

FEILKE is an international metal forming automation company. As a subsidiary of the HEMSA Group, *Feilike* (*FLK Laser*) is designed to provide customers with highquality, fully automatic solutions globally. It has become a technology-driven innovation enterprise by independently developing many core technologies in the laser industry and combining laser cutting, bending, welding, cladding and automation into one product to greatly improve production efficiency for customers with multiple automatic equipment requirements.

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+570 PATENT CERTIFICATIONS

We have obtained CE, ROHS, FDA, ETL, CSA certificates from TÜV, and our quality and safety standards have reached international certifications



LASER CLADDING

Laser Cladding

Laser Cladding technology uses high-energy laser beam as a heat source to coat powder materials on the surface of parts to prepare a high-performance protective layer, improve the surface hardness, wear resistance, corrosion resistance, oxidation resistance, high temperature resistance and other properties of the material, and improve the service life performance of the parts.







Advantages of Laser Cladding

Laser Cladding allows for power densities not normally possible with conventional thermal procedures, resulting in minimal heat input, minimal distortion and avoiding post-weld heat treatments.

Laser Cladding – Benefits:

- 1. The surface of the matrix material is only slightly melted during laser processing, and the micro-melting layer is 0.05-0.1mm. The heat affected zone of the matrix is very small, generally 0.1-0.2mm
- 2. The temperature rise of the matrix does not exceed 80°C during laser processing, and there is basically no thermal deformation after laser processing
- 3. The laser cladding layer and the matrix are metallurgical bonded, and the bonding strength is not less than 90% of the original matrix material
- 4. The cladding layer and the matrix do not have a coarse casting structure, the cladding layer and its interface have a dense microstructure, fine crystals, and no defects such as pinholes, inclusions, and component segregation.
- 5. Laser cladding technology has good controllability and is easy to achieve automatic control
- 6. It can be multi-layer cladding, can achieve gradient functional material laser cladding

Comparison with other technologies

Build up welding	Electroplating	Laser cladding
The heat input is large, the deformation is large, the heat affected zone is large, the influence on the matrix is large, and the repair effect is por	Small heat input, almost no deformation; Deplating is required before multiple electroplating	The heat affected zone is small, the substrate temperature after cladding is less than 80°C, the deformation is less, and it can be repaired multiple times
The cooling is slow, the matrix grain growth is serious after welding, the component segregation is serious, the overall performance is general, and the local performance is poor	The heat input is very small, the coating is uniform, and there are small pores	Rapid cooling, compact structure, small grain size, composition almost no segregation, excellent and uniform performance
Low price	Low price	Slightly higher price,higher cost performance
Slightly polluted	Heavy pollution	No pollution

Powdered materials

Coating powder material: iron, nickel and cobalt. The most commonly used powder grades are:

Fe-based grades: 316, 316L, 304, 40Cr, 42CrMo, 410, 2205

Ni-based grades: In625, 718, C22, 276, NiCrSiB

Co-based grades: STE1,6,12,21, T400, T800, X40

Mixed WC grades







Laser Cladding Process

1.Incoming inspection: surface cleaning, flaw inspection (coloring inspection is commonly used, if the crack is deep, ultrasonic inspection is required)

2.Machining: fatigue layer removal, dimension inspection

3.Repair plan: repair plan formulation, repair route

4.Laser cladding: selection of cladding material for cladding according to workpiece requirements

5.Performance inspection: size inspection, defect inspection

6.Machining: the workpiece is machined again by grinding/turning/polishing to obtain the final size
7.Factory inspection: size, defect detection, marking record, packaging and delivery



LASER CLADDING MACHINES





Laser Cladding Robotic Machine FLKR6063

- Laser power: 6kw (optional)
- Maximum load capacity: 15T
- Workpiece length: 3m/6m/9m/12m/15m

Model	FLKR6063
Power	6KW(optional)
Machine length	3m/6m/9m/12m/15m
Max. rotation diameter	1500mm
Max. capacity	15T
Coating thickness	0.1-1.5mm
Robot	FANUC M-20iD



High speed laser cladding equipment

- Full protection
- High speed coating
- Cost effective powder composition



Model	FLKHS3050
Body type	Fully enclosed structure
Power	6KW(optional)
Machine length	3m
Max. rotation diameter	800mm
Max. capacity	ЗТ
Coating thickness	0.1-1.5mm
Efficiency	0.3-0.6m²/h
Rotation rate	200R/Min







- Designed for on-site repairs and maintenance
- Convenient transportation
- Compact size, easy handling



Model	FLKMR01
Power	6KW(optional)
Laser Cladding Head	High speed laser cladding head
Powder feeder	Double barrel pneumatic powder feeder
Coating thickness	0.1-1.5mm
Robot	FANUC M-10iD (M-20iD)





- Designed for on-site repairs and maintenance
- Convenient transportation
- Compact size, easy handling



Model	FLKMR02
Power	6KW(optional)
Laser Cladding Head	High speed laser cladding head
Powder feeder	Double barrel pneumatic powder feeder
Coating thickness	0.1-1.5mm
Robot	FANUC M-10iD (M-20iD)





High speed laser cladding equipment

- Open type
- High speed coating
- Cost effective powder compounding



Model	FLKHL3050
Body type	Open type
Power	6KW(Optional)
Machine length	3m/4m/6m
Max. rotation diameter	800mm
Max. capacity	ЗТ
Coating thickness	0.1-1.5mm
Efficiency	0.3-0.6 m²/h
Rotation rate	200R/Min



Closed Rectangular Dot Laser Cladding Equipment

- Full protection
- High processing efficiency
- Cost-effective powder composition



Model	FLKHS3050L
Body type	Fully enclosed structure
Power	6KW(optional)
Machine length	3m
Max. rotation diameter	800mm
Max. capacity	ЗТ
Coating thickness	0.2-2mm
Efficiency	0.2-0.6m²/h
Rotation rate	40R/Min







- Open type
- High processing efficiency
- Cost-effective powder composition



Model	FLKHL3050L
Body type	Open structure
Power	6KW(optional)
Machine length	3m/4m/6m
Max. rotation diameter	800mm
Max. capacity	ЗТ
Coating thickness	0.2-2mm
Efficiency	0.2-0.6m²/h
Rotation rate	30R/Min































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