Novel Optical Coating Techniques for High Power Laser Material Processing Applications

Dr Hansjoerg Rohde[1], Samuel Thienel [2]

1- Laser Components Germany GmbH, Werner-von-Siemens-Str. 15 / 82140 Olching
2- Laser Components UK Ltd, Goldlay House, 114 Parkway, Chelmsford, Essex. CM2 7PR

SThienel@lasercomponents.co.uk

To keep pace with the trend towards higher powers in material processing applications, the laser optics used must continue to evolve to offer the highest reflectivity and laser damage threshold with the lowest thermal drift.

Optics are an essential component in all laser processing machines, from cutting and welding to additive manufacturing. The optics are responsible for ensuring that the high-quality laser beam reaches the workpiece from the source while minimising any effect on beam quality. In addition, process monitoring is increasingly becoming a must for reliable and traceable production orders. High-precision diagnostic optics have become a key technology in many online monitoring processes where the interaction of the laser beam with the material is observed and analysed.

In this talk LASER COMPONENTS explores how the production of optical coatings keeps pace with the increasing demands of laser material processing applications, through the selection and optimisation of different coating technologies, the use of online process monitoring and the development of novel techniques such as annealing of the optical coating.