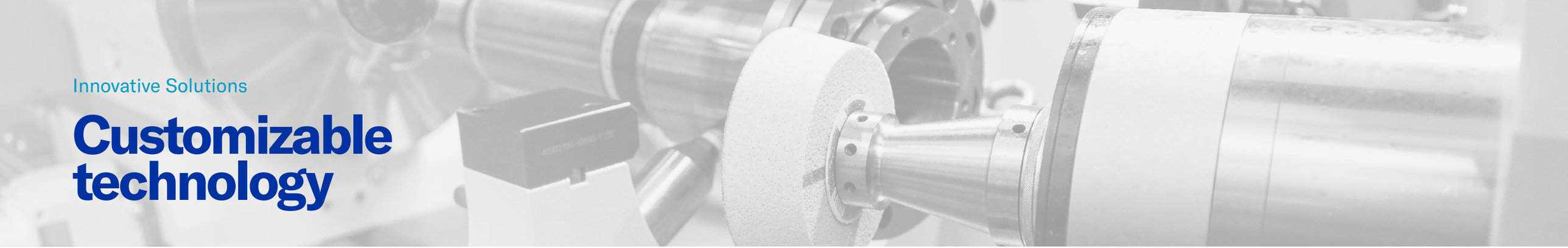
Direct driven spindle turret

- Danobat-Overbeck design with no wear parts
- Capacity for up to four spindles and one measuring probe
- Direct driven via torque motor
- Swivelling range of 300º
- Freely programmable angle position
- Including B1-transformation of workpiece coordinates

CONFIGURATIONS (*)



(*) Based on customer requirements, other configurations may be considered.



Innovative Solutions

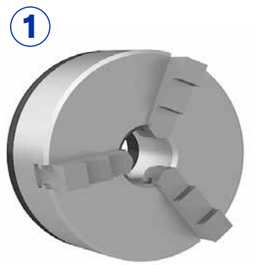
Customizable technology

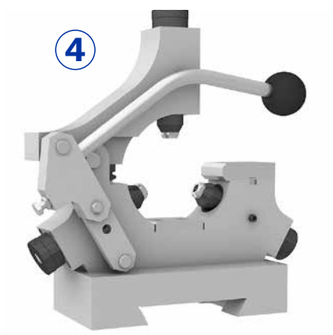
For every solution envisioned, a thorough analysis of possible effects to the pre- and post-grinding process is being conducted and at the request of the customer, a turnkey solution can be supplied.

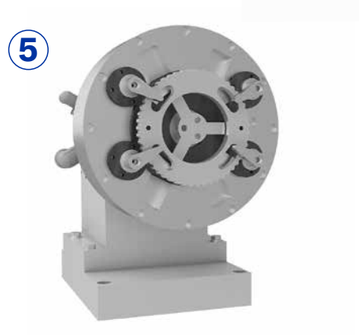
Following are some of the technological solutions that will add value to your manufacturing application, contributing towards the continuous competitiveness of your organization.

Clamping systems

1. Three jaw chuck (automatic & manual chuck) / 2. Magnetic chuck / 3. Shoe system / 4. Steady rest / 5. Customized chucks

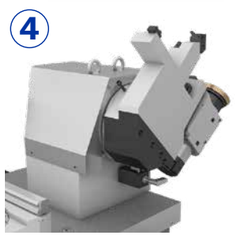


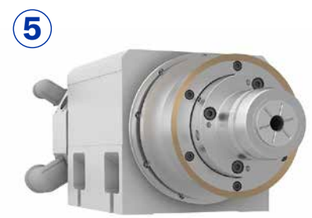


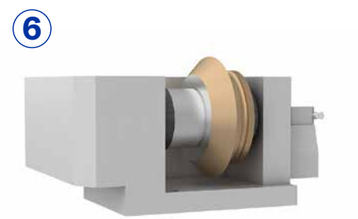


Dressing systems

1. Fixed dresser / 2. Dressing spindle / 3. Radius dresser / 4. Dressing revolver / 5. Dresser on workhead spindle / 6. Roll dresser

