FATIGUE BEHAVIOR OF CFRP/STEEL HYBRID COMPOSITES

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Summary: Hybrid CFRP/steel composites are a very promising solution to increase bolt bearing strength in composite aerospace structures. This paper reports the findings on the static and fatigue tests performed in composite specimens made of CFRP and steel foils and compares these results with conventional CFRP specimens. A servo hydraulic machine was used to perform fatigue tests under load control regime with $R=0$. Sinusoidal waveforms were adopted to control the load time evolution. Hybrid specimens have a considerable higher static strength than conventional CFRP and therefore their stress levels are higher in absolute values than conventional CFRP specimens. Conventional manufacturing techniques such as hand lay-up and drilling, and also quality control techniques such as ultra-sound scans can be successfully applied to hybrid CFRP/steel composites.