

HYPERTHERM ASSOCIATES • INDUSTRIAL ABRASIVE WATERJET CUTTING SOLUTIONS

Precision Abrasive Waterjet Cutting Systems

Global Leader **OMAX** • Official Distribution **LUCOHE**

Pioneers in high-efficiency direct-drive pumps (>85% electrical efficiency), 4th generation fluid dynamics modeling, and pure cold-cutting with zero Heat-Affected Zone across any engineering material.

>85%

ELECTRICAL EFFICIENCY AT NOZZLE

±0.025 mm

BRIDGE KINEMATIC ACCURACY

0.00°

TAPER WITH TILT-A-JET & VERSAJET

€0

ANNUAL SOFTWARE FEES (LIFETIME)



OMAX Corporation & Hypertherm Associates

Three decades of cutting-edge innovation, US manufacturing, and global precision engineering

GLOBAL LEADER

HERITAGE & RIGOR

The manufacturer that transformed water into a high-precision machine tool

Founded in 1993 in Kent, Washington (USA) by Dr. John Olsen and Dr. John Cheung, OMAX was the first company in the world to apply computer mathematical modeling to abrasive waterjet cutting.

Today, as a flagship brand of **Hypertherm Associates** (a 100% associate-owned company), OMAX engineers and manufactures the complete system under one roof: machine beds, pumps, kinematics, cutting heads, and CNC software.

6,000+

MACHINES ON 5 CONTINENTS

100%

IN-HOUSE MANUFACTURING

100% Kent, Washington (USA)

Unlike assemblers that purchase third-party generic pumps or CNC controllers, OMAX designs and fabricates every core mechanical and electronic component in its dedicated 20,000 m² facility.

Hypertherm Industrial Power

Backed by the global strength of Hypertherm Associates, ensuring long-term financial stability, ongoing R&D investment, and decades of guaranteed spare parts availability worldwide.



Grupo Lucohe: Official Exclusive Distributor

More than 40 years of industrial engineering excellence across Spain and Portugal

IBERIAN PENINSULA DISTRIBUTION

LOCAL EXPERIENCE & RELIABILITY

Industrial peace of mind backed by certified technical service

Grupo Lucohe represents OMAX exclusively in the Iberian market, delivering turnkey installations, preventative service, factory-certified operator training, and immediate consumables supply.

With central headquarters and demonstration showroom located in **Coslada (Madrid)**, our engineers ensure direct, responsive, and uninterrupted technical support across all Spanish and Portuguese industrial hubs.

+40

YEARS OF INDUSTRIAL EXPERIENCE

24h

SPARES DISPATCH COMMITMENT

Certified Factory Engineers

Our field technicians are trained directly at OMAX headquarters in Kent (USA), using official diagnostic tools, precision calibration protocols, and genuine OEM maintenance procedures.

Extensive Spares Warehouse

Over €500,000 in permanent stock of genuine OMAX orifices, mixing tubes, dynamic high-pressure seals, and Barton garnet abrasive, ensuring same-day dispatch.

Renishaw Ballbar Dynamic Calibration

Every installation in Spain and Portugal undergoes full circularity and orthogonality certification using Renishaw Ballbar systems, ensuring aerospace-grade accuracy.

Direct-Drive Crankshaft vs. Hydraulic Intensifier

The fundamental thermodynamic comparison: maximum electrical efficiency and zero hydraulic oil

OMAX DIRECT-DRIVE PUMP

OMAX Crankshaft Direct Drive

The electric motor directly turns a heavy-duty mechanical crankshaft with ceramic plungers, transferring **more than 85% of electrical grid power directly to the cutting jet.**

- ✓ **>85% Electrical Efficiency:** Minimal energy lost as heat.
- ✓ **0 Liters of Hydraulic Oil:** Zero oil changes, filters, or leaks.
- ✓ **Continuous Variable Frequency:** Consumes only what is cut.
- ✓ **40 HP = 60 HP Intensifier:** Equal or superior cutting speed.
- ✓ **No High-Capacity Chiller Required:** Minimal cooling water needed.

