

# **EFFECT OF SHOT PEENING ON THE MECHANICAL BEHAVIOUR OF THE MULTI PASS FRICTION STIR WELDED ALUMINIUM ALLOYS**

A project report submitted in partial fulfilment of the requirements

for the award of degree of

**BACHELOR OF TECHNOLOGY**

in

**MECHANICAL ENGINEERING**

by

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**DEPARTMENT OF MECHANICAL ENGINEERING**

**SASI INSTITUTE OF TECHNOLOGY & ENGINEERING**

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Academic Year 2022-23



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### CERTIFICATE

This is to certify that the project work entitled **“EFFECT OF SHOT PEENING ON THE MECHANICAL BEHAVIOUR OF THE MULTI PASS FRICTION STIR WELDED ALUMINIUM ALLOYS”** is being submitted by **A.NAGA SAI** (20K65A0301), **R.VV.NAGENDRA KUMAR** (20K65A0334), **S.PAVAN TEJA** (20K65A0339), and **T.MANIKANTA**(19K65A0367) in partial fulfilment for the award of Degree of **Bachelor of Technology in Mechanical Engineering** to the Jawaharlal Nehru Technological University Kakinada, Kakinada during the academic year 2022-23 is a record of bonafide work carried out by them under our guidance and supervision.

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## ACKNOWLEDGEMENT

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With gratitude,

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B/Cmurti  
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## ABSTRACT

Friction stir welding (FSW) is a technique for solid state joining in which the joint is created below the melting point of the base metal. FSW research activities have recently shown interest in high melting-point materials as well as soft materials. The joint quality is influenced by several distinct factors. One of those factors is tensile residual stresses. Tensile residual stresses are induced during friction stir welding, which has been extensively researched. Unavoidably, friction stir welding produces residual stress, which promotes the initiation and propagation of cracks over the usable area of the welded structure. We must employ surface enhancement approaches to prevent this. Shot peening and laser peening are the two surface enhancement methods. The purpose of this study is to review how surface improvement techniques affect the mechanical characteristics, the development of fatigue cracks, and the corrosion resistance of the weld joint.

**Keywords:** Friction stir welding (FSW), Residual stresses, Shot peening, Laser peening, Surface enhancement.

### Expected Outcomes:

- PO1: Engineering knowledge
- PO2: Problem analysis
- PO3: Design/development of solutions
- PO4: Conduct investigations of complex problems
- PO5: Individual and team work
- PO6: Communication
- PO7: Project management and finance
- PO8: Life-long learning
- PSO 1
- PDO 2