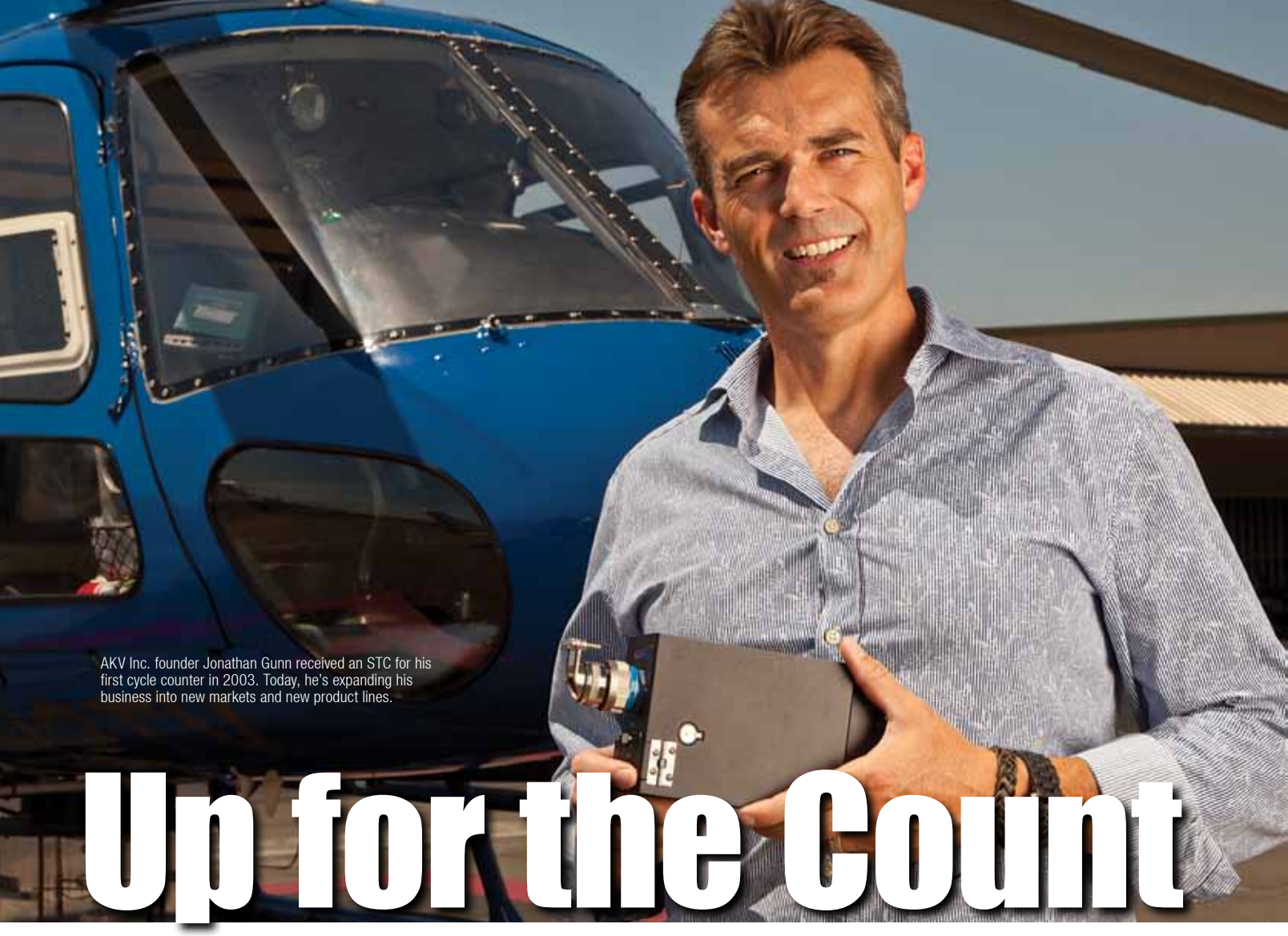

AKV Inc. founder Jonathan Gunn received an STC for his first cycle counter in 2003. Today, he's expanding his business into new markets and new product lines.

Up for the Count

BUILDING ON THE SUCCESS OF ITS AFFORDABLE, ACCURATE CYCLE COUNTERS, AKV INC. IS NOW ACTIVELY EXPANDING ITS PRODUCT LINE INTO OTHER, RELATED AREAS.

Story by Elan Head | Photos by Sheldon Cohen

When helicopter pilot Jonathan Gunn began flying for an electronic-news-gathering company in the Los Angeles, Calif., area in late 1999, it was his first introduction to the Eurocopter AS350 and the Turbomeca Arriel 1 series engine. It was also his first introduction to cycle counting.

Gunn had previously been flying Bell helicopters equipped with Allison/Rolls-Royce 250 series engines, which have component life limits measured in hours and engine start cycles *(see p.65, Vertical, Feb-Mar 2004).* Turbomeca Arriel engines, however, are among the many turbine engines that use a more-complex cycle-counting method to determine life limits, taking into account both significant power changes and engine starts. The rationale behind such methods is that engines used for, say, production activities, like logging, will experience more drastic turbine speed and temperature changes — and will therefore wear out more quickly — than engines that spend their lives in more even-keeled settings, such as flying from airport to airport.