LEGACY HYDRAULIC INTENSIFIER

Conventional Hydraulic Intensifier

Electricity drives an oil pump, which moves a hydraulic piston, which then compresses water. This double conversion loses **35% to 40% of input power as wasted thermal energy.**

- ✗ **60% - 65% Low Efficiency:** Huge electricity waste.
- ✗ **150 - 250 Liters of Oil:** Hazardous waste and frequent costly oil changes.
- ✗ **Pressure Surges at Stroke Reversal:** Creates visible striations on parts.
- ✗ **Requires 15-20 kW Chiller:** Extra power consumption.
- ✗ **High Operating Costs:** €4,000 - €8,000 higher annual expenses.



OMAX High-Pressure Pumps: EnduroMAX & MAXIEM

Continuous reliability up to 60,000 PSI with industry-leading 1,000-hour dynamic seal life

DIRECT-DRIVE HERO PUMPS



60,000 PSI (4,137 bar) • Available in 20, 30, and 40 HP configurations

EnduroMAX® Direct Drive Pump

- 1,000H MAINTENANCE INTERVAL
- >85% EFFICIENCY

Independent cylinders with micro-finished ceramic plungers. Changing dynamic seals takes less than 15 minutes per cylinder using standard hand tools.



MAXIEM® Direct-Drive Pump

50,000 PSI (3,447 bar) • Available in 20, 30, and 40 HP configurations

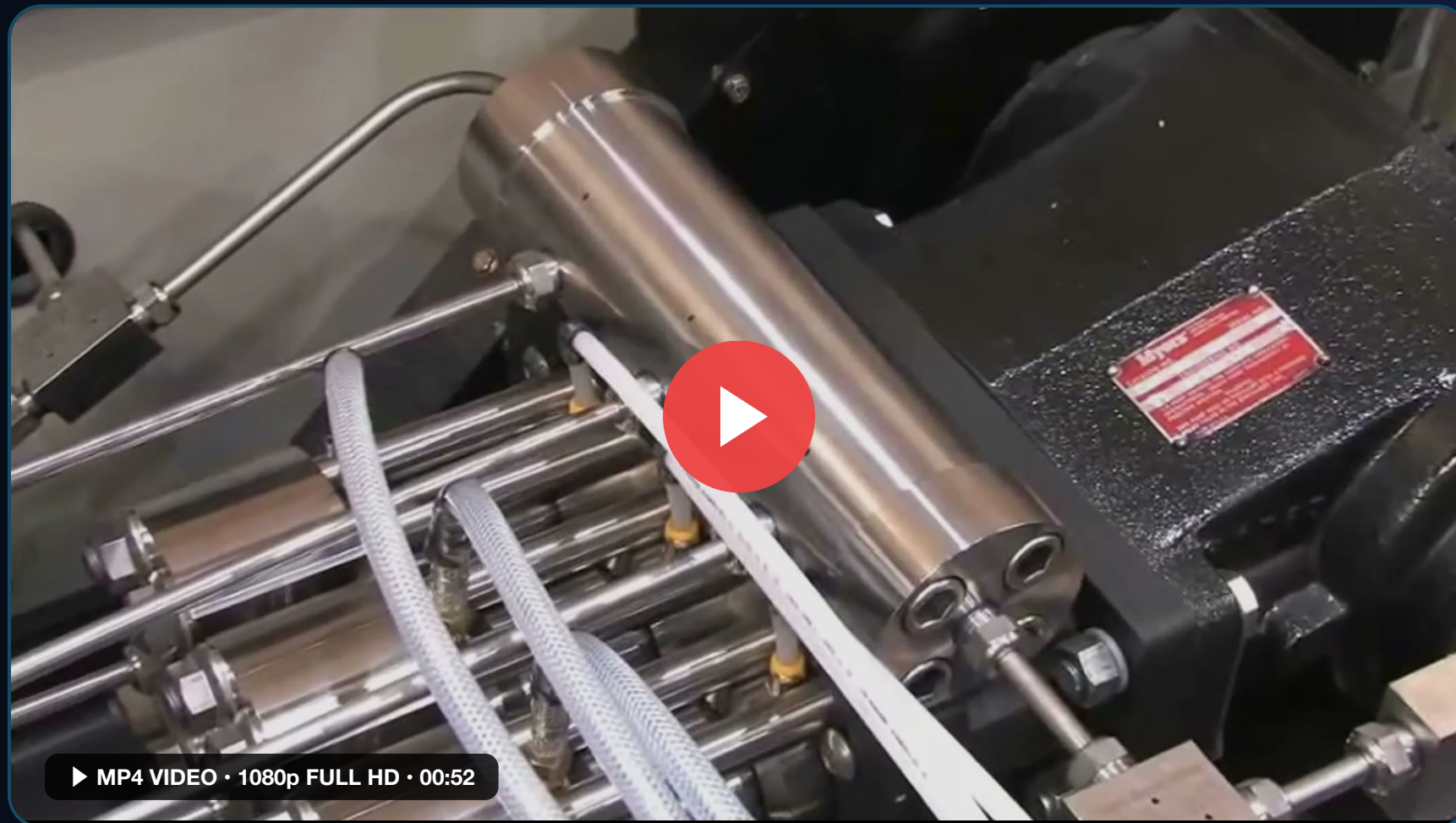
- DIRECT VARIABLE FREQUENCY
- ROBUST & ACCESSIBLE

