

LASER HARDENING

AL-ROCK

MOBILE LASER HARDENING SYSTEM

The AL-ROCK is the first mobile robot for targeted hardening of metal surfaces – whether at the customer's site or at changing locations in the hall. With the self-driving caterpillar track, you can move the laser right to the workpiece. There is no need to remove the components to be hardened, and reworking cost is significantly reduced. All that is needed is the laser beam's free access to the processing location.

The laser beam precisely follows the workpiece contour in free 3D movements. This allows weld edges, grain structures, nubs or individual points to be hardened easily.

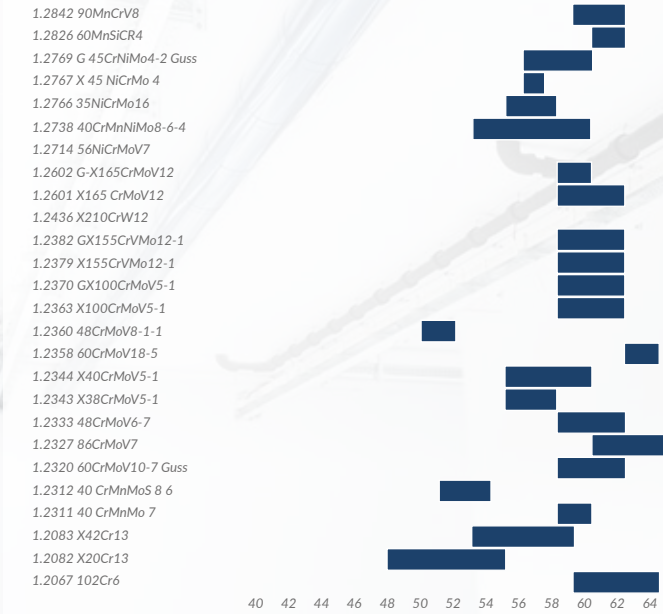
Temperature-dependent control of the laser power brings the heat precisely to the desired location to achieve the exact degree of hardening needed there.

The component's surrounding areas receive little or no heat load.

For quality control, the hardening process is documented, ensuring process reliability and reproducibility.

With the AL-ROCK, you can also perform laser deposition welding with powder or wire (with add-on modules).

ACHIEVABLE HARDNESS – IN HRC, E.G. TOOL STEEL



TECHNICAL DATA

AL-ROCK

| | |
|---|---|
| LASER | |
| Laser type / wave length | Diode laser, 900 – 1070 nm |
| Pilot laser | Red 630 – 680 nm (≤ 5 mW) green 532 nm (5mW) |
| Power | 3,000 W (CW) |
| Focal distance | f = 250 mm |
| Shielding gas feed | Included |
| Laser cooling system | External water-air cooling system |
| Display and operation | |
| | Display 1 on mobile component Display 2 at the station with 8 mm cable for free position selection |
| WORK AREA | |
| Movement speed (X, Y, Z) | Focal spot 0 – 10 mm/s over component surface |
| Movement range (X, Y, Z) | 3000 x 1000 x 1900 mm as spherical half space |
| Lowest working point | 0 mm |
| Highest working point | 1900 mm |
| Radius of 3D work area | approx. 2 m (from the booth) |
| HARDENING | |
| Gauges | Variable, from 5–20 mm (depending upon the material) |
| Case hardening depth (CHD) | max. 2 mm (depending upon the material) |
| Control | Camera-guided continuous laser output control LompocPro with E-MAqS camera |
| Repeat accuracy | +/- 0.08 mm max. |
| Smallest programmable path dimension | 0.01 mm |
| EXTERNAL DIMENSIONS | |
| Mobile component WxDxH in mm | 1200 x 1500 x 1800 |
| Weight | approx. 1,100 kg |
| Station, incl. cooling system WxDxH in mm | 1100 x 1900 x 1800 |
| Weight | approx. 700 kg |
| EXTERNAL CONNECTIONS | |
| Electrical connection | 63A 400V 3P+PE 6h 50Hz Version P250 and higher: only 32A 400V 3P+PE 6h 50Hz |
| OPTIONS | |
| | Mobile laser protection walls rotation/tilt axis Mirror system and beam splitter smoke extraction Mobile workbench DCAM external programming system |



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