CONFIDENTIAL

Prot. No. R014HWRS_JGC_HELTC

Kind att.
mr Ioannis Kalfas

Date

Brescia, 19th May 2026

LiDAR Solutions
Portable Mobile Mapping System "**HERON**"
Open Pit Mine Monitoring Solution "**OPMMS**"

Software Solutions
3D Point Cloud Processing "**Reconstructor**"
SLAM Post-processing "**HERON Desktop**"
2.5D Views Management "**GoBlueprint**"
Scan-to-BIM Solutions
Point Cloud Web Sharing Platforms

Lidar Sensors
Velodyne Sensors (official reseller)

Consulting
Global consultancy in construction and infrastructures **surveying and monitoring**.
Specialized in **tall structures**.

Dear mr Kalfas,

we thank you for the interest in HERON® LITE Color mobile surveying system; please find below the quotation for HERON® LITE Color mobile surveying system companied by all the technical details.

Please fill free to contact us for any additional request.

Sincerely yours,
Gexcel Sales Team

HERON® LITE Color

HERON® LITE Color is a wearable 3D mapping system featuring a capture head composed by **one LiDAR sensor**, for robust 3D geometry acquisition, a 4 lenses GEXCEL engineered **RGB hi-resolution panoramic camera** for images collection and an **IMU** sensor. Images can be acquired in continuous (for point cloud colorization) or on-demand at 8K in particular to obtain 360° panoramic virtual tours. **HERON® LITE Color** works in mixed indoor/outdoor environments and supports geospatial and digital twin applications. HERON® LITE Color is provided with a **complete software package** to manage the entire data processing workflow.

HERON® LITE Color components

HERON® LITE Color is composed by a capture head (Img.1), a Light Controller with internal battery (Img.2), a PDA (Img.3) for wireless control HERON®**.** The Light Controller can be carried inside the rugged backpack and the capture head installed on the pole placed on the top of the rugged backpack. It is also possible to use HERON® in the most various configurations, also without the backpack, just connecting the capture head to the Light Controller by a cable. External batteries can easily be fixed to the Controller.

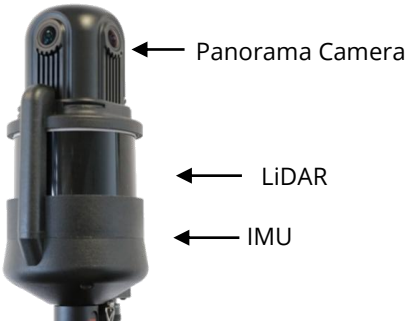


Fig. 1: Capture Head

Fig .2: Light Control Box

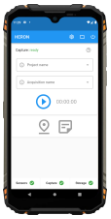


Fig. 3: PDA Personal Digital Assistant

HOW IT WORKS

The use of HERON® is very simple, and getting the results is fast. Fix the capture head on the telescopic pole, connect the cable to the light control unit and connect wireless the PDA to the Light Control Box . The capture head can be also installed on vehicles as **cars, bikes, quads** (Ask for the accessories to activate these features). No time consuming calibration or initialization procedures are required; mapping starts soon as soon as the components are connected and the control unit is switched on.

MAPPING RULES

It is possible to stop and restart the acquisition at any time and to split the scanning activity into multiple sessions. Restarting the system is not a problem as scans can be connected together in a single coherent and aligned point cloud during the post processing phase. The surveyor trajectory can be organized in a close loop or as an open path. HERON® can work in dark conditions too (if images are not required).

WHERE TO USE HERON®

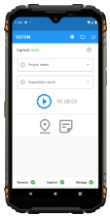
HERON® can be used in the most different environments, from extreme ones as deep underground mines, until multilevel buildings, complex construction sites or industrial plants both for 3D mapping, geospatial or Digital Twin projects. HERON® can be used both in outdoor and indoor. For his reason HERON® can be used for city mapping, real estate and building surveying, industrial, construction and infrastructures project; where the reality to be mapped is composed by a good and various 3D geometry, the SLAM algorithm can evaluate the trajectory. Installed on a telescopic pole, the capture head can work upside down and easily map cavities and to compute volumes of tanks.

EXTREME ENVIRONMENTS USAGE

HERON® does not fear hot environments, thanks to an automatic fan present inside the Capture Head. A led optional light can be added to the capture head to get color images in dark environments too. A number of poles of different lengths are available to support remote mapping of large cavities and shafts. The capture head can be fixed to the Box Unit, so to be easily installed on a robot and remotely controlled via PDA.