Engineered for maximum reliability in fabrication job shops. Compact footprint, low operating noise (<78 dBA), and simple direct mechanical layout.

Video Demonstration: EnduroMAX Internal Mechanics

3D animated breakdown: triplex mechanical crankshaft, ceramic plungers, and continuous smooth flow

1080P VIDEO DEMO



INTERNAL ENGINEERING

Watch how mechanical crankshaft power eliminates hydraulic oil entirely

This technical video illustrates the mechanical operation of the EnduroMAX pump: the electric motor drives the crankshaft directly, actuating three ceramic plungers in a 120° phased sequence that delivers exceptionally smooth, continuous pressure.

Key Highlights Visible in Video:

- ✓ **Instant Pressure Response:** Variable frequency drive adjusts output instantaneously.
- ✓ **Crankshaft Synchronization:** 120° offset delivers virtually ripple-free waterjet flow.
- ✓ **Ceramic Plungers:** Diamond-ground alumina ceramic eliminates wear and friction.

Note: In the PowerPoint (.pptx) edition, this 1080p video clip plays automatically with embedded high-definition audio.



IntelliMAX Software: 4th Generation Fluid Dynamics

The true intelligence behind OMAX: predictive mathematical algorithms with over 60,000 tested material models

PROPRIETARY SOFTWARE

COMPUTATIONAL FLUID DYNAMICS

Water deflects during cutting: only IntelliMAX predicts its exact physical path

Unlike a rigid milling cutter or laser beam, an abrasive waterjet flexes inside the cut (jet lag). Standard CNC controllers cut at constant feed rates, causing corner blowout, taper distortion, and washed-out inside corners.

OMAX developed a **4th generation computational fluid dynamics model** calibrated with real-world empirical cutting data from more than **60,000 material combinations**, dynamically modulating speed and acceleration every micron.

Zero Annual Maintenance Fees

Unlike competitors charging €3,000 - €5,000 annually for CAM licenses, OMAX provides **lifetime free software updates for unlimited office workstations**.

Dynamic Jet Lag Compensation

The cutting head automatically decelerates as it approaches corners to allow the jet tail to catch up vertically, then accelerates smoothly on straightaways to maximize throughput.

5 Built-In Edge Qualities (Q1 to Q5)

Assign distinct surface finishes per segment with one click: fast separation cutting (Q1) for non-critical edges, up to aerospace-grade mirror finishes (Q5) on precision bearing bores.

Predictive Real-Cost Job Estimator

Calculates exact cycle time, abrasive weight in grams, water liters, and electrical cost down to the cent before cutting, ensuring profitable, accurate quotations.



IntelliMAX Application Suite Ecosystem

Unified seamless workflow: from engineering CAD drawing to finished part on machine in under 3 minutes

INTEGRATED ECOSYSTEM

2D CAD & NESTING

LAYOUT

2D drawing suite purpose-built for waterjet. Imports DXF, DWG, and STEP with automatic geometry healing.

- Automatic duplicate vector clean-up.
- Safe lead-in/lead-out positioning.
- True-shape nesting optimization.

CNC CONTROL

MAKE

Machine control interface. Executes motion algorithms at sub-micron resolution.

