

## Summary

The subject of this doctoral thesis was to determine the influence of the magnetic particle test parameters on the possibility of detecting welding incompatibilities from group 4, type of sticking and no fusion in T-joints with fillet weld.

Magnetic-powder tests were carried out on specially designed and made patterns, in which the discontinuities from group 4, i.e. lack of fusion and sticking, were simulated. The simulation of non-compliance allowed to determine the sensitivity of individual test techniques. The obtained test results also allowed to determine the values of the test parameters and to confirm the thesis made at the beginning of the work.

The study also carried out tests on welded joints reflecting the actual joints occurring in welded structures with natural discontinuities.

On the basis of the performed tests, it was possible to determine whether the magnetic-particle method can be used in detecting non-compliance from group 4, taking into account the specific conditions of the study.