



Ablation LaserCell
**TURNKEY LASER CLEANING
& COATING REMOVAL SYSTEMS**



ABLATION LASERCELL

The Ablation LaserCell provides cleaning, coating removal and surface preparation on parts for manufacturing, refurbishment and repair applications.



High-Speed Repeatable Cleaning & Coating Removal
Automated & Optimized Laser Processing
Eliminates the use of Abrasives or Chemicals
Simplifies EHS Compliance

- Can be used on any manufacturing floor
- Laser and beam delivery optimized for the process
- 6-axis robot provides part handling and motion
- Integrated fume/debris collection system
- Industrial robot and electronics controls

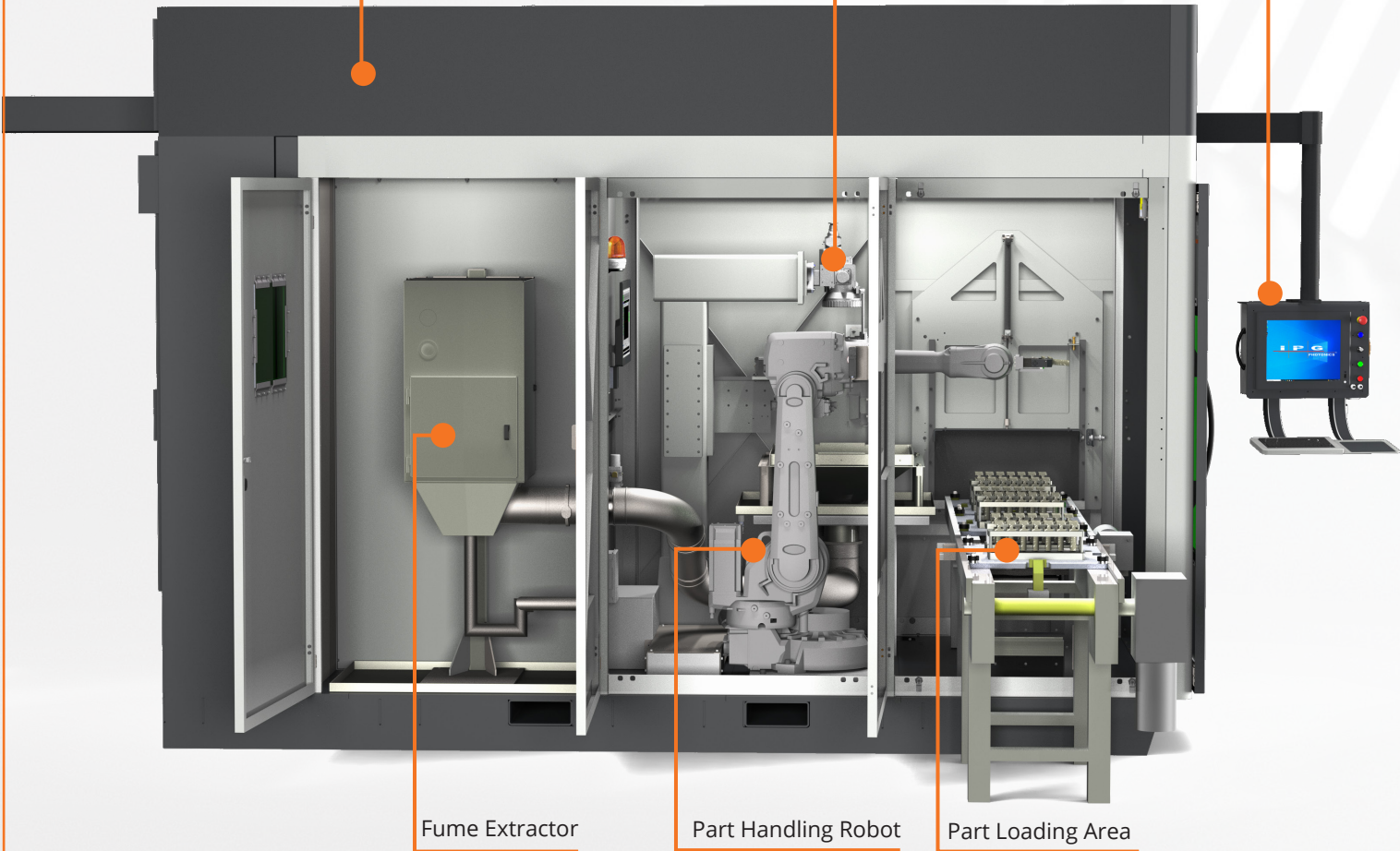


SINGLE HMI USER INTERFACE WITH IPG CORE SOFTWARE

Positionable User Interface

Class 1 Laser Safe Enclosure

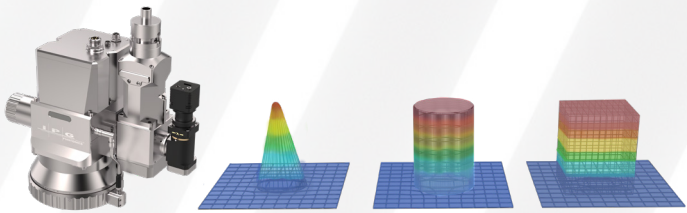
Laser Scan Head



BEAM DELIVERY & OPTICS