- Real-time feedrate override adjustment.
- Exact resume from any point on path.
- Dry-run graphic path simulation.

INDUSTRY 4.0

IntelliVISOR

Real-time telemetric monitoring and predictive maintenance across all machine sensors.

- Continuous high-pressure diagnostics.
- Nozzle wear life tracking.
- Early alerts preventing unplanned stops.

3D & MULTI-AXIS

IntelliCAM

3D solid model CAM (SolidWorks, Inventor, STEP). Generates multi-axis toolpaths with automatic bevel recognition.

- Automatic weld prep bevel detection.
- Native 5-axis cutting head motion.
- Visual 3D collision avoidance.

Tilt-A-Jet Cutting Head: True 90.00° Zero Taper

Dynamic mathematical taper elimination: perfectly square edges straight off the machine without secondary milling

TILT-A-JET ZERO TAPER

EXCLUSIVE OMAX PATENT

Transfers 100% of the natural draft taper into the scrap skeleton

As an abrasive waterjet penetrates deep material, it naturally loses energy, producing a V-shaped kerf taper. Standard machines require secondary milling or grinding to achieve perpendicular walls.

The **Tilt-A-Jet** head tilts dynamically up to $\pm 9^\circ$, transferring all residual taper into the waste scrap, leaving the finished component with **perfect 90.00° square edges** directly from the table.

0.00°

FINISHED PART TAPER

100%

AUTOMATED IN 2D CAD

Effortless Programming: The operator programs standard 2D drawings; the software calculates tilt vectors automatically without requiring 3D solid modeling.



Tilt-A-Jet® Head • Automated Articulation

Finished components ready for immediate assembly with zero secondary machining

New VersaJET® 5-Axis Cutting Head (0° to 60°)

The state-of-the-art in 3D multi-axis waterjet machining: fixed focal point, automatic taper compensation, and MAXJET 5i

NEW RELEASE • VERSAJET® 5-AXIS

ADVANCED MULTI-AXIS CUTTING

0° to 60° Articulation with Zero Focal Point Translation

The new OMAX VersaJET® head represents the cutting-edge of 5-axis abrasive waterjet technology. Purpose-designed for cutting weld preparation bevels, chamfers, countersinks, and complex 3D profiles in a single setup.

Key Engineering Specifications:

- ✓ **Articulation Range:** 0° to 60° continuous multi-axis tilting capability.
- ✓ **Fixed Focal Point Kinematics:** Nozzle pivots on the focal point; XYZ axes require no translation during angular motion.
- ✓ **MAXJET® 5i Nozzle:** Equipped with High Angle Fusible Mixing Tube (sacrificial breakaway tube protecting internal gears during collisions).
- ✓ **Z-Axis Travel:** 152 mm (6") standard, expandable to 203 mm (8") with low-profile slats.
- ✓ **Automatic Taper Compensation:** Cuts true beveled surfaces with zero residual taper.

Factory-compatible across **OptiMAX**, **OMAX**, and **MAXIEM** series • Optional *VersaJET Terrain Follower Foot* for warped plates.



OMAX VersaJET® • 5-Axis Articulated Head

Direct weld bevels eliminating secondary flame cutting, grinding, or edge milling

Video Demonstration: High-Speed & Submerged Cutting

Real-world production demonstration: rapid kinematic traverses, submerged cutting below 75 dBA, and edge precision

1080P ACTION VIDEO



SHOP FLOOR PRODUCTION

Quiet submerged cutting and ultra-smooth rapid traverses

This high-definition production footage demonstrates OMAX's advanced submerged cutting capability: pneumatic water level control raises the water above the workpiece in seconds, eliminating noise, dust, and water spray.

Key Advantages Demonstrated:

- ✓ **Quiet Shop Floor:** Operational sound pressure suppressed below 75 dBA.
- ✓ **Clean Working Environment:** Zero airborne garnet dust or mist.
- ✓ **Rapid Traversing:** Smooth acceleration guided by absolute optical encoders.

Note: In the PowerPoint (.pptx) edition, this cutting demo plays smoothly with embedded live audio.



