

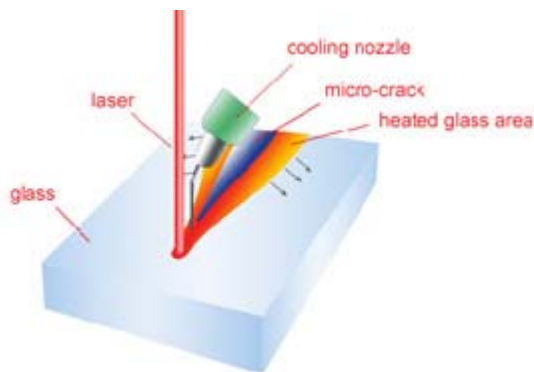
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## Cutting Costs With Zero Width Technology

[Zero Width Laser Cutting Technology™ \(ZWLCT™\)](#) is a major discovery, from Fonon Technology International, resulting in radical change on the process of cutting glass and other brittle materials. ZWLCT™ has applications in the electronic, flat panel display, solar and semiconductor industries. The METHOD splits materials on the molecular level at tremendous speed with no material loss or chips and other debris.

For years now, there have been two major glass-cutting methods: Mechanical Scribing or Sawing and Laser Cutting. The explosive rise of high-tech manufacturing has put new demands on these existing cutting technologies. Mechanical scribing and breaking is the classic and most prevalent glass

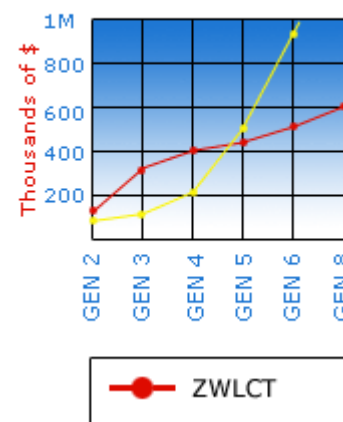


separation technology. This is a process that involves the mechanical scribing of a vent in the upper surface of the glass. This is usually accomplished with a diamond or tungsten carbide wheel. The result of this is a score line, which is a combination of controlled damage to the surface, lateral cracks, and when the parameters are well controlled, a vent crack is created. The ZWLCT™ technique generates a MicroCrack™

without substrate contact. It is done at tremendous speeds by controlled propagation of a MicroCrack™ through the subsurface layer of material. The ZWLCT™ METHOD incorporates cooling of the glass surface, following controlled heating, with the correct power density profile, creating the intermolecular separation of the glass substrate to a certain depth.

The major advantage of [ZWLCT™](#) is that no particulates are generated during the process of creating the MicroCrack™. Another benefit is that the non-separated solid product can be handled and further processed as a single unit followed by final separation later in the production process. This technique has been successfully used in LCD and FPD industries. The ZWLCT™ technique is also more cost efficient in the larger glass substrates. With G8-G10 sizes being used more prevalently now, the cost of machinery for mechanical scribing or sawing has

Cost Comparison of Mechanical vs. Laser Glass Scribing Equipment



grown exponentially while the ZWLCT™ METHOD price stays the same. This is a huge advantage in the solar industry when trying to compete on cost of production verses the fossil fuel industry.

[ZWLCT™](#) has been a major breakthrough in the flat panel display and semiconductor industries. Fonon Technology researchers are also finding ways to implement ZWLCT™ in other industries and soon it will be the standard in hi-tech laser technology applications.



**Fonon DSS**, 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 and flat panel display industries utilizing the patented Zero Width Laser Cutting Technology™ (ZWLCT™) to create products with the highest level of precision.

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