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Fatigue Investigations into a Composite Glider Structure

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The increasing demand for high strength-to-weight ratio structures in the construction of advanced aeronautical and aerospace vehicles, led to continuously growing interest on composite materials, and to development of new smart materials. The design for modern gliders structure will rely on FRPs to meet weight criteria. Due to the economic and safety criteria, the structure of them must be durable over an expected life time at environmental conditions. The authors present results of fatigue investigations into the primary structure of composite glider undertaken at the WUT: Institute of Aeronautics and Applied Mechanics. The specimens representing the main joints of wings and fuselage, as well as the wing spar root were tested, since they form a most representative part of the glider structure. The integral fatigue tests of the wings-fuselage system were finally performed. This vehicle construction requirement has lead to extensive research work on increasing application of new composite materials.

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