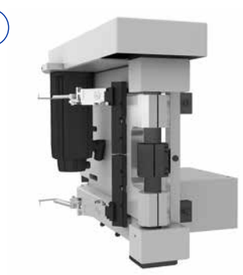


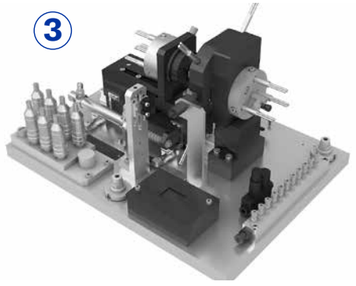


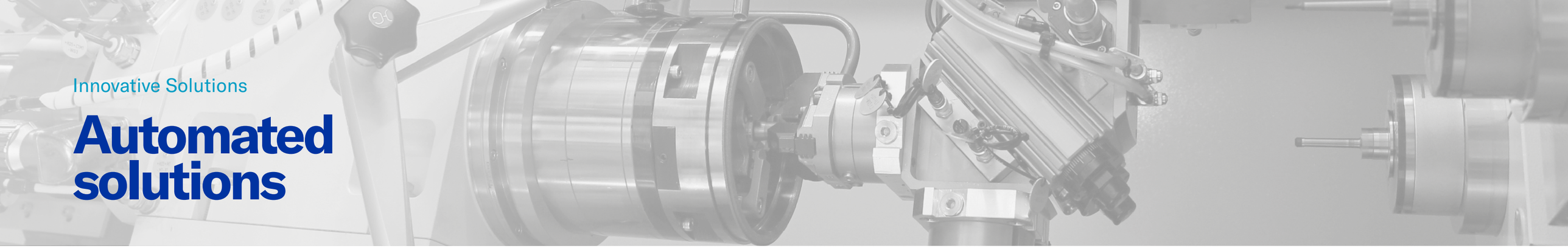


Measuring systems

1. Touch probe / 2. In-process measuring / 3. Post-process measuring





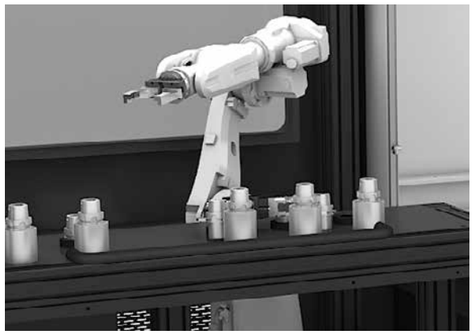


Innovative Solutions

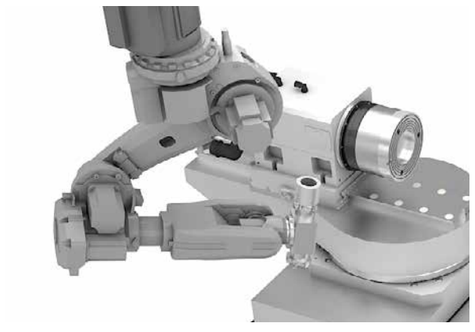
Automated solutions

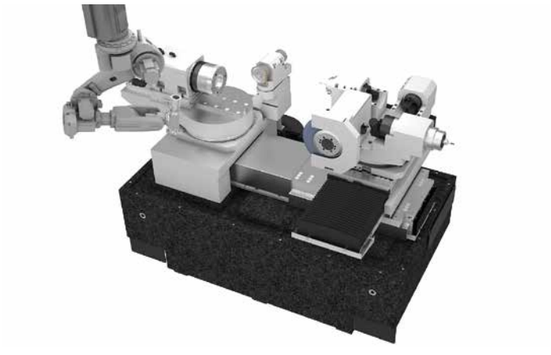
To ensure shorter change over times and thus increase productivity, different automatic loading & unloading systems integrated in the control of the machine can be offered. Danobat-Overbeck develops turnkey solutions for different applications to suit customer requirements.

