

3D LASER GRINDER

LASER-GUIDED FLOOR GRINDING MACHINE WITH 3D CONTROL SYSTEM, DESIGNED FOR THE CORRECTION OF CONCRETE FLOORS TO ACHIEVE THE FLATNESS STANDARDS REQUIRED FOR THE SAFE OPERATION OF FORKLIFT TRUCKS IN VNA (VERY NARROW AISLE) WAREHOUSES AND OPEN FLOOR AREAS.

SETTING NEW
STANDARDS



HYPER
GRINDER

HYPER
FLAT
FLOOR



3D LASER SYSTEM
HIGH-PRECISION
AUTOMATIC
FLOOR LEVELING



**VNA FLOOR
STANDARDS**
COMPLIANT WITH
VDMA, DIN 15185,
DIN 18202, TR34, FF/FL



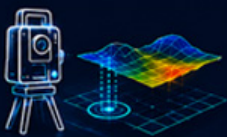
IDEAL FOR
VNA WAREHOUSES,
AUTOSTORE SYSTEMS,
AGV/AMR
APPLICATIONS
AND ADVANCED
LOGISTICS



**DRY GRINDING
OPERATION**
DUST-FREE, EVEN IN
LIVE OPERATIONAL
ENVIRONMENTS



HIGH PRODUCTIVITY
LOWER OPERATING
COSTS
CERTIFIED RESULTS



3D SURVEYING AND
MACHINE CONTROL
ROBOTIC TOTAL STATION
DIGITAL SURFACE MAPPING



DUAL GRINDING MODES
• PRESET
ELEVATION MODE
• SPOT GRINDING MODE



HIGH-PRECISION
AUTOMATIC CORRECTION
TARGETED MATERIAL
REMOVAL
ONLY WHERE REQUIRED



SAFETY AND RELIABILITY
PERFECT FLOORS FOR
VNA FORKLIFT TRUCKS
AND AUTOMATED SYSTEMS



FINAL REPORTING AND
CERTIFICATION
TRACEABLE RESULTS
FULLY COMPLIANT WITH
REQUIRED STANDARDS

MADE IN ITALY

FAST, PRECISE, RELIABLE, COST-EFFECTIVE

HG HYPER GRINDER REDEFINES THE GRINDING AND CORRECTION OF NEW AND EXISTING INDUSTRIAL FLOORS THROUGH ADVANCED LASER-GUIDED TECHNOLOGY.

- VDMA / VNA Tolerances;
- DIN 15185;
- DIN 18202;
- TR34 (DM1 / DM2);
- FF / FL Floor Flatness Measurement Systems



Modern high-capacity logistics warehouses with Very Narrow Aisles (VNA) require floors with exceptionally high levels of flatness. Tri-lateral forklift trucks must be able to travel and operate at height with maximum stability, without being affected by floor undulations and irregularities.

A conventional industrial floor is generally not suitable for this type of warehouse. Insufficient floor flatness can lead to serious safety issues, reduced handling efficiency, lower productivity and, in extreme cases, complete disruption of warehouse operations.

TECHNICAL DATA

	Grinding Head	Motor	Volt	Hertz	Amp	Working Width (mm)	Grinding Width (mm) Machine Dimensions (Drive Unit + Grinding Head, excluding prism mast) L x H x W
Laser Grinder 3D	Fresatrice con rullo	22 Kw	400	50/60	32	400	750x1500x2140
	Planetaria	18,5 Kw	400	50/60	32	750	750x1500x2140

HYPER FLAT FLOOR



The Very Narrow Aisle (VNA) warehouse configuration allows for maximum storage density and highly efficient logistics operations through the use of high-precision forklift trucks.

However, the floor is a critical component of the entire system. VNA trucks require floors with extremely high standards of flatness and surface regularity to operate safely and efficiently. This aspect is often overlooked, with the floor being considered merely as a support for the racking system, only to discover later that conventional industrial floors do not provide the performance required for VNA operations.

HG HYPER GRINDER introduces the new **LASER GRINDER 3D**, an advanced laser-guided floor grinding machine featuring automatic 3D leveling technology, designed to achieve the high-precision floor flatness required for the safe and efficient operation of VNA forklift trucks.

The **LASER GRINDER 3D** has been specifically developed to operate in active warehouse environments with minimal impact on daily operations. Its advanced dust-free dry grinding process enables precise floor correction while maintaining a clean working environment, even in facilities with fully loaded racks and in sensitive sectors such as food processing, pharmaceuticals, and electronics manufacturing.

Perfectly Flat Floor After the Grinding Process

Tracking Prism for 3D Robotic Total Station.

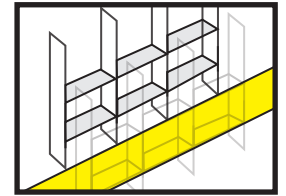
Machine Control Panel

Wired Remote Control Included

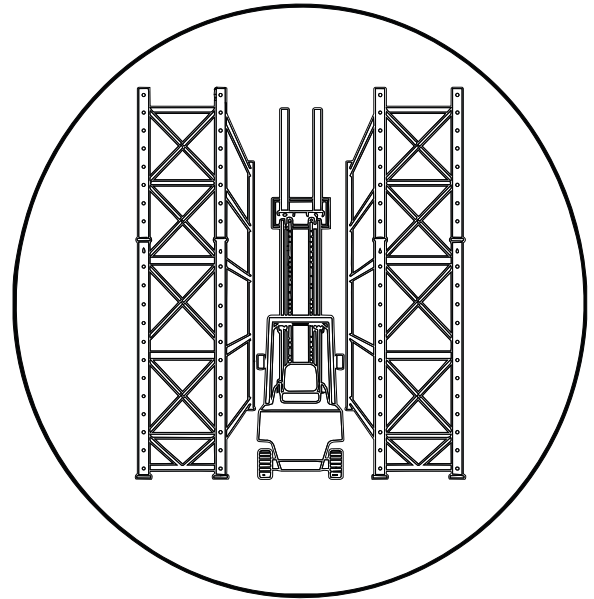
Original Floor Surface Before the Grinding Process



ULTRA FLAT FLOOR



SEMI-AUTOMATED 3D SYSTEM FOR HIGH-PRECISION CORRECTION OF VNA WAREHOUSE AISLES



The new **Laser Grinder 3D** represents the most advanced evolution in high-precision industrial floor correction and certification technology.

Designed to meet the demands of modern logistics and industrial automation, the **Laser Grinder 3D** integrates an innovative 3D digital control system based on Robotic Total Station technology, transforming the machine into a truly intelligent engineering platform.

