

## SpotTrack - Development of an automated spot weld inspection device for safe vehicle repair

There may be over three thousand spot welds in a typical car body. When a car is repaired the spot welding parameters can be different as the production machinery used in manufacture cannot be used in repair operations. The repairer is often not an expert at inspecting spot welds. Assured reliability of the spot weld is paramount, since the integrity of the spot welds is vital to the crash performance of a car and the safety of its occupants.



*Cross section of a basic spot weld*

Therefore, there is a need for a rapid non-destructive inspection device that can be operated by somebody without specialist skills.

### Project objective

The SpotTrack project is creating the first automatic spot weld tracking device that can be applied non-destructively in the automotive repair industry. The only inspection option available to body repair shops today is to create a spot weld on an off-cut and carry out a peel test on it, which is destructive.



*The destructive peel test*

However, the assumption that the test spot weld is identical to the one on the car can be unsatisfactory. In some cases the spot weld may not be tested at all. The new SpotTrack device will be designed to use ultrasound to detect any flaws in the repair weld. The type of flaws can be categorised as: stick weld (cold weld), burnt (oversized), loose weld (no fusion has occurred), undersized nugget, porosity. In all cases, the structural integrity of the weld is affected.

SpotTrack will allow the user to quickly and reliably tell whether a spot weld is acceptable by giving a simple pass or fail indication. The proposed SpotTrack system will have the advantage of testing the actual weld made within a matter of seconds and without the need for interpretation. Most importantly it will ensure that the actual spot welds going into service are safe and repairers can provide quality control records of their work.

The project will develop novel modelling and signal processing techniques and use those techniques to develop novel routines and inspection procedures in an easy to use robust device applicable to current and new materials. The results of such modelling and signal processing studies, and the survey of market needs, will enable a device to be developed that is suitable for the repair industry.

For further information, please visit the project website at [www.spottrack.eu](http://www.spottrack.eu).

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