

(54) Title of the invention : A laser welding set up with dual focal lens for laser welding of dissimilar materials

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(57) Abstract :

The invention relates to a laser welding setup (100) with a dual focal lens (115) for welding dissimilar metals. The laser welding setup comprises two different laser cavities (110) and (111) which act as the laser sources. The laser sources follow the basic mechanism of CO₂ laser. The laser beams generated in those cavities are guided by two metallic mirrors (102) and (103); and incident on the top surface of the dual focal lens (115) which is a specially designed positive Meniscus lens. The dual focal lens has a conical top surface and a concave bottom surface. The laser beams incident on either side (left or right inclination) of the inclined conical surface (201) and (202) and move vertically in the lens medium. Further, after refraction in the concave surface (204), the laser beams converge toward two different focal points. The welding edges of the materials to be welded are kept at the focal point and heat is generated at the welding edges. Due to heating and melting, the materials are welded. The intensities of the laser beams are different; and consequently, the heat generated at the welding edges is different based on their melting points. Thus, two dissimilar metals can be welded accordingly using this technology.

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