This system is specifically designed for applications such as:

- Very Narrow Aisle (VNA) warehouses;
- High-bay racking installations;
- Automated logistics systems (AGV / AMR);
- AutoStore® and robotic warehouse systems;
- Upgrading floors from FM3 standards to VDMA Guidelines, TR34 and DIN requirements;
- Precision floor correction prior to racking installation.

The Laser Grinder 3D enables contractors and logistics operators to achieve compliance with internationally recognized standards, including:

- VDMA / VNA Tolerances;
- DIN 15185;
- DIN 18202;
- TR34 (DM1 / DM2);
- FF / FL Floor Flatness Measurement Standards.

2 GRINDING MODES



- **Preset Elevation Mode:** Ideal when the elevation difference between points A and B is within approximately ± 15 mm, allowing the creation of a perfectly flat VNA aisle.
- **Automatic Spot Grinding Mode:** Allows a suitably modified map to be loaded in compliance with the required standard.

1 MACHINE, 2 APPLICATIONS:

The **LASER GRINDER 3D** is equipped with two easily interchangeable tool heads:

1 – Scarifying Milling Head with Roller

2 – Planetary Grinding Head with Gear Drive



DRIVE UNIT

Drive module compatible with both the Planetary Grinding Head and the Scarifying Milling Head.



MILLING HEAD

Rapid material removal to achieve a laser-calibrated surface in a single pass.



PLANETARY HEAD

Designed to achieve a smooth floor finish and remove the milling marks left by the scarifying head.

Maximum Flexibility:

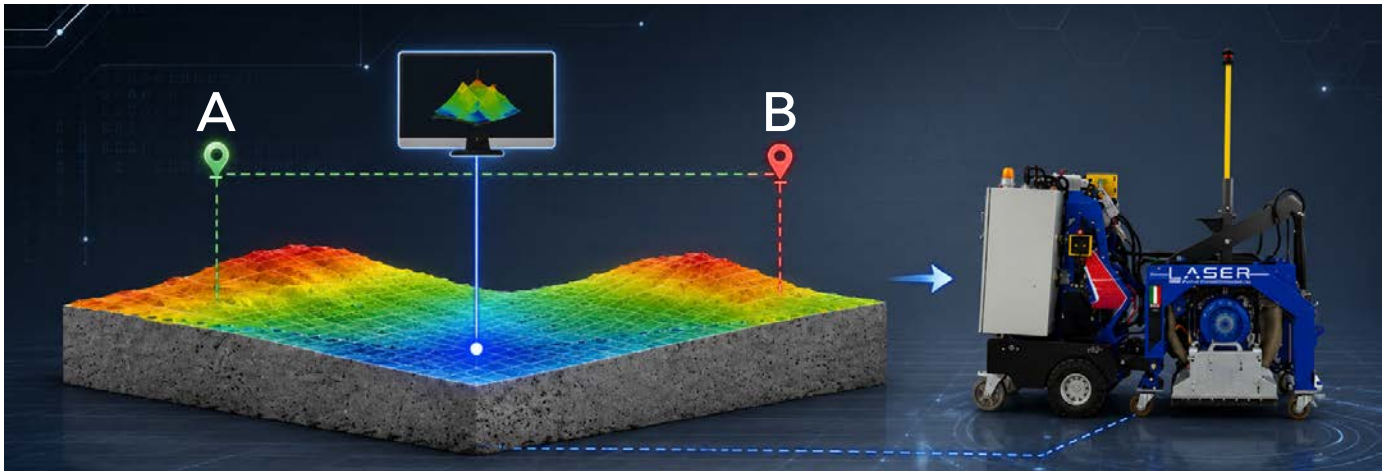


The **Laser Grinder 3D** is equipped with **two easily interchangeable tool heads**, designed to optimize every stage of the floor correction process.

The operation begins with **the scarifying milling head**, which uses the **3D laser control system** to accurately correct the floor surface and achieve the required profile by selectively removing material from out-of-tolerance areas.

The process is then completed using **the planetary grinding head**, dedicated to floor finishing. This stage removes the minor surface irregularities left by the milling process, improving floor uniformity, surface quality, and overall finish.

PRESET ELEVATION MODE



1 Surface Analysis:

The robotic total station and dedicated software detect all floor elevation variations.

2 Ideal Reference Plane:

The operator defines the reference plane using the lowest point of the surveyed surface as a benchmark.

3 The Laser Grinder 3D

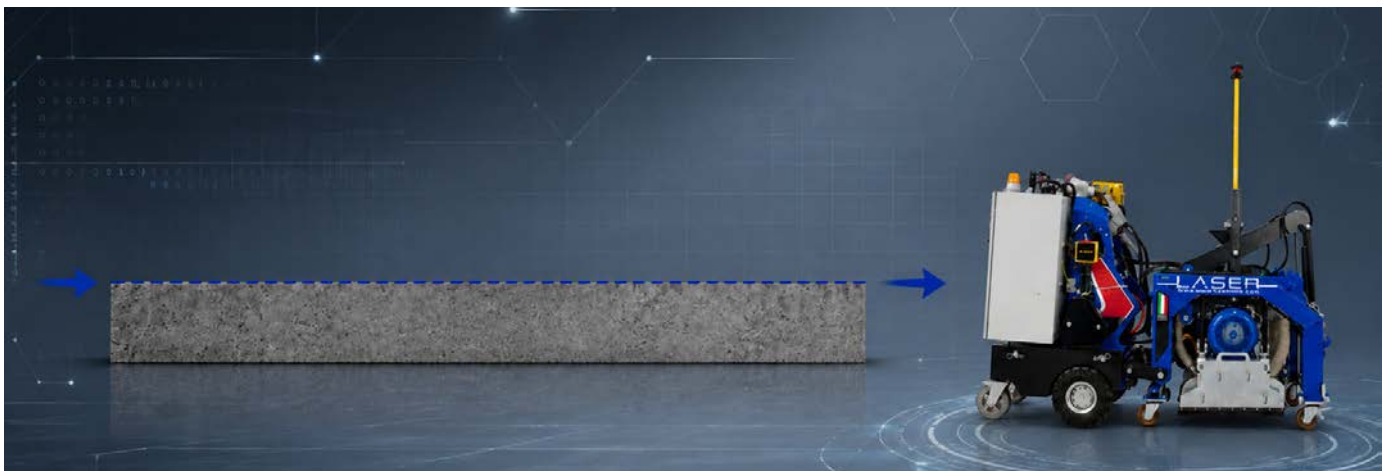
automatically **removes** all material above the reference plane.