Kinematics & Sealed IntelliTRAX Drive System

Sealed linear traction with optical glass scales in a positive-pressure clean air enclosure: immune to abrasive

SEALED KINEMATICS

TRUE CLOSED-LOOP FEEDBACK

Sealed against abrasive slurry: kinematics that never wear out

Airborne garnet dust and waterjet slurry rapidly destroy open linear guides, ball screws, and rack-and-pinion drives on conventional machines.

OMAX's patented **IntelliTRAX** drive encloses optical glass scales and drive elements inside a **hard-anodized steel beam fully sealed with positive clean air overpressure.**

±0.025 mm

LINEAR POSITIONAL ACCURACY

±0.013 mm

AXIS REPEATABILITY

Optical Glass Linear Scales

Position is never estimated from motor encoder counts: an optical reader measures the actual physical position of the bridge in each axis, compensating for thermal expansion and mechanical backlash instantly.

Renishaw Ballbar Laser Verification

Every machine installed by Grupo Lucohe in Spain and Portugal is dynamically calibrated using **Renishaw Ballbar** diagnostic instrumentation, with an official circularity certificate provided.

OptiMAX Series: The Global Gold Standard

The most advanced, productive, and highly automated abrasive waterjet cutting system in the industry

ULTRA-PREMIUM FLAGSHIP

FLAGSHIP MODEL

OptiMAX 60X & 80X Series

The pinnacle of 30 years of OMAX waterjet engineering. Designed for high-tempo production environments where every cycle second counts.

1,778 mm/min
RAPID TRAVERSE SPEED

±0.025 mm
POSITIONING ACCURACY

Advanced Standard Equipment:

- ✓ **IntelliVISOR** predictive diagnostics pre-installed at factory.
- ✓ **Tilt-A-Jet** zero-taper head included as standard equipment.
- ✓ Fully compatible with the new **VersaJET® 5-axis head**.
- ✓ Rapid motorized water level for silent submerged cutting.
- ✓ Table sizes: **60X** (3,100 × 1,575 mm) and **80X** (up to 8,200 × 2,000 mm).



OMAX OptiMAX 60X / 80X

Ergonomic touchscreen console, full safety perimeter enclosure, and high-speed bridge drive



OMAX Series: Heavy-Duty Rigid Closed Bridge

BRIDGE PRECISION

The proven closed-bridge architecture that built OMAX's worldwide reputation for reliability

RIGID CLOSED BRIDGE

OMAX 5555, 55100, 60120 & 120X

Engineered with a vibration-dampening mineral composite base and rigid closed-bridge gantry, ideal for heavy-duty machining in titanium, tool steel, and large structural plates.

MODEL	CUTTING ENVELOPE (X × Y)	REPEATABILITY
OMAX 5555	1,397 × 1,397 mm (55" × 55")	±0.025 mm
OMAX 55100	2,540 × 1,397 mm (100" × 55")	±0.025 mm
OMAX 60120	3,048 × 1,524 mm (120" × 60")	±0.025 mm
OMAX 120X / 160X	Up to 16,000 × 2,032 mm	±0.025 mm

Available with single head, independent dual bridges, or dual heads on a single carriage to double cutting output.



OMAX 55100 Precision Bridge

The most trusted and widely deployed waterjet machining center in the industrial sector

FABRICATION & STEELWORKING

MAXIEM 1515, 1530, 2030, 2040 & 3060

Designed specifically for steel fabrication and manufacturing job shops that need to load heavy raw plates with overhead bridge cranes or forklifts without obstruction.

3-Sided Unobstructed Access:

The open gantry design provides unrestricted access for fast, safe loading and unloading of oversized plates from any side.

- ✓ Powered by high-efficiency 50,000 PSI MAXIEM direct-drive pumps.
- ✓ Fully compatible with the new **VersaJET® 5-axis head**.
- ✓ Complete IntelliMAX software suite with lifetime free updates.
- ✓ Large table formats up to 6.2 × 3.1 meters (MAXIEM 3060).



MAXIEM 1530 Gantry System

Working area: 3,048 × 1,575 mm • Accelerated return on investment for job shops



GlobalMAX Series: Accessible Entry to OMAX Ecosystem

Genuine direct-drive performance with a competitive, contained capital investment

INDUSTRIAL ENTRY

SMART CAPITAL INVESTMENT

GlobalMAX 1508, 1530 & 2040

The accessible gateway to OMAX technology. Designed for workshops looking to bring high-precision waterjet cutting in-house without compromising on American engineering quality.