SYSTEM CONTROL

HERON® is controlled by a PDA (Personal Digital Assistant), to control the capture settings, for file manager and to get control points on the field.



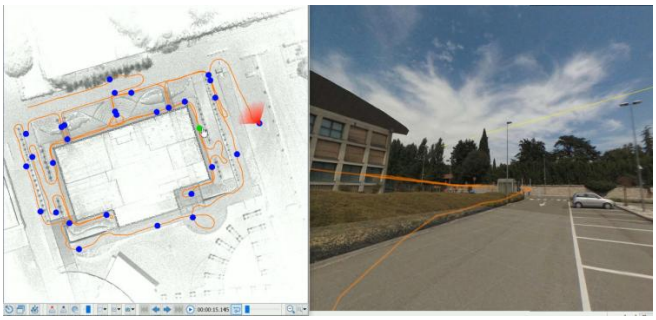
PDA

DATA ELABORATION WORKFLOW

With HERON® a full set of post processing software is provided:

- HERON® Desktop software is a powerful SLAM post processing software, with a patented algorithm. HERON® Desktop produces a 3D point cloud model of the survey.
- GEXCEL Reconstructor® software is also provided for advanced point cloud management. Reconstructor® is a worldwide well known software.

HERON® Desktop and Reconstructor® software are included with the Hardware.



COLOR ACQUISITION

HERON® is equipped with a High Resolution Camera (Fully engineered by GEXCEL) that allows acquiring RGB Full Resolution spherical images at 24fps or 8K Resolution images on demand. The color is automatically mapped on the 3D model so. In this way it is possible to obtain a colorized point cloud model or a virtual tour by navigation throughout spherical images (inside the Gexcel Reconstructor® software or by third parties software). A Led based Lighting lamp is available to support the color acquisition in dark environments.

CONSTRAINS FOR ACCURACY IMPROVEMENTS

HERON® supports various methodologies to insert constraints in the point cloud so to improve the global accuracy of the survey. Constrains can be managed as follow:

- By measuring Points of Known coordinated (Control Points) positioning capture head on a pole and positioning the pole on the Control Point
- Control points can be positioned on the ground, on a wall or on the ceiling of the site (for example on the volt of a tunnel of a deep mine).
- Control points can be recognized by the operator in the point cloud obtained by HERON®
- Portion of georeferenced point clouds coming from Tripod Scanner, from UAV, from a BIM model or from a mobile mapping system can be used as constrains too.

GEOREFERENCING

Coordinated of control points measured by GNSS or by total station can be used to georeference the point cloud model.

POINT CLOUD

Very dense point cloud rendering with multiple color layers and advanced point cloud rendering which prominently emphasizes features and details can be obtained thanks to the GEXCEL Reconstructor® software.

PRODUCTIVITY

HERON® LITE Color can work for one hour using the internal battery of the Control Box. External extra batteries can be easily plugged on the Control Box to improve the working time to 1 or 2 hours. HERON® can work at the walking speed of the surveyor or at maximum suggested speed of 30 km/h (19 miles/h) if mounted on a vehicle. For this reason it is possible to map, at walking speed, more than 3 Km per hour of tunnels, roads or routes, or around 12.000 m^2/h on buildings or more than 150.000 m^2/h in outdoor environments.

ACCURACY

HERON® LITE Color provides as result a point cloud model with a local accuracy of around 5 mm and a global accuracy of around 5 cm using control points. Without the use of control points the system provides a global accuracy of 10/20 cm accuracy that can vary in function of the geometry of the object mapped or in function of the path followed by the surveyor. The patented algorithm of HERON® LITE Color allows improving the global accuracy, if cross trajectory during the mapping is applied. The system does not require starting and finishing the mapping activity from the same position.

MULTI RESOLUTION AND MULTI SENSORS

HERON® LITE Color provides as output standard point clouds data with reflectance (or color if the acquisition of color is made in Full Resolution mode and not in High Resolution 8K on demand mode). This data can be easily merged and aligned with point clouds and meshes coming from UAV based sensors, Terrestrial Laser Scanners, .las files, hand held devices. Gexcel Reconstructor® software can in fact import all the main point clouds formats and automatically align and merge the 3D data from different sources at different resolution.

