

Q141306 Mazak Offer

1.0 Mazak Company Presentation

GLOBAL POTENTIAL OF YAMAZAKI MAZAK

Yamazaki Mazak is the world's largest manufacturer of machine tools. We produce systems for precision machining of metal parts, including laser cutting machines, CNC turning centers, horizontal and vertical machining centers, multi-tasking machining centers, turnkey production cells, and software. Our solutions help our customers carry out manufacturing processes efficiently and economically. We have developed a range of unique products with unrivaled performance, and we operate 80 Technology Centers and Technical Centers worldwide to provide our customers with convenient access to comprehensive solutions and optimal service support.

MAZAK LASER TECHNOLOGY

Mazak Laser offers a range of 2D and 3D laser cutting solutions covering more than 50 machine models. This spectrum of innovative products enables Mazak to effectively respond to customer needs in this field. Mazak is a leader in laser technology, capable of significantly improving production efficiency, competitiveness, and profitability. We use innovative design solutions and intelligent automation systems to simplify operation and ensure maximum repeatability of machine performance.

MAZAK SUPPORT IN EUROPE

Mazak's laser technology center supports our customers in more than 30 countries. Our commitment to optimizing the efficiency of our customers' processes does not end with the purchase of a Mazak machine. Our extensive service network is always ready to serve customers with expert knowledge and experience.

MAZAK EUROPEAN PARTS CENTER

Our European Parts Center is located in Belgium, has a warehouse with an area of 4,600 m², and is able to ship any of 97% of Mazak parts on the day the order is placed. The new facility can ship more than 20,000 parts per month and handle orders 365 days a year. The state-of-the-art warehouse facility is fully automated and equipped with a new small parts retrieval system, with 8,000 small containers moving between 70,000 warehouse locations, as well as a stacker crane to handle 3,000 medium and large pallets.

2.0 General System Presentation

OPTIPLEX NEXUS FIBER

Optiplex Nexus Fiber series machines operate intelligently and ensure maximum productivity.

The OPTIPLEX NEXUS Fiber series machines feature a moving optical system (so-called "flying optics") and a robust, highly dynamic structure with a 2-pallet changer and a rack-and-pinion (helical tooth) positioning mechanism, enabling high cutting speed and maximum efficiency.

- The OPTIPLEX NEXUS FIBER cutting machines are designed for integration with intelligent setup functions and intelligent monitoring functions, and are characterized by excellent performance. The intelligent Multi-Control Torch 2.1 head and automatic nozzle changer are solutions that increase end-user productivity by optimizing and automating head setup for each program. This optimization dramatically speeds up

cutting, increases production efficiency, reduces operator involvement — and day after day contributes to greater machining repeatability.

- OPTIPLEX NEXUS FIBER machines are ready to work with a wide range of Mazak's automated material handling systems.
- The new state-of-the-art Preview G control system with a 19-inch touchscreen includes tables of technological parameters that simplify the machine operator's task.
- Doors sliding along the X-axis provide excellent accessibility to the work area, particularly important in small-batch production requiring high flexibility.
- The OPTIPLEX NEXUS Fiber cutting machine is available in configurations with laser resonators of 2.0 kW, 3.0 kW, 4.0 kW, and 6.0 kW power.

3.0 Intelligent Functions

INTELLIGENT FUNCTIONS SIMPLIFY OPERATION AND INCREASE MACHINE PERFORMANCE

Mazak has developed a number of intelligent functions that automate machine setup and monitor the cutting process. These functions can dramatically simplify machine operation and automatically correct cutting parameters to achieve the highest possible part quality and overall throughput.

Intelligent Setup Functions

Numerous functions are available to simplify operation and reduce machine setup time.

Auto Nozzle Changing — OPTION	Optimizes the use of assist gas and helps achieve maximum feed rate in every task (for 8 nozzles)
Auto Focus Positioning	Helps achieve the highest product quality and maximum feed speed.
Focus Detection — OPTION	Automatically calibrates the reference position
Auto Profiler Calibration	Maintains a stable distance between the material and the nozzle during cutting.
Auto Nozzle Cleaning	Maximizes the time between necessary operator interventions.
Beam Diameter Control	Allows stabilization of machining conditions and acceleration of thin sheet cutting, as well as increased efficiency when cutting thick plates.

