



Southeast Asia's MRO moment: The road to 2035

The race is on to build the engineering talent, technology, scale and resilience needed to capture Southeast Asia's maintenance work in an increasingly competitive market. **Tom King** reports.

Asia-Pacific is on track to account for more than half of global passenger traffic over the next two decades. According to IATA, the region will contribute 41 percent of global passenger growth, adding an estimated 2.4 billion passengers as traffic rises from 1.7 billion in 2024 to 4.1 billion by 2044. That leap will see more aircraft flying more hours, requiring more checks, engine inspections and, ultimately, a surge in demand for maintenance, repair and overhaul (MRO) across Asia.

But traffic growth and MRO capacity may not necessarily keep pace with each other. Asian carriers can probably order aircraft faster than the industry can develop skilled engineers, add hangar space and expand engine maintenance facilities.

That in turn will put further pressure on an MRO system already grappling with engine overhaul bottlenecks, spare-parts shortages and limited capacity. The challenge is particularly acute because much of the region's fast-growing intra-Asian traffic will be served by

single-aisle aircraft powered by latest-generation engines. It ultimately begs the question of whether Asia's MRO sector can keep pace.

Meeting the challenge will require more than adding more hangars. Airlines, MRO providers, regulators and technology partners will need to work more closely to strengthen supply chains, develop engineering talent and adopt technologies and processes that improve efficiency without compromising safety or reliability.

It will also require greater cooperation across aviation markets developing at very different speeds. Established MRO hubs can help by building capabilities in emerging markets, transferring skills and technical expertise and developing maintenance centres closer to where Asia's future fleet growth will occur.

Regulators, meanwhile, will need to ensure standards and oversight keep pace as the MRO ecosystem becomes increasingly interconnected across Southeast Asia.

The issue is not simply whether Asia can build enough MRO ca-

◀ *South Korean flag carrier Korean Air also believes AI-enabled automation and predictive maintenance will have a profound impact on Asian MRO operations.*

capacity, but whether it can build the right capacity for the decades ahead. That means combining investment and workforce development with smarter maintenance practices, new technologies and more sustainable operations.

How effectively the industry prepares itself to meet these challenges will determine whether MRO becomes an enabler of Asia's aviation expansion, or turns out to be one of its biggest constraints.

THE DIGITAL HANGAR

In many respects, MRO is almost an ideal artificial intelligence (AI) use case: enormous quantities of operational data, repetitive inspection processes, expensive downtime and considerable value from predicting component failure before an aircraft needs to be taken out of service.

Singapore-based Alton Aviation Consultancy Director Joshua Ng says: "AI-enabled predictive maintenance is likely to have the broadest impact on MRO operations over the next decade, particularly when combined with real-time aircraft data and increasingly integrated maintenance-planning systems. The value of AI extends beyond the automation of individual maintenance tasks, its greater potential lies in improving decision-making across the maintenance process."

South Korean flag carrier Korean Air also believes AI-enabled automation and predictive maintenance will have a profound impact on Asian MRO operations over the next decade.

"Korean Air is actively leading this transition. In predictive maintenance, we manage an in-house solution alongside global platforms like Boeing AHM and Airbus Skywise Fleet Performance+. Leveraging AI-driven data analytics, we successfully prevented over 100 potential flight disruptions in 2025 alone," a company spokesperson told *Asian Aviation*. "Furthermore, our upcoming Engine MRO Centre in Unbuk is designed entirely as a 'Smart Factory.' Supported by a dedicated IT system, this facility will feature automated warehouse systems linked directly with production execution and RFID real-time tracking, which includes big data analysis to enhance precision and efficiency," they added.

Mahesh Kumar CEO of Asia Digital Engineering (ADE), the Malaysia-based MRO company that grew out of AirAsia's engineering operation, says the future of MRO is increasingly digital, and the industry must continue to evolve to keep pace.

"Technology, data analytics and digital platforms are transforming the way aircraft maintenance is performed, and the workforce of tomorrow must be equipped with both technical and digital capabilities. As MRO continues to become more connected and data-driven, companies must invest in continuous learning to ensure their people are prepared not only for today's requirements, but also for the future of aviation," he says.

