

# Business Impact Case Study: Ventura Aerospace Inc.

Shorter Time to Market

Lower Product Life-Cycle Cost

Greater Profitability



## Overview

### Company

Ventura Aerospace Inc. consists of a team of domain experts that provides solutions for thermal monitoring of aircraft interiors, hidden areas, and cargo compartments.

### Challenge

Proving the value and effectiveness of a new type of fire suppression system for FedEx Express aircraft at a much lower cost than the standard safety systems offered by large, established suppliers.

### Solution

Using the established NI platform and support from NI engineers to deliver a product to market quickly and profitably that costs less than traditional systems.

### Business Benefits

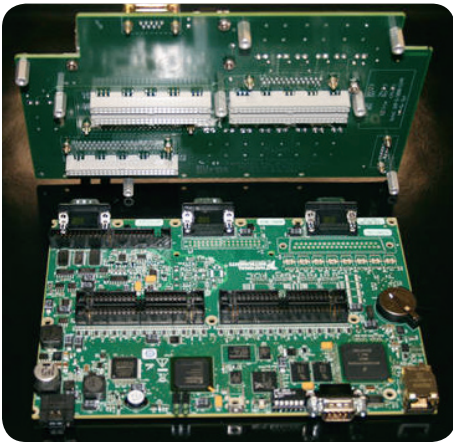
Ventura Aerospace's small team of systems engineers produced a quality solution in half the time and at about 50 percent of the cost of their competitors' solutions.

## Ventura Aerospace Reduces Time to Market for Disruptive Technology by 50 Percent Using the NI Graphical System Design Platform

### Customer Profile

Ventura Aerospace Inc. is a small design team of domain experts that has developed rigid cargo barriers, oxygen systems, and other integrated control and monitoring systems for aviation shipping safety throughout the world.

With the increased presence of combustible materials, such as lithium batteries, in aircraft cargo, Ventura Aerospace and FedEx Express worked together to develop a system that further enhances air freight transportation safety. Ventura Aerospace recognized an opportunity to develop an innovative system consisting of fire detection sensors and a novel delivery mechanism to control the distribution of Cargo Foam®, a fire-suppression chemical, directly to the fire.



The fire control unit contains an NI Single-Board RIO device and a custom daughterboard.

## Challenge

To win new business with its fire suppression system, Ventura Aerospace needed to turn its novel idea into reality quickly and inexpensively while overcoming a limited budget, a small design team without prior experience developing fire suppression systems, and the need to validate the effectiveness of this fire suppression system versus traditional fire containment systems.

Although there are stringent fire prevention and safety regulations for cargo planes, fire suppression systems are not mandatory for cargo compartment configurations, and it is typically difficult to convince a company to invest in nonmandated safety regulations when not provoked by an incident. Therefore, Ventura Aerospace needed to prove the effectiveness and value of this system at a much lower cost than the standard safety systems offered by large, established suppliers.

At this point, Ventura Aerospace recognized that early success with a well-known company was critical to winning future business, so it submitted an unsolicited proposal to FedEx Express, its biggest client, to develop this innovative system and implement it in freight aircraft. Ventura Aerospace guaranteed it could do this on time and within FedEx Express' budget for a traditional system. To achieve this, Ventura Aerospace knew it needed a development platform that its engineers could use to confidently innovate and rapidly develop a prototype to inexpensively bring their ideas to fruition.

## Solution

With the main objective of delivering a product to market quickly and profitably, Ventura Aerospace set out to create a prototype for FedEx Express. The development team needed a design approach that seamlessly transitioned from idea, to prototype, to production. The company knew it needed tools that could not only handle the complexity of the system but also scale for potential mass production in the future.

As the company began evaluating its options, it considered a programmable logic controller and text-based programming solution because its design team had previous experience in this area. The company immediately realized this solution would be too costly considering the performance required and moved on to the next option—building a custom system. However, Ventura Aerospace knew it did not have enough in-house knowledge to build a complex embedded system and discarded this option as too costly as well.

