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Morphing Structures for Improved Aircraft Performance

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Morphing aircraft structures have been defined as the capability to provide superior and/or new vehicle system performance by tailoring the vehicle's state to adapt to the environment and multi-variable mission rules. There are two categories of morphing, planform and performance. There have been many morphing concepts proposed in the last 15 years, and many of them are based upon bio-mimicry of the likes of bats, birds and insects. This Introductory Lecture will provide an overview of the reasons why morphing is so attractive for aircraft designers, and to give a range of examples of different research programs from around the world that have demonstrated some of the possibilities for morphing aircraft. Having described the state of the art, the lecture will conclude with some ideas as to where morphing technology will go in the next 20 years.

Keywords: Morphing; Aeroelasticity; Green Aircraft;

Preferred Presentation Type: lecture