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# GA manufacturers expand their global footprint

by Matt Thurber

## Non-U.S. investors are staking their claims now, committing to a long-term view of the business

Around the beginning of this decade, a flurry of acquisitions of general aviation companies took place. In almost every case, U.S. or European investors were reluctant to step up and compete to buy these GA manufacturing assets. In only two cases did Western investors buy a GA manufacturer: MetalCraft acquired the SJ30 jet program in 2011, after its Middle East owner Emivest Aerospace declared bankruptcy; and Textron bought Hawker Beechcraft in 2014, after a Chinese company had submitted a bid for the bankrupt U.S. airframer.

The list of formerly U.S. GA companies now owned by foreign enterprises is surprisingly large. Clearly non-Western investors possess a greater appreciation for the long-term opportunities in GA manufacturing, a fact that is surprising considering that GA is such a tiny part of these countries' industrial activities.

The largest player in this shift is Aviation Industry Corp of China (Avic); its China Aviation Industry General Aircraft (Caiga) subsidiary purchased Cirrus Aircraft in 2011, and in 2011 subsidiary Avic International Holding bought engine manufacturer Continental Motors Group. Avic's move breathed new life into Cirrus's single-engine Vision jet program, which likely would have been cancelled had not Avic put up the money to see it through certification and into production. Most Cirrus single-engine piston models are powered by Continental engines as well. (Avic had also expressed interest in purchasing the SJ30 program from Emivest.)

Piper's nascent Altaire single-engine jet didn't fare as well and was cancelled after the company was bought in 2009 by Imprimis, a Brunei

investment firm. Piper is now owned by the government of Brunei, part of the sovereign wealth fund via an investment by the country's ministry of finance.

Piper became profitable again in 2011 and has seen success with its high-performance single-engine piston and turboprop models and with fleet sales of training airplanes to large flight academies all over the world. Piper single-engine piston airplanes have been popular trainers in China, and in January the company announced an order for 50 Archers from its Chinese dealer, China Air Shuttle.

Another formerly strong competitor in the single-engine jet market was Canada's Diamond Aircraft and the D-Jet program. Late last year, Chinese investor Wanfeng Aviation (Canada) bought 60 percent of Diamond Aircraft, complete with rights to the DA62 and DA40 (Lycoming- and Austro-powered) programs from Diamond Aircraft Industries Austria, according to Wanfeng, as well as the D-Jet. "The future of the D-Jet and/or possible derivative aircraft is subject to ongoing review," the company said in a statement about its purchase. The investment does not include Diamond Austria.

The list of Chinese investments in GA continues with a Beijing-based investor buying Superior Air Parts in 2010. Superior makes FAA-approved engine parts using the parts manufacturer approval (PMA) system. Superior also designed a Lycoming-style engine using its PMA parts and targeted it at the experimental amateur-built (EA-B) segment, then later received FAA certification for the similar Vantage engine. The same investor that owns Superior had bought helicopter manufacturer Brantly International in 2007.

### EXPERIMENTAL BUYERS

Most of the other Chinese investments in GA are in the EA-B segment.

U.S. kit manufacturer Glasair was acquired in 2012 by Jilin Hanxing Group chairman Fang Tieji. According to Hanxing Group, plans were to “increase [investment] in the Glasair production line, apply for certification for Glasair aircraft, transfer foreign mature aircraft design and manufacturing technology to China, [and] develop Chinese independent general aircraft industry.” Since then, Glasair has received FAA light-sport certification of the Merlin. Glasair had plans to obtain Part 23 certification of the Sportsman, which is sold in kit form, but that has not been happened yet.

Enstrom Helicopter changed hands in 2012 when China’s Chongqing General Aviation Group acquired the company. Since then, it has forged ahead with the TH180 two-seat trainer.

Mooney Aircraft is also owned by a Chinese investor, Taiwan’s Cheng Yuan, who purchased the Kerrville, Texas manufacturer in 2013. The company restarted the single-engine Mooney production line in 2014 and announced new models,

among them long-awaited two-door versions of the Acclaim and Ultra, which have just **received FAA certification**. These aircraft had begun the Garmin G1000 NXi integrated flight deck.

Mooney also had begun development of two all-composite, diesel-powered fixed-gear singles aimed at the Chinese training market, the M10T powered by a Continental Motors CD-135 and the M10J with a CD-155, but recently revealed that the program had been canceled.

