MRO to go

MRO software offers efficiency and cost savings for airlines and as **Paul E Eden** finds, new solutions to old problems are leading software providers to offer greater functionality than ever before

easyJet announced the successful deployment of a new MRO planning platform
(photo: easyJet)

The regulatory requirements of running a modern, safer airline operation mean maintenance planning, record keeping and compliance have long since exceeded the capabilities of Excel for all but the smallest carriers. A number of smart and regularly updated software systems exists to simplify, even automate the MRO tasking an airline generates, none of them catering specifically to the low cost or regional markets, but all offering extensive functionality that's just as relevant, albeit perhaps in different ways, as it is to the largest flag carrier.

Ronald Schaeuffele, CEO of SWISS AviationSoftware (Swiss-AS), which produces the popular AMOS MRO software suite, says the system is suitable not only for any type of airline operation, but also for MROs. The company's low cost carrier customer list includes AirAsia, easyJet, flydubai, Indigo, Jet2, Norwegian,

Pegasus, Ryanair, SpiceJet, VivaAerobus, Vueling and WOW air, among others. "It's a community product where every customer uses the same AMOS software, but adjusted to suit their particular needs. We don't see LCCs using AMOS any differently to traditional airlines, although they may not require the full scope of modules and functions, since they typically outsource at least some of their maintenance tasks. The way AMOS is employed tends to be influenced more by individual maintenance scope, aircraft type and so on, than by airline type."

Where maintenance is outsourced to one or more independent MROs, there's real value to be had in easily and accurately produced work packages that can be passed from airline engineering department direct to the MRO, enhancing efficiency and, potentially, safety. It's an area in which AMOS is particularly helpful,

thanks to a generic interface that enables data transfer, via the check-out/check-in of work packages, between the airline and its MRO(s).

However, there is far more to MRO software than managing maintenance and compliance, and this extended versatility is particularly attractive to growing LCCs. Nick Godwin, Managing Director at Commsoft, the UK-based provider responsible for the OASES MRO software suite, notes Blue Air, as an example. The Romanian carrier uses OASES to manage a fleet of around 30 Boeing 737s of various models, exploiting its functionality to the full.

"They use it to control their continuous airworthiness management and they're using it to manage the complete purchasing of an inventory. They have OASES interfaced to a finance system and from an operations system, they do all their own heavy checks and now they're looking to do third party work for similar customers."

Real-time compliance

John Bowell, Director of Global Sales for the FLYdocs Asset Management Platform, says the company's very particular product is proving especially popular with LCCs, a fact highlighted by a recent deal with Frontier Airlines. "I think the LCCs really appreciate the outsourcing possible with our products – we supply technical services as well as software, predominantly around auditing daily compliance documents, but also support of end-of-lease. Given their tight budgets, a late return from lease can have a significant impact on an LCC and our software helps avoid that with minimal internal overhead."

FLYdocs also works with Wizz Air and provides end-of-lease services to Norwegian and Silk Air, among others. "We're flexible in how we supply our customers, as in the case of Norwegian, where they have a long-term agreement with a competitor but choose our system for their end-of-lease work because it delivers the efficiencies and technical support they require."

FLYdocs has also made headway into the regional market, notably with QantasLink and its mixed Boeing 717 Bombardier Q series fleet. The data capture, storage and search functions inherent in the FLYdocs platform are equally useful to QantasLink as they are to Frontier and Virgin Atlantic, or even to the two-aircraft operator currently in discussion with Bowell. "The service is typically charged on a monthly per aircraft basis and there's no data cap. It also makes no difference to the customer whether they have two aircraft or 200, they all receive exactly the same level of service."

Regional application

According to Schaeuffele, AMOS is every bit as useful to regional operators as it is to LCCs, even those with very small fleets. "We have customers with fleets ranging

from a single aircraft to in excess of 300. There's actually no maximum to how many aircraft the system can handle, although it tends to meet its limitation with hardware, which dictates the number of concurrent users", the company states.

However, regional operators tend to employ their MRO software somewhat differently to the LCCs. The regionals often keep most of their maintenance in-house, out-sourcing far less compared to the low costs.

