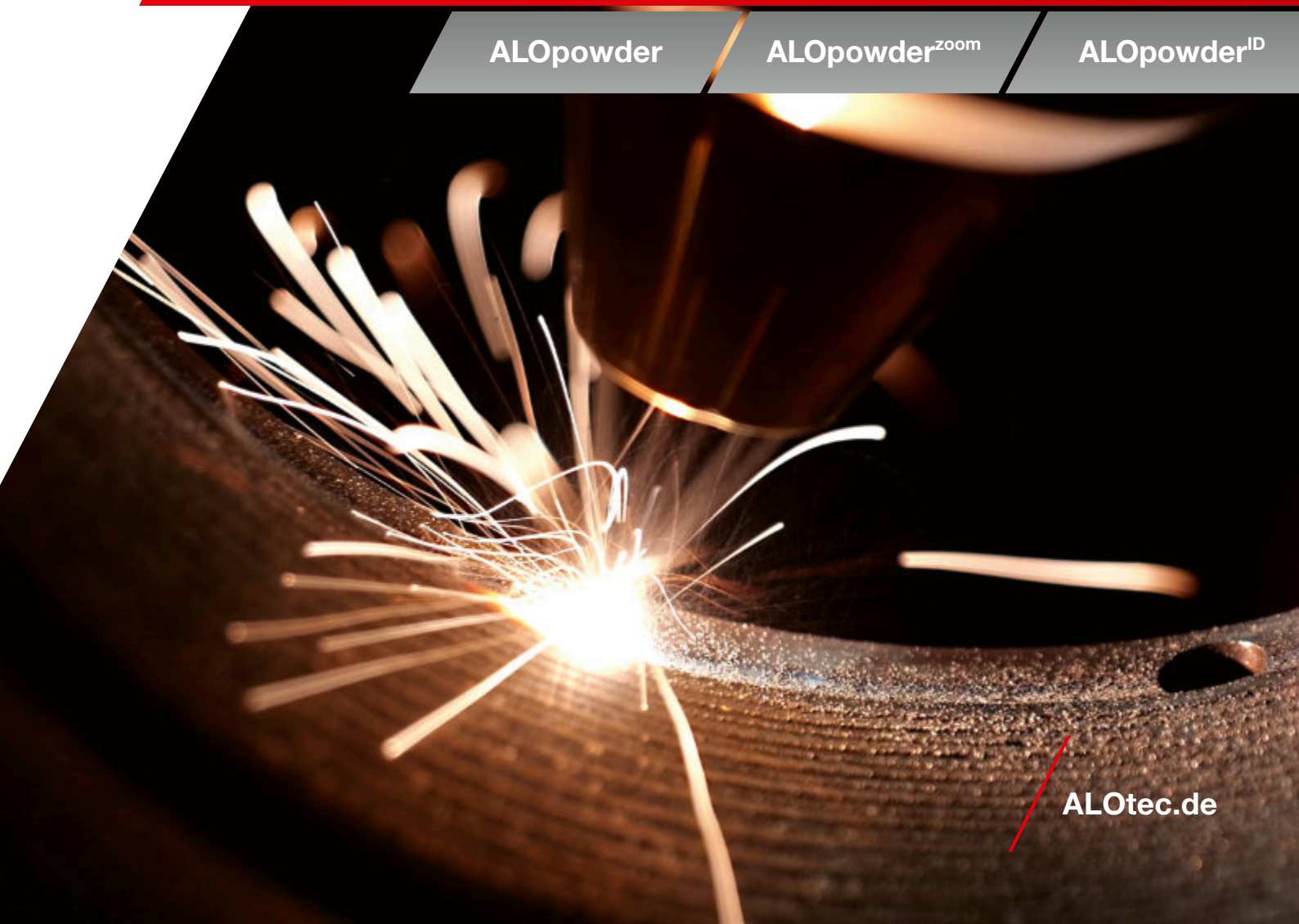
ALOtec Dresden

Technology for laser powder cladding

ALOpowder

CLADDING AND REPAIR

ALOpowder | ALOpowder^{zoom} | ALOpowder^{ID}



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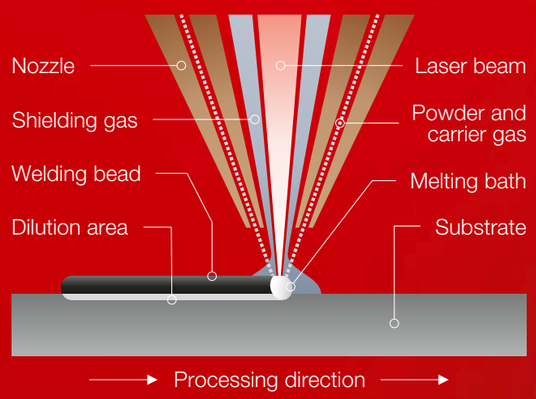
ALOpowder

Laser cladding is a process in which a base material is melted locally. A metallic filler material is added to the molten pool via a nozzle. The rapid cooling behind the laser beam results in a strong adherent metallic bond.