Also moving to Chinese ownership was the German Extra 400 and 500 all-composite single-engine airplanes, sold to Jiangsu A-Star Aviation Industry in 2015. While the company said at the time that, “It is the buyer’s intent to launch series production of the aircraft as soon as their facilities in China will be ready for production,” so far there is no indication this has taken place.

With the exception of Diamond’s long history of manufacturing in China, many of the Chinese GA acquisitions that promised to jump-start production in that country have yet to see these plans



**The Piper Archer DX, above, replaces the avgas Lycoming with a 155-hp Continental Motors CD-155 turbodiesel.**

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to fruition. Either the acquired companies were revived with an influx of money for development projects already under way or their existing programs have just continued. Cirrus production hasn't moved to China, for example, nor has manufacturing of Continental engines.

There are other examples of GA manufacturer acquisitions, such as Quest Aircraft, a U.S. company that was purchased by Japan's Setouchi Holdings in 2015.

Discovery Aviation (the former Liberty Aerospace) was owned by Kuwaiti investors but is now owned by a single U.S. investor. Discovery Aviation is for sale, and at the U.S.-China General Aviation Business Conference held in March, Discovery officials discussed the company's attributes with attendees from China.

Australia's GippsAero was sold in 2008 to India's Mahindra. Mahindra has supported the development of the single-engine turboprop GA10, and certification is imminent. While Mahindra has reportedly indicated an interest in bringing GA series manufacturing to India, this has yet to happen.

Icon Aircraft, manufacturer of the amphibious A5 LSA, is opening a factory in Tijuana, Mexico, this summer, for manufacturing of the major composite structural components for the A5. Final assembly takes place at Icon's headquarters in Vacaville, Calif.

There are two examples of foreign manufacturers setting up shop in the U.S., similar to how foreign automobile makers have built manufacturing plants in the U.S. This makes sense, because the major market for these products—business jets—remains the U.S. Honda Aircraft's Greensboro, N.C. factory began delivering newly certified HondaJets in 2015. And Embraer has expanded its assembly lines in Melbourne, Fla. to produce both the Phenom 100 and 300 and Legacy 450 and 500.

Gulfstream does some manufacturing in Mexicali, Mexico, such as wiring harnesses, electrical panel and radio rack assembly, sheet metal fabrication, machined parts and structural components.

Bombardier has spread its manufacturing operations around the world, with assembly lines in

Canada supported by plants in Mexico, Morocco and Northern Ireland.

Textron Aviation operates a manufacturing facility in Mexico. The Chihuahua factory produces wiring harnesses and small parts.

### **CHINESE BIZAV MANUFACTURING?**

With the exception of Superior's attempt to buy Hawker Beechcraft and Avic's interest in Emivest, the one aviation segment that hasn't seen a lot of Chinese manufacturing effort or acquisition attempts is business aviation. Textron Aviation is the only business aircraft OEM that has nurtured deep manufacturing roots in China (all have service center networks there), although its original plans have been scaled back.

In March 2012, Cessna and Avic announced the signing of two agreements "to jointly develop general and business aviation in the People's Republic of China. The accords together pave the way for business jets, utility single-engine turboprops and single-engine piston aircraft to be manufactured and certified in China." The plan was to produce the Citation Sovereign and Latitude in Chengdu and also develop a new business jet, and manufacture piston singles and Caravans in China.

Since then, general and business aviation in China has leveled off after significant growth earlier this decade, and Textron Aviation's plans have changed, although it says it remains committed to the market. Textron Aviation's joint venture with Caiga in China, Cessna-Avic (Zhuhai), involves light manufacturing such as painting XLS+s flown to China for delivery in that country. Final assembly of China-bound Caravans single-engine turboprops is done in Shijiazhuang.

"We have seen some King Air activity in China that we believe this partnership has helped us cultivate," a Textron Aviation spokeswoman told **AIN**. There are roughly 300 Cessna jets and 900 Cessna and Beechcraft turboprops in Asia-Pacific, and a number of Cessna piston singles are flying in China, primarily for flight training. Cessna had a manufacturing partnership in Shenyang, China,

for construction of the 162 Skycatcher LSA (assembly was completed in the U.S.), but the company stopped marketing and selling that airplane in 2014 and last year destroyed the unsold Skycatcher inventory.

