# SUMMARY

The subject of this thesis is the development of a new methodology for determining the linear energy of $E_L$ welding based on the obtained effect of melting the welding consumable and remelting a part of the parent material to be welded. The new methodology assumes the determination of the amount of heat introduced into the joints by measuring the transverse area of the weld or padding weld, and then using the reference sample coefficient β after substituting the measured value in the formula presented in this paper, calculating the actual value of the linear welding energy $E_{L\beta}$.

The thesis presents the problem of inaccuracy in calculating the linear energy of welding for welds and padding welds according to a commonly known and used formula based on parameters used during the welding process, such as current, arc voltage, welding speed and process efficiency, as well as explaining the reasons for underestimation resulting from the lack of taking into account in this formula a number of external factors influencing the final welding result in the form of a weld or padding weld.

Tests were carried out that allowed to determine the relationship between the transverse area of the welds - including the remelted part of the parent material and the weld metal - and the thermal energy consumed during the welding process. These dependencies led to the determination of the β reference sample coefficient, which was successfully applied in the new methodology.

In this diploma thesis, examples of practical application of the new methodology for determining linear energy of $E_{L\beta}$ welding are presented, which allows to determine the heat input also for cases that have so far been very problematic or completely indeterminate, such as spot welding, tape padding or multi-process hybrid welding.