Advances in **Laser Technology, Process Modeling & Automated System Integration** have made laser ablation a tool of choice for advanced manufacturing.

- IPG High-Power Laser Scan Head with optics optimized for the application
 - High-intensity through large area options
- Optimization of beam shape, energy profiles and laser output provides best-cost ablation results
- IPG designed and manufactured components with single-vendor support



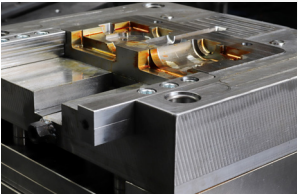
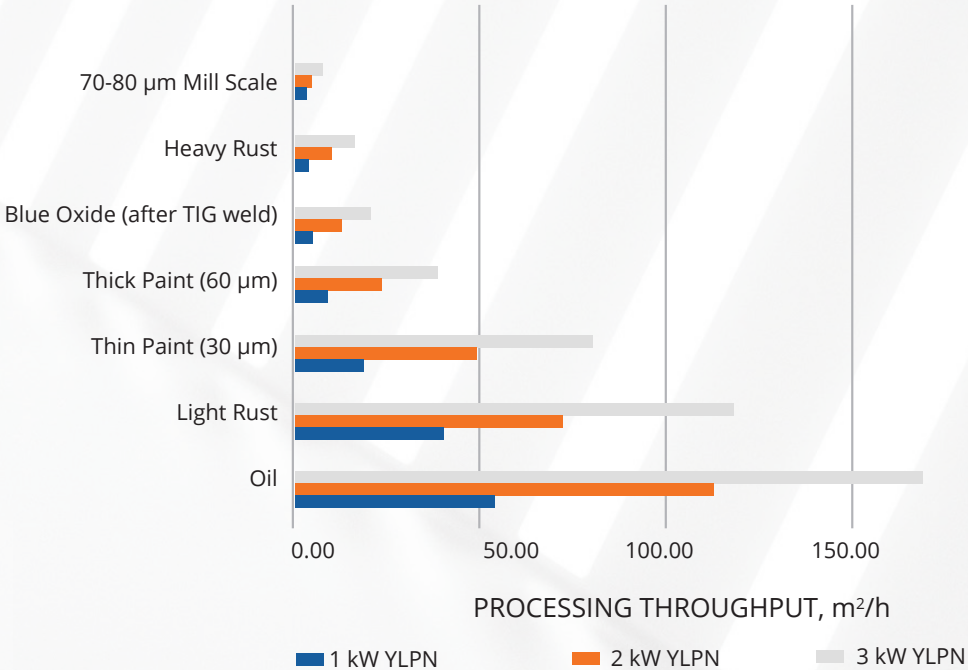
Selection of beam shape and energy profile to best match the application



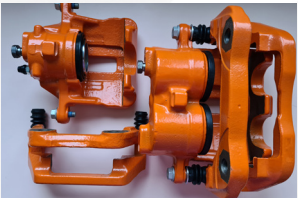
IPG FIBER LASERS

- CW, QCW, pulsed nanosecond & ultrafast laser selection
- Zero-maintenance, high efficiency laser sources
- IPG Applications Support for laser selection, hardware configuration and process development