1) HERON® LITE Color - SYSTEM COMPONENTS

HERON® LITE Color is provided with all the software necessary to process the data acquired on the field by the system and to produce the deliverables needed by the final user. It is also present a list of hardware accessories and several software packages from Gexcel and from Gexcel's partners, to satisfy the more particular needs of the surveyor.

HARDWARE COMPONENTS

- 1 Capture head (1 laser with integrated IMU and a 360° panoramic camera and cooling fan)
- 1 Light Control Box with internal battery to manage 1hours HERON® working time
- 1 PDA Personal Digital Assistant for around 20 hours working time
- Telescopic carbon fiber pole with rapid and secure fixing
- Cables
- 1 professional USB data transfer key (to transfer the data from the Light Control Box to the post processing PC)
- Shoulder Straps

SOFTWARE INCLUDED WITH HERON®

HERON® Desktop (1 license by USB dongle key)

On-premise software for post-processing data management (no raw data sharing on the web – data security granted)

HERON® Desktop is the GEXCEL powerful post processing software where runs the GEXCEL patented SLAM algorithm and where the constraints are managed.

The HERON® raw data stored in the HERON® Light Control Unit have to be copied into a workstation where HERON® Desktop post processing software have been installed.

HERON® Desktop features:

+ Run the SLAM algorithm so to produce, from the Raw data acquired in the field, the trajectory made by the surveyor and to produce a point cloud model of the mapped site by HERON®

+ Raw data can be split into smaller parts in order to both cut any unwanted/unnecessary part and speed up the post processing process, if the survey has been taken for a long duration

+ Data post processing can be done in both fully automatic and manual workflow, where there are defaults Presets in

each step of the workflow itself, and main parameters are fully under users' control in manual mode.

+ Different HERON® surveys, different split parts from one single HERON® survey, a HERON® survey and external point clouds can be connected/aligned/merged together in HERON® Desktop

+ Moving objects can be removed by automatic Cleaning functions

HERON® DESKTOP Constraints add-on

For the projects/applications which requires high level of accuracy but have to be fast and done for huge areas. With this add-on, during the post processing software, external known points and georeferenced point clouds can be imported and used as fixed constraints in space. The raw HERON® Data will be integrated with these fixed constraints in order to achieve optimized global accuracy.

At the end of post processing process with integrated constraints, the processed HERON® data can:

- Achieve global accuracy of 5 cm or even less if the HERON® survey would be planned properly
- Be georeferenced with respect to the spatial information from the constraints

External known points are points which are acquired by Total station, GNSS.

External georeferenced point clouds can be any type of point clouds acquired by TLS, mobile mapping systems, UAV or even point clouds converted from BIM models.

Reconstructor®

A worldwide well-known software for advanced 3D point clouds analysis fully developed by GEXCEL, and be adopted by several hardware companies as main software sold in complete solution package with their instruments.

In only one single platform, LiDAR data from terrestrial laser scanners, handheld, mobile, airborne/UAV acquired point clouds, mesh models, CAD/BIM models and polylines can be imported, processed and managed.

DotProduct, Faro, Riegl, Stonex, Teledyne Optech, Topcon, Zoller + Fröhlich are laser scanners whose raw scans data are fully compatible for direct importation in Reconstructor.

The software contains a series of advanced tools for point cloud registration. The powerful **automatic registration** tool supports the registration of a huge number of scans together, using only common geometries; the **target-based** registration tool supports automatic recognition and detection of spherical and circular targets. **Bundle adjustment** is the fine registration process which runs an advanced and enhanced algorithm to minimize and optimize global registration errors.

Data georeferencing can be done in a flexible way either by using control points or using reference georeferenced 3D models.

Artificial colorization can be generated as a new color layer of a point cloud which can be scalar (i.e reflectance, range, confidence, altitude, and range) or vectorial (i.e inclination), which will be useful to better display or highlight features from the point cloud.

The main outputs of processed data include mesh models (3DS, DXF, PLY, OBJ, etc.); 3D distances; Areas; Volumes

computation; Cross sections and isolines (DXF), Mesh borders and edges, Orthophotos and X-ray Orthophotos (real dimension); Change detection planarity and verticality maps; flythrough videos.

Point clouds can be exported in E57, PLY, LAS and other interchangeable formats.

