

# The geometrical fine adjustment of circular honeycomb structure using laser welding

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**Abstract.** The circular honeycomb structures are made of formed thin sheet for the lightweight structure. The stator pin must be pressed in the circular honeycomb structure. There can be problem with the adhesive friction and bonding during the installation pressing of the stator. The idea is that the structure is designed a bit loose and the diameter of the structure is decreased to the necessary installation tolerance by the thermal effect of the laser in the area of final installation. The heat influence of the laser weld shortens the thin plate. Therefore it can be used in order to decrease the diameter of circular thin sheet honeycomb structure. In the first stage of the study the 1.5 mm sheet 100 mm plate was shortened 0.8 mm with the contribution of 28 laser welds. In the second stage of the study the diameter of the circular honeycomb structure made of 1.5 mm plate was decreased by using laser welding. The energy input of the 150 mm area in the inside of the cylinder was 84 kJ. The 320 mm diameter of honeycomb structure can be decreased 0.3 mm which is just enough to achieve a sufficient installation tolerance of the inner stator pin. The laser weld treated circular honeycomb structure was not distorted but the installation of the stator pin was easy and the installation tolerance was just enough tight for the good attachment of the stator pin.