

Cladding Heads YC50

Processing heads for laser cladding with CO₂ and solid-state lasers



When cladding, the wear resistance or corrosion properties of a component or a range of components can be improved. For this procedure Precitec offers the YC50 cladding heads. They can be used in units with CO₂ and solid-state lasers. Areas of application are, for example, repair welds on tools, turbine blades or moulds, the tempering of surfaces and the generation of structures in tool, automobile and aircraft construction.

>> ROBUST & STABLE

- lenses are protected against contamination by a protective window
- long protective window durability because of the coaxial protective gas supply
- easy to align using the option to connect a monitoring camera
- optics assembly identical with YW50 welding head

>> USER FRIENDLY

- process highly reproducible because of the precise adjustment of the laser and powder beam
- can be adapted for different laser types
- optics can be replaced easily
- can be converted by the adaptation of a CrossJet for welding

System types / Lasers:

- gantry systems
- robots
- orbital systems
- for all solid-state lasers like Nd:YAG, disc, fibre and diode lasers (YC50)
- for CO₂ lasers with beam focusing via parabolic mirror or lens (YC50 CM)

Cladding Head YC50 for solid-state lasers



with 4-beam nozzle:

- robust powder supply
- cladding in extreme and unavoidable positions
- cladding of large surface areas



with coaxial anular jet nozzle:

- homogeneous powder focus
- small powder focus diameter
- high powder effectivity rate
- mixing of protective gases possible
(through auxiliary gas connection directly on the head)

• Quality Control

- integrated LWM sensors for in-process monitoring and adjustment
- protective window cartridge with laser power independent monitoring for presence, temperature and level of contamination
- integrated laser power measurement

• Modularity

- easy to integrate into existing machines
- can be adapted to changing requirements (can be converted easily for welding)

• Process Management

- simple teaching by monitoring camera possible
- internal media guidance
- long protective window durability because of coaxial protective gas supply

Cladding Heads YC50 CM for CO₂ laser

- homogeneous powder focus
- small powder focus diameter
- high powder effectivity rate



- **Quality Control**

- LWM sensors for in-process monitoring and adjustment possible

- **Modularity**

- easy to integrate into existing machines
- can be adapted to changing requirements (can be converted easily for welding)
- long optics durability because of coaxial protective gas supply

Cladding is a procedure whereby material properties can be adjusted to the subsequent load requirements of a component by the local application of additional materials. It is used particularly where expensive, delicate and wear-resistant components are repaired or manufactured.



Radial cladding of valve seats



Cladding of a shaft



The 4 jet nozzle is particularly suitable for coating 3D components because it is possible to work safely in tight spots.

So that the cladding heads can also be used in an automated production mode, different sensors have been integrated both for monitoring the optics and also for monitoring the process:

- Monitoring the Optics

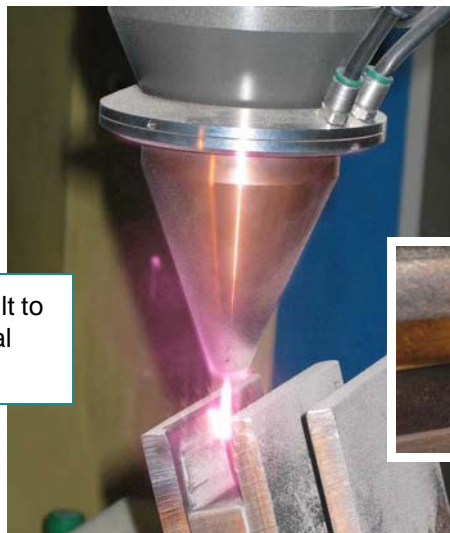
The level of contamination and the temperature of the protective window can be determined with protective window monitoring. The presence of the protective window can also be checked.

- Process Management

The integrated process monitoring sensor makes it possible to keep to the height and width of the cladding track precisely even when building up several layers or with volatile geometries.

- Quality Control

Online process monitoring using the LWM laser welding monitor



Cladding is also possible in difficult to access areas, such as the internal surfaces of grooves.



Cladding grooves

Technical Specifications of Cladding Heads YC50

standoff distance	12 to 14 mm (24 mm at focal length focusing of 250 mm)
min. powder focus diameter	0.7 mm (anular jet nozzle), 3.0 mm (4-beam nozzle)
track widths	depending on laser power and defocusing of laser beam up to 6 mm possible
free aperture	48 mm
mass	approx. 4.5 kg (CO ₂), approx. 5.5 kg (solid-state)

The given data was generated for a typical application and may be different given other circumstances. Furthermore misprints, changes and/or innovations may lead to differences in the listed measurements, technical data and features. Therefore **all information is non-binding and technical data, measurements as well as features are not guaranteed by information in this product information.**

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