



LASER MANUFACTURER PRODUCES SHIFT-FREE FILM WITH BIAS TARGET SPUTTERING

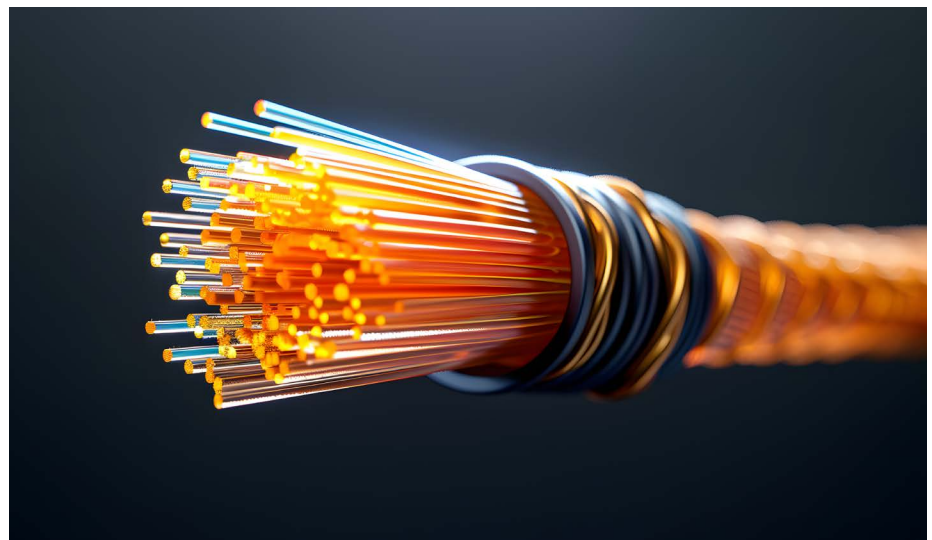
KEY PERFORMANCE REQUIREMENT

Shift-free, low loss, accurate wavelength film for telecomm applications



BACKGROUND

A leading Asian laser manufacturer needed a deposition system for laser facet coating, including multi-layer anti-reflective (AR) and highly reflective (HR) coatings of indium phosphide (InP) laser facets. The system needed the ability to provide low-loss coatings that met minimum optical reflectance values at 1310 nm.



CHALLENGE

While most off-the-shelf physical vapor deposition (PVD) systems met the basic requirements for laser facet deposition systems, this manufacturer needed specific requirements for its application. It required a system that ensured the resulting film was the densest, shift-free, and low-contamination optical film possible using PVD.

Unfortunately, common evaporation methods could not produce the shift-free quality that the manufacturer needed. Optical coatings deposited through evaporation are porous, meaning air and water can pass into the film. Changes in humidity of the environment result in optical spectrum shift, which can reduce the effectiveness of the laser.



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THE OUTCOME

Customer-qualified lasers for use in products



SOLUTION AND PROCESS

To meet these requirements, the manufacturer turned to Denton's proprietary bias target sputtering technology. The Infinity IBD – the system featuring the technology – provides the purest, lowest defect films, which leads to a higher laser damage threshold. The system is able to produce dense, shift-free films suitable for all environments.

With the Infinity IBD, high-energy ions only exist near the target, eliminating beam overspill. The system provides advanced process control and closed-loop control of film properties for high-performance films at a high throughput. It is fully compatible with front-end options ranging from a single load lock to Denton's Versa cluster tool, increasing throughput and process efficiency.

RESULTS

The implementation of the Infinity IBD enabled the manufacturer to achieve a low loss, shift-free film and, ultimately, qualify its lasers. Additionally, with this capability, the manufacturer expects to produce films with a high laser damage threshold and extract more power from individual laser diodes, lowering the cost per watt of its product.

About Denton Vacuum

Denton Vacuum empowers the global optics and opto-electronic markets, helping engineers optimize processes and solve production challenges while improving manufacturing yields and gaining efficiency and throughput. Our continued commitment to research and development of thin film technology, including our proprietary integrated diagnostic systems, enables predictable, repeatable performance in a wide process window.

Interested to learn how a partnership with Denton might help your business?
[Contact us](#) today for an expert assessment of your application.