Across Southeast Asia, AI is being rapidly adopted into MRO,

but the biggest obstacle to deploying it at scale may not be the technology. It may be who owns and controls the data that makes AI such a valuable tool.

Airlines operate the aircraft, OEMs manufacture them, engine makers generate performance data, MRO providers maintain them, software companies analyse the information, and lessors own much of the global fleet. So whose data is it?

This question is becoming a significant commercial battleground. Predictive maintenance and advanced AI depend on large, high-quality datasets, yet much of that information remains fragmented or protected as proprietary intellectual property. AI it seems, could therefore advance faster than the industry's willingness to share data.

Regulation adds another challenge. Aviation in Southeast Asia cannot adopt Silicon Valley's "move fast and break things" mentality when safety and accountability are paramount. Regulators must therefore understand where AI assists engineers, where it makes decisions, and ultimately who authorises and is responsible.

Looking toward 2035, the pace at which AI reshapes MRO across Southeast Asia may therefore depend less on advances in the technology itself, which are inevitable, and more on how quickly the industry can resolve questions around data ownership, access and crucially, trust.

GLOBALISATION TO DOMESTIC RESILIENCE

After a succession of shocks, from Covid and the supply-chain dislocations that followed, and for some still lingers, to an increasingly fraught geopolitical backdrop, the case for a resilient domestic Southeast Asian MRO supply chain capability has moved from an operational consideration to a strategic imperative.

A Southeast Asian aviation supply chain does not have to mean a single, self-contained ecosystem. A more likely model is an interconnected regional network, with different markets building on their respective strengths.

Singapore already leads in sophisticated engine and component work, while Malaysia and Thailand are expanding maintenance capacity. Indonesia, the Philippines and Vietnam, meanwhile, are looking to turn their large labour pools and growing aviation markets into deeper domestic capabilities.

Vietnam offers a clear example of how quickly that capacity is taking shape. In June 2026, HAECO agreed to form a joint venture with Sun Group, Toyota Tsusho and Japan Airlines to develop a US\$360 million aircraft maintenance facility at Van Don International Airport. The 170,000-square-metre complex is expected to begin operations in late 2028. At its centre will be a four-bay widebody hangar, with flexibility to accommodate narrowbody aircraft.

HAECO expects the project to create more than 1,000 skilled jobs and has begun training Vietnamese recruits at its facilities in Xiamen. The operation is also expected to incorporate digital processes and AI-enabled applications, building technical capability alongside physical capacity.

As Southeast Asia's fleets expand towards 2035, MRO investment



▲ *EirTrade believes USM parts will prove vital to Southeast Asia's MRO sector.*

is increasingly about building domestic engineering expertise, reducing reliance on distant maintenance centres and capturing work that has historically flowed to established aviation hubs.

According to Johnson Chen, sales and business development manager Asia at EirTrade Aviation, over the next decade, closer engagement between independent Used Serviceable Material (USM) integrators, airlines, and MRO infrastructure could also prove vital to building Southeast Asia's circular-economy resilience.

"As engine maintenance becomes the primary cost driver across Asia, access to high-quality, fully traceable USM is transitioning from a cost-saving alternative to an operational necessity, allowing airlines to optimise engine life by specifying the target build during a shop visit. This increased demand for USM means we are likely to see an expansion in the number of logistics centres, aircraft dismantling facilities, and aviation free-trade zones across the region, enabling supply chains to shift toward localised repair, storage, and distribution," Chen said.

But expanding capacity does not guarantee Southeast Asia will capture a greater share of Asia's maintenance work. Capacity is being built elsewhere, with India and China in particular adding to the competitive equation.

Korean Air expects the balance of MRO activity across Asia to shift considerably over the next decade.

◀ *HAECO formed a venture to develop a US\$360 million aircraft maintenance facility at Van Don International Airport.*

"While our specific long-term projections to 2035 remain fluid, we anticipate a profound shift in Southeast Asia's market dynamics over the coming decade," the airline says. "Historically a primary destination for regional maintenance, Southeast Asia will face new pressures as India rapidly strengthens its domestic capabilities."