Intelligent Monitoring Functions — OPTION

The Multi-Control Torch 2.1 head of the OPTIPLEX NEXUS Fiber machine is equipped with sensors that monitor piercing and cutting operations, helping to achieve the highest possible efficiency and product quality. If anomalies are detected, cutting parameters are adjusted or cutting is halted until proper conditions are achieved.

Pierce Detection	Minimizes piercing time, allowing for greater production efficiency.
Plasma Detection	Monitors and stabilizes stainless steel cutting, reducing the amount of dross.

Burn Detection	Monitors the process and signals abnormal cutting conditions for mild steel.
-----------------------	--

Intelligent Cutting Functions

The automatic functions are derived from Mazak's many years of experience in designing and delivering efficient laser cutting systems of the highest quality. The OPTIPLEX NEXUS Fiber series machines are equipped with the following INTELLIGENT CUTTING FUNCTIONS:

Fine Power Ramping	Regulates acceleration and deceleration to avoid excessively abrupt speed loss and dross formation.
Flash Cut	Monitors and stabilizes stainless steel cutting, reducing the amount of dross.

Recommended Application Range:

Material / Power	4 kW
Mild steel, O₂	20 mm
Mild steel, N₂	4 mm
Stainless steel, N₂	15 mm
Aluminum, N₂	15 mm
Copper, O₂	8 mm
Brass, N₂	8 mm

Note!

Cutting capability is directly dependent on the quality of the material being cut.

4.0 Standard Features, Characteristics, and Equipment

MACHINE FRAME

The base of the OPTIPLEX NEXUS Fiber laser cutting machine is made of solid, precision-machined cast iron and provides the entire system with high accuracy, repeatability, and durability. The cast iron base houses the motion drive system, electrical systems, and the CNC control system. The work zone is easily accessible thanks to the machine's ergonomic design, which includes sliding access doors located along the X-axis. Because the main machine frame is made of solid cast iron, it does not need to be anchored to the building foundations.

MOTION SYSTEM

Motion drive in the X1–X2 and Y axes is delivered by direct-drive motors via rack-and-pinion mechanisms. Precision guides for the X and Y axes are used in the rigid gantry structure. Z-axis motion is delivered by a digital servo drive.

CONTROL UNIT

The OPTIPLEX Fiber NEXUS machine operates under the control of a state-of-the-art MAZATROL PREVIEW G control unit equipped with a 19-inch touchscreen, which has made it possible to reduce the number of mechanical buttons. The Mazak PREVIEW G interface enables process monitoring via color 2D and 3D images. The touchscreen monitor provides

quick and easy access to all intelligent monitoring functions and intelligent setup functions. The ergonomic design allows adjustment of rotation angle and tilt. Active vibration control enables fast and stable cutting of thin materials.

FIBER LASER RESONATOR AND FIBER OPTIC BEAM DELIVERY SYSTEM

The new solid-state, diode-pumped ytterbium laser provides high beam quality and is characterized by long service life. This type of laser consumes 40% less electrical energy thanks to higher excitation efficiency. In addition, it requires no servicing, which dramatically reduces machine operating costs. The laser beam is directed to the multifunctional Mazak head. The Mazak fiber laser solution has been optimized by integrating the solid-state fiber laser resonator with the Mazak PREVIEW G control, the Mazak Multi-Control Torch 2.1 head, and the intelligent monitoring and setup functions. This combination of advanced technical solutions distinguishes the Mazak Optiplex Nexus Fiber machine from other systems.

MAZAK MULTI-CONTROL TORCH 2.1 HEAD

Offered exclusively by Mazak, the Multi-Control Torch 2.1 head is an original modern solution without which the intelligent setup and intelligent monitoring functions could not operate. These functions directly increase end-user productivity by enabling the machine to automatically optimize head configuration for the selected program. This optimization dramatically speeds up cutting, increases production efficiency, reduces operator involvement — and day after day contributes to greater machining repeatability. The combination of beam diameter and focus control functions enables more efficient cutting of materials of various types and thicknesses. The eight-position nozzle changer streamlines unattended operation and helps maintain proper cutting quality and minimum gas consumption.