FLEXMOTION - **Robotic cell**

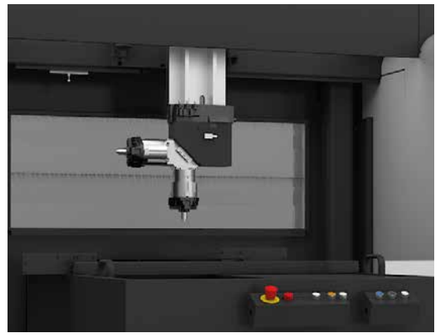


FLEXMOTION - **Integrated robot**

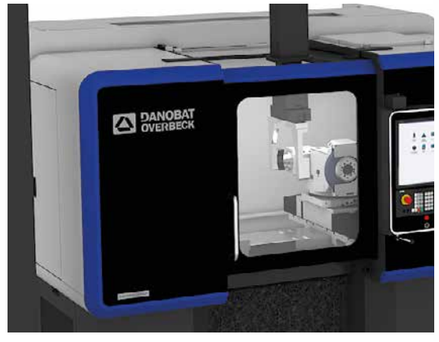




QUICKMOTION - **Integrated loading & unloading system (conveyor or pallet system)**



TURNKEY AUTOMATION SYSTEMS



Digital Focus

In order to advance towards the creation of smart factories, where all equipment is interconnected and can operate autonomously, we have a value proposition for you, comprising of solutions developed in-house. These solutions combine the latest digital technology and over 65 years of experience in machine tools and production systems.

Danobat's digital offering focuses on three main benefits: Solution efficiency, user friendliness and autonomy.

Data System

A platform for data capture, storage and processing to deliver the right information for monitoring machine condition. This is the ideal decision making tool for optimizing machine utilization.

The technology allows you to:

Get real-time and historical information on a wide range of key machine parameters.

Monitor your machine anytime, anywhere.

Get automatic reports to support your decision making.

Improve machine utilization by predicting any system failure.

Work with optimized machining processes, to get best quality with minimum energy consumption.

Connect easily to corporate IT systems (ERP, MES, PLM ...).

Digital Focus

Danobat Digital Suite

User-friendly interface for intuitive operation that assists the operator and helps in optimizing machining processes.

Main facts:

User friendly and intuitive with outstanding usability.

Centralized information for fast and simple access.

Multiple operation aids for easy, efficient and accurate grinding.

Fully integrated with the latest multi-touch technology.

Digital support: machine documentation, troubleshooting and dynamic preventive maintenance schedule.

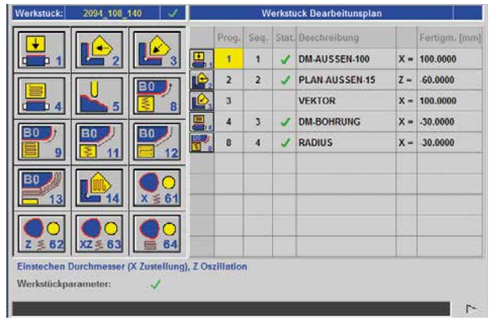
Energy efficient solution, thanks to the energy management module.

Based on its extensive experience and close relationships with customers, Danobat-Overbeck developed an easy-to-use interface to monitor, diagnose and manage even the most complex grinding cycles and processes.

EXECUTION

Most relevant machining information displayed in a single view.

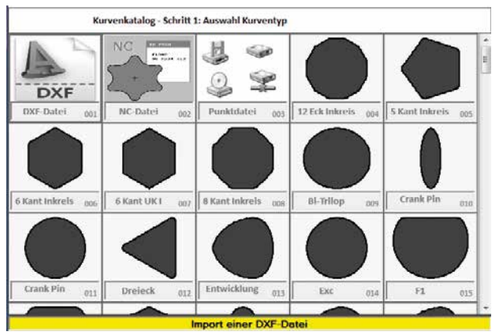
- Machining cycle progress
- Key process variable display
- Alarm visualization with troubleshooting



OPERATIONS

A clear, easy to understand display of operations, showing main parameters to easily follow and monitor the sequence of the program and grinding operations.

