

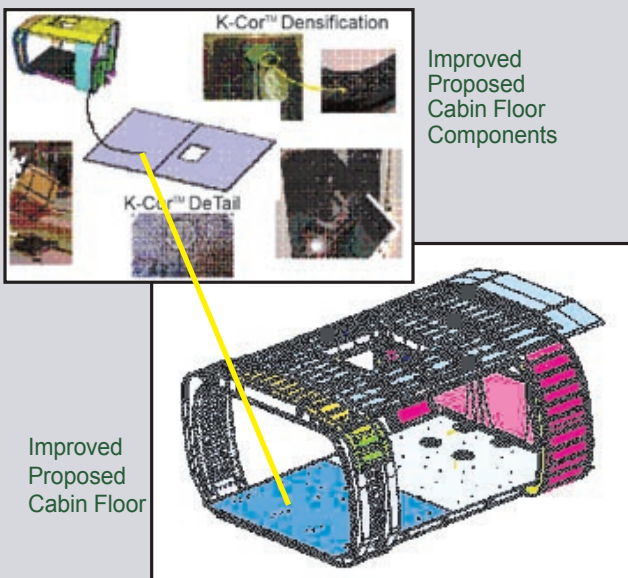


UH-60 Black Hawk Helicopter

OBJECTIVE / SOLUTION

Develop and demonstrate less labor intensive manufacturing processes capable of economically producing a lighter weight, lower cost, and more durable composite floor structure through the use of advanced materials and construction techniques.

Helicopters are weight and price sensitive. Excess weight translates into reduced mission duration, range, payload, and/or performance. Cabin floor structures that are lighter, with lower acquisition costs, provide increased operational performance—less weight equals more range and/or operational capability. The current floor is manufactured in a five step process—an inner composite skin, an outer skin, a core blanket (spliced and stabilized) as individual cured details, and then assembled into a final bonding operation. This manufacturing process is labor intense and expensive. The proposed cabin floor will be manufactured as a single step, co-cured structure, assembled from carbon face sheets and K-Cor™ sandwich core mate-



Low Cost Rotorcraft Cabin Floor Structure

Reducing the weight of the UH-60 helicopter through the use of lighter weight, lower costs, and more durable composite structures.

rial. The structure proposed will demonstrate increased damage tolerance over the current honeycomb core design. It will be a form/fit/function solution on both new and retrofit applications. Fabrication, inspection and evaluation (destructive/non-destructive) of coupons and full-scale prototype hardware will validate the project's success.

ACHIEVEMENTS

- Project results will contribute to meeting Force Operating Capability (FOC) Air Responsive and Sustainable Aviation Support (FOC-04-01), Strategic Force Protection (FF7), Future Force (FF11), Soldier Protection in Counterinsurgency Environment (CF4), and CF6 goals
- Form/fit/function replacement design for new/retrofit applications
- Single step manufacturing processes, reduced O&S and recurring costs, improved rate of climb/maneuverability and increased payload and range

BENEFITS

- New composite cabin floor structures will be lighter and cost less than the current cabin floor
- Improved power-to-weight margin which equates to better performance and lower operational costs
- Improved damage tolerance and reduced recurring costs

STATUS

- Program is in its third year of funding (FY09)
- Requirements development, conceptual design and risk reduction plan complete (FY07-08)
- Developed conceptual manufacturing and tooling plan (FY08)
- Materials optimization and supplier selection underway (FY08-09)
- Initiating preliminary detail design and structural/producibility risk reduction (FY09-10)
- Tool design/fabrication, component manufacture and testing (FY10)

WEAPON SYSTEMS / SECONDARY ITEMS IMPACTED

- Utility Helicopter
- UH-60 Black Hawk Helicopter family
- Future rotorcraft programs such as the Joint Heavy Lift (JHL) Helicopter

POTENTIAL COST AVOIDANCE

- Return on Investment of 4:1 with a cost benefit of \$22M