



Combined morphing assessment software using flight envelope data and mission based morphing prototype wing development

Results in Brief

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Technologies for morphing

An EU team evaluated technologies that enable morphing of aircraft wings. The group proposed six technologies and tested five in wind tunnels, plus combined several systems onto a single unpiloted vehicle wing.



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Morphing in aviation refers to changing the shape of an aircraft's wing during flight to achieve performance increases. Although an old idea, its practical implementation requires considerable research and development.

The EU-funded **CHANGE** (Combined morphing assessment software using flight envelope data and mission based morphing prototype wing development) project investigated the application of morphing technologies in aviation. The team tested

investigated the application of morphing technologies in aviation. The team tested various technologies, separately and in combination. Testing included unmanned vehicles and wind tunnels.

The group proposed and developed six novel morphing concept technologies. Five were validated via wind tunnel testing. Using unmanned vehicles, the consortium also demonstrated the feasibility of combining multiple morphing mechanisms on a single wing. Researchers further developed and tested various single- and multiple-material skins, suitable for other structures in addition to aircraft skins.

CHANGE developed a modular software architecture capable of determining and achieving optimum wing shape. The innovations include a new shape measurement technique. All aspects of the software system were verified using morphing structural design combined with wind tunnel testing. The software is intended for eventual autonomous use in aircraft.

The project hosted three successful workshops and brokerage events.

CHANGE made substantial progress towards practical implementation of multiple wing shape-altering technologies. The innovations may eventually lead to cost reductions and performance increases for aircraft.

Keywords

Morphing, aircraft, wings, wind tunnels, aviation, unmanned vehicles, wing shape

Project Information

CHANGE

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