

# HAECO embarks on an MRO IT upgrade

**Teresa Cheung**, Assistant General Manager, Centre of Excellence & Cathay Operations, Line Maintenance and **Christine Yung**, Leader of the AMOS Competence Excellence team, HAECO Hong Kong share a case study of HAECO's experience in implementing a new MRO solution





We have all seen various software solutions available to aircraft engineering and MRO businesses in the market. As much as understanding what the software can do for users, it is also beneficial to know how the solution can add value to a business. This case study is about our experience in implementing a new MRO IT solution in HAECO Hong Kong and the process involved. Before we go into details, let us set the scene with a background of HAECO.

## HAECO



### HAECO in the 1960s

HAECO was established in 1950 with the merger of Swire's Pacific Air Maintenance & Supply Company and Jardine Air Maintenance Company. In the 1960s, HAECO constructed what was Asia's largest aircraft maintenance hangar and grew its business. The Company moved its operations to a brand-new facility at Hong Kong International Airport in 1998 and has since added a second and third hangar to its expanding operations. New capabilities were also added to meet the changing demands of customers.



Today, the HAECO Group is one of the world's leading aviation product and service providers. The Group provides a comprehensive range of products and services in Airframe, Cabin, Component, and Engine segments. The HAECO Group consists of 16 operating companies, employing around 17,000 staff in Hong Kong, the Chinese mainland, Europe, and the United States.



Passenger aircraft interior stowage devices developed by HAECO Cabin Solutions, offering airline customers solutions to combine passengers and cargo in main cabin during the COVID-19 pandemic.



### WANTED: A NEW MRO IT SOLUTION

HAECO's legacy system was designed and built in-house. Its limitations and constraints made it increasingly difficult to support our operations in the modern-day business environment. It was challenging to meet our customers' requirements, such as real time progress status and details. The system did not allow for electronic work packages and data exchange with customers or integration between modules. At the same time, it lacked the capability to facilitate data-centric business decisions. Multiple key business processes, including quotation, contract management and invoicing was still being handled manually and not supported by our legacy IT systems.

### OUR CHOICE: SWISS-AS AMOS

HAECO Hong Kong was clear about its needs. We wanted an end-to-end solution with a user-friendly interface. Following several rounds of workshops with Swiss-AS, we concluded that AMOS offered a comprehensive range and practical basic functions for the end-to-end MRO process and comes with a user-friendly user interface. As a service provider, Swiss-AS was responsive to our requests and queries during the Request for Proposal (RFP) stage. They also set out a structured roadmap for future development of functions, which we valued.

AMOS originally stood for Airline Maintenance & Operational Systems when it started off as a purely airline operational system back in 1989. The launch of its AMOS MRO Edition in 2017 covered new features developed specifically for MRO processes. The airline-related functions are quite mature while the MRO functions allow for future improvements and fine tunings for HAECO Hong Kong.

### SELECTION OF AMOS MODULES

The AMOS Business Process Model is very comprehensive as shown below. We decided to implement the AMOS modules highlighted in green as they fall within the scope of an MRO like HAECO. Modules shaded grey are more applicable to airlines.

