

Increase of weld strength by micro alloying for HSLA steel

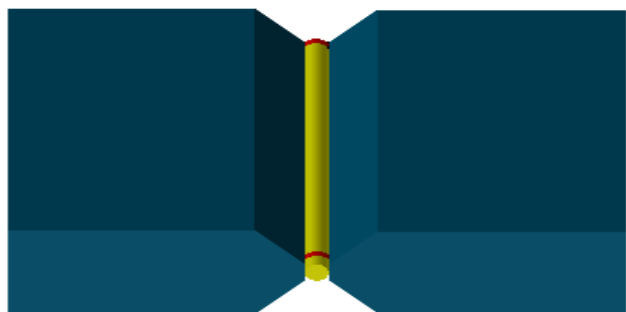
PhD Thesis

Author: Laurentiu Zgripcea, Teodor Heput

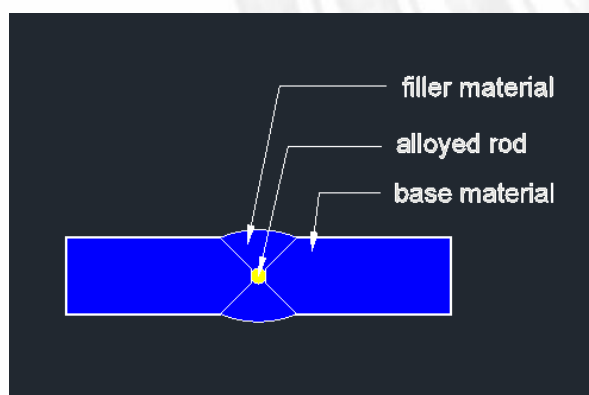
For special repairs of steel armors, standard welding cannot assure the strength required in normal exploitation. This is a safety requirement and cannot be minimized. As example repairs of armored vehicles, digging shovels for excavator or heavy machineries wearing plates.

The common elements of these steel grades are equivalent carbon which is much higher than ordinary steel grades. For this reason, special precaution must be taken during welding and special techniques also.

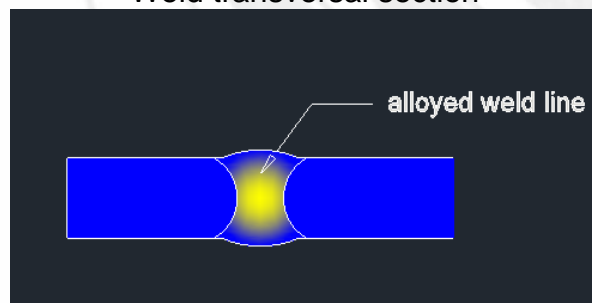
The new idea is to use a superalloyed cold wire, positioned in the welding center which will diffuse during the welding in the whole joint section.



Position of the superalloyed wire



Weld transversal section



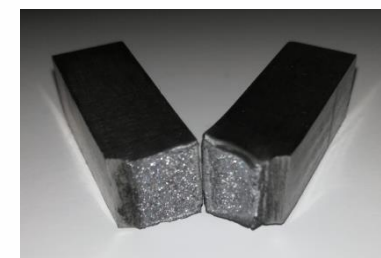
Weld after diffusion



Typical application of wearing plate repair



Aspect of high resilient weld



Aspect of non-conform fragile weld

Special welding using superalloyed wire and effect of weld microalloying is tested at impact, using Charpy machine. The sample must absorb higher energy and aspect of the breakage must be resilient, without fragility.

Contact: laurentiu.zgripcea@student.upt.ro 0773757441