

Improving resistance welding of aluminum sheets by addition of metal powder - DTU Orbit (08/11/2017)

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In order to ensure good quality joints between aluminum sheets by resistance spot welding, a new approach involving the addition of metal powder to the faying surfaces before resistance heating is proposed. Three different metal powders (pure aluminum and two powders corresponding to the alloys AA2024 and AA7075) are investigated for the resistance spot welding of AA1050 aluminum sheets of three different thicknesses. Microstructural and mechanical analysis demonstrates that significant improvement in weld bead morphology and strength are obtained with the addition of metal powder. The improvement obtained is shown to be due to the development of a secondary bond in the joint beside the weld nugget increasing the total weld area. The application of powder additive is especially feasible, when using welding machines with insufficient current capacity for producing the required nugget size. In such cases the best results are obtained with pure aluminum powder.

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