#### AMOS BUSINESS PROCESS MODEL

	00 AMOS Competence Center	01 Organizational & Commercial	02 Staff and Qualifications	03 Engineering	04 Planning	05 Purchasing and Components	06 Stores and Logistics	07 IMC	08 Line & Base Maintenance	09 Customer MRO SERVICES	10 Component Shop Work	11 Finance and Accounting	12 Quality Assurance
ACC Supporting all Short term and long term operations	Define the Vendor Contracting and Invoicing	Manage staff qualifications using HR DMS Planning and Allocation Time	Define aircraft, engine, and component requirements and approval with OEM, OAS, EASA, AD, Regulatory Authority and company procedures	Plan short and long term Program Work Package by reviewing available resources	Define and approve Material Planning	Warehouse Management and Inventory Control	Controlled Tracking	Line and Base Maintenance work	Manage 3-party contracts and Line & Base Maintenance MRO Services	Component Shop Contracting and Invoicing	Assess Financial Reporting	Quality Auditing	Quality Auditing
0002 Data Operations	0101 Organizational Structure	0201 Staff Allocation	0301 Aircraft Parts Definition	0401 Planning	0501 Material Planning	0601 Inventory Logistics	0701 Aircraft Status Monitoring	0801 Scheduled Line Maintenance	0901 Aircraft MRO Services	1001 Component Maintenance	1101 Invoice Checking	1201 Quality Auditing	
0003 Adoption Improvement	0102 Maintenance Release Org	0202 Qualification Management	0302 Maintenance Program	0402 Modification Control	0502 Work Package Generation	0602 Goods Receiving	0702 Event Tracking	0802 Unscheduled Line Maintenance	0902 Customer Contracts	1002 Component Release	1102 General Ledger	1202 Technical Assistance	
0004 Release Change	0103 Vendor Management	0203 SHM Planning	0303 Configuration Management	0403 Counter Setup and Update	0503 Ground Time Planning	0603 Repair & Package	0703 Distribution	0803 Base Maintenance Out-of-Service	0903 MRO Quotation	1003 Capacity Use	1103 Fixed Asset Management	1203 Occurrence Reporting	
0004 Configuration & Setup	0104 Vendor Contracting	0204 Shift Plan Definition	0304 Reliability Program	0404 Publications & CRM Library	0504 Facility and Weight Planning	0604 Loan & Service	0704 Pick-up Process	0804 Aircraft Delay & Cancellation	0904 MRO Administration	1004 Customer CRM	1104 Material Allocation	1204 Budget Incident	
0100 Prior List & Questions	0200 Staff Training	0300 Work Instructions Authoring	0400 Weight and Balance	0500 Staff Capacity Planning	0600 Fuel Agreements	0700 Recurrent Defect Reporting	0800 Component Run-In/Out	0900 Customer Comments	1000 Billing	1100 Project Cost Controlling	1200 Multi-Financial Reporting		
0200 Vendor & CRM Management	0300 Time and Materials	0400 Technical Records	0500 Aircraft Phase-out	0600 Reporting Back	0700 Electronic Purchase Order	0800 Inventory Control	0900 Annual Review	1000 Billing	1100 Customer Comments	1200 Project Cost Controlling			
0300 Project Administration	0400 Structural Compliance	0500 ETOPS	0600 Long Term Planning	0700 Surplus Material and Loss	0800 Fueling	0900 Work Order Release	1000 Multi-Financial Reporting	1100 Project Cost Controlling	1200 Multi-Financial Reporting				
0400 Software Management	0500 Long Term Tooling	0600 Long Term Tooling	0700 Long Term Tooling	0800 Long Term Tooling	0900 Long Term Tooling	1000 Long Term Tooling	1100 Long Term Tooling	1200 Long Term Tooling					
0500 AI Consumption Monitoring	0600 Aircraft Utilization & Flight Log	0700 AI Consumption Monitoring	0800 AI Consumption Monitoring	0900 AI Consumption Monitoring	1000 AI Consumption Monitoring	1100 AI Consumption Monitoring	1200 AI Consumption Monitoring						

The selected modules were to provide better support for HAECO Hong Kong's daily operations with flexibility to utilise AMOS to the greatest extent possible.

### SELECTION AND IMPLEMENTATION PROCESS

With an IT solution being a key component of any business infrastructure for many years, even decades to come, selecting the right product and efficient implementation are critical to ensure that the business gains the optimum value from the new software.

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“...we narrowed the field down to three solutions with whom we initiated formal RFP processes. Workshop invitations were extended to them, enabling us to further drill into the major functions that the solutions could provide with on-site demos.”

### Selection process

The selection process at HAECO Hong Kong started from identifying active MRO solutions in the market through a touch-base workshop to better understand the products on offer. We then shortlisted the service providers who met our requirements and invited them to exploration workshops to get deeper insights into each potential solution. At the next stage, we narrowed the field down to three solutions with whom we initiated formal RFP processes. Workshop invitations were extended to them, enabling us to further drill into the major functions that the solutions could provide with on-site demos. Out of this thorough process, Swiss-AS AMOS emerged as the best fit with HAECO Hong Kong's needs and culture.

### Implementation

Overall, the implementation was a 30-month project overseen and driven by a dedicated project team called *smarthAECO* formed in April 2019. High calibre employees across departments in HAECO Hong Kong were picked to work on the AMOS implementation. From an initial size of 15 full-time members, the team grew to 25 core members, along with support from more than 80 Subject Matter Experts (SMEs). *smarthAECO* gained high engagement and support from the HAECO leadership team throughout the project cycle from study to implementation. The project team reported directly to the Director and General Manager of HAECO Hong Kong.

The first and definition stage ran from April to December 2019, with four key steps to be

accomplished. We had to learn how to use the system, review and define its business process, identify any gaps between AMOS functions and our business as well as HAECO Hong Kong's requirements, and then define the IT infrastructure with the different sub-systems.

The second stage was the actual implementation. Between January 2020 and June 2021, four User Acceptance Test (UAT) cycles and Final Acceptance Test (FAT) were carried out. During this time, testing and validation of additionally developed MRO features was also conducted. Training took place from January to September 2021 with AMOS leading key users training and train-the-trainer sessions, followed by end-users training. Right from the start of the program in April 2019, we planned for an exhaustive Data Migration and ran nine cycles throughout the project.



“ AMOS will provide us with a state-of-the-art airworthiness management system that will ensure an efficient and more sustainable operation. The digital and paperless system will enable Norse to operate according to the highest safety standards as well as ensuring on-time performance and a lower carbon footprint.”

Chief Operating Officer, Norse.

### Norse Atlantic Airways takes off with AMOS, the world-class M&E software solution.

Norse is putting their confidence and trust in Swiss-AS that AMOS will support them in getting their brand new airline off the ground. AMOS allows the airline to build their paperless line and base maintenance processes within AMOS.