Caiga has broader interests in business aviation manufacturing in China and has long promised to bring to market the Primus 150, a single-engine turboprop based on some assets it purchased when Epic Aircraft was sold to its Russian owners. The Primus 150 will be powered by the GE Aviation H85 turboprop. No recent progress appears to have been made on this airplane since the engine-selection announcement in 2012.

Avic, a new member of the General Aviation Manufacturers Association, reported delivery of 32 aircraft last year: four Y5Bs, 11 LE500s, 11 A2Cs and six Y12s. The Y5B looks like a clone of the Antonov An-2 biplane; the LE500 is clearly a Socata Trinidad clone; the A2C looks like a Quicksilver 500 light sport airplane; and the Y12 is a clean-sheet Chinese twin turboprop that took to the skies in the 1980s. In addition, since 2005 Avic has manufactured Falcon 7X and 8X fuselage T3 sections for Dassault in China.

Epic Aircraft is also foreign-owned, purchased by Russia's Engineering LLC in 2012.

Pilatus Aircraft builds fuselages for the PC-6 Turbo Porter single-engine turboprop in Chongqing, China, under a joint venture called Pilatus

Aircraft Industry (China). Completed fuselages are shipped to Pilatus headquarters in Stans, Switzerland, where PC-6s are manufactured.

## MANUFACTURING IN CHINA

Actual GA manufacturing activity in China seems to be accelerating, even though signs are that some of the earlier plans by GA manufacturers haven't panned out.

Last September, Slovenia's Pipistrel and China's Sino GA Group signed a memorandum of understanding to set up a new company to manufacture the Alpha Electro all-electric trainer and Panthera hybrid four-seat single. According to Pipistrel, "the production capacity will be 500 aircraft per year."

The two companies said they will invest €500 million in the venture, which will create two production facilities with a runway and maintenance and training operations in Taizhou and Yinchuan. Also covered by the investment is money to pay for Pipistrel to develop a zero-emission 19-seat aircraft "powered by hybrid electric technology and hydrogen low-temperature [polymer electrolyte membrane] fuel cells, planned for public transport between the cities in China and all over the world."

Diamond Austria is already working with Chinese companies for manufacturing in China, where the DA20, DA40 and DA42 are certified.

For the past 10 years, Binzhou-based BinAo has been manufacturing DA40s under license, with

**U.S. companies looking to grow in developing nations take a long view. At one time Cessna had an agreement to build the now-cancelled SkyCatcher in China.**



150 Continental diesel-engine-powered DA40s built thus far. That is on top of the nearly 70 DA40s delivered to China from Diamond Canada. The Canadian company, which will start manufacturing the diesel-powered, twin-engine DA62 this year, expects to begin delivering DA62s to China after receiving Chinese CAAC validation.

Diamond Austria recently began working with CETC Diamond Wuhu Aircraft Manufacturing, which is just starting to produce DA42s and Rotax-powered DA20s for the global market.

### **SLOW PROGRESS**

Business aviation projects in China are encountering “very slow progress,” said consultant Rollie Vincent, president of Rolland Vincent Associates. “The Chinese are fond of joint ventures and announcements; that’s step one, then from there they start negotiations. It’s a long journey.”

From an initial intake of deliveries, he said, the business jet market in China “has really slowed down. I think China is off the radar for most aircraft salespeople.”

Among the factors affecting the Chinese market are a large import tariff and the difficulties of operating in the country’s tightly controlled airspace and at airports that don’t welcome business aviation. That said, he added, “We’re seeing a fairly active secondary market. Once airplanes get inside the tariff wall, it makes sense to keep them

inside; the import tax is already paid. It makes the market a little sticky. It creates a domestic market.”

From the standpoint of manufacturing business aircraft in China, he said, “I think there’s a lot of desire and energy pointed that way. The question is, will this be initially for the domestic market or go to international markets and start trying to sell aircraft that they develop to a global customer base? That’s going to be hard. Going domestic first then focusing outward would be a more successful strategy. [Manufacturers] need to prove their domestic capability first.”

With regard to Chinese ownership of GA assets, Vincent said, “I think they’re searching for intellectual property. They’re trying to advance quickly. They know they have already come a long way in terms of technological development, but they see opportunities in aerospace, both civil and military. They know the demographic trends are leaning toward Asia. Maybe it won’t be in the next 10 years, but 20 years. Asia is three-quarters of the world population, has the fastest economic growth rate, with strong demand for pilots, and massive interest in pilot development. China is pretty wise. It’s not today’s opportunity but tomorrow’s. They’re going to be well positioned both with technology and a platform to take care of future opportunities.”

