



DEFENSE LOGISTICS AGENCY

THE NATION'S COMBAT LOGISTICS SUPPORT AGENCY



SMALL BUSINESS INNOVATION PROGRAMS EXPLORED INNOVATIONS

SECURING RESOURCES FOR US DEFENSE & COMMERCIAL INDUSTRIES

TOPIC NUMBER:
DLA182-001

TOPIC TITLE:
Rotorcraft Fuel
Bladder Weight and
Total Ownership
Cost Reduction

**CONTRACT
NUMBER:**
SP4701-18-P-0125

SBIP COMPANY:
Response
Technologies
Coventry, RI

**TECHNICAL
PROJECT
OFFICE:**
DLA Aviation

PUBLISHED:
2021

FORCE READINESS AND LETHALITY & SUPPLY CHAIN INNOVATION

RESPONSE TECHNOLOGIES MODERNIZES THE FLEXIBLE FUEL CELL

Response Technologies LLC, a Bell Textron company, developed an additive manufacturing 3D reinforced composite process currently used in their redesign of a decades-old military technology – the flexible fuel cell. Traditional fuel cell manufacturers use WWII-era subtractive manufacturing and production processes, which does not capitalize on advanced manufacturing techniques, capabilities or efficiencies. Compared to the Response fuel cell technology, traditionally manufactured fuel cells are more costly, provide less protection and have considerably longer procurement lead times.

Response's innovative, forward-thinking manufacturing methods resulted in a seamless, crashworthy, ballistically-tolerant and self-sealing fuel cell that is universally fuel compatible and environmentally sustainable.



Flexible Fuel Bladder. Image provided by Response Technologies, 2018

The design improvements are potentially lifesaving, cost effective and reduce procurement lead time – all benefits that have a direct impact on warfighter and weapons system readiness. The redesign and modernization comes with several benefits, most notably:

- 20% targeted weight reduction
- 40% reduction in total ownership costs
- 20% reduction in future procurement costs
- Reduces manufacturing lead time from months to days
- Timeline for new product designs using the technologies derived is reduced by 8x
- Potential to eliminate the need for aromatics in fuel for self-sealing

Made in the USA



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Response addressed and overcame the usual risks and concerns associated with advanced manufacturing techniques by meeting priorities for the DoD rotorcraft market and by certifying the fuel cell under the rigorous standards of MIL-DTL-27422F.

The Bell UH-1Y Venom is expected to be the first platform to utilize Response Technologies' fuel cell. Additionally, Response is working on fuel cells for the H60 Blackhawk, H-53K Sea Stallion, AH-1Z Viper, A-10 Thunderbolt, and the F-16 Fighting Falcon.

Response was acquired by Bell in December 2020.

For more information on Response Technologies, please contact DLASBIR2@dla.mil.

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