Overall, by tracking engine wear more accurately, complex cycle-counting methods can save operators a lot of money by keeping engines from cycling out sooner than they need to. However, keeping track of power cycles in the cockpit can be a distracting task for a pilot whose "main objective is to fly the helicopter," said Gunn. Moreover, Gunn said he noticed a general lack of understanding and standardization when it came to cycle counting, as the process is often addressed only in maintenance manuals, not flight manuals. "I came to find out, talking to the other pilots, that everyone had a different understanding of the process. I thought this was crazy if they expect the pilot to do it."

THE BIRTH OF AN IDEA

With the idea of improving cycle counting efficiency and reducing pilot workload in mind, Gunn saw an opportunity to develop a simple, inexpensive electronic device that would track cycles automatically and use the most optimal of the

methods permissible. Drawing on his previous training as an electrical engineer, that's exactly what he did.

Gunn achieved a United States Federal Aviation Administration (FAA) supplemental type certificate (STC) for his first cycle counter in 2003, and started a business, AKV Inc., to market it. The product took off immediately, thanks to its simple installation procedures, easy-to-read cockpit display and economical price (the first units sold for less than $3,000 US, and they are still not much more than that). "It was very popular," said Gunn. "It was designed to be affordable."

Today, AKV's product lineup includes cycle counters for Arriel-1- and Honeywell (previously Lycoming) LTS101-powered AS350 helicopters; Honeywell (previously Lycoming) T53-powered Bell 204, 205, 210 and UH-1 models; and Arriel and LTS101 BK-117 variants (including the Eurocopter EC145 and UH-72A Lakota). Having achieved great success in the tourism, utility and law enforcement sectors, in particular, Gunn is now actively pursuing new markets for these existing products, including air medical operators of the EC145 and the U.S. Army, with its hundreds of UH-72s.

He also recently went through the process of having his Arriel 1B, 1D, 1D1 and 1E2 engine cycle counters validated by Turbomeca, giving them the manufacturer's seal of approval as acceptable cycle-counting aid systems. This also means that when AKV incorporates any changes made by Turbomeca to the cycle-counting procedure, those will be validated, too (and made available to customers as a software field upgrade). Gunn is also working with Turbomeca to incorporate the AKV Data Stream, an Ng (gas producer turbine) cycle-counter data-retrieval system, into the manufacturer's new BOOST (bank of online services and technologies) program, a centralized online maintenance database currently in development.

TAKING IT FURTHER

Gunn, however, isn't just content with counting cycles.

Responding to growing industry demand for tracking trends and exceedances, he has now introduced an exceedance-and-trend monitoring system called the ETM1000, which already has FAA and Transport Canada STC approvals (European Aviation Safety Agency approval is pending) for AS350 AStars powered with Arriel 1 and LTS101 engines. Versions for single-engine Bell helicopters and other models are said to be coming soon.

The ETM1000 continuously monitors and records all engine and drivetrain parameters — including N1 (gas producer), N2 (power turbine), Nr (rotor), measured gas temperature and torque — for values in excess of the airframe and engine-operating limitations. It also records outside air temperature, pressure altitude and values from the airspeed switch. All of this data is recorded onto a removable SD card for download and viewing in a Microsoft-Excel-based custom viewing software (ETM1000 data will eventually be incorporated into the BOOST program, as well).

The ETM1000 system includes instrument-panel-mounted annunciators, along with an audible side tone, to warn pilots when limits are being approached, and has the ability to connect to third-party satellite-tracking systems to automatically transmit exceedance alerts to the aircraft's home base.

The new ETM1000 responds to growing industry demand for tracking trends and exceedances.


Having previously operated AKV's cycle counters in its legacy AS350 B2s, the Los Angeles County Sheriff's Department Aero Bureau chose to install AKV cycle counters in its new, vehicle engine monitoring display (VEMD)-equipped B2 replacement fleet. AKV is now working on a dual-engine cycle counter for the Aero Bureau's new AS332s. Jonathan Gunn Photo

Like AKV's cycle counters, the ETM1000 is simple to install, connects to existing airframe and engine signal generators, is field programmable, and has no associated subscription fees — customers own their own data. "It's a full turn-key system," said Gunn. "I've provided a lot of capability for the price."

The ETM1000 has also been catching on quickly, with AKV recently securing orders from the Los Angeles Police Department and various other operators.

In conjunction with his expanded product line, Gunn has also been growing his business overall. In 2009, he partnered with Dart Helicopter Services: Dart is now AKV's official distributor, and has helped expand its international reach. Gunn is also launching a new, user-friendly website that will provide more information about AKV's cycle-counting and exceedance-and-trend monitoring products.

One thing that isn't changing is Gunn's commitment to customer support — something he credits for much of AKV's success. Indeed, he said that many of his company's current customers came to AKV when they couldn't get adequate support for similar, previously installed products. "Customer support is a big thing for operators. We're always available for them . . . and we stand behind our products."