OPTIPOD

The OPTIPOD module contains components used by intelligent setup functions such as automatic nozzle change (OPTION), automatic focus positioning, focus detection (OPTION), automatic head height calibration, and automatic nozzle cleaning.

CUTTING PARAMETERS STORED IN THE SYSTEM

A table of technological parameters is stored in the CNC system. The operator only specifies the material and defines the thickness, and the system automatically selects the optimum cutting conditions, such as laser power, frequency, gas pressure, etc. Difficult piercing techniques and enabling/disabling of tracking calibration are also configured automatically.

FAST AUTOMATIC TWO-PALLET CHANGER

The automatic two-pallet changer allows a pallet with finished sheets to be exchanged for a pallet with new sheets, streamlining material feeding and retrieval during the production cycle.

MANUAL WASTE CONTAINERS

Four waste containers are built into the base of the Mazak Optiplex Nexus machine. The work zone under the table on which the pallets move is inclined so that waste falls into the containers. The containers are equipped with wheels to facilitate movement.

CHILLER

All required cooling equipment is included in the standard delivery. The delivery includes hoses of standard length 6 meters.

ADDITIONAL STANDARD FEATURES, CHARACTERISTICS, AND EQUIPMENT

- Cutting nozzle (ϕ 1.2 [0.047], ϕ 2.0 [0.079], and ϕ 3.0 [0.118] (mm [inch]): 1 each)

- 5 nozzle adapters (universal, fitting all nozzle diameters)
- Laser workpiece edge detection and coordinate system rotation
- USB port for personal computer
- LAN network communication function
- Automatic power shutoff
- Numerical control of assist gas pressure (set pressure: 0.02 to 2.5 MPa)
- Assist gas changer
- Side air blast
- Power transformer (multi-tap from 380 V to 480 V)
- Slatted table (pitch 100 mm [1.97 inch])
- Manual sheet clamp (2 pieces × 2 pallets)
- Foundation materials (leveling plates and anchors for the pallet transport mechanism)
- Protective glass cleaning kit
- Adjustment tools
- Displacement sensor
- Lighting
- Resonator signal lamps
- Manuals on CD in English
- Printed manual in Polish
- Standard MAZAK coloring: frosted white and velvet black

5.0 Standard Technical Data

Item	Technical data	Notes
Machine model	Optiplex NEXUS 3015 FIBER	
Laser power	4.0 kW	
Type	Fiber laser	Beam generation in active fiber. Beam transmission via fiber optic.
Maximum sheet dimensions	1525 × 3050 mm	
Pallet height	900 mm	From floor
Maximum load capacity	930 kg	Uniform load
Axis travel — X-axis	3100 mm	
Axis travel — Y-axis	1580 mm	
Axis travel — Z-axis	150 mm	Possibility of cutting profiles on the work table — only as part of supplementary production

		due to the dust extraction system
Rapid traverse	X/Y axes: 60 m/min; Z-axis: 60 m/min	In combined axis: 85 m/min.
Axis feed systems	X1/X2/Y: Rack and motor with pinion; Z-axis: ball screw	
Positioning accuracy	X/Y axes: $\pm 0.05/500$ mm; Z-axis: $\pm 0.01/100$ mm	
Repeatability	X/Y/Z axes: ± 0.03 mm	
Cutting head	With variable focal length lens F125 mm to F200 mm	Pressure resistance of the lens protective glass: 2.5 MPa
Z-axis height tracking	Non-contact, Z-axis follow-up system	
Sheet support	Distance between combs: Pitch 100 mm (standard); Pitch 50 mm (option)	Number of combs: 31 pieces/pallet
Lighting	Fluorescent lamps	
Oscillator lamp	Yellow color (oscillator ready for operation); Red color (laser beam being emitted)	
Assist gas change	Number of gas types: 3 (Oxygen, air, and 3rd gas); Pressure setting: 0.02 to 2.5 MPa; Supply pressure: 0.78 (Oxygen) 0.83 (Air) 3.0 MPa (3rd gas)	Setting unit: 0.01 MPa
NC function of assist gas pressure	Assist gas pressure can be set programmatically. Pressure setting: max. 2.5 MPa	
Weight	4 kW: 12,850 kg	Weight includes: cooling unit, resonator, transformer, and pallet changer.
Noise level	Max. 80 dBA	
Max. active power consumption (kW)	4 kW: 18 kW	