Companies such as Cessna, which has deployed resources in China for the long term, stand to benefit. “Cessna and others have proved that if you

**The North American market currently presents the greatest opportunities for manufacturers, so some foreign-owned companies, such as Honda Aircraft, have built their manufacturing facilities in the U.S. to be closer to customers.**



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get in there early and keep them happy, they stay in your family,” he said.

“We’re a global industry, and despite the current rhetoric this is a long-term trend. I think it’s a shame that U.S. companies are not hanging onto some of the technology. I think it’s going to be more valuable, important technology to own.”

While China overall has tended to build its aviation infrastructure from the top down (airlines to GA instead of the other way around), Vincent sees Chinese investors starting with the foundation of a future GA industry. “It starts with training then moves into personal flying, then business aviation,” he said.

“It’s not high technology that we can’t let out of our grasp, but it is the building blocks of an industry. They’re buying the building blocks that they never developed. China is catching up quickly in a lot of ways, whether it’s infrastructure or capital investment.

“[The Chinese are] investing in buildings, roads and airports, and they are definitely on the leading edge of capital investment. When it comes to technology they’re hungry for intellectual property, and they see this industry as the industry of the future, one that is pretty attractively priced.”

Vincent believes there will be more Chinese investment in GA assets, and two companies that he thinks might be attractive are Learjet and One Aviation. “For the right price, Bombardier would definitely consider speaking with anybody about selling Learjet,” he asserted. “Some small helicopter companies could be investment targets. Assets that once had a strong brand, I think there is potential there.

“I’m pleased that the industry is attracting investment. Who would want to see Mooney or Cirrus wither on the vine? They brought a lot of great technology to the market, and they need an infusion of capital to keep going. Some of this is not profit-motivated. The Chinese have a longer-term view on return on investment, so maybe they’ll keep this industry going.”

## CHINESE OWNERSHIP BENEFITS

Rhett Ross, president and CEO of Continental Motors Group, says he enjoys working with his company’s Chinese owners and appreciates different viewpoints on nurturing a storied GA manufacturing firm.

“China is an interesting market,” he said. “They’re growing, and they are still trying to drive many things into the 21st century rapidly to create a truly broad-brushed industry or country... It’s a big country, and there are a lot of things to do to bring a country forward. They’re creating a middle and upper class with significant discretionary income, and those people expect to have the same experiences and opportunities that we take for granted.”

Ross said a country such as China can either develop GA itself or leapfrog ahead by purchasing existing GA businesses, “so they can more rapidly provide capacity. All these things are coming together in aviation. They got [Continental Motors] and Cirrus almost back to back, because that was a leapfrog. China has a nascent aviation industry. The majority is either licensed technology or military technology that’s licensed from the Russians.

“They want to bring technology in. Even though our engines are old technology, it’s still an advancement for them. They’re buying the knowledge base, the industry understanding, the broader service network. And with Cirrus they were buying one of the most advanced general aviation companies available, and they got in at the right time.”

By contrast, Continental’s former owner, Teledyne, was a publicly traded U.S. company. As a result, he said, “It was a quarter-over-quarter grind. Truly trying to think strategically, that was an afterthought and was thrown out the window for the expediency of the moment. I see that a lot in Western industry, and it has got to change because it’s hurting the long-term value of corporations.”

The Asian mentality of thinking long term is not a cliché, he explained. While leadership at Continental’s parent Avic does think long term and is aware

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that the GA industry won't pay off in the short term, "it doesn't mean they're bad business people," he said. "They ride me for results. But if there is a choice of eking out a small percentage this year, or 10 percent long-term, they go for the long term."

Avic takes seriously the creation of a five-year plan, but in a way different from Western companies, Ross said, where the five-year plan gets put in a binder and never looked at again. "We truly look at it; it's a five-year rolling plan, and we look at it every year, evaluate what has changed, if it's still accurate, and make tweaks."

Given the restrictions that still hamper GA and even business jet flying in China, it's hard for an outsider to see how owning all these GA assets benefits their Chinese owners. "They are expanding on the world stage," Ross explained, "and not being as insular. This provides global influence, and providing jobs is a good way to do that. The U.S. has practiced that kind of thing for years by buying or exporting business into other regions."

