

HARD FOUGHT GAINS

Much smaller in dollar terms than the MRO markets for mainline single-aisle and widebody jets, regional airliner MRO nevertheless involves thousands of aircraft, dozens of providers internationally and similar challenges, reports **Chris Kjelgaard**



Compared with the MRO markets for mainline single-aisle and widebody jets, the MRO market for regional aircraft is small. Oliver Wyman's 'Global Fleet and MRO Market Forecast 2021-2031', published in January 2021, estimated that regional jets and turboprops represented 21 per cent of the total global fleet of air transport aircraft for the year. However, regional aircraft accounted for a much smaller share than that of the overall 2021 commercial aircraft MRO market, according to Oliver Wyman: just 11 per cent of the approximate US\$70 billion total engine, component, line and airframe heavy maintenance spend.

By 2030, regional aircraft will account for an even lower proportion of what by then will be a much larger commercial aircraft fleet, Oliver Wyman predicts. Estimating that by 2030 the total fleet

MRO spend on regional aircraft appears likely to rise to around \$11 billion in 2031

size will increase to more than 36,000 aircraft, the consulting firm forecasts regional turboprops will represent just seven per cent of the overall fleet – compared with



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1. Ascent Aviation Services is a US-based provider of heavy airframe MRO for regional aircraft and has two large MRO facilities in Arizona. Photo: Ascent Aviation Services

Supply chains for regional aircraft parts and components “are usually quite different”

just under 10 per cent in 2021, when some 2,500 regional turboprops were in service. While there will be about 600 more regional jets in service by 2031 than the approximately 3,000 flying in 2021, the proportion of the overall commercial aircraft fleet regional jets represent is likely to fall from a little under 12 per cent in 2021 to about 10 per cent a decade later.

The picture is similar for regional airliners in terms of the proportion of the 2031 MRO spend they will require. While the 2031 MRO spend for all commercial aircraft will be much greater than the 2021 spend, rising to somewhere between \$103 and \$116 billion, regional airliners will account for less than 11 per cent of the overall amount – and possibly less than 10 per cent. However, the absolute MRO spend on regional aircraft appears likely to rise from a little under \$8 billion in 2021 to around \$11 billion in 2031.

The relatively small proportions of total commercial aircraft fleet size and MRO spend accounted for by regional aircraft tend to disguise the fact that the regional aircraft MRO business is still a sizeable business. The market will generate \$8 billion or more a

year from now through 2031. It is also highly fought over. The same engine and component MRO specialists that handle the repair and overhaul work on larger commercial jets also handle much of the work on regional aircraft. But regional aircraft line maintenance and heavy airframe maintenance are very competitive markets, with many smaller MRO shops able to compete with larger facilities on a more or less equal basis. At the same time, some of the regional aircraft manufacturers and various operators are deeply involved

in providing MRO for the aircraft they make or operate.

The Canadian, US and European markets

Take the Canadian market as an example. Chorus Aviation – which owns Jazz LP, the company that operates all the aircraft in the Air Canada Express regional network – also owns two MRO companies, Jazz Technical Services in Halifax, Nova Scotia and Voyageur Airways in North Bay, Ontario. There the company handles the MRO for all of the Dash 8s and CRJs in the Jazz and Voyageur fleets, and it has now begun taking on MRO work for third-party customers, according to JC Tewfik, VP marketing, sales and services for Premier Aviation Québec, an independent company based at Québec City Jean Lesage International Airport which specialises in regional aircraft heavy airframe MRO.

Several other Canadian operators also perform MRO on their aircraft, among

them Dash 8 operators Air Inuit and Air Creebec, according to Tewfik. Not to be forgotten as a major MRO provider for all of North America for the former Bombardier CRJ family is Mitsubishi itself – renamed the SpaceJet family following Mitsubishi Heavy Industries’ purchase of all of Bombardier’s CRJ production and MRO assets – which operates the former Bombardier MRO service centres for CRJs in Tucson, Arizona and Bridgeport, West Virginia.

Similarly, Embraer operates a large MRO facility at Nashville International Airport for ERJ-family and E-Jet-family aircraft flown by operators throughout North America. Air Canada and AAR handle heavy Embraer E-Jet airframe MRO, while Mirabel-based Avianova has established a cooperation with Air Canada and is building a large new facility in which to perform airframe MRO on that airline’s new Airbus A220 jets. In the USA, Delta TechOps and Lufthansa Technik both handle E-Jet MRO and Delta handles MRO for its A220s.