Note: The technical data applies to the standard machine, and the use of certain additional options may result in changes to these parameters.

6.0 Price List

POWER 4000 W

MODEL		
4000W	OPTIPLEX NEXUS 3015 FIBER with IPG YLS-4000 U resonator and chiller	€ 464,980
DUST COLLECTOR		
PLLO007	Donaldson DFPRO-4 Spark Dust Collector	€ 13,900
BASIC EQUIPMENT		
AS662	Automatic Nozzle Change (8 holders)	€ 3,950
AS685	Nozzle cooling system	included
SD118	Intelligent monitoring + focus detection	€ 1,560
PLKK001	MAZAK parts kit	€ 3,400
LN614	Additional protective glass cartridge	€ 940
ADDITIONAL EQUIPMENT		
AS686	Nozzle centering camera	€ 2,390
NO313	Nesting camera	€ 11,690
RB165	Sheet lifter with CE marking	€ 20,420
CAD/CAM SOFTWARE		
SOFT	CAD/CAM software	€ 8,750
DOCUMENTATION		
CI001	Set of manuals and plates in Polish	standard
ADDITIONAL OPTIONS		
CI002	Transport	included
CI003	Installation	included
CI004	Training	included
CI005	36-month warranty on IPG resonator	included

MAZAK SMART SYSTEM JUNIOR PROGRAMMING PACKAGE

Mazak Smart System is a PC-based CAD/CAM system that allows the user to eliminate numerous traditional, unproductive stages of sheet metal processing — and implement projects into production faster than ever before. This software enables interactive nesting as well as the import of 2D IGES, DXF, and DWG drawings. Automatic profile verification and repair function. Calculation of optimized cutting sequence and automatic application of toolpath and cutting strategy are just some of the advanced tools built into the system. Windows 7, Windows 8, or Windows 10 in 64-bit edition.

MAZAK SMART SYSTEM PLUS PROGRAMMING PACKAGE

Mazak Smart System Plus combines the technological functions of the Smart System for Laser solution with readiness for future expansion with additional functions such as bending and punching with CNC control.

Together with the Smart System Plus platform, you can also order other optional components such as a network (floating) license, integration with the IRP system, and other enhancements. Pricing information is available on request.

AUTOMATED MATERIAL HANDLING SYSTEMS — OPTION

By implementing automation of laser processing systems, a company can reap significant benefits. A typical laser cutting machine is used for only a fraction of the useful time in a working week. It does not work productively during setup, waits for material, and finally — waits for the operator during breakfast breaks or after working hours. Owners of laser cutters who have ventured to measure the effective cutting time are almost always unpleasantly surprised by the low level of utilization of these valuable machines.

Automation systems enable flexible shaping of production capacity through unattended operation, i.e., without the need to expand the plant's workforce. They also streamline production under the one-piece flow model and reduce non-value-added production time. The bottom line is typically up to a 50% increase in production capacity compared with stand-alone machines, along with a significant reduction in production lead time.

Mazak was the first manufacturer to introduce laser cutting machines into a flexible manufacturing system. Today we offer the following systems:

- Compact loading/unloading system
- Vertical flexible manufacturing system
- Automated parts sorting system
- Automatic storage/retrieval system

Please contact a Mazak representative, who will present a detailed offer for an automated material handling system tailored to your individual needs.