NANOSECOND LASER PROCESSING THROUGHPUT FOR TYPICAL ABLATION APPLICATIONS



Efficient removal of accumulated mold release compounds



Reduce solid waste in remanufacturing operations



High Speed Surface Cleaning for Roll Forming Equipment

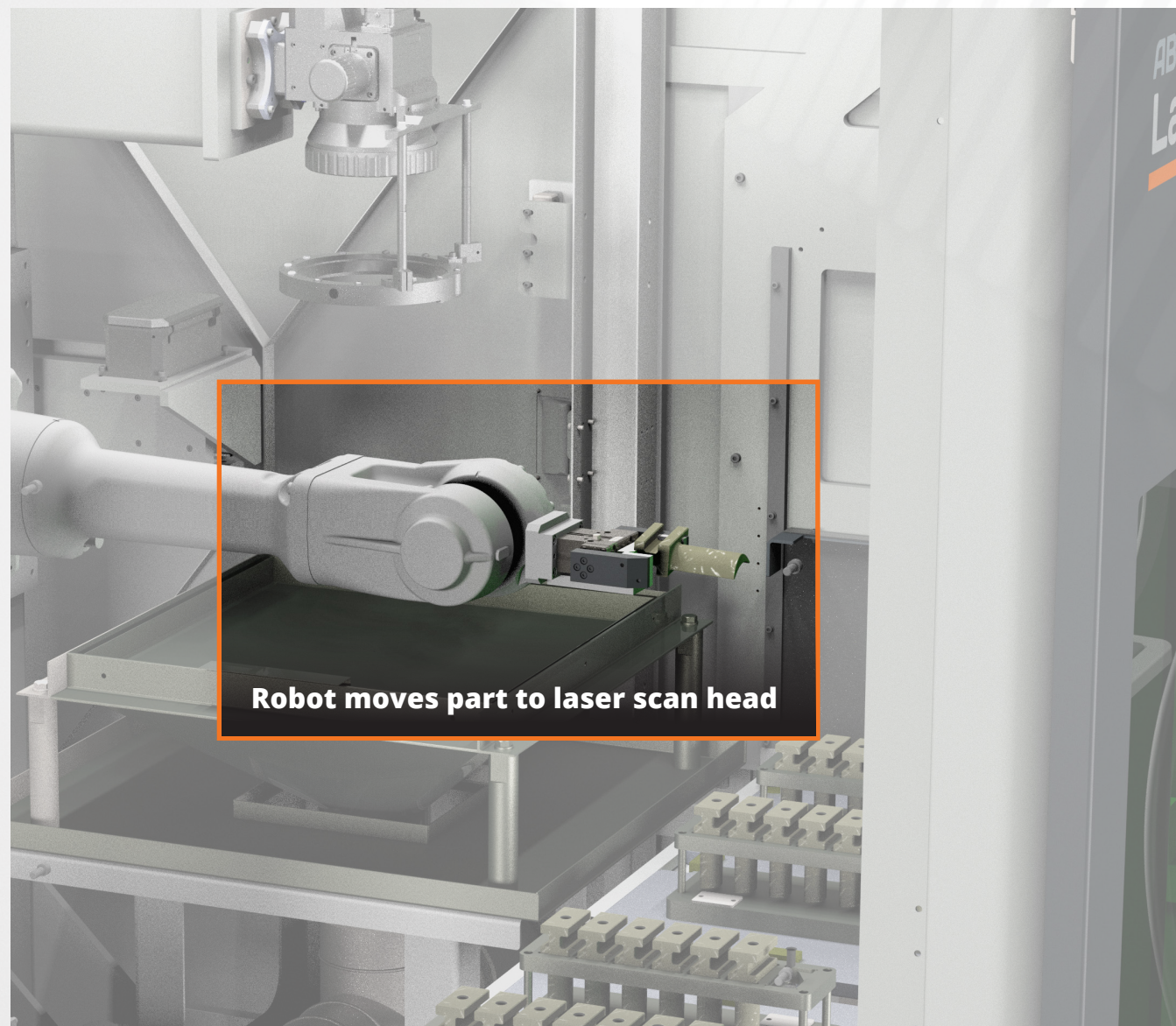
ABLATION LASERCELL

Part & Scan Head Positioning Configurations

The automated ablation process requires the part to be positioned within range of the scanning laser beam, and frequently requires repositioning of the part or the scan head for the beam to completely process the part. Two configurations are available.