At present, Premier Aviation Québec (PAQ) is primarily handling heavy airframe MRO for ATR and Dash 8 turboprops, as well as the Embraer ERJ family, according to Tewfik. In addition to the competitors already identified, Tewfik names at least four other independent Canadian MRO providers which compete for regional aircraft airframe heavy check business: JD Aero Technical, KF Aerospace, Skyservice and Springer Aerospace.

Various facilities and regional aircraft operators in the USA also compete for the North American and Latin American

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BILLION



The regional MRO market will generate \$8 billion a year from now until 2031



1. The regional MRO sector is bouncing back from Covid (Photos 1, 3 & 4: Ascent Aviation Services)
2. Premier Aviation Québec is primarily handling heavy airframe MRO for ATR (pictured) and Dash 8 turboprops, as well as the Embraer ERJ family
3. Ascent Aviation Services was able to retain most of its mechanics during the Covid-19 crisis
4. Large North American regional airlines are tending to outsource their heavy airframe maintenance rather than perform it in-house

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markets which are PAQ's primary sources of MRO business. One very important one is Skywest, Inc, the largest regional airline company in the world which operates no fewer than 13 maintenance bases in the USA, the largest of which located in its home state Utah. Other competitors include Empire Aerospace in Coeur d'Alene, Idaho and Mountain Air Cargo - which also operates 26 Cessna 208s and 17 ATR turboprops as freighters, many under contract to FedEx Express - in Kinston, North Carolina.

Another increasingly important US-based provider of heavy airframe MRO for regional aircraft is Ascent Aviation Services, which has two large MRO facilities in Arizona - one at Tucson International Airport and another nearby at Pinal Airpark, where its 'Marana' aircraft storage site and disassembly operation is situated. Ascent also handles widebody airframe heavy MRO.

The company performs airframe MRO on single-aisle jets and regional jets at its Tucson facility, primarily focusing on CRJ900 and CRJ700 airframe maintenance and interiors work. Ascent also performs "some specialised work" on

Embraer 190s and 175s, but hasn't made a major MRO commitment to the E-Jet family yet because of the "investment in tooling and training" that would require, says Scott Butler, Ascent Aviation Services' chief commercial officer.

Butler says Ascent first ventured into regional aircraft MRO three years ago and the work now represents "a pretty good-sized" and expanding part of its business. The supply chains for regional aircraft parts and components "are usually quite different" to those for mainline commercial aircraft and are "quite challenging", being "pretty stressed for different aircraft types" for heavy-check parts requisitioning.

Europe is no less competitive a market for regional aircraft MRO than is North America, according to Malcolm Chandler, head of commercial and marketing for Vallair. In

addition to its aircraft leasing and other businesses, Vallair handles airframe MRO for ATR turboprops at its facility at Montpellier in France and has acquired a large hangar at Chateauroux in which it will perform heavy maintenance on Airbus A330 family widebodies.

Chandler says there are at least eight competitors to Vallair in Europe for ATR airframe MRO business: BinterTechnic in the Canary Islands; Czech Airlines Technics in Prague; Exeter Aerospace (formerly Flybe)

in southwest England; LOT Aircraft Maintenance Services in Poland; Magnetic MRO in Tallinn, Estonia and in Poland; Sabena technics in France; SAMCO Aircraft Maintenance in the Netherlands; and Skyways Technics in Denmark.

While the regional aircraft MRO sector suffered substantially from the effects of the Covid-19 crisis on air travel, the sector has largely bounced back and short-term capacity is becoming tight to

non-existent. One reason for the early recovery of the regional airline sector, particularly in the USA, was that major airlines preferentially stored their larger single-aisle and twin-aisle aircraft to reduce capacity but kept in service many of the regional aircraft operated by their regional airline partners, according to Richard Brown, managing director of Naveo Consultancy.

This was particularly true for 60-70-seat regional jets such as the Embraer 175 and CRJ700, and for the Dash 8-400 and the ATR 72 large turboprops. The rebound in utilisation of these aircraft is demonstrated in Naveo

Consultancy's 'Air Transport Traffic, Fleet & MRO Update' of November 2021.

The report shows that after the slump produced by the onset of the pandemic, utilisation of the CF34-8 engine type powering the Embraer 170/175 and the CRJ700, and the PW100 turboprop engine powering the Dash 8-400 and the ATR 72, grew back much more quickly and strongly than did utilisation of the CF34-10, the CF34-3 and the AE3007. Those engines respectively power the Embraer 190/195 and CRJ900; the CRJ100 and CRJ200; and the Embraer ERJ family.

