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Improvement of Ultrasonic Inspectability in Large Size Feed Stock of Premium and Standard Quality Ti-6Al-4V Titanium Alloy

K Nageswara Rao*, R. N. Ray*, A. K. Bhatia*

Abstract

Ti-6Al-4V is a versatile alpha-beta titanium alloy. It has higher strength and responds to heat treatment. It has been well established that the mechanical properties and ultrasonic inspectability of titanium and titanium alloys are significantly affected by microstructure which in turn depends on thermo mechanical processing. As the product size increases, meeting the macro, micro and inspectability in ultrasonic testing becomes more difficult. The new generation of international specifications have forced the manufacturer to institute strict controls over all the stages of processing. MIDHANI is the only manufacturer in South East Asia producing titanium & titanium alloys for aerospace and aeronautical industries against stringent international specifications.

In order to achieve the fine equiaxed primary alpha in transformed beta matrix which improves ultrasonic inspectability in the product, the thermo mechanical processing parameters were designed with a minimum 70 per cent deformation in alpha-beta field.

The factors that affect microstructure, mechanical properties and ultrasonic inspectability will be discussed in the presentation