The Preset Elevation Mode is ideal when the elevation difference between points A and B is within approximately 15 mm and the objective is to achieve a perfectly flat VNA aisle fully compliant with the required standards.

The robotic total station and dedicated software perform a complete surface analysis, accurately detecting all floor elevation variations. Based on the collected data, the operator defines an ideal reference plane using the lowest point of the surveyed area as a benchmark.

The Laser Grinder 3D then uses this information to automatically correct surface irregularities with maximum precision, removing only the material located above the reference plane and correcting exclusively the out-of-tolerance areas.

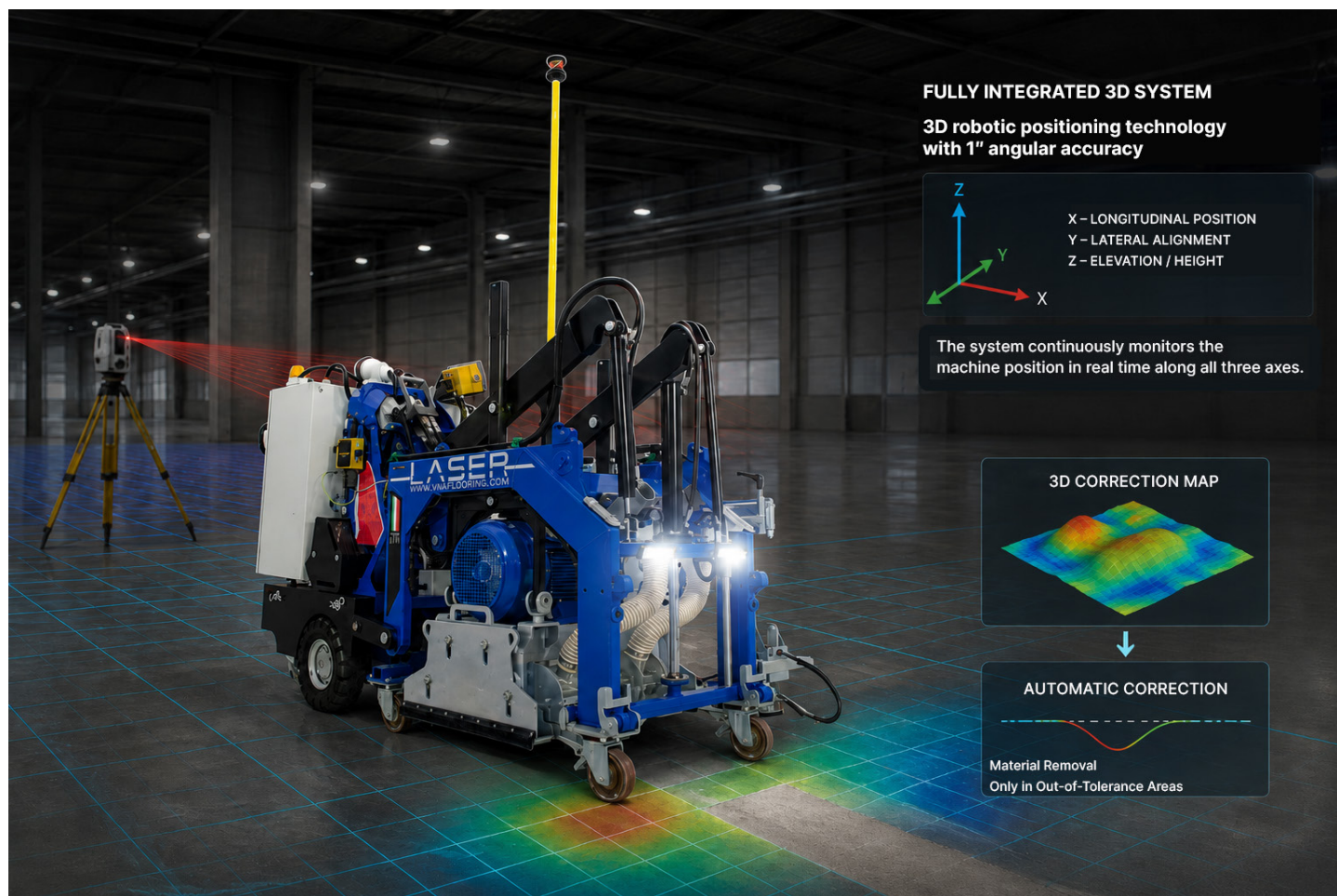
Thanks to its advanced 3D robotic control system, the machine operates with accuracy of up to 1 mm, ensuring full compliance with VNA specifications and high-precision industrial flooring standards.



4 Final Result:

A perfectly leveled surface aligned with the ideal reference plane.

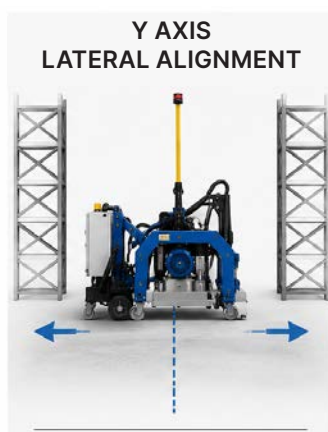
AUTOMATIC SPOT GRINDING MODE



The Automatic Spot Grinding Mode is ideal when the elevation difference between points A and B significantly exceeds 15 mm. Under these conditions, a preset elevation correction would require the removal of large amounts of material.

Instead, the dedicated software generates an optimized theoretical surface that follows the actual floor profile while correcting only the areas that do not comply with the required specification. This optimized surface is then uploaded to the machine control system, allowing the Laser Grinder 3D to automatically follow the correction map along the X, Y and Z axes and intervene exclusively where required.

The result is an extremely precise and efficient grinding process, with reduced material removal, shorter operating times, and full compliance with the required standards for VNA aisles and high-precision industrial flooring.



THE COMPLETE **Laser Grinder 3D System**



GROUP 1

HG199201 - MULTI-INVERTER HYDRAULIC DRIVING TRACTION WITH CABLE REMOTE CONTROL AND 3D

Key Features:

- Drive unit with hydraulic quick-connect couplings.
- Inverter-controlled electric drive system, 18.5 + 1.5 + 1.5 kW.
- Wired remote control.
- Junction Box
- Control Panel Docking Station
- Slope Sensor



GROUP 2

HG199301 - COMPLETE 22kW MILLING HEAD

Complete with:

- Hydraulic drive frame.
- 22 kW scarifying milling head.
- Dust extraction shroud.
- 3D sensor support.