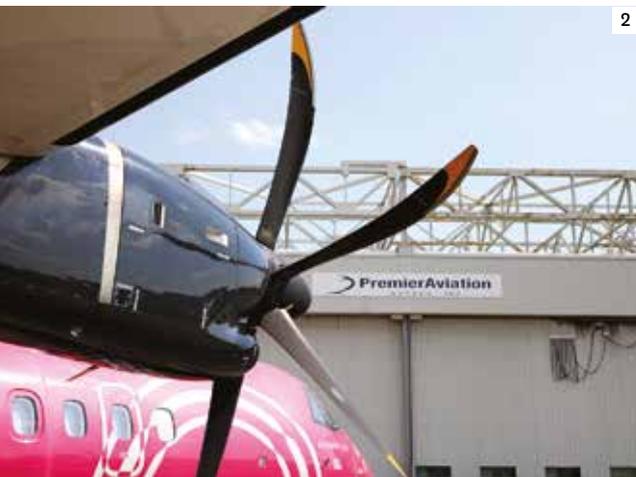
MRO capacity crunch

Tewfik says that today all of PAQ's regional aircraft heavy MRO capacity is booked "almost until 2024", where until

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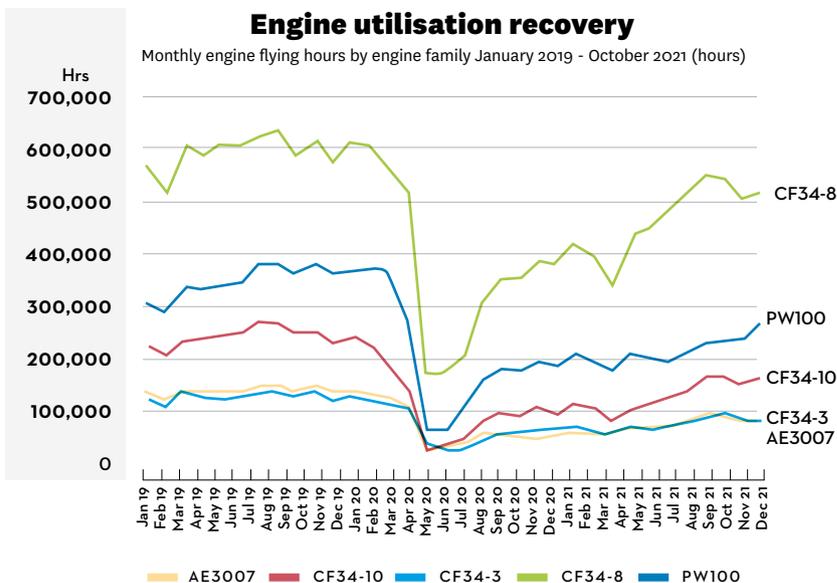
Skywest, Inc is the largest regional airline company in the world and the company operates no fewer than 13 maintenance bases throughout the USA, the largest of which is located in its home state of Utah



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Engine utilisation recovery

Monthly engine flying hours by engine family January 2019 - October 2021 (hours)



September 2020 its capacity was usually fully booked only for about six months ahead. A major reason for this is that after about ten years of Tewfik pursuing a particular potential customer for business, the customer agreed a contract with PAQ and immediately booked slots for 15 aircraft. That's a big win considering that PAQ's entire annual induction capacity is in the 40-50 aircraft range.

Tewfik also discerns a growing trend among large North American regional airlines to outsource their heavy airframe maintenance rather than perform it in-house, as they used to do. This is making capacity tighter at big regional aircraft MRO facilities. For instance, "Embraer at Nashville is full until 2025", he says.

The regional airline sector in Europe is also emerging again (depending on country), says Vallair's Chandler. Regional aviation in the UK has seen a fair amount of recovery, "led by Emerald Airways and the resurrection of Flybe", in part because of the relative inefficiency of the UK's privatised railway system and the high costs for passengers of travelling domestically by rail.

However, the French Government's climate-conscious decision to ban domestic flights on all inter-city routes which the nation's TGV high-speed trains can cover within two and a half hours has adversely affected the operations of some French regional carriers, such

as Air France subsidiary Hop. The rule effectively pushed domestic air service out of the centre of France, leaving only routes between cities in northern and southern France and between cities in western and eastern France.

That said, ATR MRO business "is looking up" for Vallair, according to Chandler. The company has been

the increasing amounts of MRO work required following the quick rebound in regional aircraft utilisation – particularly in the USA. This is a highly important consideration for PAQ, which obtains about 70 per cent of its business from US customers, according to Tewfik.

Even though PAQ has its own training school and employs every apprentice

who graduates from it, the company is reluctant to expand. "What scares me the most is manpower," says Tewfik. Although its capacity is fully booked for the next two years and PAQ knows that in today's market it could obtain ample new business, expansion would require it to

hire about 100 more mechanics and "they are not available in Québec", he says. Without an adequate supply of skilled mechanics, the C\$40 million investment he reckons PAQ would need to make to build a large new maintenance hangar and tool it completely would effectively be money thrown away.

