LASER PROCESSING

GLASS AND OTHER TRANSPARENT BRITTLE MATERIALS
LASER PROCESSING OF GLASS AND OTHER TRANSPARENT BRITTLE MATERIALS

Laser processing of glass and other transparent brittle materials provides unmatched advantages compared to conventional production methods. Laser processing of glass is contact-free as the laser is a tool that doesn’t wear out. ROFIN provides laser sources and complete system solutions as well as processes tailor-made to the customer’s needs. Customers benefit from ROFIN’s broad application know-how to find the right solution for their specific needs.

SmartCleave™Fl - IP protected laser cutting process
The ROFIN SmartCleave™Fl process utilizes ultrashort-pulsed lasers with dedicated properties, e.g. the Burst Mode. The basic invention is a patented process using laser filamentation to separate brittle and transparent materials in a high-speed, quasi-debris-free and zero-gap process and nearly no post-processing. The patent portfolio is expanded continuously by ROFIN.

Superior Technology
- Kerfless separation process
- > 300 mm/s cutting speed
- Glass thickness range 30 μm to 10 mm
- Cutting of chemically and thermally strengthened glass
- Suitable for glass, sapphire, crystals, ceramics etc.
- Cutting of complex geometries
- Cutting stacks of brittle material
- Constant-overlap feature “SyncroFl” for higher processing speed

Unmatched Quality
- Minimal micro-cracking and chipping
- High bend strength
- Surface roughness Ra < 1 μm
- Quasi debris-free
- Quasi zero-gap process

Compelling Economics
- Low cost of ownership
- Dramatic reduction of process steps
- Green technology without water use
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ROFIN not only offers a revolutionary glass cutting process with SmartCleave™ Fi, but also solutions for a wide range of other applications.

**Drilling/Cutting**
- High aspect ratio (> 1:20) drilling
- Good quality cutting of complex shapes/geometries
- Micro holes (< 200 µm diameter)
- Low risk of micro cracks/chipping

**Marking/Inside marking**
- Powerful software allows easy and flexible decoration (text, DMC, bitmaps etc.)
- Smallest spot diameters for almost invisible markings for e.g. traceability
- Inside glass marking (no contamination) without surface damage
- High contrast surface marking on various materials
- Excellent marking speeds

**Decoating/Thin film ablation**
- Perfect thin film removal with excellent ablation rates
- Superior beam quality equals highly sophisticated microstructures

**LIFT-process**
- Nano layers with optical effects (e.g. color changes) can be transferred, forgery-proof
- Wide range of colors, selectable
- Functional layers possible
- Base material properties remain unchanged
### MPS Flexible System Features
- Welded steel construction base frame
- Granite base for the motion modules
- Modular design
- Laser garage for 19" laser source or laser supply cabinet
- Spacious working chamber
- Large working chamber
- Pneumatic sliding door
- CNC controller (Beckhoff)
- Option manual sliding door (e.g., for crane loading)

### MPS Advanced System Features
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### CombiLine System Features
- Spacious working chamber with observation window
- Programmable z-axis
- Smart operation technology
- Space-saving design
- Selectable lasers
- Low investment costs

### ROFIN Laser Type

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