- Library with intelligent cycles based on machine configuration for grinding, dressing and measuring operations
- Easy navigation and program structure definition
- Tools and templates for fast and easy programming



INTEGRATED MODULES

Multiple optional integrated modules:

- Profile editor
- Contour module
- Threads module
- Forms module module
- CAD files import

Advanced Services

Danobat offers worldwide specialized services to support you throughout the life cycle of your equipment. From engineering services for the design of machining processes and set-up of the machine to technical service and spare parts and retooling of your existing machines for a new family of parts.

We have an extensive network of professionals working in over 40 countries, capable of meeting your needs wherever you are and ensuring fast attention, effectiveness and proximity.

Danobat Centers of Excellence

An international center, working in the machining of high precision components, to help you become more competitive by maximizing your efficiency and productivity.

We have the resources required for excellence based operations: Latest generation Danobat technology in machining, measuring, software and control, piloted by highly qualified staff working exclusively on our challenges and those of yours.

Our centers of excellence are focal points for cooperation with customers, suppliers and other partners to generate high value applied knowledge in manufacturing processes.

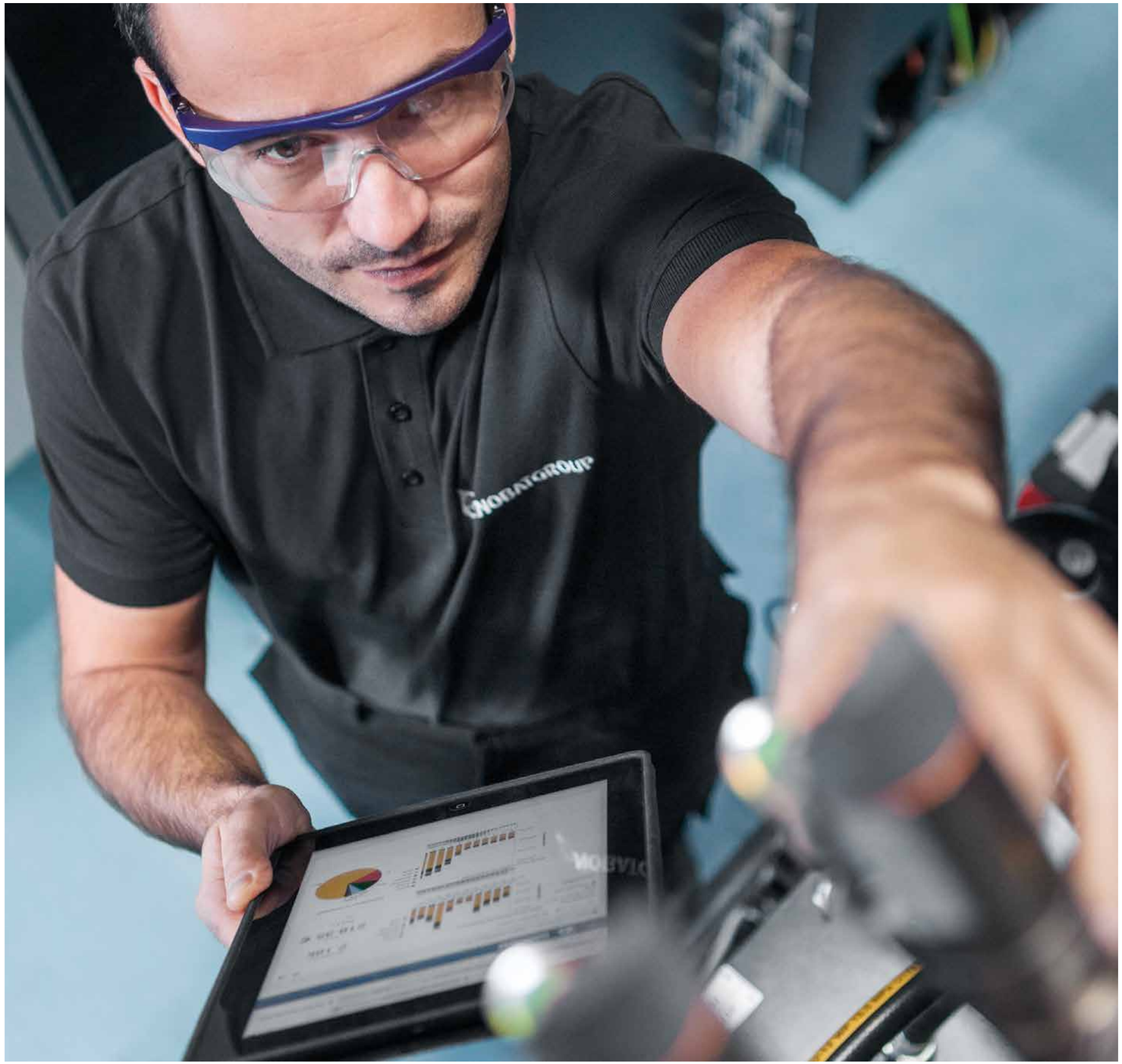
Original spare parts

We understand the importance of machine availability to ensure production output. We therefore have a large stock of original spare parts (more than 100,000 item references) ready to be dispatched immediately from different warehouses around the world.

Corrective and preventive maintenance

We offer collaboration agreements for regular machine status checks, to prevent the most common machine issues.

Digitization of manufacturing and our non-stop monitoring solution can help identify patterns and predict future errors. And for any that can't be predicted, our worldwide service team can help get the machine up and running again to minimize downtime.



