



CASE STUDY:
Trailing Edge Control Surface
WITHOUT The Use of Foam

Smart Tooling uses exclusive shape memory polymer tooling technology to produce a multi-chamber trailing edge composite part with co-cured spars without the use of foam core.

PROBLEM
 Create trailing edge control surface with a small, hollow trailing edge cavity and co-cured spar

OPPORTUNITY
 Save weight and reduce scrap

SOLUTION
 Using exclusive shape memory polymer tooling technology, the trailing edge control surface was successfully manufactured without foam.

Traditionally, composite trailing edge control surfaces required the use of foam fabricated to a knife point to mold the trailing edge because traditional tooling methods could not mold composite with such small, and often times trapped geometry.

The machined foam is co-cured into the part, adding weight. The foam is brittle and easily damaged during machining and layup, creating potential scrap and rework.

Alternatively, using Smart Tools that act as bladders, the part was produced without foam. Because the Smart Tool is

rigid at lay-up, but elastic for cure extraction, the Smart Tool can easily be removed from the cured composite part and reformed and reused to make the next composite trailing edge. The benefits include reduced weight, scrap, and cost.

Smart Tooling provides formable, reusable tooling solutions for manufacturing composite parts with complex geometries for the aerospace & defense industry. Smart Tools improve quality, reduce labor hours, decrease consumables, and increase throughput - essentially, Smart Tools enable the manufacturing of composite parts better, cheaper, and faster.

TRAILING EDGE CONTROL SURFACE
 SUB ARTICLE COMPOSITE PART

