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Maintenance Matters

Business is booming, but supply chain issues and labor shortages temper capacity



Special Report



Profound change moves the maintenance market

BY KERRY LYNCH AND MATT THURBER

The landscape of aircraft maintenance has changed profoundly. Yes, the industry was busy before the pandemic and technicians were hard to find.

But now capacity is limited, the technician shortage has accelerated, and, supply chain issues have continued, creating immense challenges for companies that maintain business aircraft.

Despite all of that, industry executives agree: business is booming.

“Business is getting better and there are many jobs being sold well into 2024,” said Ken Thompson, managing director of regulatory affairs for the National Air Transportation Association (NATA).

Thompson, who is the liaison for the association’s aircraft maintenance and systems technology committee, noted that the majority of NATA’s MRO members report that they are at capacity with hangar space. “The really good news is that a lot of our MROs are busy,” he said.

The downside, for owners, is backlogs and long lead times.

Owners and operators are acutely aware of the capacity constraints. But they also see opportunity. A recent JetNet iQ survey revealed that operators believe MRO capacity is among the top three issues confronting the industry over the next five years. In addition, JetNet iQ’s survey

further revealed more than 19 percent of respondents cited MRO when asked if they had \$500 million to invest in the industry where would they invest for best returns, said Rolland Vincent, the creator of JetNet iQ and president of Rolland Vincent Associates.

“There has been a shift in the MRO space that could have significant implications for aircraft owners and operators. While progress is being made in terms of streamlining MRO processes, aircraft owners should expect a more seamless experience,” said Tim Ferrell, senior v-p of JSSI Tech Services. “It will be interesting to see how this trend develops

over time as more research is conducted into the area of aircraft maintenance and repair operations. On the engine side, there continue to be some bottlenecks with respect to facilities facing backlogs, with sometimes as much as 20- to 30-day delays.”

LEAD TIMES GROWING

Long lead times are particularly critical for MROs servicing large business jets, as one NATA member reported having to schedule heavy C checks for those aircraft well into 2025, Thompson added.

“Business is good,” said Ryan Huss, v-p of sales at Duncan Aviation, which is headquartered in Lincoln, Nebraska, and has satellite and full-service locations throughout the U.S. “Certain product lines are booked well into next year. We don’t forecast this to end unless something in the economy changes the trajectory of business aviation. There are a lot of airplanes flying now.”

In addition to long lead times for scheduled heavy maintenance, large MROs are busy with major retrofit projects—interiors, upgrades, and additions of new technology. Such projects are also filling hangars, Thompson noted.

This means when a client needs a quick turnaround with a smaller aircraft, the hangar space is no longer available. “When they [MROs] have these long-term type projects going on that they’ve already built into 2024 or 2025, and then somebody has a quick-fix item with their smaller aircraft that they used to be able to support, they have no hangar space to do it,” he said.

Some MROs face the prospect of turning this work away, Thompson said. Others, however, are expanding and building new hangars, if they have a footprint on the airport that enables them to do so.

“There are larger companies that have that bandwidth and the area to build. They’re already building larger hangars to support the changing fleet,” he said. But in general, these shops are “going to be really careful on how much more they accept.” If a shop books into 2025, aircraft owners are probably going somewhere else to get their basic maintenance accomplished.

“I have never seen such a busy time, it’s unbelievable.”

“We’re extremely busy,” said Travis Fleshman, general manager of Stevens Aerospace and Defense’s Greenville, South Carolina, MRO facility. “We have a lot of work and are processing it well, but we’re dealing with the same struggles as the rest of the industry.” Maintenance slots are filling quickly, he added, and if on Tuesday there



AMAC Aerospace former trainee Hugo Marmonier and technician Wilfried Fidegnon.

was a future slot open, “by Thursday it’s full. But Stevens always tries to accommodate customers and shuffle things around.”

