Optimisation of the strength of aluminium foam sandwich (AFS) panels by different heat treatments

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Abstract: Aluminium foam sandwich panels (AFS) made of a low-density aluminium alloy AlSi6Cu6 foam core and two dense 6082 alloy face sheets were fabricated, after which the panels were subjected to two different heat treatments. First, the AFS panels were aged to increase their strength without further solution heat treatment and fast quenching, a process which resembles a T5 treatment. Second, to define a reference point the face sheets of AFS samples were cut off the foam and subjected to a full T6 treatment. Hardness profiles were measured across the thickness of the face sheets after the two different treatments and the microstructure was investigated. The main conclusion is that mechanical performance of AFS panels can be considerably increased by heat treatment without full solution heat treatment (T5), but without reaching the level of a full T6 treatment. The potential use of an easy to apply T5 treatment is an important cost reducing factor.

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