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The Pros and Cons of HIPping of Ti-based Alloys to Near Net Shape

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It is widely accepted that Near Net Shape HIP (NNSHIP) has many advantages over alternative process-routes for the production of some types of components, but as with all process-routes there are disadvantages. This process-route now has competition from additive manufacturing, which is being used to produce components such as engine casings, but the various technologies of additive manufacturing also have their disadvantages. It is important that the pros and cons of all process-routes, including of course conventional thermo-mechanical processing, are considered so that the optimum process-route is selected for different types of components. In this paper the advantages and the disadvantages of NNSHIP will be discussed together with progress in overcoming them, where that is seen as feasible. The work will be illustrated by work on HIPping of beta Ti alloys, since these are in many ways the most interesting because their microstructures and thus properties are sensitive functions of the thermal history.

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HIP Process

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