The results of a HERON® survey can be exported directly into Autodesk® environment, in particular, in ReCap project with all 3D data and spherical images overlapped and are ready for any further traditional downstream workflows.

Data exportation for the most commonly used software and sharing platforms is also supported with direct import and upload to:

- Vertical software: Orbit 3DM Feature Extraction, ClearEdge3D EdgeWise, Micromine, Faro Scene.
- Cloud-based webshares: Orbit 3DM Cloud, 3DUserNet, Cintoo, Faro WebShare.

See more details on suggested vertical software and webshare tools in the following pages of this document.

Recontructor® HERON® add-on (1 license by USB dongle key)

HERON® add-on comes along with HERON® package, which is especially developed for managing HERON® data and integrating HERON® point clouds coming from other sources.

When loading point clouds model in Reconstructor®, it is possible to define the resolution of the point cloud at the density of the processed point cloud imported in Reconstructor® can be defined by user's convenience. Additionally it is possible to filter the point clouds coming from HERON® LiDAR sensors. A 3D Reflectance color layer can be added into the point cloud's color layers.

The HERON® survey can be visualized in the form of a X-Ray orthophoto that display a 2,5D orthophoto of the point cloud obtained by the HERON®. The X-Ray orthophoto can be moved to Autodesk® AutoCAD® to easily measure the geometries.

Inside Reconstructor® HERON® add-on it is also available to use the Blueprint Navigator tool provides the functionality the experience of a 3D immersive navigation tour inside the HERON® survey, along the acquired trajectory.

Create Reference Map is used to transform 3D mapping data into reference models which are ready to be used in Change Detection mode, Tracking add-on and Constraints add-on.

HERON® point clouds can be exported directly and ready to be opened as Autodesk® ReCap Project with high density point clouds and spherical views, thanks to the availability of 5K images and Export 3D panorama function.

Direct exportation of standard format files to Faro® WebShare, Orbit® GT software, and Cintoo® are supported.

Reconstructor® 3D Viewer (free licensing)

On-premise software for 3D point clouds visualization offering

- Navigation of 3D inside Reconstructor® projects and visualization of 2D views (generated in Reconstructor®).
- Linear/Angular measures.

- Annotations.

GoBlueprint (free licensing)

On-premise software for 2D views measurement, which can be installed on any Window computers or Window mobile devices for the uses both in the office and onsite jobs, providing

- Visualization of X-Ray images (blueprints) through a 2Dview (generated in Reconstructor®).
- Measures (distances, areas, volumes) directly on 2D plans or elevations.
- Quickly sharing of survey results in a very simple way.
- Export to Autodesk® AutoCAD® with real dimensions.
- Running on any Windows-based pc or tablet for onsite usage.
-

Recommended Software Requirements*
- Processor: Intel Core i7/ Core i9/Xeon or equivalent, 4 or more physical cores, on a single CPU socket.
- Main memory (RAM): 32 GB.
- Graphics card that supports OpenGL 4.0 or higher, 4 GB dedicated GPU memory, single GPU.
- Windows 10.
- Mouse with two buttons plus a clickable scroll wheel.
- Screen resolution: 1920x1080 or higher.

* For more information about your workstation configuration requirements, please contact our team at sales@gexcel.it

1-YEAR CARE PACKAGE

The care package is active for 12 months from the date of goods delivery. It includes:

- Warranty*
- Software updates and license

* The warranty coverage excludes accidental or willful damages.

2) GEXCEL SOFTWARE ADD-ONS (OPTIONAL)

The following software add-ons can be added to the included software packages in order to satisfy the request of specific processing needs or outputs.

Reconstructor® MINING add-on

This package of functions is suitable for spatial data, quarries or open pit mines to monitor the changes and optimize the development of a site and make work progress decisions based on detailed information.

As quantities have been the most important input or output for people working on aggregates and mining industries. Cut&fill volume computation can be used in almost every stage of the quarrying and mining processes. The Reconstructor® MINING add-on provides a simple Cut&Fill volume computation: the user just need to input, in the software, two 3D meshes of a site which are acquired at two different times, then, constraints as planes and polylines can be added to narrow down the interested computation area. Cut&fill volume computation results will be displayed with respect to both the total cut and fill volume and cut and fill volume accordance with altitude from reference plane. Standard PDF and CSV report format files are built and will be exported as users' convenience.

