Steel structures are popular in the construction of means of transport due to the high strength of the material, ease of formation, and its low cost. Lattice structures are also present in steel structures. Lattice structures are made of steel sections with different cross-sectional shapes. Elements of lattice structures are joined with using various welding methods. These connections should have adequate strength, quality and reliability. This is very important because they are subjected to various load, also dynamic. These loads can come from both the driving and work of special equipment which is located in the mean of transport.

Based on a comprehensive literature review of the subject of this paper, and taking into account the results of our own research, the following objective has been formulated:

*The aim of the study is to determine changes in the limit load capacity steel construction of means of transport after using micro-jet cooling for traditional MIG/MAG welding process.*
Operating range:
• load bearing structures (structural solutions, materials),
• connection of load carriers,
• micro-jet cooling,
• determination of the load capacity of the welded structure.

Taking into account the current state of knowledge concerning the load carrying capacity of vehicles, determined in the literature review and the information collected during the exploratory and own observations, the following thesis was adopted:

1) *Cooling of micro-jet welds in corners of low-alloy steel trusses used in means of transport leads to increased frame deformation and impact resistance.*

2) *Cooling micro-jet welds increases the design load capacity from the point of view of increasing the limit values of plastic deformations of structural nodes.*

According to the suggested thesis, the research conducted and the preceding literature studies were devoted to reaching the main purpose of the work. To accomplish this, a detailed study plan was developed:
• comparison of the tensile strength of the welds made using traditional welding methods and the micro-jet cooling method,
• comparison of the yield point for welds made using traditional welding methods and micro-jet cooling,
• comparison of the impact strengths of traditional alloyed welding methods and the micro-jet cooling method,
• development of model trusses as support elements,
• testing the limit-load capacity of model trusses,
• numerical studies of stresses and displacements,
• comparison of numerical and experimental studies.
In this work new technology of welding micro-jet cooling was presented. It can be considered as a new way to improve the mechanical properties of the weld. It allows to obtain the weld with high plastic properties. The reason for this is the formation of the weld metal with large amount of fine-grained ferrite. This amount is higher in comparison to conventional welding method. A large amount of fine-grained ferrite has a positive influence on improving the mechanical properties of the weld.

Micro-jet cooling is an innovative method of forced cooling. It can be used to cooling of the weld immediately after the welding. This method allows cooling the weld under controlled conditions, particularly at a controlled cooling rate. Proper cooling rate allows obtaining the characteristic phases in the structure of the weld metal. The presence and amount of phases in the structure affects on the mechanical properties of welds. Ability to control the structure and properties of the weld metal are very important. The structure of weld metal can be controlled with several cooling parameters of micro-jet cooling (kind of cooling medium, pressure of the cooling medium and the number of micro-streams).

The concept of limit load is an important issue in the design of steel structures. Knowledge of this parameter allows to the load with smaller value of force than the limit. If the limit load is exceeded, structure is destroyed. The theory of limit load says that the achievement of the yield strength in fiber cross of element does not exhaust the capacity of the element. Therefore, it is possible to better use of strength of material in comparison to traditional calculations.