MT CONNECT — OPTION

MT Connect is a communication protocol in the manufacturing industry that enables seamless connection of devices and systems from different manufacturers in order to record and exchange information in a standard format such as XML. The protocol belongs to the open-source category of solutions, and its use does not involve the payment of royalties. When adopted in a plant as a comprehensive communication standard, it creates a "plug-and-play" network platform that enables a company to calculate overall equipment effectiveness, monitor all equipment from a single system, reduce production losses, and formulate lean manufacturing strategies. By establishing an open and extensible communication channel between devices and systems connected on a plug-and-play basis, the MT Connect protocol enables the exchange and interpretation of data from various sources. Automated graphical reporting functions and control dashboards are available as part of the Intelligent Factory option.

MAZAK iSMART FACTORY OPTIONS — OPTION

The Mazak iSMART Factory platform enables visualization of the operation and performance of cells, departments, and entire plants, and comparison of current results with historical or target values. Such real-time analyses allow manufacturing companies to actively manage processes, rather than merely react to historical reports.

- Managers can observe changes in efficiency and profitability on an ongoing basis.
- Performance problems can be detected quickly — and thus eliminated more quickly.
- Across the entire plant, efficiency increases by 10% to 50%.
- Every user on the production floor can read the analytical dashboard metrics.

Mazak iSMART Factory is an Industrial Internet platform for the manufacturing industry, comprising software and hardware components for machine monitoring that connect directly to plant equipment. It is used to monitor all machines on the production floor: CNC machine tools, non-CNC machine tools, manufacturing centers, as well as processes performed manually. Information from all these areas is integrated within a single manufacturing execution system.

Further Information on Training

Programming Training

Programming training (purchased separately) lasts, depending on the software package purchased, from three to four days, and including travel time — from four to five days. Before the course begins, a computer must be sent to our facility in order to install the necessary software. The programmer will use this computer during the training. Classes are held exclusively in classrooms. Practical examples of the software's capabilities and functions are also presented there.

Maintenance Training

Basic maintenance training is conducted at the customer's facility during machine installation.

9.0 Installation and Customer Acceptance

INSTALLATION AND CUSTOMER ACCEPTANCE

After the order has been placed, a Mazak coordinator for new machines will contact you to assist in carrying out the individual stages of installation.

Installation

Upon receipt of all necessary documentation, including the down payment and any order:

- YMCE Poland Branch will send a document confirming the order placement.
- You will receive a pre-installation package by mail, containing full documentation of installation procedures and requirements. It includes information on machine requirements, delivery and training, as well as financial documents to be completed before shipment.
- Dates for any machine operation and programming training will be set.
- Mazak will send a safety agreement for signature. Transport requirements and arrangements will also be confirmed.
- Several weeks before the planned installation, YMCE Poland Branch will contact the customer to answer any questions regarding installation and to review the activities that the user is required to undertake prior to installation.

Once the machine has been delivered to the designated location, YMCE Poland Branch will carry out its installation. However, YMCE Poland Branch is not responsible for:

- transport from the port of arrival/warehouse to the location selected by the customer,
- transport within the customer's facility,
- the work described on the following page in the section "ACTIVITIES TO BE CARRIED OUT BY USERS PRIOR TO INSTALLATION".

Activities to Be Carried Out by Users Prior to Installation

(Before delivery of the laser machine, you will receive a pre-installation package containing detailed information on these items)

- Foundation. If the user deems the laying of a foundation necessary, this should be done in accordance with the plan sent before the machine's delivery. Anchor bolts must match the fittings.
- Power supply (primary side). The purchaser is responsible for the electrical installation between the main disconnect and the laser power transformers.
- Grounding. Grounding resistance: below 10 ohms, minimum cross-section of 38 mm², single-core insulated wire.
- Dust extraction system. The purchaser is responsible for the electrical installation between the building's main switch and the dust collector's electrical cabinet, and for the compressed air source.
- Gas installation. Purchase and installation of all necessary laser gas and assist gas tanks, hoses, regulators, wrenches, and piping between the laser gas tanks and the assist gas system in the laser machine.
- Machine positioning and initial leveling. The customer is responsible for providing personnel needed to unload the machine from the truck, as well as for unpacking the machine and accessories from the container, positioning the machine correctly on the floor, and initial leveling of the machine. Plates for leveling floor height differences are provided with the machine.