1 PART-TO-PROCESS

uses the system robot to pick the part from the pallet, present it to the laser scan head, and provide repositioning of the part to access ablation surfaces. This configuration is popular for smaller sized parts, where multiple parts may be loaded on a pallet, and pallet loading time (per part) is minimized.



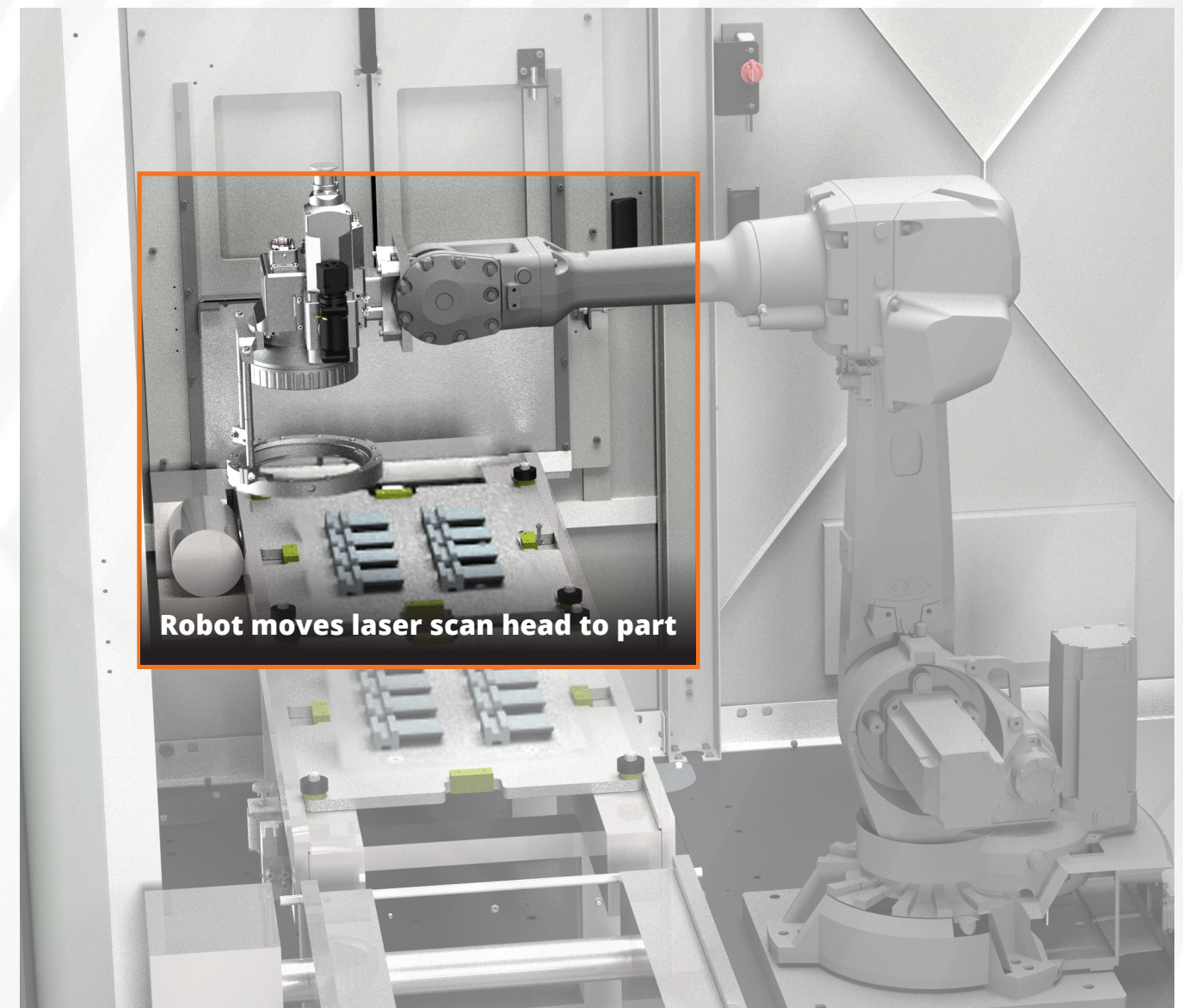
CONFIGURATION OPTIONS

Both configurations provide reliable, repeatable ablation with simple system programming for selected area or complete part cleaning or coating removal with consistent, high-quality results without the use of chemicals or abrasives.

2 PROCESS-TO-PART

keeps the part in the same location where it is loaded and positions the system robot with the laser scan head to perform the ablation.