- ✓ **100% OMAX DNA:** Designed, engineered, and assembled by OMAX in Kent, USA.
- ✓ **Same IntelliMAX Software:** Powered by the exact same 4th generation fluid dynamics algorithms.
- ✓ **GlobalMAX Direct-Drive Pump:** 45,000 PSI high efficiency with minimal service needs.
- ✓ **Official Lucohe Backing:** Local technical service and 24h spares dispatch guaranteed.

Maximum Profitability

Replaces low-reliability imports with a robust, reliable machine backed directly by Grupo Lucohe.



GlobalMAX 1530

Working area: 3,050 × 1,530 mm • Compact footprint with minimal operational overhead

Specialized Systems: MicroMAX and ProtoMAX

From 5-micron micro-machining for aerospace and medical devices, to compact laboratory rapid prototyping

SPECIALIZATION

ULTRA-HIGH PRECISION MICRO-MACHINING



MicroMAX Abrasive Waterjet

The world's highest precision in abrasive waterjet cutting. Engineered for sub-millimeter tolerances in medical and semiconductor industries.

POSITIONAL ACCURACY:

± 0.005 mm (5 microns)

Fine micro-abrasive jet down to 0.15 mm • Vibration-isolated mineral base • Superior, faster alternative to wire EDM

COMPACT FOR R&D & LABORATORIES



ProtoMAX Compact Waterjet

The first compact industrial waterjet for universities, technical colleges, R&D labs, and rapid agile part prototyping.

CUTTING ENVELOPE:

305 × 305 mm (12" × 12")

Integrated 30,000 PSI pump • Fully sealed safety enclosure • Complete desktop IntelliMAX software



Terrain Follower

Non-contact/contact height sensing with collision protection.
Maintains constant standoff height over warped or uneven sheets.



Rotary Axis (6th Axis)

Submerged rotary cutting of round pipes, square tubing, and
complex cylindrical profiles with continuous synchronized rotation.



1,000 kg Hopper & SRS

High-capacity abrasive bulk hopper paired with continuous Solids
Removal System (SRS) that evacuates garnet without halting
production.



Chiller & Closed Loop

Thermal water stabilization for 24/7 continuous operation and
closed-loop filtration for zero-discharge environmental compliance.

Pure Cold-Cutting: Any Material, Extreme Thickness

Zero Heat-Affected Zone (HAZ = 0): no mechanical stress, thermal distortion, or micro-structural alterations

MULTI-MATERIAL CAPABILITY

METALS & SPECIAL ALLOYS

Steels & Hard Alloys

Cuts where fiber laser cannot reach due to thickness limits or reflective beam risk:

- **Titanium & Aerospace Alloys** (Inconel, Hastelloy).
- **Wear-Resistant Steels** (Hardox 450/500, Tool Steels).
- **Heavy Stainless Steels** (+150 mm up to 300 mm).
- **Reflective Metals:** Pure copper, bronze, and naval aluminum.

ADVANCED MATERIALS

Composites & Sandwiches

Clean edge cutting without delamination using automated low-pressure soft-piercing:

- **Carbon Fiber** & aircraft structural panels.
- **Honeycomb Panels** (Aluminum & Nomex cores).
- **Kevlar, Glass Fiber, & Basalt** without fraying.
- **G-10 / FR-4** & technical dielectric laminates.

NON-METALLIC & BRITTLE

Glass, Stone & Polymers

The only technology capable of cutting brittle materials without inducing micro-fractures:

- **Laminated, Bulletproof, & Optical Glass** without cracking.
- **Natural Stone, Granite, Marble, & Dekton / Silestone.**
- **Technical Ceramics & Silicon Carbide.**
- **Engineering Polymers:** PEEK, POM, PTFE, elastomers.



OFFICIAL CONTACT

OFFICIAL DISTRIBUTION • SPAIN & PORTUGAL

Elevate Your Manufacturing Precision with **OMAX** & **LUCOHE**

Request a free technical cutting feasibility study with your DXF drawing or material sample. We calculate exact cycle times, operating costs, and the optimal machine configuration for your plant.

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