

## **The high art of surface treatment**

Even when things get tight: Pallas sets new standards

**Surfaces today are a sophisticated business: ingenious materials and processes render them fit for heavy-duty strain, reliable performance and long service lives. Whether for wear protection, repair, cleaning, modification, corrosion control or function expansion – treated surfaces make components more durable, processes more efficient and products more competitive. No wonder that the demands on modern surface treatment are so complex. Providing optimally designed solutions calls for profound knowledge of the specific applications, media and influencing factors, in all areas of industry and all types of process. As a leading company for surface technology, Pallas GmbH & Co. KG regularly sets new standards in many branches of industry. The latest highlight in the success story of this family business, headquartered in Wuerselen near Aachen, is iClad<sup>®</sup>, a processing head for laser cladding of internal surfaces designed for industrial use for apertures as small as 30 mm in diameter.**

### **Repair instead of replacement**

Over 50 years of experience in the development of customised solutions for technical or decorative surfaces qualify Pallas as a sought-after specialist for challenging tasks. This modern service enterprise with a staff of around 35 provides the whole spectrum of processes, all from a single source: electroplating, thermal coating, non-stick and plastic coating as well as laser treatment. The company's accumulation of expertise and processing technologies allows an interdisciplinary evaluation of the task at hand. Coupled with the courage to tread new ground, this approach repeatedly leads to innovative solutions with added value. Through purposeful combination of the advantages of thermal, mechanical or electromagnetic processes and specific

materials, Pallas develops customised surfaces for heavy-duty components or tools, for example for the automotive or aerospace industries. The result: field-tested solutions for key industrial applications like tool-making and mould construction, sealing or bearing seats, rollers or drill pipes. The benefit is obvious: there is no longer any need for the costly and time-consuming manufacture of new tools and moulds. Instead, the existing components are quickly and inexpensively repaired or optimally configured for the specific application.

### **Hard facts for narrow pipes**

The industry has long been on the lookout for comparable solutions for the repair and coating of difficult-to-access components, for example in the automotive industry and mechanical engineering, or in medical engineering. The answer to this demand was provided by Pallas in terms of a processing head for laser cladding of internal contours. The compact design of the iClad<sup>®</sup> special processing head makes it possible for the first time to coat bores measuring from 30 mm in diameter and to a depth of 500 mm. Even blind bores can now be coated, alloyed or annealed right into the angle. By way of comparison: conventional standard processing heads require an aperture diameter of the inner contour of at least 100 mm.

### **Specialist know-how in a nutshell**

From the initial idea through to the finished product, and even beyond, the personal consultancy provided by Pallas ensures first-class solutions. Right from the decision to purchase, customers profit from intensive, needs-based consultation provided by a qualified expert. This applications-oriented, process-focused solutions expertise is a guarantee for the optimal design of the equipment. For operators or laser manufacturers interested in iClad<sup>®</sup>, Pallas determines the necessary process parameters for laser sources, process media and application areas of the optics and defines the design specifications for the optics, the type of laser source, the beam path and the geometry. The

Wuerselen-based specialist company for surface technology also takes care of the subsequent construction of the processing head, application tests as well as implementation and after-sales service. This ensures access to an all-in-one solution with optimal consulting and development. After the purchase, Pallas keeps the customers up to date on current developments through a range of services: thanks to various measurements, optimisations, replacement of optical components or nozzles and reworking of supplied optics, operators participate reliably in new findings. Furthermore, on request Pallas also offers internal coatings as a service.

### **Sheer potential for as yet inaccessible internal surfaces**

iClad<sup>®</sup> is designed for the treatment of internal contours whose diameter is just about as big as that of a two-Euro coin. Pallas manufactures this highly efficient processing head for a range of laser sources. This means that iClad<sup>®</sup> can be connected without any problems not only to the most prevalent lasers like diode lasers or Nd:YAG lasers but also to fibre lasers or disc lasers. The laser power ranges up to 3 kW. The modular design allows different heads to be attached for varying diameters of the workpiece to be treated. In this way, internal contours from a diameter of 30 mm can be treated to a depth of 500 mm. The distance from the head to the working area lies between 5 and 12 mm. In spite of the compact design, an optional camera connection for adjustment or for monitoring of the process is also possible.

Stephan Kalawrytinios, manager of Pallas, is convinced of the great potential of iClad<sup>®</sup>: "The market has been waiting a long time for this solution. The compact design of this processing head, customised for industrial deployment, opens up a whole range of application areas where so far expensive components have had to be replaced, a costly and time-consuming process."



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