

CASE STUDY

PRODUCT CO-DEVELOPMENT OF A LAUNCHER SYSTEM WITH CORVUS TECHNOLOGY SOLUTIONS



CONTEXT

ANCA Motion identified an opportunity to develop a launcher system to address emerging customer needs where existing solutions lacked performance, controllability, and robustness. The intent was to create a new launcher platform from first principles — not to adapt an existing product — and to build a technically credible foundation that could later be tailored to specific customer use cases.

Corvus Technology Solutions brought valuable application insight based on prior customer engagement. The collaboration combined ANCA Motion's technology origination and deep engineering development with Corvus' experience adapting solutions for operational environments.

CO-INVENTION CHALLENGE

The primary challenge was the creation of a new launcher concept and platform under significant uncertainty. Early work required evaluation of multiple possible architectures before settling on a belt-driven launcher concept. From there, the challenge expanded to include:

- Definition of the launcher's fundamental operating physics
- Selection of a viable low-inertia actuation approach
- Development of electronics, firmware, and control strategies from scratch
- Mechanical design, simulation, and validation of dynamic performance
- Ensuring the resulting platform could be adapted to real customer needs

This was not incremental development. It required sustained technical effort over an extended period to move from concept to a working proof-of-concept launcher.



APPROACH

ANCA Motion led the concept definition and end-to-end technical development of the launcher platform. This included architecture selection, physics modelling, electronics design, firmware and control development, mechanical design, and simulation.

A physics-based modelling approach was central to development. A dedicated launcher physics model was created to predict system performance based on UAV mass and launch velocity. Moment of inertia and moving mass were key drivers, directly influencing architectural decisions such as belt selection and servo motor choice. Simulation and FEA were used extensively to validate stress, inertia, and dynamic behaviour, with predicted performance proving accurate to within a small margin.

Collaboration with Corvus focused on adapting the underlying technology to customer contexts, informed by their prior operational experience. This input helped shape interfaces, configuration choices, and practical deployment considerations without redefining the core technology.

SOLUTION

The outcome was a launcher system built on a robust ANCA Motion-developed technology foundation. The platform combined:

- Custom electronics and control hardware
- Launcher-specific firmware and control strategies
- Mechanically integrated actuation and structural design
- Physics-based modelling and simulation to define and validate performance limits

The firmware architecture was a critical component of the solution and differed substantially from ANCA Motion's machine tool firmware. It embodied launcher-specific control strategies and required extensive refinement to achieve reliable, repeatable operation. The resulting system was modular by design, allowing customer-specific adaptation while preserving the integrity of the core platform.

VALIDATION & OUTCOME

Development of the launcher POC progressed from initial discussions through to a completed system over approximately 24 months. While the launcher was physically complete earlier, a substantial portion of the effort — particularly firmware architecture and refinement — occurred late in the program and was essential to achieving a functional result.

The completed POC demonstrated that the underlying physics, control strategies, and mechanical design worked as intended. Input from Corvus helped ensure the platform aligned with real customer expectations and use cases.

For ANCA Motion, the project reinforced its capability to originate complex electromechanical systems from first principles and deliver a validated technology platform. For Corvus Technology Solutions, the collaboration enabled them to engage customers with a differentiated launcher solution built on a proven and deeply engineered foundation.

