Repair Welding at a Height of 25 Meters

Task

MATEX PM, a company based in Plzen (Pilsen) in the Czech Republic, markets job-shop solutions for various metal applications using diode lasers. In the reactor hall of the Dukovany nuclear power plant a routine check detected cracks on a gear wheel in the gearbox of a crane. As the crane was 25 meters up, and there was no easy way to remove the gear wheel, the customer looked for another – as simple as possible - solution to repair the cracks.

Procedure

The repair called for a mobile laser capable of welding the gear wheels in situ. The laser would have to be compact and light in order to work on a narrow scaffold. The Dukovany nuclear power plant contracted MATEX PM to carry out the repair welding directly on-site using a diode laser. The LDF 3000-60 mobile diode laser system together with a control robot were positioned on a level with the crane at a height of 25 meters in order to weld the cracks in the gear wheels.

Result

The welding was carried out with a Ø 1.2 mm focus without using any additional filler wire. The mobile diode laser enabled the gear wheels to be repaired in situ, avoiding the costly and complex effort of removing them. A final material test of the repaired gear wheels to the nuclear power plant’s exact specification was successfully passed.

Material: GS36Mn5
Task: Weld gear wheels in situ
Laser: LDF 3000-60
Optic: Focus Ø 1.2 mm
Parameters: 0.6 m/min – Repair welding using a diode laser
Result: Successful repair, the crane is operable again