Due to the lower energy input compared to conventional arc welding processes, the components experience less distortion and minimal structural transformation.

Laser powder cladding is used to apply wear-resistant coatings on heavily stressed components or protection for corrosive environments. In addition, the process can be used for repair and shape modification. The process is also suitable for additive manufacturing.



ALOpowder

ALOpowder^{zoom}

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Roll it – laser on:

The laser powder cladding process on our Youtube channel clearly documented.

Technology for all component shapes

Depending on the function and application of the component, different laser optics ensure the optimum cladding results.

ALOpowder

This processing optics for laser powder cladding has a fixed laser track width. **ALOpowder** guarantees a good accessibility to the part during the process due to its compact contour.

Application: Coating of 3D surfaces for corrosion and wear protection, repair of worn parts, design modification or correction of production failures and additive manufacturing of 3D parts.

ALOpowder^{zoom}

This processing optics for laser powder cladding guarantees the highest flexibility for your cladding solutions through variable laser track width.

Application: Corrosion and wear protection, repair, design modification and additive manufacturing especially for large components such as shafts or bearing shells.

ALOpowder^{ID}

The internal processing optics for laser powder cladding guarantees you the accessibility for coating of inner diameters.

Application: Coating of internal surfaces, blind holes as well as of tubes and cylinders, repairing of worn contours and corrosion and wear protection.

Advantages of laser powder cladding

The advantages are convincing: high precision and firmly adhering connection through metallurgical bonding with low energy input.

- Quality assurance during the processes
- Hardness up to 65 HRC Tungsten carbides up to 3000 HV
- Minimal distortion due to small heat input
- Flexible shaping of the laser beam
- Energy efficient and environmentally friendly
- Versatile alloy selection
- Deposition rate up to 2 kg/h
- Internal coating from 70 mm diameter
- Small batches and single pieces

Mobile on site laser hardening at the component. **Just ask us!**

Powder materials for all applications

Diverse powder materials for versatile application possibilities.

26 $3d^6 4s^2$

Fe

Iron

55.845

- Flexible and economical
- Hardness up to 65 HRC
- Wear resistance due to W, V
- High corrosion resistance due to Cr, Ni

28 $3d^8 4s^2$

Ni

Nickel

58.6934

- High toughness
- High corrosion resistance
- Ideal as buffer and filler material

27 $3d^7 4s^2$

Co

Cobalt

58.933

- Hard alloy in combination with chrome
- High resistance to wear and corrosion
- Ideal for high operating temperatures

74 $4f^{14} 5d^4 6s^2$

W

Tungsten

183.84

- Extreme hardness up to 3000 HV
- Very high abrasion resistance
- Can only be machined by grinding due to its hardness

Cu/Sn

Copper/Tin

- Good sliding properties
- High corrosion resistance
- High resistance to cavitation

Powder as filler material

Different types of laser cladding materials – including tungsten carbide, nickel-based, cobalt-based and iron-based alloys – ensure optimum cladding according to the desired requirements, such as wear resistance, corrosion resistance and high-temperature resistance.

Applications with ALOpowder

The application options are numerous: corrosion and wear protection, repair, design modification or even additive manufacturing of 3D components.

Conveying Screws
Forming Dies
Cutting Tools
Bearing Shells
Brake Discs

Applications

Laser powder cladding is used for the application of wear protection layers on heavily stressed components. It is also used for repairing components or for simple and fast modification of component geometries in machine, tool and mould construction as well for additive manufacturing of 3D components.

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laser hardening and **cladding systems**

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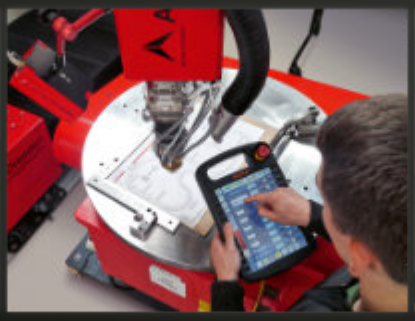
System engineering

Laser systems for use in tool, mould´and machine making

Contract manufacturing

Laser hardening, repair and coating as well as additive manufacturing

ALOtec Dresden is a high-performance technology partner for the metalworking industry specialised in the manufacture of customized and turnkey robotic systems for laser hardening and laser cladding for over 25 years.



In addition, **ALOtec Dresden GmbH** offers services in the fields of laser hardening and laser cladding with powder or wire (Job-Shop-Production). These laser material processes can also be carried out – through the innovative **ALOflex** system – on-site at the customer's premises.

ALOtec Dresden GmbH

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25 YEARS ALOtec Dresden