Some process-to-part system configurations use rotary positioners to change the orientation of the part in the laser cell. This configuration is typically used for larger, heavier parts, which are normally loaded one at a time.

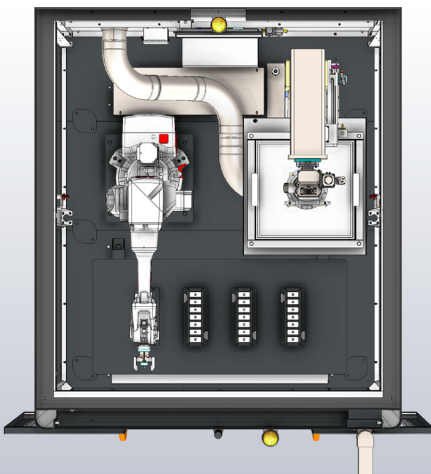


ABLATION LASERCELL

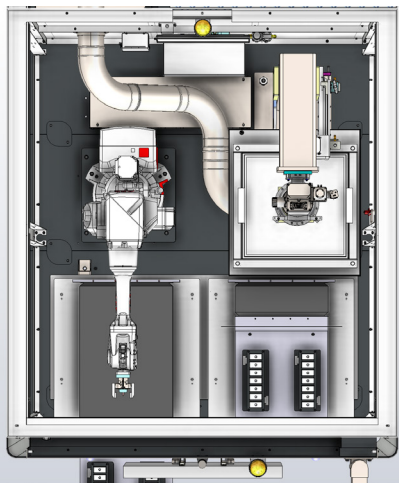
Part-to-Process

Four part loading options provide flexibility to match the number of parts to be processed and the pallet dimensions. Table and drawer loading options provide fast and easy manual loading of parts, while conveyer and turntable loading offer automatic methods to increase throughput for higher volume processing.

TABLE LOADING

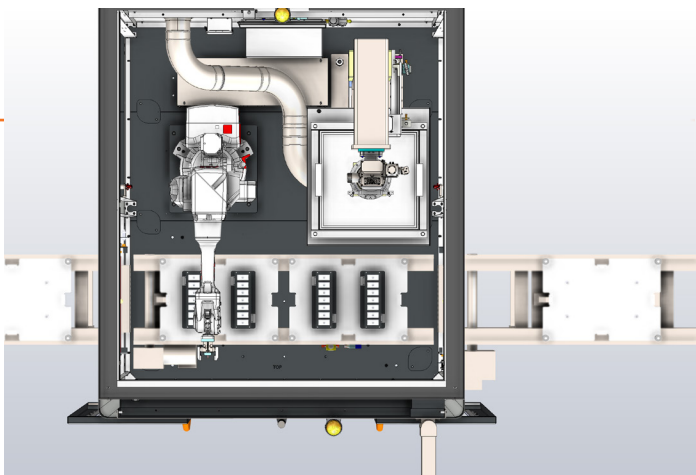


DRAWER LOADING

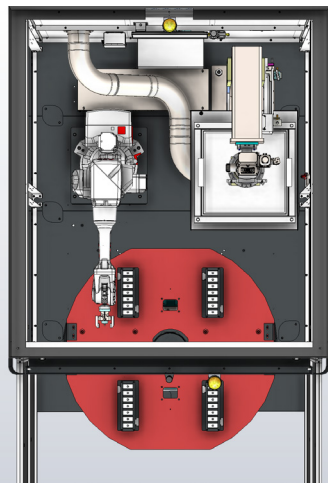


Max Part Size: 165 x 300 x 600 mm
Max Part Weight: 15 kg
Single or multiple load pallets
Each pallet can hold multiple parts