GROUP 3

HG199401 - COMPLETE GRINDER GROUP 15kW WITH 750MM PLANETARY HEAD

Key Features:

- Hydraulic drive frame.
- HGE 750 planetary grinder with ø340 mm grinding discs.
- 750 mm dust extraction shroud.
- 3D sensor support.



GROUP 4

HG200401 - 3D ROBOTIC CONTROLLER SYSTEM

Complete with:

HG199001 Robotic Total Station

- 1" Robotic Total Station
- External Battery
- Tripod
- Prism Pole
- Handheld Controller for Total Station
- Quick-Mount Bracket for Total Station
- Control Tablet
- Site Performance Software
- Verification App
- Scan & Advanced Surfaces Module
- Tracking Prism
- Machine Control Panel

HG200502 Machine Control System

- On-board 3D machine control panel
- 1-year connectivity package for remote control and data exchange
- CCP Contract for software updates and support services

OPTIONAL ACCESSORIES FOR **Laser Grinder 3D**



HG1039704 - 400MM DIAMOND ROLLER DRUM

Roller for use with the 22 kW Scarifying Milling Head.

Segments	Diameter $\varnothing$	Width	Weight
168	230mm	402mm	34Kg



HG165803 - AUTO-GUIDANCE KIT

Auto-Guidance Kit for Autonomous Aisle Tracking.



HG177901 - MOBILE STRAPPING DISPENSER WITH STEEL COIL

Metal Strip Cart complete with coil, designed for the installation of the metal guide track used by the Auto-Guidance Kit.



SOFTWARE

Professional software for the analysis of industrial floors and VNA aisles through the processing of point cloud data acquired by the robotic total station. The system automatically verifies compliance with the required standards, identifies out-of-tolerance areas, and generates digital correction maps and optimized grinding plans, improving accuracy, operational efficiency, and overall floor correction quality.



MAIN COMPONENTS OF LASER GRINDER 3D

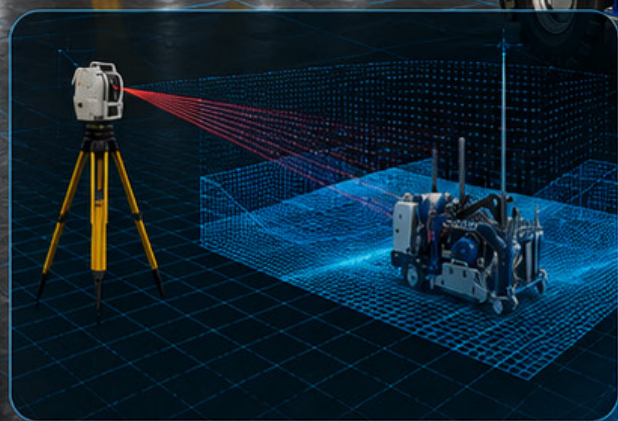
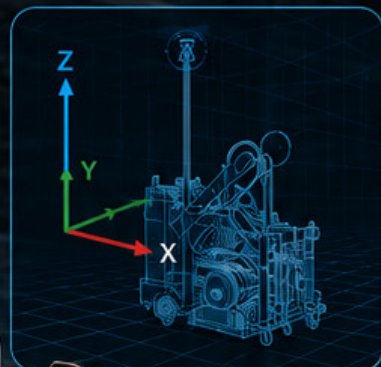
ROBOTIC TOTAL STATION 1" Angular Accuracy

KEY FEATURES



-  1" Angular Accuracy
-  Prism-Based Measurement Technology
-  Automatic Prism Tracking
-  Long Measurement Range
-  Automatic Orientation via Setup Pilot Technology

The robotic total station continuously tracks the prism mounted on the Laser Grinder 3D, enabling the system to determine the machine's exact position with millimetric accuracy.



MILLIMETRIC
ACCURACY



ADVANCED
TECHNOLOGY



COMPLETE
3D CONTROL



INTELLIGENT
AUTOMATION



ABSOLUTE
RELIABILITY

MAIN COMPONENTS OF THE LASER GRINDER 3D SYSTEM – 3D TECHNOLOGY

The 2026 configuration integrates professional surveying and machine control instruments, utilizing technologies developed by the world leader in precision measurement and machine control systems.

1" Robotic Total Station – Precision Surveying and Machine Tracking

Robotic total station designed for high-precision surveying and Machine Control applications. Thanks to automatic prism tracking, it provides continuous and accurate monitoring of the Laser Grinder 3D position throughout all operational phases.

Integrated advanced technologies enable intelligent prism acquisition, interference management within the working area, and automatic station orientation, improving system reliability, operational efficiency, and overall accuracy.

Key Benefits:

- 1" angular accuracy;
- Automatic robotic prism tracking;
- Continuous machine position monitoring;
- Faster surveying operations;
- Reduced alignment errors;
- Ideal for high-precision floor correction applications;
- Extended operating time with 8–10 hour Li-Ion batteries;
- Seamless integration with 3D and Machine Control systems.



Machine Control Panel – On-Board Operator Interface

The 3D control system integrates advanced technologies for the automated management of high-precision operations, combining both 2D and 3D machine control within a single platform. The control panel enables direct operation on 3D CAD projects, improving accuracy, increasing productivity, and reducing interpretation, layout, and manual operation errors. Its intuitive graphical interface provides real-time visualization of machine position, project data, and work progress, ensuring maximum control throughout the entire grinding process.

Key Features

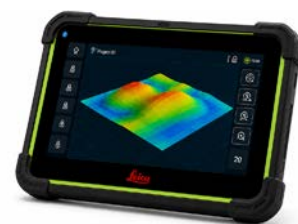
- 8" anti-glare touchscreen display
- Direct support for DXF / DWG / XML files
- Clear and customizable 3D visualization
- Immediate and intuitive machine information display
- IP66 / IP67 industrial protection rating
- Rapid project creation directly in the field
- Alert and safety zone management
- Seamless integration with robotic and Machine Control systems.

Control and Survey Tablet – Rugged Tablet

Professional tablet designed for operation in industrial environments and construction sites, ideal for surveying, Machine Control, and Laser Grinder 3D management applications.

Compact, lightweight, and highly durable, it features the Windows operating system, a 7" multi-touch display, integrated 3G/4G connectivity, and reliable performance even under demanding working conditions.

Its rugged design, combined with IP65 protection and MIL-STD certification, provides resistance to dust, water, and impacts, ensuring maximum reliability and continuous operation in the field.