Topographic meshes of a huge scanned site can be generated easily from original point clouds by defining a polyline constraints and a user-defined view to the point cloud.

In a quick and simple way, *DEM points* tool is a complete new development of Reconstructor® which can generate Digital Elevation Models (DEMs, both DSMs and DTMs) from a very complex point cloud. Users only need to define point spacing between each individual point and point selection options (i.e. same data, *Lowest point* selection for DTM, and *highest point* for DSM). At the end of the computation, the tool will provide an orthophoto of the complete point cloud, a simplified structured point cloud defined by *point spacing* parameter and a point list including all spatial information of points in the simplified point cloud. From the point list or the simplified point cloud, a mesh can be generated easily by meshing tools built-in Reconstructor® software.

The meshes generated in Reconstructor® can be exported in 3DS, DXF, PLY, OBJ, and many other interchangeable mesh formats, for traditional downstream workflow.

Especially for mining application, edges known as crests and toes, as the key feature of interest providing a way to verify the current shapes of the mine, can be automatically detected and extracted in some seconds using *Crests and Toes* tool. Level of details of edges can be defined by users and these edges can be exported as polylines in DXF format, ready to open in Autodesk® AutoCAD.

To extract Contours, from the latest development of Reconstructor®, contour lines can be extracted from both 3D meshes and 3D point clouds (both structured and unstructured point clouds can be used) using *Contours* tool, the final result includes not only polylines but also orthophoto of every invaluably contour line and point cloud slices if

the model used in the computation is a 3D point cloud.
With the Mining add-on, Tunnel cross sections can also easily be extracted from survey trajectory, polylines, and user-defined lines. Cross sections as polylines are ready to be exported in DXF and used in Autodesk® AutoCAD.

Reconstructor® COLOR add-on

The Color add-on includes tools which are designed to manage the colorization of 3D models (both point clouds and meshes) using external images (prospective, spherical, thermal). These tools can be classified according to the objects that users want to colorize and the procedures they need to apply.
For the higher level of detail recognitions and display, from 3D models (3D structured point clouds and texture meshes), with high resolution images taken by professional camera, the Texture Mapping tools can integrate and colorize a 3D model from these images, then blend color information from these images into one single complete 3D model adding another color layer along with the original one. This requirement is typically required by professionals and experts working in Heritage, Archeology applications.

3) GEXCEL ACCESSORIES

HERON® LITE Color is a versatile system: it can be used tilted, wore or handheld. The Capture Head can be easily docked on poles and vehicles, thanks to the car mount accessory. Cables of various lengths are available to assure the connection between the Capture Head and the Light Control Unit Box.

External Battery

To extend HERON® working time of around 1 hour. Easily and fast fixing to the external part of the Light Control Box.
To be ordered if LED Ring is used.

- li-ion battery
- 12V-7000mA
- 445g
- 77x160x25mm

#4 Sections Pole with connection cable

To measure remote control points or to measure cavities, thanks to a telescopic pole where the Capture Head is dockable. Perfect when using along with the HERON Constraints add-on (Connecting cable must be added)

- Pole is composed by 4 sections
- retracted: 56 cm
- extended: 180 cm

Cable to connect the Capture Head to the 4 Sections Pole

Rugged Backpack *Plus*

Rugged backpack hard case usable both for transportation and acquisition

- Dimension: 540 x 400 x 220 mm
- Weight: 5000 g

Lighting LED Ring

Dedicated lighting LED to light up dark scenes when HERON® images have to be acquired

To be used with a dedicated battery, not included.