CONVEYOR LOADING



TURNTABLE LOADING



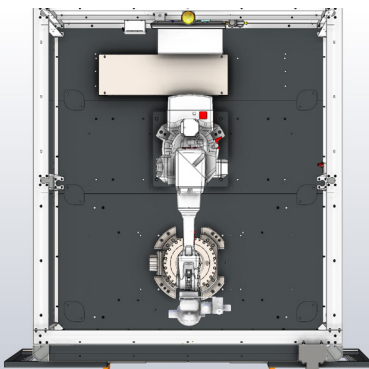
PART LOADING OPTIONS

Process-to-Part

Five part loading options are available to best match part shapes, sizes and weights. Single and two axis positioners accommodate large, heavy and complex shaped parts. Head & tail stock is best for shafts and long cylinders. Conveyor and turntable options enable automatic loading and sizeable work volumes for larger parts.

SINGLE AXIS POSITIONER

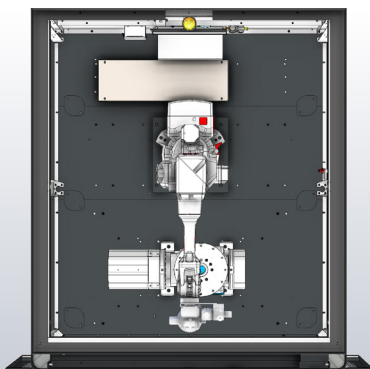
for Largest-Heaviest Parts
& Complex Shapes



Max Part Size:
Ø 1000 mm x 1500 mm length
Max Part Weight: 1000 kg
180° rotation in 3.1 sec

TWO AXIS POSITIONER

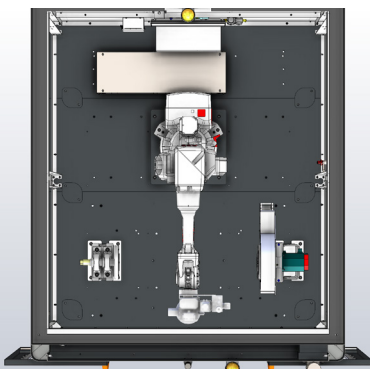
for Large-Heavy Parts
& Complex Shapes



Max Part Size:
Ø 1000 mm x 600 mm length
Max Part Weight: 500 kg
180° rotation in 3.6 sec

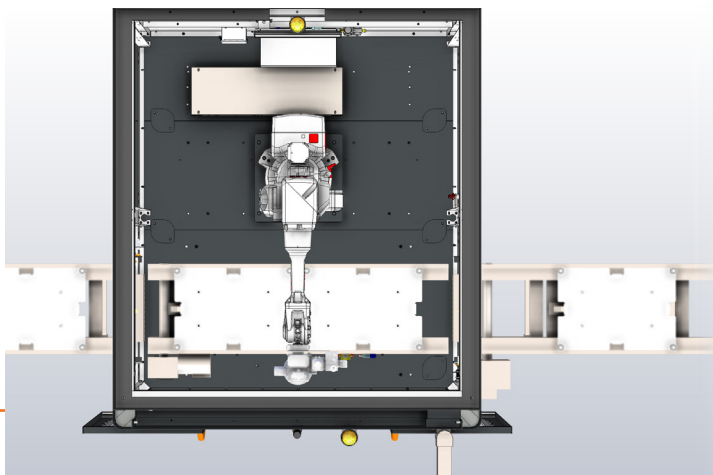
HEAD & TAIL STOCK

for Shafts & Long Cylinders



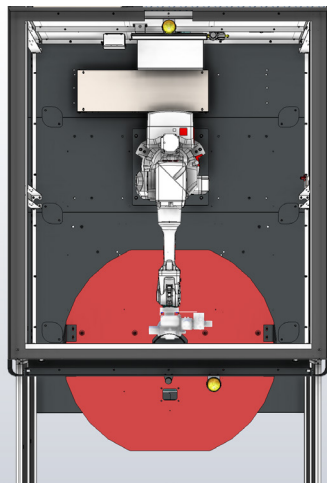
Max Part Size:
Ø 1000 mm x 1250 mm length
Max Part Weight: 1000 kg
180° rotation in 3.7 sec