“This is a conversation we’ve been having to have with customers over the last couple of years due to being at or near 100 percent capacity and the labor shortage,” said Phil Stearns, Stevens Aerospace director of sales and marketing. Customers need to warn their MRO ahead of time about changes in the work scope so the provider can arrange for the space, parts, and personnel. “The technicians can only work so much overtime,” he said. “With capacity issues, this becomes a much more important discussion.”

“I have never seen such a busy time, it’s unbelievable,” said Ruedi Kurz, director maintenance and production organization at AMAC Aerospace, the Basel, Switzerland-based maintenance and completions company. “We’re full, all our hangars are full. And we are constantly hiring qualified people. The biggest problem is the hangar space, we have to always shift around the aircraft.” But with multiple work shifts and overtime, AMAC is keeping up with the massive flow of work while not compromising quality.

“We’re very fortunate and glad to have this situation,” he said.

At Pentastar Aviation in Waterford, Michigan, the past three years have been so busy that regular overtime has been necessary. “It continues to be strong,” said Doug Levangie, v-p of maintenance and advisory services. “But looking at the sales side, I think we’re going to experience a little bit of a downturn. People I’ve talked to, [things] are getting back to normal. Last year was unbelievable.”

“It will probably return to normal rather than the frantic pace,” added Gregory Schmidt, Pentastar’s president and CEO. “We keep a close tab on sales, that’s

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a barometer.” Interest rate hikes and inflation seem to be causing a bit of cooling off in business aviation activity.

“We are experiencing a slowdown on pre-buy [inspections],” added Levangie. “We’re still getting calls, but it seems like some sales are falling through, people are backing off. It happened a couple of times [in March].”

At West Star Aviation, “We’re still incredibly busy,” said CEO James Rankin. The maintenance provider is adding new hangars at its Chattanooga, Tennessee; Perryville, Missouri; East Alton, Illinois; and Grand Junction, Colorado facilities to accommodate growth. “We exceeded our budget for the first quarter,” which saw growth over last year’s first quarter and the final quarter of 2022, he said, “and we’re staying very busy. [Last year] was one of our largest growth years in terms of new members joining West Star.”

“Avex is focused on limiting how long we have an aircraft,” said Chad Cundiff, CEO of Camarillo, California-based TBM sales and maintenance specialist Avex and

also New State Aviation Holdings, which acquired Avex in 2021 and Blackhawk Aerospace in January. “It doesn’t do any good sitting in our hangar.”

One area that may be easing is avionics upgrades due to a lack of regulatory mandates, but NATA’s Thompson noted even that trend may be short-lived. With new airborne connectivity products coming online such as Gogo 5G and SmartSky’s recently completed air-to-ground network and low-earth-orbit satcom from SpaceX (Starlink) and OneWeb (Gogo and Satcom Direct), those projects are anticipated to pick back up—and, with it, other projects. “When people upgrade [connectivity] they might as well upgrade their panels and do everything else,” he said.

Another trend emerging is some shops have stopped taking work on certain aircraft types, particularly older, out-of-production models. That is a function of supply shortages and the time it takes to get unique or hard-to-find parts. Those parts are in such demand that operators are looking overseas to get their hands on

them and paying close to three times the price. These are components on aircraft that are out of service and being parted out. But those parts need to be approved and repair stations need to make sure that they are airworthy. That adds in time to the entire process.

“So, we’re hearing a lot of these [older] aircraft are not being taken on because they occupy hangar space,” Thompson said. “If you have an aircraft that has one of these parts, then you may have to wait longer times to get repair of it.” These owners are being warned of the backlogs and supply chain difficulties on parts.

SUPPLY CHAIN CHALLENGES

Legacy aircraft aside, the concerns surrounding the supply chain have lingered since Covid. “In a nutshell, the supply chain goes back to the factories,” Thompson said, as they fall behind on output. Some component manufacturers have struggled getting workers back or finding new ones for those that moved on during the pandemic to jobs that may provide more flexibility, he noted. “Now we’re starting to see a little bit of it coming back” but it remains a problem. “Covid provided a whole new lens” on work-life balance, he said.

MROs are “having to plan well out in the future, getting a hold of what they know the aircraft might need during certain scheduled inspections, what that supply chain will support and forward scheduling those inspections,” Thompson said.