- 24 volt
- 36 Watt

Tild Adapter

Pole Adapter to tilt the capture head - Only for LITE series

4) COMMERCIAL PROPOSAL

DESCRIPTION	PRODUCT CODE	UNIT PRICE	RESERVED JGC DISCOUNT
HERON LITE COLOR 1 X CAPTURE HEAD (1 LIDAR 120 M RANGE WITH INTEGRATED IMU) 1 X LIGHT CONTROLLER WITH INTERNAL BATTERY 1 X LIGHT CONTROLLER CHARGER 1 X RUGGED BACKPACK 1 X PDA PERSONAL DIGITAL ASSISTANT 1 X PDA CHARGER 1 X CARBON FIBER POLE 1 X CONNECTING CABLE 1X PROFESSIONAL USB DATA TRANSFER SOFTWARE: 1 X HERON DESKTOP + CONSTRAINTS ADD-ON RECONSTRUCTOR + HERON ADD-ON RECONSTRUCTOR VIEWER INCLUDED FREE OF CHARGE GOBLUEPRINT VIEWER INCLUDED FREE OF CHARGE 1 YEAR CARE PACKAGE	HELT03SCB	36.200,00 €	25%
ACCESSORIES			
EXTERNAL BATTERY - ADDITIONAL	HEBAT	480,00 €	INCLUDED
4 SECTIONS POLE WITH CONNECTION CABLES	HEPOLEX HEMSTWCCA04	655,00 €	INCLUDED
LED RING LIGHT (AN EXTRA BATTERY - EXTERNAL BATTERY - IS REQUESTED)	HELED	1.450,00 €	10%
RUGGED BACKPACK PLUS	HELTBKHC+	2.440,00 €	10%
TILT ADAPTER	HETILT	510,00 €	INCLUDED
SOFTWARE			
RECONSTRUCTOR COLOR ADD-ON		2.850,00 €	10%
RECONSTRUCTOR MINING ADD-ON		1.950,00 €	10%
SERVICES BLUE OPTION CARE PACKAGE HARDWARE MAINTENANCE AND TECHNICAL SUPPORT - TO BE CONFIRMED ON THE HERON'S PURCHASE DATE (INCLUDES: EMAIL SUPPORT – 10 HOURS 2 DAYS WEB TRAINING) DOES NOT INCLUDE: SHIPPING , CUSTOM DUTIES REPAIRS OR FAILURES DUE TO NEGLIGENCE OR MISUSE)		3.780,00 €	10%
SILVER OPTION CARE PACKAGE HARDWARE MAINTENANCE AND TECHNICAL SUPPORT - TO BE CONFIRMED ON THE HERON'S PURCHASE DATE (INCLUDES: EMAIL SUPPORT – 20 HOURS 2 DAYS WEB TRAINING) 1 KEY REPLACEMENT 250 € HERON SUPPORT WITH REMOTE DATA ELABORATION 15 HOURS – 10% DISCOUNT WARRANTY EXTENSION 1ST YEAR (ON DATE OF PURCHASE - SHIPPING AND CUSTOM DUTIES EXCLUDED) – 5% DISCOUNT DOES NOT INCLUDE: SHIPPING , CUSTOM DUTIES REPAIRS OR FAILURES DUE TO		5.580,00 €	10%

NEGLIGENCE OR MISUSE)			
GOLD OPTION CARE PACKAGE HARDWARE MAINTENANCE AND TECHNICAL SUPPORT TO BE CONFIRMED ON THE HERON'S PURCHASE DATE (INCLUDES: EMAIL SUPPORT – 20 HOURS HERON SUPPORT WITH REMOTE DATA ELABORATION 15 HOURS 2 DAYS WEB TRAINING) 1 KEY REPLACEMENT FOR FREE 1 YEAR WARRANTY EXTENSION (ON DATE OF PURCHASE - SHIPPING AND CUSTOM DUTIES EXCLUDED) DOES NOT INCLUDE: SHIPPING , CUSTOM DUTIES REPAIRS OR FAILURES DUE TO NEGLIGENCE OR MISUSE)		8.960,00 €	10%
HERON SUPPORT WITH REMOTE DATA ELABORATION 15 HOURS		4.200,00 €	10%
HERON SUPPORT 10 HOURS BY EMAIL		2.200,00 €	10%
WARRANTY EXTENSION 1 YEAR ADDITIONAL – TO BE CONFIRMED ON THE HERON'S PURCHASE DATE (DOES NOT INCLUDE: SHIPPING, CUSTOM DUTIES REPAIRS OR FAILURES DUE TO NEGLIGENCE OR MISUSE)		4.940,00 €	10%

5) GENERAL CONDITIONS

Delivery	DELIVERY IS 4 WEEKS AFTER RECEIPT OF ORDER
Price	VAT EXCLUDED CUSTOM COSTS, IF PRESENT, ARE NOT INCLUDED ALL OTHER DUTIES AND COSTS NOT INCLUDED SHIPPING EXPENSES NOT INCLUDED
Payment Conditions	50% AT THE ORDER CONFIRMATION 50% AT THE SHIPMENT
Offer validity	12ND JUNE 2026
Sing and Stamp	