Competitiveness is increasing in all sectors and as your needs become more sophisticated, the services you require become ever more complex. Evolving your machine to cater to new needs requires know-how not only of the machine itself but of industries, machining processes and manufacturing environments.

Our expert team can help guide you towards the path of increased competitiveness.

Inspections

We offer all our expertise and knowledge of equipment and processes to you to provide a real picture of your machine's status.

Process optimization

We offer detailed studies of your machining processes to assure your equipment is fully utilized to its maximum potential, yielding optimized production, quality and financial results. The optimal solution may include the development of specific machining and measuring cycles and engineering of specialized tools and fixtures.

Production optimization

With years of experience, dealing with a huge variety of challenges in a wide range of industries, enable us to detect opportunities where others only see problems. A comprehensive analysis of your processes and workflows provides the input we need to develop a simulation model that will help you maximize output.

Retooling & Retrofitting

We can't predict your future needs, but we can work with you to prepare for them. We perform retooling and retrofitting services to help you face new challenges, improve and add new functionality and extend the life cycle of your equipment.

Obsolescence management

Avoid future problems with component availability. Future-proof your machine. We propose and perform changes to obsolete components, anticipating any issues that could halt production due to lack of a spare part that may no longer exists.

Software & hardware updates

Hardware and software are constantly being updated and upgraded. So if you want to keep your machine at the cutting edge, we have the right solution for you.

We install hardware and software upgrades to ensure an extended life cycle and performance improvements.

