Fonon DSS
Product Line

FONON DISPLAY & SEMICONDUCTOR SYSTEMS
Tel: 407.829.2613
Fax: 407.804.1002
www.fonondss.com
info@fonondss.com
A DIVISION OF FONON TECHNOLOGY INTERNATIONAL

Laser Glass Scribing Systems - Fantom™ Series

Fonon DSS Laser Scribing Systems are a part of a new line of high-output laser glass cutting systems capable of processing up to G8 glass panels. They incorporate a new generation modular laser and precision direct drive high resolution linear motion systems forming precision, standalone, small foot print automatic tools which can be easily integrated into glass processing lines.

Automatic Breaking Systems

Fonon DSS' new Automatic Breaking Systems are a new generation of precision breaking systems specifically designed for the Flat Panel Display Industry. These systems will process up to Generation 4 fully scribed glass panels, with custom capabilities up to G6 and G8 sizes. It is designed to transport, precision align, and separate the glass panels along the scribe lines, propagating the ZWLCT™ (Zero Width Laser Cutting Technology™) laser scribe all the way through the glass. The breaking systems complement the Fantom™ series laser scribing systems with fully compatible software control language, files, and operational formats.

Patterning & Coating Removal Systems

Fonon DSS manufactures ITO removal systems utilizing state-of-the-art proprietary fiber laser technology. These systems perform direct imaging by laser beam for patterning of coated substrates offering immediate, CAD friendly large area patterning without wet chemical processes. Materials like indium tin oxide (ITO), TCO, TO, anti-reflective coatings on glass and PET plastic film, automotive windshields and mirrors, architectural windows, photovoltaic cells, solar panels, and semiconductor applications can all be processed with this single-step, CAD based, dry ablative process that replaces photolithographic technology.

Semiconductor Dicing & Scribing Systems - BlackStar™ Series

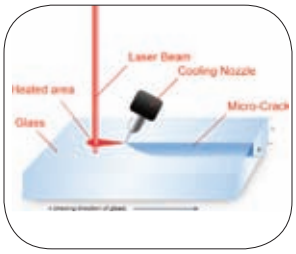
Fonon DSS builds wafer dicing machines utilizing Fantom Wafer Dicing Technology™ (FWDT™) invented and patented by Fonon Technology and modified to accommodate the requirements of a wafer singulation process without affecting the existing dicing method, processes or procedures. Fonon DSS dicing systems increase the yield per wafer and maximize throughput while minimizing the HAZ specifically for low-K wafer substrates. Fonon DSS machines can process twice as many wafers as conventional dicing systems. A combination of FWDT™ and a proprietary laser source results in a 50% cost reduction per chip from processed wafers.

OEM Kits & Process Integration

Fonon DSS' OEM fiber laser kits are specifically designed for maintenance-free OEM applications. They do not require routine replacement parts or materials; they require only a low voltage power source. Wall-plug efficiencies up to 50% result in a compact size, reduced utilities, and trouble-free air cooling. Fiber-to-fiber architecture means no optics to align or maintain, no mechanics to stabilize, and high power densities required for precision applications.

Zero Width Laser Cutting Technology™ (ZWLCT™)

No matter the industry or application, precision cutting glass and other brittle materials has always been a vexing problem. However, Fonon invented a new process for performing precision controlled scribing of glass. The new Zero Width Laser Cutting Technology™ (ZWLCT™) represents a major breakthrough for brittle material scribing. The effects of this technology are projected to be far-reaching.



ZWLCT™ splits materials on the molecular level with tremendous speed. Additionally, there is no material loss, no particles and no chips or other debris associated with conventional scribe and break technology. This is done at tremendous speeds by controlled propagation of a microcrack through the subsurface layer of material. The scribe line is formed in such a way that molecules do not leave the surface of the glass, unlike conventional mechanical scribing and breaking technologies.

Comparison of mechanical and laser glass cutting methods

	MECHANICAL SCRIBE	LASER SCRIBE	LASER FULL BODY CUT
Speed* (mm/s)	500	<1500	<20
Accuracy (µm)	50	25	200
Thickness range	30µm – 20mm	200µm – 10mm	30µm – 1mm
Cooling	———	Water, ethanol, CO_2	Clean dry air, nitrogen
Post processing	Breaking, grinding, cleaning	Breaking	———

* Based on 0.5mm thick sodalime glass, with a 200W laser and water cooling.

About the Company

Fonon DSS (Display & Semiconductor Systems) is a division of Fonon Technology International, the world renowned inventor and manufacturer of Zero Width Laser Cutting Technology™. Fonon DSS focuses on the semiconductor, glass processing and flat panel display industries utilizing the patented Zero Width Laser Cutting Technology™ (ZWLCT™) to create products with maximum throughput and the highest level of precision.

21 CFR 1040.10 Compliance

This product is a Class 1 laser as designated by the CDRH and MEETS the full requirements for a stand-alone laser system as defined by 21 CFR 1040.10 under the Radiation Control for Health and Safety Act of 1968. As an added level of security, a redundantly switched safety interlock system helps prevent accidental exposure to excess laser radiation. Plus, the system is equipped with an electrical power manual reset, a key-locked laser power switch and a remote interlock connector. Finally, the system has audible and visible emission indicators with five (5) second emission delay settings. All these features, in combination, constitute the laser radiation safety system, which allows the equipment to be used in a safe and secure manner.