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Aviation Software

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## COVID-19 IMPACT

While the pandemic has severely affected the airline industry, there was no significant impact on this project. Work from home arrangements did result in some inconvenience while trying to arrange and carry out UAT test cases but the smartHAECO team quickly adapted to the new work norm with online conferences and tools. Overall, the impact was manageable, and the project timeline was kept on track.

## OTHER CHALLENGES

Coordination between different departments could be challenging, especially during the Final Acceptance Test stage where we had to mimic the whole end-to-end process from quotation, planning and executing to invoicing. Given the involvement from multiple departments and numerous stakeholders, the coordination on how to ensure a smooth and on-time testing was quite daunting. On a positive note, HAECO project leaders and key users invested great efforts in advocating the need for process and system changes to the business units via strong governance. This created a good awareness in the organization to collectively pursue the goals and benefits of this project.

## TRAINING AND DELIVERY

Training was carried out in three broad phases: key users training, train-the-trainer session and end-users training. Key users training was conducted by Swiss-AS to provide an overview of the system functions to the project team

members, to ensure they understood the major modules in AMOS during the early project phase. In the train-the-trainer session, key users conducted training for the SMEs as they would be involved in UATs as well as training the end users in their own departments. Finally, end user training was conducted around four months before AMOS went live at HAECO Hong Kong. It consisted of classroom training with practical exercises.

## USER FEEDBACK

It is understandably challenging for employees to adapt to a project that involves big changes. The resistance was also heightened given that HAECO's legacy system had been tailored to internal processes and employee requests. As AMOS is an integrated system, the linkage between modules could be seen as complex. However, with adequate training and refresher courses planned and delivered during the project implementation phase, users are now well adapted to the system.

## REGULATORY MATTERS

Regulatory approval applications are not processed with AMOS. Regulatory approval applications vary between authorities. Submission of supporting documents may have to be submitted by mail, in electronic format by email or uploaded via the respective authority's portal. Automated processes do not easily suit the purpose.

## LESSONS LEARNED

While we have achieved the deliverables, there is always room for improvement. For this project, we had put too much attention on the actual functionalities of AMOS and limited ourselves to addressing the issues. If more focus and resources had been put into change management and advocating the opportunities that the system had to offer, it may have helped to shift our staff's perception and enable them to be more receptive to adopting AMOS.

## ADVICE WHEN CONSIDERING A NEW MRO SOLUTION

If your business is contemplating a change like the one HAECO Hong Kong undertook, you need to decide if you want a whole new system to cater to end-to-end MRO functions or just an add-on MRO solution to your existing system. For the latter, it is key that your current and potential solution are compatible or integration would pose challenges.

## BENEFITS FROM IMPLEMENTING AMOS

Given that we are still in the stabilisation phase, more change requests from AMOS are expected in the coming version. A benefit that we have observed so far is the digitalized exchange of work packages in structured data language (XML).



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## VENDOR FOLLOW UP

Our needs and reasons for change were well addressed. AMOS provided HAECO Hong Kong with the end-to-end solution that we were looking for, even though a lot of enhancement work is still in progress. AMOS has been and continues to be very responsive to our change requests, addressing them with utmost professionalism, and with plans for future development.

## NEXT STEPS

We will be upgrading to the latest version of AMOS in August this year and also kick starting the AMOSmobile study with our operations team. Our target is to implement AMOSmobile by the end of 2022 so that staff can work more efficiently with mobile devices.

## CONCLUSION

The dedication from the project team members is highly admirable. Most importantly, the strong leadership and direction from the steering committees were crucial in keeping the project well on track and ensuring its success.



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## TERESA CHEUNG



Teresa started her aviation career from a “Next Generation Maintenance & Engineering System” study in an airline. Over the past 25 years, she took on a wide range of functions in airlines and MRO, including engineering, corporate safety, inflight services and airports operation. After two decades, she returned to M&E and recently completed a transformational M&E project in HAECO. She holds a degree in Accounting & Financial Analysis and post-graduated in Business Administration, E-commerce, Logistics and Digital Transformation.

## CHRISTINE YUNG



Christine joined HAECO as a Graduate Trainee in 2013 with a degree in Aerospace Engineering and Business Management. She was posted to different departments and took up various roles covering areas such as operational support, employee relations and project management in the past eight years. She was a member of the smartHAECO team and served as the Functional Lead on planning and now has stepped up in leading the AMOS Competence Excellence team.

## HAECO GROUP



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## SWISS AVIATION SOFTWARE



Over three decades, Swiss-AS has been successfully developing, marketing and selling the MRO software solution AMOS. Their long experience, uncompromising pursuit of quality and safety, and commitment to equip Swiss-AS customers with a state-of-the-art solution are the pillars which steer the development of the system as well as the service delivery. Swiss Aviation Software Ltd. (Swiss-AS) is a 100% subsidiary of Swiss International Air Lines and thereby embedded in the Lufthansa Group, one of the biggest airline groups of the world.