"With major infrastructure coming online, such as Air India's Bengaluru facility and the new LEAP maintenance plant in Hyderabad, we expect a notable reduction in the MRO volume that traditionally flowed into Southeast Asia," Korean Air says. "This will alter regional dynamics, shifting demand internally within India while increasing competition among established Southeast Asian hubs as new facilities, such as SIAEC's hangars in Malaysia, begin to scale their operations."

The opportunity for Southeast Asia, therefore, is not simply to build more hangars, but to ensure new facilities can also compete for increasingly contested maintenance work.

Korean Air itself is part of that build-out, constructing what it describes as "the largest engine maintenance cluster in Asia" at Unbuk in Incheon, targeted to begin operations in 2027.

China looks likely to present another competitive MRO pull factor. Bill Chen, regional sales director, Landing Gear (Asia-Pacific) at aircraft parts trading, leasing and asset management firm APOC Aviation, believes that by 2035 China's MRO industry will have developed into a leading, self-sufficient regional service hub, driven by expanding domestic fleets and the mass operation of COMAC commercial jets.

"The market will sustain stable growth with full localisation of airframe, engine and component overhaul capacity across major industrial clusters. Digital twin, AI predictive maintenance, and green overhaul technologies will become standard operational tools," Chen says.

He also points to Hainan, which China has established as a special free trade zone and which is already attracting Southeast Asian airlines for airframe and engine maintenance. Chen believes it could become a major maintenance hub by 2035.

"Despite challenges such as talent gaps and international airworthiness coordination barriers, China will secure top-tier global standing in aviation maintenance, forming a closed industrial loop integrating aircraft manufacturing and full-life-cycle MRO services," he says.

THE HUMAN BOTTLENECK

This simultaneous rush for capacity is putting Asia's MRO workforce under growing strain. Korean Air expects competition for skilled maintenance personnel to intensify as new facilities open, driving wage pressures and making the shift towards automated and AI-assisted MRO an operational imperative.

"Concurrently, to address these workforce and cost pressures, we are optimising our operational portfolio. By outsourcing routine

maintenance tasks while internalising high-value, complex engineering capabilities, we can effectively improve profitability while accumulating critical technical know-how in-house," Korean Air says.

Alton's Ng says the biggest challenge will be scaling MRO capacity and capability quickly enough to keep pace with demand. "This extends beyond any single issue and brings together workforce availability, supply-chain resilience, engine-shop capacity, infrastructure and the changing technical requirements of the fleet. Over the longer term, however, workforce development may become the most important constraint on how much of that demand Southeast Asia and the broader APAC can capture locally. Building physical capacity can often be achieved more quickly than developing experienced licensed engineers, technicians and specialists, with a projection of approximately 120,000 aviation technicians required within APAC over the next 10 years."

Mahesh Kumar at ADE meanwhile points out that while the APAC region continues to produce highly capable aviation professionals, the pace of industry growth is now exceeding the rate at which experienced talent is entering the workforce.

"This is particularly evident as airlines expand fleets, aircraft utilisation increases and more maintenance work is being performed within the region. The challenge is less about attracting interest in aviation and more about accelerating the development of qualified,

licensed personnel without compromising safety or quality."

"Our hiring strategy is closely aligned with our expansion plans. As we continue to grow our maintenance capacity across Malaysia and internationally, we are recruiting strategically to ensure the right talent is in place as new facilities come online. Over the next few years, we expect to hire several hundred additional maintenance personnel across our network, with recruitment phased alongside operational growth," he adds.

Taken together, these forces point to something broader than a straightforward expansion of Southeast Asian MRO. Asia's maintenance map it seems, must be remodelled. Southeast Asia is building greater domestic capability, but so are its competitors in China, India and South Korea.

The race to meet Southeast Asia's MRO demands in 2035 will not simply be about adding hangars or expanding capacity. It will be about who can assemble the right combination of skilled talent, advanced technical capabilities, digital infrastructure, regulatory certification, resilient supply chains and operational scale to keep more maintenance work within the region.

Just as importantly, it will be about who can deliver the turnaround times, reliability and cost competitiveness needed to win business not only from Southeast Asia's rapidly expanding domestic airline fleets, but from operators across the wider global aviation market. ➔

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