To expand, PAQ would need to hire experienced mechanics from other countries; however, unlike the FAA, Transport Canada doesn't recognise the certifications and accumulated type experience of mechanics from other countries, he says. So any highly experienced A&P mechanics moving to Canada from, say, Europe would have to begin work as apprentices again and would take years to obtain Canadian certification as A&P mechanics. "The only way for us to come out of the nightmare in Canada is for Transport

Regional aircraft tend to be simpler to maintain and "more mechanical" than newer mainline jets

performing freighter conversions on a number of ATR turboprop aircraft and has carried out heavy airframe MRO on various other ATR aircraft, including some repossessed from carriers in the Far East and due to be re-deployed by regional carriers operating services across the Mediterranean between Southern European and North African destinations.

Mechanics shortfall

The Covid-19 crisis has also created a staffing problem for various MRO providers, according to Tewfik. Many long-term A&P mechanics chose to retire permanently when they were laid off in response to the crisis and are no longer available to service



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Canada to recognise [immigrant mechanics'] talent and recognise their equivalencies," says Tewfik.

Butler says Ascent Aviation Services was able to "maintain and retain a significant percentage of its mechanics" – it has about 200 overall – because of its aircraft storage and aircraft recycling businesses. Both surged as a result of the travel slump wrought by Covid-19. Ascent works closely with aviation schools in Arizona to continue developing its local workforce, an important activity both because of the struggle to retain employees when the major airlines come calling and because Ascent is intent upon expansion in the relatively near future.

Butler says Ascent's MRO capacity is "booked ahead quite fully for the next six to 12 months", and as a result "we're always hiring and trying to improve"

the company's competitive position and offer. The company has expansion plans and is simultaneously "seeing [MRO] capacity getting tighter and tighter in the rest of the world". This is important to Ascent, because in addition to its regional jet and mainline narrowbody MRO work, the company is heavily involved in widebody airframe MRO and has customers from all six continents, says Butler.

Working differences

As a diversified airframe MRO company, Ascent Aviation Services is in a

particularly good position to know what the key differences are between MRO for regional airliners and MRO for mainline commercial jets. As one might expect, when comparing working on regional

Far fewer mechanics can work on a regional jet at the same time than on a widebody

aircraft and working on mainline jets, the "scale, service and scope [of MRO work] play into how you do things and also how you flow the aircraft" through a heavy check, says Butler. One obvious difference is that far fewer mechanics can work

on a regional jet at the same time than on a widebody. Only one mechanic can get into the electronics bay of a CRJ at a time, for instance, and because its interior is so much narrower than that of a widebody, sizeable numbers of mechanics can't work on a regional jet's interior simultaneously.

Another important difference between MRO for regional aircraft and MRO for mainline jets is that "most airlines operating regional jets don't veer too far from

1. Premier Aviation Québec's regional aircraft heavy MRO capacity is booked "almost until 2024". Photo: Premier Aviation Québec

2. Ascent first ventured into regional aircraft MRO three years ago and has steadily expanded. Photo: Ascent Aviation Services

the [OEM's] manual, but major airlines can have a very different maintenance programme" to that recommended by the OEM, says Butler. "It's not a difference in approach per se, but getting used to the [mainline jet] operators' programmes themselves takes a bit of getting used to," he notes. That makes regional jet MRO planning and workflow "a little bit easier" than following different mainline operators' customised maintenance programmes, when working on different aircraft of the same type.

Tewfik says that while in most aspects performing regional aircraft MRO is just like performing MRO on larger aircraft, maintenance planning, methodology and workflow is different for regional aircraft, at least in terms of scale and resources required. Often, too, "it is more difficult to get parts on some [regional] aircraft", though they tend to be simpler and "more mechanical" than newer

mainline jets. Another difference between regional airliner MRO and mainline jet MRO is that the build quality of some regional aircraft, particularly slightly older ones, is not always as good as it should be, according to Chandler. Doors sometimes don't fit well and on occasion it has been known for parts corrections to be required for airframe deviations. Additionally, interchangeability of parts between airframes of the same aircraft type is not always ideal.

Of course, MRO task and planning differences exist between different regional aircraft types. The most important difference, according to Tewfik, is that different regional types have different C-check intervals. "Every OEM has its own recipe for the C-check," he says. "Some are time-based, some are cycle-based. The number of hours for a Saab [340] is 3,000. For an ATR, it's 5,000. For an ERJ, it's 6,000." **M**



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