CONVEYOR LOADING



Working Volume: 500 L x 400 W x 250 H mm
Max Part Weight: 500 kg/pallet
Single-side cleaning – Higher volume Production

TURNTABLE LOADING



Working Volume: 1000 L x 400 W x 500 H mm
Max Part Weight: 350 kg/side
Single-side cleaning – Higher volume Production

ABLATION LASERCELL

SPECIFICATIONS

Laser Source	Continuous Wave, Quasi-Continuous Wave, Pulsed Nanosecond & Ultrafast Fiber Laser Options
Beam Delivery	IPG High Power Scan Head. Optics selected to suit application.
Maximum Part Size	From 165 x 300 x 600 mm up to 1000 mm diameter x 1500 mm long, depending on System Configuration. See Part Loading Options
Part Loading	Depending on System Configuration. Part Loading Options
Part Tooling	Custom-designed part tray and robot gripper included with system
Part Handling Robot	Industrial 6-axis robot. Min reach 1800 mm, Max Payload 25 kg Positioning repeatability ± 0.025 mm (0.0001 ins) Specific robot selections may be available at additional cost.
Machine Enclosure (L x W x H)	Main Workcell Dimensions 4200 x 2200 x 3000 mm (165 x 86 x 118 in) Laser Dimensions 960 x 780 x 560 mm (38 x 31 x 22 in) Chiller Dimensions 626 x 807 x 1362 mm (24.6 x 34 x 54 in)
System Control	Industrial PLC controller with front swing-arm mounted HMI and keyboard running IPGCore software. Comprehensive door interlock and E-Stop systems Integrated work chamber heat sensor
Power Measurement	Integrated laser power meter
System Calibration	Automated calibration using the power meter and Master Calibration Artifact
Process Assist Mist Dispenser	Programmable misting system with adjustable spray nozzles for liquid coating of parts. System includes an 11.5 liter (3 gallon) fluid reservoir
Fume Extraction	Fume extraction module mounted within the laser cell using a downdraft table beneath the ablation area to collect dust, fumes and particles. Compatible with liquid and/or mist processes. Filtered air exhausted through the laser cell roof. Air exchange rate 12,750 l/min (450 cfm). Efficiency 95% on 0.3 micron mist/smoke
Software	HMI using IPGCore multi-platform interface and process control software with embedded IPGScan deflection controller Nine (9) pre-defined application-specific process parameters sets Robot-agnostic positioning software using solid model as input
Application Compatibility	Pre and Post- process cleaning for Welding, Brazing, Diffusion bonding and Adhesive bonding Surface preparation for bond coat EB-PVD TBC & Atmospheric Plasma Spray (APS) TBC applications TBC and BC coating removal for part repair, OEM part rework and tooling cleaning
Facilities Required	Power: 480 VAC, 3 Phase, 60 Hz, 110 Amps Air: Filtered moisture-free compressed air, 550 kPa (80 psi) minimum
Operating Environment	Temperature: 0°C to 43°C (32 to 110°F) Relative Humidity < 75%, No dew or frost
Regulatory Standard Compliance	OSHA 29 CFR 1910, ANSI/ RIA 15.06-2, ISO 10218-2, NEC UL 508.A, ANSI ASC Z136.1, NFPA 70, NPFA 79

Contact Us: (563) 445-5600



Legal notices: All product information is believed to be accurate and is subject to change without notice. Information contained herein shall legally bind IPG only if it is specifically incorporated into the terms and conditions of a sales agreement. Some specific combinations of options may not be available. The user assumes all risks and liability whatsoever in connection with use of a product or its application. IPG, IPG Photonics, The Power to Transform and IPG Photonics' logo are trademarks of IPG Photonics Corporation. © 2023 IPG Photonics Corporation. All rights reserved.