Machine Communication System – Radio Communication Kit

Enables wireless communication between:

- Robotic total station;
- Machine control system;
- Field tablet.

Cross Slope Sensor

Ensures proper machine leveling during grinding operations and maintains stability throughout high-precision floor correction applications.

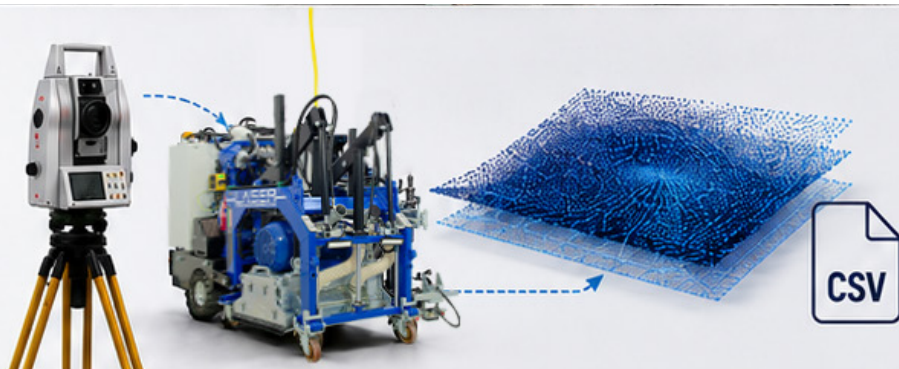


INTEGRATED DIGITAL WORKFLOW

Laser Grinder 3D introduces a **fully digital workflow** that integrates **surveying, analysis, and floor correction** into a single streamlined process.



1 FLOOR SURVEYING

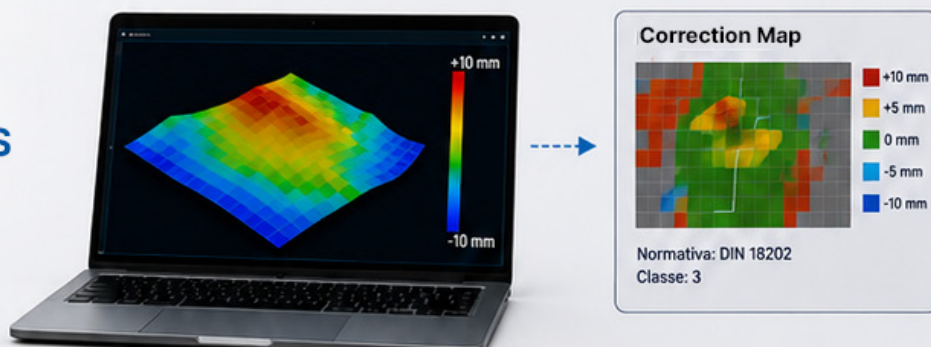


The floor surface is measured using:

- A robotic total station;
- Compatible scanning systems;

The acquired data is processed into a point cloud or CSV file that accurately represents **the geometry and elevation profile of the floor surface**.

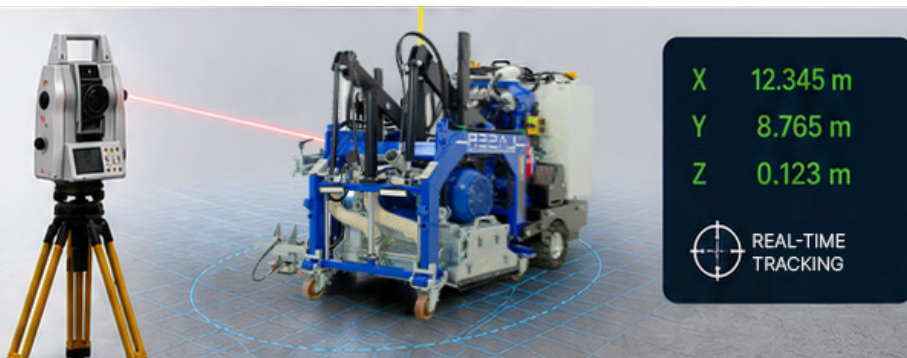
2 DATA ANALYSIS AND COMPARISON WITH REQUIRED TOLERANCES



The collected data is processed by HG Hyper Grinder proprietary software, which:

- Analyzes **floor flatness** and **levelness**;
- **Compares the results** against the selected standard;
- Identifies **out-of-tolerance areas**;
- Generates a **digital correction map**.

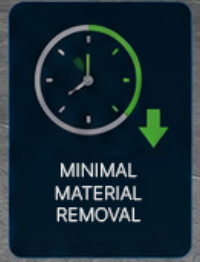
3 REAL-TIME MACHINE POSITIONING



The robotic total station continuously tracks the prism mounted on the machine, allowing the system to determine the exact position of the **Laser Grinder 3D** at all times within the working area.

4

FLOOR CORRECTION USING TWO OPERATING MODES



The machine can perform floor correction using two different operating modes:

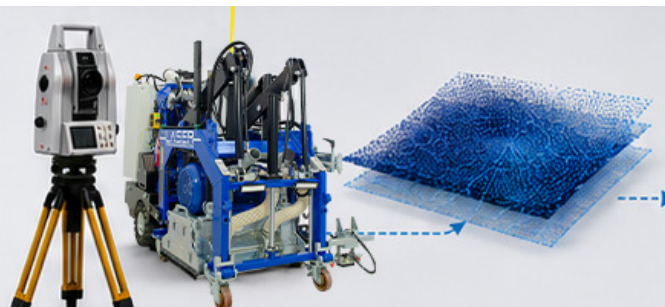
- **Preset Elevation Mode**
- **Automatic Spot Grinding Mode**

This approach provides:

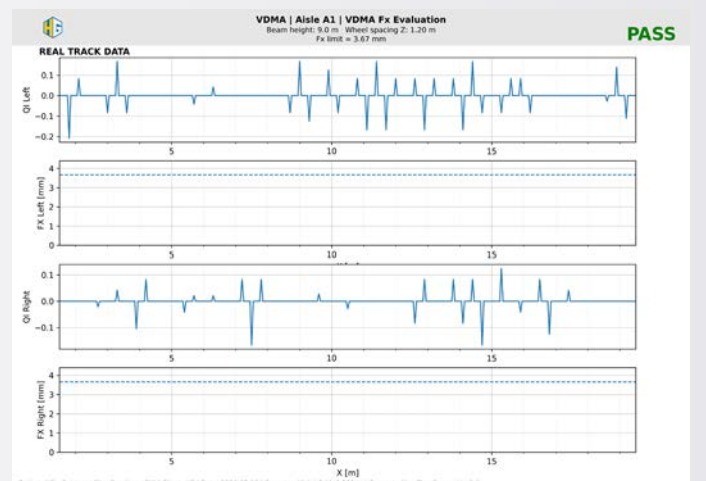
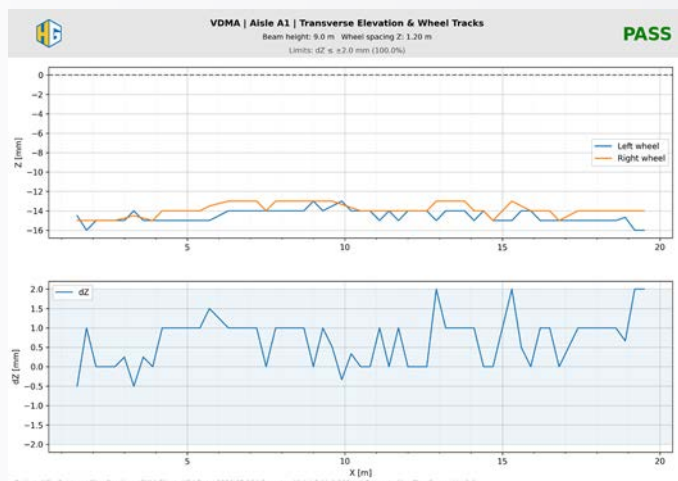
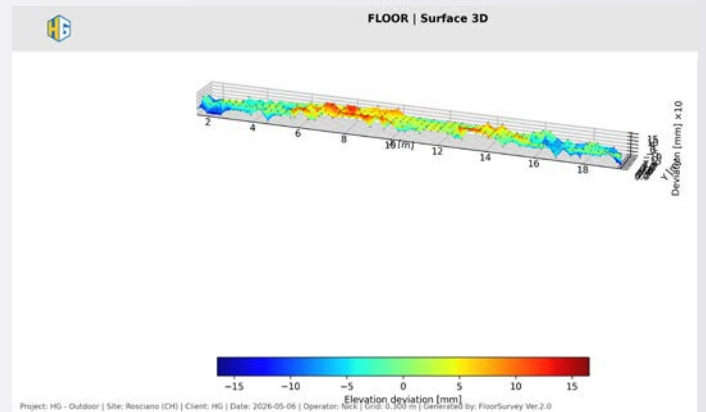
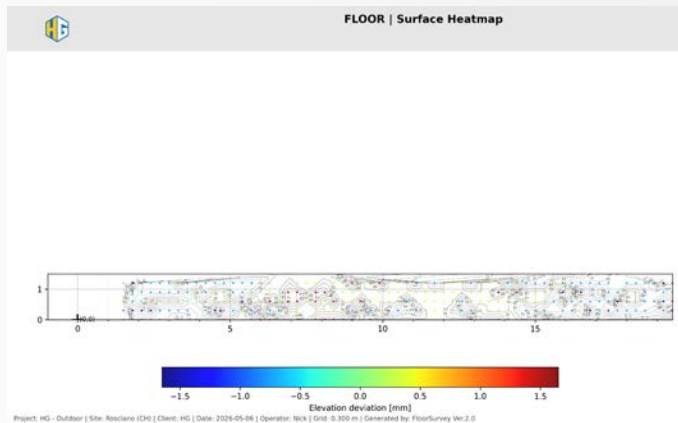
- Minimal material removal;
- Reduced processing time;
- Lower tool wear;
- Preservation of the floor structure.

5

FINAL VERIFICATION AND CERTIFICATION



Upon completion of the grinding process, the floor is re-measured using the robotic total station. The system then generates a comprehensive technical report certifying the floor's compliance with the required standard.



REMOTE TECHNICAL SUPPORT

An additional key advantage of the Laser Grinder 3D 2026 is the ability to provide remote technical support. Through a dedicated application, our technicians can securely access the machine's control panel remotely, in a manner similar to remote access systems commonly used on computers. This enables rapid diagnostics, software configuration, troubleshooting, and operational support, reducing downtime and ensuring maximum machine availability.



SECURE ACCESS
Encrypted and Secure Connection

DIAGNOSTICA IN TEMPO REALE
Complete Machine Monitoring

RAPID AND EFFECTIVE SUPPORT
Rapid Intervention and Problem Resolution

REDUCED DOWNTIME
Maximum Uptime and Productivity Guaranteed

CONNESSIONE SICURA

REMOTE ACCESS

HOME
Dashboard
Macchina
Allarmi
Parametri
Diagnostica
Manutenzione
Impostazioni

Quota: 20,5 mm
Avanzamento: 1,2 m/min
Velocità: 1500 rpm
Potenza: 75 %

EMERGENCY STOP
START
STOP
RESET
ENABLE
MANUAL AUTO

HG HYPER GRINDER

THIS ALLOWS US TO:



**ASSIST THE OPERATOR DURING
SETUP AND CALIBRATION**



**VERIFY THE MACHINE
OPERATING PARAMETERS**



**ANALYZE SYSTEM
PERFORMANCE**



**PROVIDE REAL-TIME
TECHNICAL SUPPORT**

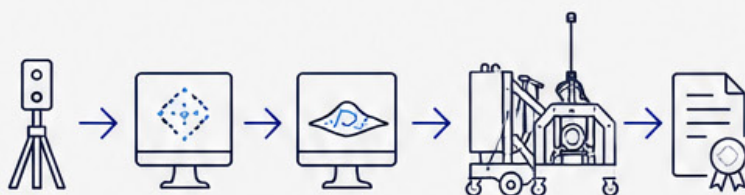
An internet connection is all that is required, either through:

- A Wi-Fi network available on site, or
- A SIM card installed in the machine control system.

This functionality significantly improves the speed of technical support and the operational reliability of the machine.