Ventura Aerospace then evaluated, and ultimately selected, the National Instruments graphical system design approach, which consists of commercial off-the-shelf

*“The support and confidence we received from NI is crucial for a small company like Ventura Aerospace. Leveraging our strategic partnership with NI and its technologies, our small team was able to propose and win business at FedEx Express, delivering a quality solution in half of the time and at about 50 percent of the cost of our competition.”*

—Jeremy Snow, President,  
Ventura Aerospace

embedded hardware and graphical programming software. This was the ideal solution for Ventura Aerospace because it empowered its domain experts to rapidly develop a prototype by helping them focus on their core competencies rather than investing a large portion of their time in learning how to use the development tools. The NI LabVIEW graphical programming environment offers an inherently short learning curve and the NI reconfigurable I/O hardware platform is extremely flexible and intuitive and helps users easily take code developed in the design phase straight to deployment. All of these factors reduced the total development time and product life-cycle costs.

When evaluating their various options, Ventura Aerospace recognized NI as a trusted brand because the company has a reputation for its strong commitment to customer success. Additionally, Ventura Aerospace knew it could lean on NI for support and technical expertise. This was important to Ventura Aerospace because it provided their engineers with the confidence to innovate. By taking advantage of the established NI platform and support from NI engineers, Ventura Aerospace alleviated the concerns FedEx Express had regarding how a small company with no prior experience in this area could build a complex, embedded fire suppression system.

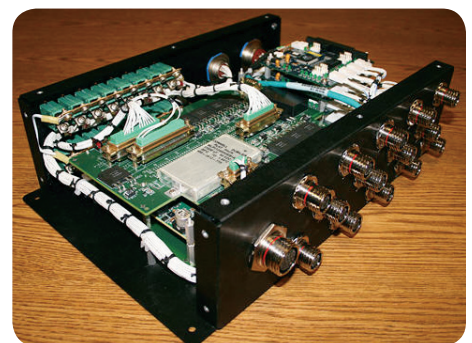
## Business Benefits

Ventura Aerospace quickly delivered a prototype to FedEx Express to prove its concept and gain investment. Using the NI platform, Ventura Aerospace's small team of systems engineers produced a quality solution in half the time and at about 50 percent of the cost of their competitors' solutions. Additionally, because of the intuitive NI platform, Ventura Aerospace engineers could focus on designing an innovative fire suppression system rather than learning low-level electronics programming and development techniques. Using the NI platform, the company invested one-third of the man-years in development that it would have invested using another solution.

Using the NI platform, Ventura Aerospace reduced not only prototype development costs but also total product life-cycle costs. As Ventura Aerospace moved from design, to prototype, to deployment, it continued to use the same unified, integrated platform from NI. This enabled Ventura Aerospace engineers to reuse the same software they developed for their prototype in their deployed systems, which meant costs continued to decrease throughout each phase of the product life cycle. Overall, Ventura Aerospace was more profitable more quickly because it chose the NI platform. The company saw a profit within 20 months and, in five years, saw a 10X revenue improvement. Additionally, by using the NI platform, Ventura Aerospace realized a 384 percent greater return on investment (ROI) than if it chose to use another solution.

*“Using NI technologies enabled our developers to quickly master the tools and focus on our core competencies. We could not have delivered on time without using a graphical system design approach.”*

– Troy Ingram, Systems Engineer,  
Ventura Aerospace



The fire control hub is the center of the system.



## Results

50% shorter time to market

20-month payback period

384% improvement in ROI

264% increase in 5-year cumulative net income

2/3 less man-years required for development

## Future

Ventura Aerospace's success deploying the fire suppression system on the initial FedEx Express airplane is quickly expanding to include other types of planes in the FedEx Express fleet. Ventura Aerospace uses the NI graphical system design platform to take advantage of the same hardware infrastructure while making programmatic changes to the software. Additionally, the flexibility of the system opens up future opportunities for Ventura Aerospace to customize solutions to meet the needs of other customers looking for fire suppression systems as well as other air safety applications. For example, the company has leveraged its investment in the graphical system design platform to build other turnkey data collection systems for aircraft ground and flight testing as well as lab testing setups used for aircraft certification. Not only is Ventura Aerospace's software and hardware investment protected as the company migrates its solution from one type of plane to another, its ROI is also maximized as the company customizes the software to pursue further revenue generating opportunities.

*“At FedEx Express, keeping your packages safe is our No. 1 priority. FedEx Express worked with Ventura Aerospace to develop a new reliable fire suppression system in which a fire is effectively knocked down within a short amount of time. The new suppression system that we've been working on is a large improvement compared to existing fire suppression systems.”*

– Bruce Popp,  
Manager of Strategic Projects Engineering, FedEx Express



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