Activities to Be Carried Out by Mazak During Installation

After the machine has been delivered to the customer's facility and the "ACTIVITIES TO BE CARRIED OUT BY USERS PRIOR TO INSTALLATION" have been completed, Mazak personnel will finalize the installation at the facility. They will perform the following activities:

- Inspection of the machine and accessories for transport-related damage.
- Verification of the on-site availability of all manuals, documents, accessories, and necessary software.
- Removal of all transport brackets and cleaning of the machine.
- Checking of power supply and grounding, and then connecting the machine to power.
- Completion of machine leveling, and verification of gas installation and fluid levels.
- Installation of the optical system.
- Switching on the machine and checking lubrication.
- Verification of proper settings of the mechanical and optical systems, and adjustment of these systems if necessary.
- Testing and adjustment of the resonator.
- Verification of chiller operation.
- Testing of the control system.
- Installation of optional equipment.
- Setting of all machine tool variables.
- Assistance in machining test parts according to the criteria and technical data of YMCE Poland Branch.
- Conducting safety training.
- Execution of any additional tasks indicated on the order confirmation and necessary for customer installation acceptance.

All of the above activities will be documented on the installation acceptance form. Upon satisfactory fulfillment of the above requirements, the machine installation will be considered accepted. The form will then be dated and signed by the engineer and by a signatory

authorized by the customer. The customer will receive a copy of the form. The installation will be deemed complete, and the customer will be obliged, in accordance with the terms of the contract, to pay the remaining balance of the machine fee.

10.0 Warranty

WARRANTY

Warranty on the IPG resonator and chiller:

– is 36 months, counted from the date of signing the acceptance protocol.

Warranty on the MAZAK machine:

– is 24 months, counted from the day of completion of installation and signing of the acceptance protocol, provided that you are its owner, that its assembly is carried out in accordance with our recommendations, and that it operates under normal conditions of use.

If, under warranty, it becomes necessary to replace parts, we will deliver them free of charge by transport means of our choice, provided that you notify us immediately of the defect and confirm that the machine is properly assembled, maintained, and operated under normal conditions of use. YMCE Poland Branch is not liable for any taxes or duties imposed by the government or administrative authorities. During the warranty period, a representative of YMCE Poland Branch will, with the customer's assistance, replace complete subassemblies that have failed under warranty. The assistance and/or services necessary to carry out the replacement shall be provided by the customer, without charging YMCE Poland Branch for their cost. Furthermore, during the warranty period, all service activities and repairs must be performed by YMCE Poland Branch personnel or with the consent of YMCE Poland Branch. Failure to comply with the above requirements results in invalidation of the granted warranty. THE WARRANTY FOR REPLACEMENT OF DEFECTIVE PARTS AND ANY OTHER WARRANTIES OR EXPRESSLY STATED OBLIGATIONS SUPERSEDE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. If you are acting as a distributor, financial institution, or similar entity operating on behalf of or for the first user of the equipment, the warranty may only be transferred to the first user. In all other cases, the non-transferable warranty is granted solely to you.

Further Information on the Warranty

EXCEPTIONS NOT COVERED BY THE WARRANTY

- Problems related to improper operation and careless handling of the machine, and/or
- Consumables, damage and loss of materials, work in progress, perishable goods, power failures, and/or
- Problems related, among other things, to natural disasters, tectonic movements, fire, theft, or improper use, including gross negligence, willful or accidental damage.

As with any other equipment, certain components wear out and require replacement over time. The customer bears the cost of replacing these parts, which in the case of a laser machine include: glass panes, electrodes, ceramics, optical system, seals, pipes, operating fluids, fuses, bulbs, cutting nozzle, and the material support mechanism on the cutting table. If the failure of one or more parts not covered by warranty results directly from the failure of a part covered by warranty, the part(s) not covered by warranty will be replaced free of charge.