FTCN Replay: Two Defense Startups Take Aim at Critical Military Technology Gaps

The latest episode of **From the Crows' Nest** showcased two emerging defense technology companies that are addressing critical gaps in America's military capabilities through innovative approaches to unmanned systems and aircraft maintenance.

AOC Director of Advocacy & Outreach and podcast host Ken Miller spoke with Ethan Thornton, founder and CEO of **Mach Industries**, and Rob Sladen, chairman and CEO of **Zulu Pods**, about how their technologies are reshaping defense manufacturing and operational readiness.

The Unmanned Systems Revolution

Thornton, who founded Mach Industries while still in high school, dropped out of MIT to focus full-time on developing next-generation unmanned systems after witnessing the transformative role of drones in the Russia-Ukraine conflict.

"If we imagine a war happening three decades from now, there's no question that it'll be fought with hundreds of thousands, likely millions of unmanned autonomous systems," Thornton said. "What Ukraine proved is just how quickly you can iterate and field these capabilities."

The urgency became apparent when examining battlefield statistics. Thornton noted that approximately 80% of casualties in Ukraine result from drones, and Ukrainian forces pushed the Russian navy largely out of the Black Sea using unmanned systems without having a navy of their own.

However, Thornton expressed concern about America's current

position in unmanned systems development, pointing out that US technology is not making a significant impact in Ukraine compared to systems from other nations.

“If you look at the war in Ukraine, US unmanned systems are not really having an impact over there,” he said. “If you had $100 million to spend on defense assets, you’d spend that on American tech. Now if you look at dollar-to-dollar impact, basically if I can spend $20 million and I’m just trying to get effect, you are likely not spending that on US unmanned systems.”

Rethinking Tactical Deployment

Current drone technology in Ukraine operates primarily at tactical ranges, but Thornton argues American forces need to think strategically to offset China’s superior industrial capacity. This means developing systems with significantly longer range and loiter time that can deliver strategic effects rather than just tactical ones.

One of Mach Industries’ key innovations addresses a critical vulnerability in conventional artillery: counter-battery targeting. Traditional artillery pieces reveal their location immediately upon firing, making them targets for return fire. Vertical launch systems eliminate this problem entirely.

“The interesting thing about Viper [one of Mach Industries’ three main products] is because it launches vertically, there’s no launcher to back target,” Thornton explained. “The second you launch that thing, it’s not even worth sending counter battery fires.”

The company’s approach combines the firepower of guided artillery with extended range and improved survivability, all at comparable or lower costs than existing systems.

Thornton emphasized that America cannot win a production war against China and must instead focus on technological

advantages.

“If we find ourselves in a set of proxy wars where we’re trying to go toe-to-toe with China on production capacity, we’ll lose,” he said. “The optimization needs to be dollar-to-dollar asymmetry. We need to be able to come up with net new tech architectures either in hardware or software, ideally both, to give us a dollar-to-dollar advantage.”

Revolutionizing Aircraft Lubrication

Sladen’s company, Zulu Pods, addresses a different but equally important challenge: efficient lubrication delivery for military turbojets powering drones and missiles.

Traditional oil systems for jet engines are designed for thousands of hours of operation, but expendable systems only need to function for perhaps 30 to 45 minutes. Many engineers divert fuel for cooling instead of using dedicated oil systems, but this approach is inefficient.

“You’re carrying fuel in the air and you’re not burning it and it’s taking up volume on a vehicle, like a drone or a missile,” Sladen explained. “And that volume is really expensive real estate.”

Zulu Pods’ technology delivers an air-oil mist rather than jetted oil, reducing fluid volume by approximately 95%. This allows manufacturers to either carry more fuel for extended range or use the freed-up space for other systems.

The company has expanded beyond its core product to develop safety systems and anti-corrosion technologies that address fleet readiness concerns. Sladen noted that Air Force fleet readiness has dropped from 72% 30 years ago to 50% today, while the average aircraft age has increased from 17 to 30 years.

“We very much look at ourselves like the picks and shovels of

next generation weaponry," Sladen said. "We want to be component and subsystem technology for the next generation of weaponry."

Looking Ahead

Both companies emphasize rapid iteration and first-principles thinking rather than relying on legacy approaches. Mach Industries averages three months between major vehicle redesigns, while Zulu Pods focuses on matching technology to mission requirements rather than over-engineering systems.

As unmanned systems and attritable platforms become central to modern warfare, innovations from companies like Mach Industries and Zulu Pods will prove crucial to maintaining America's technological edge.