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MIL/Aero: Takes a Lickin' and Keeps on Tickin'

By Lynnette Reese, Editor-in-Chief, Embedded Systems Engineering

Once again, we owe embedded developers and designers working in the MIL/Aero sector a debt of gratitude.

Most of you already know that Military and Aerospace systems have very demanding specs due to life-safety or otherwise critical systems that are often used in the harshest environments and with the expectation of reliability in the face of hefty amounts of abuse. "Takes a lickin' and keeps on tickin'" used to be the tagline for Timex watches years ago, and should be the tagline for MIL spec devices. And yet, over the years a new challenge has arisen: do all of the above at the lowest possible cost. COTS has been part of that solution, as has a clever design, flexible products, and expertise on what can accomplish the job without breaking the budget.

The Timex watches did not have the challenge of maintaining backward compatibility with older systems, nor did they have to maintain comms with multiple additional systems in the space of a packet of Chiclets. MIL/Aero is so much more and never gets a tagline or a commercial.

A 325th Fighter Wing F-22 Raptor takes off from Tyndall Air Force Base, Fla., March 31, 2017. (U.S. Air Force photo/Airman 1st Class Cody R. Miller)

Small form factor adds another dimension to the demands of MIL/Aero, as Steve Gudknecht, Product Manager at Elma Electronic, points out in this issue's "Round Table." Gudknecht lays it straight out there, advising, "…buy modular, COTS-based solutions from a supplier that can provide the complete solution, in packaging suited to the end environment."

Just last week I was interviewed for a background check on a former contractor that reported to me a couple of years back. Literally, a man in a black suit and tie showed up at my door and flashed a thick gold badge before we sat down to answer a half-hour of questions on the bloke in question. Briefly, I was reminded of "Men in Black." Many people who work in Defense have every crack and facet of their lives combed through before they are cleared to work on classified systems.

I have always had enormous respect for engineers and companies that cater to the MIL/Aero sector. Detailed design demands at the outset are followed through with rigorous systems and acceptance testing. In many cases, engineers designing for MIL/Aero pull off near-miracles of ingenuity and yet cannot speak a word of their accomplishments until years later, when projects are finally declassified. While they work, they cannot leave anything on their desks unattended (not for a moment) and must lock them away. Other MIL/Aero systems can be discussed freely (e.g., COTS) but still must face the rigors of meeting specs that are difficult to design for with modular systems meant to fit a pre-determined set of needs. The pressure is still there, albeit in a different form.

Also responding to the questions the Round Table article poses are Doug Patterson of Aitech Defense Systems, George Hilliard of WinSystems, Rodger Hosking of Pentek, James Schada of Virtium, Jim Shaw of Crystal Group, Rob Persons of Artesyn Embedded Technologies, and Chris Ciufo of General Micro Systems. Points on determining processing requirements and architecture, the impact of operating systems, and payload processing for UAVs are among the topics touched on.

As UAVs come into the commercial world and the general public begins to appreciate never-existed-before-now applications made possible by UAVs, we have the MIL/Aero folks to thank for prior work…as usual. Thank you for your service, for the midnight oil you have burned on classified projects and the unique brand of patriotism that shows in silent pride of a job well-done and mostly unsung. Thank you.

http://eecatalog.com/military/2017/04/28/milaero-takes-a-lickin%E2%80%99-and-keeps-on-tickin%E2%80%99/