JSSI Parts & Leasing has been forecasting the need for parts that will come up for inspection to try to circumvent longer lead times, said president Ben Hockenber. “When this occurs, we are able to anticipate these issues before they happen and ensure those parts are pre-ordered,” he said. “Alternatively, one of JSSI’s key differentiators is our ability to offer high-quality alternatives to new parts. This proactive

approach not only saves time but also money as companies can plan ahead and make sure they have all the necessary components on hand without having to worry about delays or additional costs due to waiting periods. It also allows us to be more efficient with our resources by ensuring that nothing goes unused or wasted during production processes.”

“There has been little to no improvement to the supply chain across the board, whether engine, airframe, avionics, all three categories are seeing a significant struggle,” said Tony Brancato, president of StandardAero’s business aviation division. Although he expects improvement by the end of the year, delays in getting parts from major manufacturers has resulted in knock-on delays that require moving input dates later “because we don’t have the space,” he said. “It’s not as simple as moving aircraft around and parking them outside. We might do that for a few hours or half a day, but owners prefer to have their aircraft inside, and we like to respect that as much as possible. We’re trying to prioritize, and it’s very challenging.”

Like most MRO facilities, ACI Jet is facing supply chain and workforce issues while the hangar is the fullest it’s ever been, according to David Jensen, ACI Jet senior v-p of aircraft maintenance. “The supply chain issues weren’t something we experienced on a regular basis pre-pandemic,” he said.

“It’s causing everybody to be more proactive, with scheduling, more downtime, and ordering parts ahead of time. We do have times where an airplane is sitting in the hangar and nothing can be done until a certain part shows up.

“There’s a snowball effect that happens when an airplane is delayed. We want to see return to service on time. When parts come in there are other airplanes there as well, [so we’re] juggling airplanes continually.”

While ACI Jet employs every resource to find parts, he added, “The reality is the manufacturer is often the only one making



it. At the end of the day, we can use all the resources but end up waiting.”

Some of these efforts include trying new vendors and working with engineering firms on alternatives, he explained, “anything that fits in the FAA guidance of what we can and can’t use.”

“We have had to shuffle quite a bit but have not had to decline a customer to come in.”

Ultimately, Jensen said, aviation will move away from on-demand, just-in-time manufacturing, which failed during the pandemic. “We will see something come out better out of this.” Additive manufacturing, for example, “will play a bigger role as we learn what caused these supply chain issues.”

At Duncan Aviation, v-p of sales Huss is well aware that manufacturers are “doing everything they can” to speed up the flow of parts. With its many facilities and the huge amount of work it accomplishes,

Duncan has the advantage of a massive parts inventory and has also developed an in-house parts manufacturing capability called Duncan Manufacturing Solutions (DMS).

“We’ve been trying to help with things we can produce,” he said. “Our DMS side is doing as much as possible. But things like windshields are tough to get. I wish we could build windshields. Tires have gotten better, there are still a few airframes affected, mostly legacy types. In-house, anything out of metal other than cast, but anything milled or formed we can do. We also have an autoclave and can do composites and plastics.

“We have had to shuffle quite a bit but have not had to decline a customer to come in. We’re always able to maneuver around enough to find a spot.”

For Pro Star Aviation, a busy maintenance facility in Manchester, New Hampshire, part of solving the supply chain problem means sticking with products that are available. “We’re going to install what we can get,” said Jeff Shaw, director of sales and marketing.

Demand for airborne connectivity equipment is high, and Pro Star has been successful



Pentastar Aviation technicians (left to right) Tony Ryan, Greg Cole, and Eric Niedjelski at the MRO, FBO, and charter provider’s facility at Michigan’s Oakland County International Airport.

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West Star Aviation is adding hangars at all of its main facilities in the U.S. so it can accommodate more work on customer aircraft and keep up with last year's record growth.

in obtaining Gogo products so that is what it is installing. "There's no sense in me trying to sell Honeywell satcom or Collins radar if we can't get it," he said. "Right now we can't get either. All the right ingredients for creating demand are there, but supply is not.