In addition to acquiring the most sophisticated technology available in the GA market, the other benefit for Chinese companies is the engineering talent it gains. "For us it was engine technology that powers some of this, our diesel technology, and also acquiring people who understand how to develop products under a regulated regime like the FAA and EASA," Ross said. "As China tries to develop a GA industry, it's going to learn from people like us to make it easier to apply this: how to certify under CAAC, stand up MROs and train pilots."

To drive that forward, Continental regularly hosts CAAC personnel to help them understand the regulatory framework that enables GA to thrive in the U.S. "They're starting to understand and look at the flexibility that they want," he said. As an example, Ross cited China's automobile infrastructure. Just 15 years ago, drivers couldn't just climb in their cars and go anywhere without permission, but now that is possible. "That's what they want to get to with GA infrastructure, and they're trying to figure out how to get there. That's where we help."

The airspace restriction battles are improving, and at some airports pilots can now get approval for a VFR flight in just eight hours instead of three days. "Their big problem is there are not enough airfields," he said, "not enough open airspace, and not enough flight instructors."

There is pent-up demand to fly GA in China. At the annual Zhuhai airshow, Ross sees families camping out for days outside the airport fence waiting for the flying displays. "They've got a billion-plus population that wants what we have; all that same wide-eyed enthusiasm is there. I think it's going to happen."

### **FRESH TALENT, FRESH IDEAS**

What China brings to the GA table isn't just money but young people who are not entrenched in the same old ways of doing business. "We've got to break out of the mold we're used to," Ross said. "I see China doing that, not because it's a savior market but because they don't know what questions not to ask. They're not afraid to ask stupid questions. We are, because we've been in the business too long."

"I don't consider China the savior of the industry. We need to quit hoping for a home run. Regulators need to do their job, which is safety, but they have got to get out of the way. We need to be good business people, not wide-eyed enthusiasts, and drive investment and deliver product so we can broaden the access. If we take all of North America, we represent less than 7 percent of the global population and 80 percent of GA activity. What's preventing it? In Africa, no avgas. This is where courage of convictions and a good business case can not only drive things, by using all our advanced technology, but also make flying more economical. That's part of what the Chinese bring as an investment: how to drive up volumes and economies of scale and do things differently."

"I see young fresh blood all over the world asking those questions. We and our sclerotic old industry should be afraid. I started telling my people, 'There are billionaires out there asking every

**A Chinese investor purchased the rights to the Diamond DA40 program. The fate of the D-Jet remains under review.**



dumb question in the world, and they landed a rocket on its tail, they're flying drones to deliver packages, and we're saying they can't do that. We're still selling buggy whips.' It's not just unique to China. I think China, like some billionaires, is willing to put its money where its mouth is and invest long term, not just next quarter. Paul Allen, Jeff Bezos, Elon Musk, they're willing to take flyers, and what they're doing is innovative."

Ross and his team are trying to push the envelope and break out of the mold of just accepting the status quo. "I'm trying to create a skunk-works mentality," he said, not just to spend money but to try new ideas and improve safety. "I don't accept the point-blank answer, that's the way it was always done, or that's what the regulation says." Most of the underpinnings of the regulations were written seven decades ago. "We can change. Regulators are open-minded, and I think they're getting it. To be competitive in the next 100 years, they're starting to think, 'Maybe we do need to do this.'"

Continental's owners are putting their money behind their GA investments. "We run a good business," Ross said, "and because of that they have been very supportive in investment so we

can drive new product development and factory improvements. They're investing for the long term, and as long as we're running a good business and justifying the return on investment, you can see that in their supporting Cirrus in getting the Vision jet finished."



**Rollie Vincent,  
aviation consultant**

In March, Continental Motors announced that it is **building a manufacturing facility and corporate office complex** slated to open in 2019. Much of the 225,000-sq-ft facility will be devoted to advanced engine and parts manufacturing using new manufacturing techniques and processes. The company plans to build a customer and technical service environment that will offer around-the-clock customer assistance. It has plans to add an engineering and design service center in China.

"There is definitely a huge pent-up demand for general aviation in China," said Bradley Harker, commercial officer, U.S. and Foreign Commercial Service Section at the U.S. embassy in China, speaking at the U.S.-China General Aviation Business Conference in March. "But the question is how quickly this can happen. When China decides to put its mind to something, it absolutely can grow." □