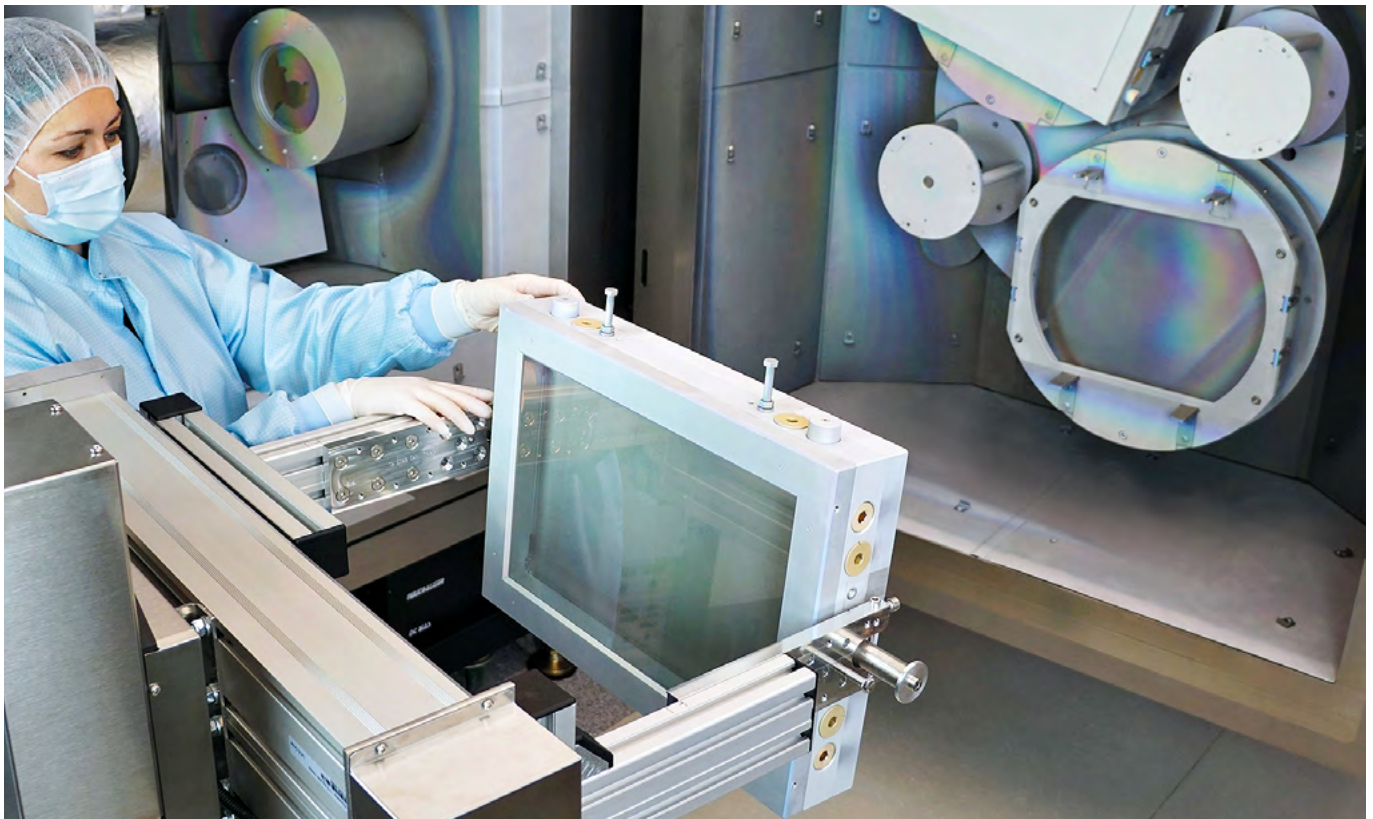


# Coating of Large Optics

## Long Shapes / Round Shapes



*"Teresa", the largest IBS machine, suitable for substrates up to Ø 550 mm*

**LASEROPTIK** uses dedicated equipment for dielectric coatings on large optics up to 2 m in length (long axis for rectangular shapes) or 550 mm in diameter with a superior spectral uniformity over the complete surface and high LIDT values. Approved automated ultrasonic and manual cleaning procedures guarantee an optimum cleanliness even on these large scale geometries.

### Possible sizes and techniques for large optics

coating technique	rectangular		round Ø
	long axis	short axis*	
IBS	2000 mm	250 mm	550 mm
IAD	940 mm	80 mm	350 mm
EBE	940 mm	80 mm*	500 mm

\* at the given maximum of the long axis, can be larger with a shorter long axis



*"Maxima", the patented IBS coating machine for large, rectangular optics*

## Metal or dielectric coatings by EBE, IAD or IBS



*12" interferometer*



*Ultrasonic substrate cleaning*



*Laser testing lab*

## Dielectric IBS coatings

LASEROPTIK can coat laser mirrors that are amongst the largest in the world by using IBS

<b>Max. substrate size</b>	ø 550 mm or e.g. 450 x 300 mm <sup>2</sup>
<b>Metrology</b>	12" Zygo Verifier Fizeau Interferometer @1053 nm
<b>Preparation</b>	ultrasonic cleaning and substrate handling tools
<b>Process control</b>	reproducibility assured by in-situ optical broadband monitoring
<b>Application</b>	minimized risk of stress induced crazing in vacuum, cleanable by ultrasonic cleaning machines
<b>Dispersive coatings</b>	low GDD, GTI, defined GDD and spectral width
<b>LIDT</b>	0,9 J/cm <sup>2</sup> @805 nm 42fs 1kHz 45°s-pol, S-on-1, referenced to sample surface tested at ELI beamlines Prague*



\* Willemsen, T., Chaulagain, U., Havlíčková, I., Borneis, S., Ebert, W., Ehlers, H., Gauch, M., Groß, T., Kramer, D., Laštovička, T., Nejd, J., Rus, B., Schrader, K., Tolenis, T., Vaněk, F., Velpula, P. K., Weber S. (2022) Large area ion beam sputtered dielectric ultrafast mirrors for petawatt laser beamlines. Optics Express, 30(4), 6129-6141