"We used to be a boutique avionics shop and would work on any airplane," Shaw said. But as integrated avionics grew more complex and avionics technicians had to become more specialized to work on each type of product, Pro Star stopped offering services to all comers. "We focused on airplanes we maintain," he said. "Rather than install avionics on a bunch of aircraft, we focus on aircraft we have good supply chain on. Meantime we grin and bear it."

Avex deals with supply chain issues by working with aircraft operators well in advance of the scheduled work. "You're coming in September," said CEO Cundiff, "so let's get prescheduled and get ahead of that. We've seen some of that start to recover and some places where it still is a struggle to get new equipment to do upgrades or overhauls."

"Tires are an up and down issue," said Stevens Aerospace general manager

Fleshman. "Hawker windshields are nearly impossible." Customers are being told they'll have to wait until the third or fourth quarter for a windshield. This is also affects the King Air market, he said.

"[Supply chain] requires more planning now, we have to have a pulse on the availability of parts and equipment, what we can get and can't. It changes really fast. What we've done more in the last few years is educate the customer base on the fluidity of supplies.

"Our procurement folks are fantastic," he enthused, "the network they have, the way

“Rather than install avionics on a bunch of aircraft, we focus on aircraft we have good supply chain on. Meantime we grin and bear it.”

they have to find parts, they're really good.”

To keep its defense customers flying, Stevens Aerospace has started making and obtaining FAA parts manufacturer approval for some parts on the legacy King Airs operated by the military. "We're trying to serve a base [of customers] that's been neglected," he said.

At AMAC Aerospace, supply of Boeing and Airbus parts for its VIP customers hasn't been an issue, because the business/VIP versions of airliners use the same parts. "Corporate aviation is a small fraction of that volume," said director of maintenance Kurz. "Gulfstream and Bombardier, they struggle. There are shortages of windows and tires. It starts with Covid, everybody did lean production, and now we have these busy times. We can see some suppliers cannot follow up, whether it's an OEM [original equipment manufacturer] or subcontractors. Through our good network we've been able to establish over the last 15 years, so far we've overcome this situation. It's not easy, sometimes it doesn't go as planned, but so far we did not have to cancel a delivery or delay a big project."

"Supply chain is definitely an issue," said Pentastar Aviation CEO Schmidt. "We have had delays. There are so many issues, who would ever think you couldn't find a tire?"

One move that vendors have put in place to prevent hoarding is to require a photo of the old windshield or the wear on brakes before allowing the MRO to order new parts. Pentastar has also seen a shortage of carbon material for carbon brakes.

"We've had some customers get angry when we can't deliver on time," Schmidt said. "They're getting tired of [everyone] blaming the pandemic. We reach out to customers proactively." He urges customers to engage early in the maintenance process. "Don't wait to the last minute because we won't be able to [handle the work]. Transparent communications [are essential]. We're doing the best we can."

"The first thing is to try to build good partnerships with our suppliers," said West Star Aviation CEO Rankin. "We try to help them out, and they work hard to help us. A lot of that is prioritizing and understanding when we need the parts. We don't want to sit on a part for six months if another customer needs it. Vendors have done a good job, they're in a tough spot, and a lot of the time it's sub-vendors. We have tried to do advance purchases and stocked up on things we know we use often. We try to have them on hand so we're not slowing down the project."

Most members of the Aircraft Electronics Association (AEA) are the shops that install avionics, and the association regularly receives feedback from members. "The number of shops I've talked to said [supply chain] is improving," said AEA president and CEO Mike Adamson. "They're still experiencing some pains with certain products, but they're not complaining about it like a year ago. There is optimism, and they're not saying the sky is falling. They've learned to adjust."

MANAGING THE WORKFORCE

Compounding all of the challenges facing maintenance providers are workforce

issues. Some MROs have been creative, creating apprenticeships and other educational programs to draw new talent into the field. For example, ACI Jet worked with the local community to build a new A&P school at Cuesta College in central California. The first cohort of 25 started school in January and more than 100 students have signed up for slots.