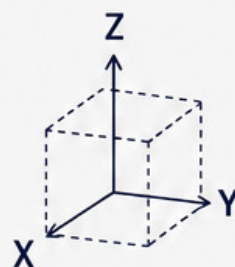
OPERATIONAL ADVANTAGES OF HG LASER GRINDER 3D

The 3D system offers numerous operational advantages:

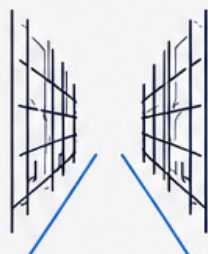


INTEGRATED WORKFLOW

SURVEYING → ANALYSIS → CORRECTION → CERTIFICATION



AUTOMATIC MACHINE
CONTROL
ON THE X, Y AND Z AXES



HIGHER PRODUCTIVITY
IN LONG WAREHOUSE
AISLES



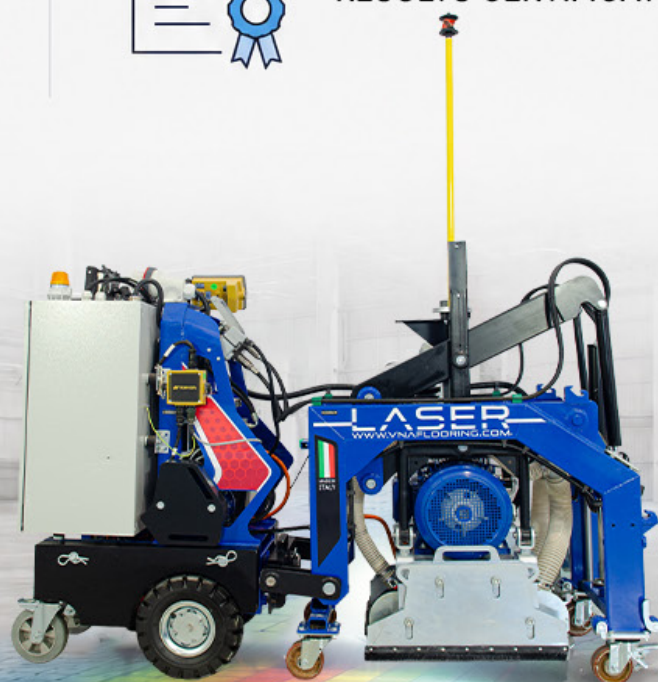
HIGH ACCURACY ON
LARGE SURFACES



REDUCED DEPENDENCE
ON THE OPERATOR

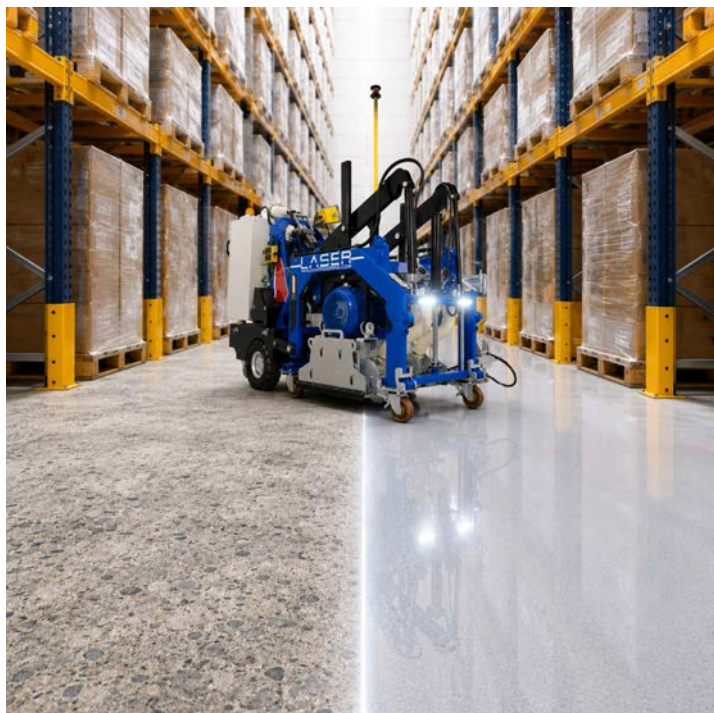


TECHNICAL
DOCUMENTATION AND
RESULTS CERTIFICATION



BUSINESS OPPORTUNITIES

Beyond its technical advantages, the **Laser Grinder 3D** also represents a significant business opportunity for companies operating in the logistics and industrial flooring sectors. Many warehouse floors are constructed using laser screed technology and typically achieve FM2 or FM3 tolerances. However, these standards are often insufficient for **VNA forklift** trucks and **automated warehouse systems**, creating a growing demand for floor upgrading and precision correction services.



With the **Laser Grinder 3D 2026**, companies can offer highly specialized services such as:

- VNA aisle grinding and correction;
- Upgrading floors from FM3 to VDMA standards;
- Floor preparation for AGV / AMR systems;
- Floor flatness verification and technical certification.

Because these services require specialized technology and expertise, they are in high demand and typically generate attractive profit margins.

Companies equipped with a Laser Grinder 3D often become the leading providers of precision floor correction services within their geographic region, gaining a significant competitive advantage.

					
HIGH-VALUE SPECIALIZED SERVICE	HIGH MARKET DEMAND	SPECIALIZED EXPERTISE AND TECHNICAL KNOW-HOW	INDUSTRY LEADERSHIP THROUGH SPECIALIZED EXPERTISE	SUSTAINABLE COMPETITIVE ADVANTAGE	HIGH PROFITABILITY

THE ADVANTAGES OF LASER GRINDER 3D

Laser Grinder 3D has been designed to deliver maximum precision, operational efficiency, and versatility in modern logistics and industrial environments.

Thanks to the integration of a robotic 3D control system and advanced machine control technologies, it offers numerous operational advantages that optimize productivity, reduce costs, and improve the quality of floor correction operations directly on site.



- **Easy to Transport and Maneuver**

The compact design of Laser Grinder 3D allows for quick and efficient transfer between different job sites and warehouses. Thanks to its reduced dimensions, the machine can be easily transported using standard vans, eliminating the need for trucks or specialized transport vehicles.



- **Reduced Set-Up Time**

Rapid deployment and fast start-up thanks to the robotic control system and automated setup procedures, minimizing preparation time and maximizing on-site productivity.



- **Dust-Free Dry Grinding**

The integrated dust extraction system enables clean, dust-free operation, making the Laser Grinder 3D suitable for use in sensitive environments and fully operational facilities without disrupting ongoing activities.



- **Operation in Active Warehouses**

Laser Grinder 3D can operate without interrupting normal warehouse activities, allowing floor correction work to be carried out safely and efficiently while logistics operations continue uninterrupted.



- **Grinding Close to Racking**

Ability to work up to approximately 30 mm from the racking, maximizing the usable surface area of the VNA aisle.



- **Millimetric Accuracy**

Automatic 3D control with high accuracy for full compliance with VNA standards.



- **Maximum Grinding Flexibility**

Ability to grind the entire aisle or operate on 2-track or 3-track configurations according to operational requirements.



