



Galvo Driven Systems vs Flying Optics Systems Laser Marking Systems

There are two competing laser marking technologies, namely; Galvo driven vs flying-optics. Laser Photonics provides both system technologies. However, more than 95% of all Direct Parts Marking applications are ideally suited for Galvo driven systems. This article seeks to help explain the differences to ensure your team identifies the best-fit system technology for your application.

Galvo Driven systems are extremely fast and precise when compared to flying optics with just two moving parts making this technology considerably more reliable. This technology allows excellent control over marking depth that is repeatable across the entire working surface. Both Vector and Raster based files are supported with Galvo based systems compared to flying-optics systems that are limited to Raster files only. A Galvo driven system allows the operator to adjust the laser's speed, power & frequency giving them complete control over the accuracy, depth of penetration into the work surface and quality of workmanship. The only disadvantage is the marking size area is limited up to 12" x 12".

Flying-Optics technology is ideal for marking signs, plaques, pens and other low profile applications requiring very shallow marking depths. The marking process takes much longer with the laser head physically traveling back & forth on an assembly of belts, pulleys and guides dropping short pulses of light energy similar in concept to older dot matrix printers dripping ink. Mirrors are used to deflect the laser beam across the X and Y axes of the chamber. This creates a continuous variation in beam size across the entire working surface. The laser beam is never perfectly parallel diverging slightly as it leaves the laser source. Without the ability to control divergence, the quality of workmanship on each part is different across different areas of the processing chamber directly related to continuous changes in raw beam size. Multiple passes are required for shallow marking applications with little control in the size and depth of the marking application. A key benefit is the size of the processing chamber supporting larger batch operations. While taking longer to process, the operator can manage another work station waiting for the batch to complete its cycle time for low volume applications. However, under the same conditions, smaller batch size/Galvo driven systems will process significantly more units in the same amount of time. For medium to higher volume applications, a Galvo driven system is superior to flying-optics.

Laser Photonics provides both technologies and will ensure the best-fit system is identified for your application.