"We're putting in a lot of effort to make sure this is a high-end school, focusing on instruction and the students, not cranking through as many as possible," said ACI Jet's Jensen. "Bill [Borgsmiller, ACI's founder] and I recognized 10 years ago our biggest challenge is labor. We wanted to do our part to contribute, and we produce technicians not only for ACI but for local companies, and we're making a decent impact on the state of California. This has been received well by the community, and interest is high."

Filling the pipeline with technicians is one problem, but there is also the retention issue, figuring out how to encourage people to make a career of aviation maintenance. "Companies that do all this training must have hard-fast contracts in place to keep them for a few years," said NATA's Thompson. "If they don't have that program in place, they're losing these mechanics to people who pay more."

But there are also steps companies can take to promote careers. ACI Jet's executive team spends a lot of time on this. "It's always been the culture here," said Jensen. "This is more important for the new generation coming into aviation. They're looking for something special, they want to contribute, and we try to make that happen."

Visitors to ACI Jet's San Luis Obispo, California, facility can see an example of the company's efforts, a wall decorated with

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“mission patches,” which, he said, “commemorate momentous accomplishments.” For big projects, like the first installation of a major upgrade, ACI Jet director of marketing and communications John Tucker designs a patch that captures the challenges of the job, and each team member receives a patch. “Everybody feels good about it,” Jensen said.

Beyond such recognition, ACI Jet leaders realize that career progression is different for each individual. Newly hired technicians are invited to help develop their career paths, which includes a two-year program to help launch their next step, whether it’s becoming a manager, being director of maintenance on a jet, or moving into a different department. “It’s inspiring for the employee,” he said, “they’re more motivated, and it feels like a partnership, they’re on a path. There is loyalty gained out of that. It’s been received well and been successful, [it shows] we’re listening to them.”

Maintenance providers have also reached out to other industries for help where a broader knowledge may be sufficient or an A&P may not be necessary, such as in paint or upholstery. In addition, the military is a source of prospects, NATA’s Thompson said.

“We recruit across the nation,” said Duncan Aviation’s Huss. “It’s important to

have all aspects feeding in, whether they’re homegrown, from outside [companies], tech school graduates, or military. We need all those resources.” That said, when Duncan Aviation is able to train a mechanic from the ground up, “we do instill the company culture quickly,” he said.

Last year, Duncan Aviation spent more than \$8 million on training. And this includes leadership training, which starts fairly early in a new hire’s career. “It really helps us develop leaders,” Huss said.

With its long experience working on military contracts, Stevens Aerospace has a unique advantage in helping military personnel transition to civilian careers. One way it approaches this is to recruit from nearby military bases. The company also recently was approved in the Department of Defense’s SkillBridge program, which helps companies hire experienced military personnel and launch their post-military careers.

“They bring a lot of energy and they’re a sponge,” said Stevens Aerospace’s Fleshman.

Stevens also sponsors youth in the Aviation in Action program, putting aviation technician community college students to work part-time and then hiring them when they finish their courses

AMAC Aerospace works with European aviation schools to help students gain practical experience, which ultimately benefits the company. “A lot of these young people, after they finish school, they knock on our door,” said AMAC’s Kurz.

AMAC also hires people without the EASA Part 66 B1 and B2 technician licenses, “and we train them and bring them to the license standard,” he said. “We have people with us who made their way from non-experienced all the way to supervisor. We can offer a career path if they’re interested and have the right qualifications. It makes it good for us, these are people who have the AMAC spirit in their blood.”

“We have a robust leadership training program,” said West Star’s Rankin. “We want them to understand if they’re coming in as an apprentice, we want them to be able to see the career path they can help form.

“We want them to stay with us for the remainder of their career, and we want these to be valuable years for them,” he said. “We have done a lot with pay and benefits the last few years and a lot to support people during the pandemic, it solidified that we do care. The pandemic was a difficult time, but we came through stronger as a company.” ■