Press hardening segment after the laser deposition welding process (left) and after partial finishing (right)

EvolutionClad 58

Increase the service life of your press hardening tools with our innovative coating solution through laser cladding

EvolutionClad 58 – Advantages

- Longer service life compared to through-hardened variants in terms of the tendency to crack, starting from the cooling channel to the surface
- Excellent resistance to abrasive and adhesive wear during hot forming of galvanized and AlSi coated sheets
- Optimal combination of a hard coating (56 - 58 HRC) as a shell and a soft and tough base material (30 - 34 HRC) in the core
- Locally graded material composite on the tool segment ensures targeted adjustability and adaptation of the material properties to the process-side application requirements
- Possibility of repairing the coating
- More homogeneous cooling and higher thermal conductivity

Generate cost benefits through longer tool life and benefit from a coating that has been optimized precisely to the requirements of your press hardening application. Our innovative coating solution for tool segments with the customized material EvolutionClad 58 achieves a hardness of 56 - 58 HRC, guaranteeing excellent wear resistance in the active area. Due to the use of a pre-tempered base material with high toughness and ductility, this is also combined with a reduced risk of cracking starting from the cooling channels. Benefit from the advantages of our durable and reliable coating solution and ensure a longer service life for your tools.

Properties EvolutionClad 58

Our near-net-shape coating with the material EvolutionClad 58 offers excellent wear resistance with an effective coating thickness of 1.5 mm after finishing. Thanks to the low oversize of the coating, efficient finishing in hard condition is guaranteed.

voestalpine Additive Manufacturing Center
www.voestalpine.com/additive

voestalpine
ONE STEP AHEAD.

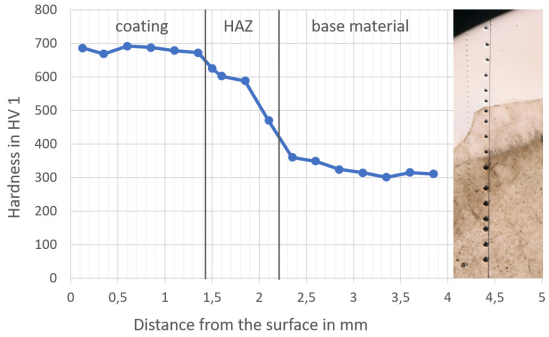
Demonstration segment in pre-machining

Demonstration segment for new production with our coating solution

EvolutionClad 58

Hardness of the coating

With a surface hardness of 56 - 58 HRC, the coating solution with the material EvolutionClad 58 offers optimum wear resistance. As the hardness curve shows, the heat-affected zone is reduced to a minimum by the laser cladding process.



Chemical composition (% by weight)

EvolutionClad 58

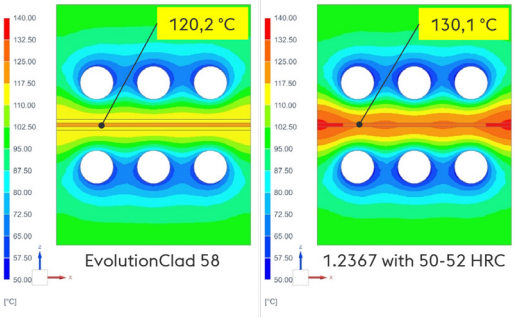
C	Mn	Si	Cr	Ni	Mo	V	W
0,45	0,4	0,6	6,8	2,2	2,4	1,0	1,8

Base material Advantages

- Longer service life and lower tendency to crack due to high toughness (A5 18-20%) of the base material
- Pre-tempered base material with very high thermal conductivity of 33.5 W/m*K (20°C) to reduce the cycle time
- Machining in pre-hardened condition at a hardness of 30 - 34 HRC
- Excellent weldability, especially when reprocessing the coating
- Good material availability at low cost

Thermal simulation

Comparison of the materials EvolutionClad 58 and 1.2367 at a case hardness of 50-52 HRC using a thermal simulation. Our solution offers more homogeneous cooling conditions with identical boundary conditions compared to the through-hardened and tempered variant.



The following boundary conditions were defined for the thermal simulation: thermal conductivity determined experimentally, sheet temperature 900°C, cycle time 10s

voestalpine Additive Manufacturing Center GmbH
Hansaallee 321
40549 Düsseldorf
Germany
additive@voestalpine.com
www.voestalpine.com/additive

voestalpine
ONE STEP AHEAD.