Advanced training

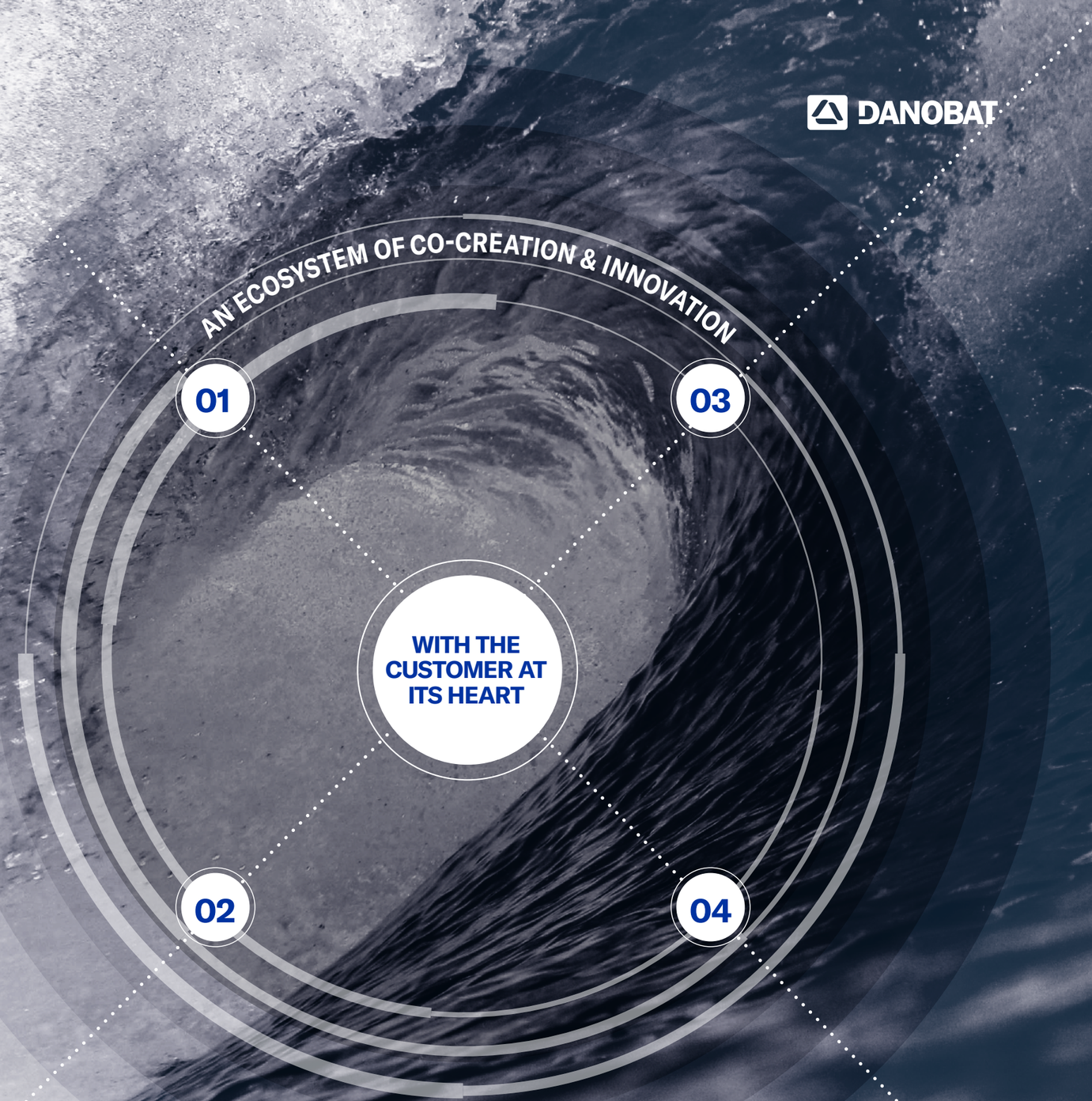
Get the most from your Danobat machine. Customized training in machine work modes, programming, cycles and specific functions, drive compensation, alarm messages, recovery instructions, preventive maintenance, etc.

How we do it

The Danobat way

If you want to achieve different results, you have to do things differently. That is the Danobat way. Qualified specialists, in-house technology, drive for innovation and, of course, a corporate culture that values people and puts you at the heart of its organizational system, creating an ecosystem that fosters co-creation and generates real, lasting, sincere partnerships.

Our teams have the ability to understand your daily chanllenges and provide solutions that bring us together a meaningful experience for the mutual benefit of everyone. Commitment, honesty, responsibility and trust to create innovative solutions that are fully customized, useful and profitable.



01 Experts close to you

The experience of our staff and our focus to working alongside our customers are Danobat's key distinguishing features.

02 The value of people

Commitment, enthusiasm, self-motivation, a feeling of belonging, initiative, creativity and adaptability to a changing environment: these are just some of the attributes that define the people that make up Danobat.

03 In-house technology

Precision in results and ease-of-use are our KPI's (key performing indicators) in all the solutions we provide. That's why we specialize in developing intuitive, easy-to-handle in-house technology.

04 Bringing the future closer through innovation

Danobat's track record can only be understood in terms of its firm, sustained backing for innovation. Since our earliest days, more than sixty five years ago, innovation has been in our very blood. It is now our most recognizable and identifying gene.

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