INCREASE WAREHOUSE EFFICIENCY

With the exclusive HYPER FLAT FLOOR system, you will achieve the highest possible floor flatness in your warehouse in accordance with the most demanding standards and regulations. Proper floor flatness provides the following benefits:

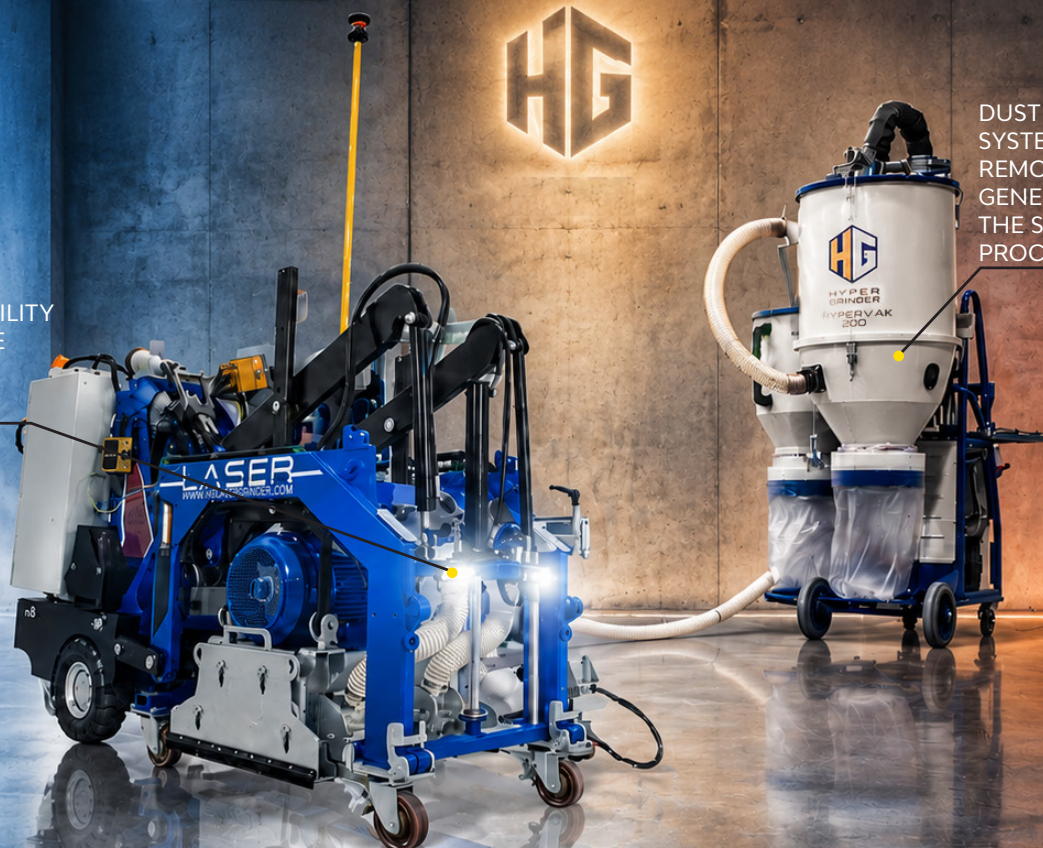
- HIGHER FORKLIFT OPERATING SPEEDS.
- IMPROVED WORKPLACE SAFETY.
- GREATER OPERATIONAL EFFICIENCY.
- REDUCED MAINTENANCE COSTS.
- IMPROVED QUALITY OF WORK.

The grinding process uses sympathetic gradients to improve floor flatness while complying with the requirements of the selected specification. Only the minimum amount of material is removed to provide the maximum benefit to the customer.

POWERFUL
LED LIGHTS TO
IMPROVE VISIBILITY
AND ENHANCE
WORKPLACE
SAFETY



DUST EXTRACTION
SYSTEM FOR THE
REMOVAL OF DUST
GENERATED DURING
THE SCARIFYING
PROCESS



RECOMMENDED DUST EXTRACTOR

HYPERVAK 200



Professional dust extractor designed for the rapid collection of large volumes of fine dust. Particularly suitable for dry grinding applications on natural stone, concrete, wood, and any operation where efficient dust extraction is required. The fully automatic Hyper Self Cleaning (HSC) system cleans the filter through vibration and reverse air pulses, ensuring reliable and effective performance. The filters are cleaned to near-new condition, maintaining maximum extraction efficiency.

The high-performance pre-separator cyclone (optional) removes up to 95% of the dust, significantly extending filter life. The continuous bag collection system allows faster and easier dust disposal.

Its robust construction provides excellent maneuverability, high quality, and long-term reliability. The machine is also designed for easy maintenance, helping to minimize operating costs.

For transport and storage, the machine height can be reduced to just 175 cm, minimizing space requirements. Large wheels and lockable casters make handling and transportation easy.

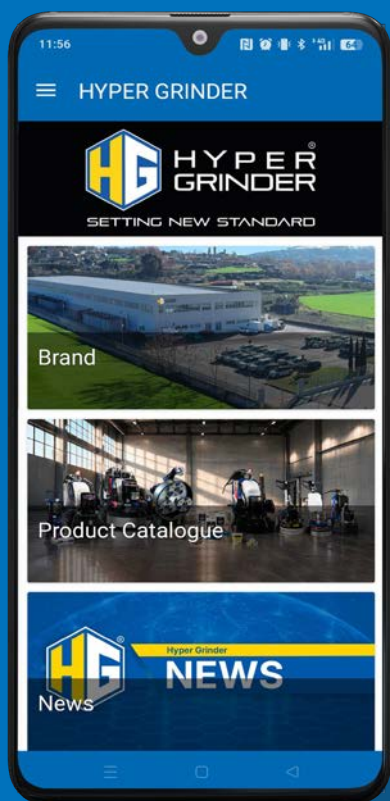
HYPERVAK 200 features a 3-stage filtration system:

- 1: Cyclone Separator
- 2: Main Filter
- 3: HEPA Filter

Optional: Pre-Separator Cyclone Kit – Part No. HG000402KIT200

TECHNICAL DATA

Modell	Motor kW	Depress. max mm H ₂ O	Volt	Hertz	Amp	Filter Surface cm ²	Max Airflow m ³ /h	Container Capacity L	Dimensions L x H x W cm	Weight Kg
Hypervak 200 T5 HSC	5,5	2400	380/480	50/60	16	97000	640	Continuous bag	137x203x60	159
Hypervak 200 T7 HSC	7	3875	380/480	50/60	16,7	97000	724	Continuous bag	137x203x60	165



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