Commsoft's Godwin echoes the message from Swiss-AS, agreeing that OASES is as relevant and useful to low cost and regional airlines as it is to mainline carriers, but he reckons there's a big difference between what a large LCC and a regional airline need from such a system. "We have a significant number of regional airline customers and we're fortunate to be able to say that many of the recent European regional airlines gold and silver award winning carriers have been OASES clients, among them ASL Airlines Ireland, Eastern Airways and Sky Express Airlines – I can't claim that's why they won the awards, but it does show them as well-run airlines." ▶

Godwin - We see MRO systems becoming far better integrated
(photo: Commsoft)

Frontier Airlines has signed up with FLYdocs
(photo: Airbus)

Blue Air uses OASES to manage its fleet of 737s
(photo: Cologne Bonn Airport)

An MRO system like OASES is capable of managing the entire aviation engineering activity in an airline, but a regional carrier might use it to affect the maximum amount of control over parts and labour and making sure they're compliant with regulations on the approved maintenance programme schedule and with airworthiness directives and service bulletins.

"In some cases, like Loganair's, they perform their heavy maintenance in-house, but more well known aircraft are sent to an MRO for the schedule scope of tasks that OASES generates as a work scope or work pack, complete with all the necessary cards and instructions. The MRO might be using similar software to manage their production, loading tasks for completion and closing out, plus recording any out-of-scope or non-routine work to report back to the airline."

Godwin adds that the same would typically be true for an LCC, albeit for different reasons. "The LCC works hard to reduce costs, while a regional works its people hard because they're typically small in number and have multiple or complex tasks to fulfil. Both want the software to do as much as possible and I'd say that in their respective fields, both models are class leaders in keeping costs down and extracting maximum efficiency from their people. Compared to legacy airlines, it's probably fair to say they're likely to be more flexible, more innovative and more likely to employ new techniques, such as mobile technology," he says.

Towards tomorrow

Looking to extract maximum utility and efficiency in operation from AMOS, in 2016 SWISS-AS launched AMOSmobile, a touch-optimised mobile package that compiles a suite of modules onto a mobile device as an addition to the standard AMOSdesktop application. Swiss-AS offered 'maintenance execution' as the first AMOSmobile module. It covers functions including dispatch, handling and the e-signature of work orders, stock information and parts requests, fleet status and approval control. The company currently has in excess of 50 apps covering daily line and base maintenance tasks, with more to come.

Looking to the future, Swiss-AS will continue AMOSmobile development and is also working on AMOScentral, a cloud-based, scalable message broker that AMOS customers can use without fear of losing control of their data. It's an innovative addition that will seamlessly integrate into the AMOS world. It will enable every member of the AMOS community to act as either a subscriber to, or provider of data sets, according to their needs, while using a unique registration in the AMOScentral service directory. Both parties, subscriber and provider, will need to agree to the exchange of information via AMOScentral, where privacy is guaranteed by end-to-end data encryption, the company explains.

Godwin sees mobile technologies capturing and validating data at source, while eliminating variability, as key to the future; accurate data, once gathered, can be used many times. "They'll be used more and more, especially on inventory control and potentially in engineering control.

"Customers will expect far more reporting, with management able to see the detail in just a few clicks. We see MRO systems becoming far better integrated

into the entire airline set-up, with operations, finance and HR systems. In the past, airlines were happy to work with exports from one system, importing them into another, but now they increasingly want automated exchanges with minimal intervention.

"It all comes down to reducing, managing, predicting and tracking costs. We've already invested in OASES to add this functionality and while we haven't seen a great deal of customer interest in it yet, I'm certain it will come," notes Godwin. ◾

Aerogility at easyJet

On 8 May, easyJet announced the successful deployment of the Aerogility maintenance planning platform, a new AI-based multi-agent software that doesn't replicate the functions of systems like AMOS and OASES, but takes aspects of their data, combines it with input from other sources, and generates predictive maintenance forecasts.

According to Swaran Sidhu, Head of Fleet Technical Management at easyJet: "Aerogility has given us the ability to look into the long-term maintenance planning of our fleet with the capability to not only make a late change to the plan but at the same time understand the impact of that decision operationally and economically. It's helping us drive down costs and maximise the number of aircraft available to our customers."

Aerogility CEO, Gary Vickers describes the software as a decision support system. "It's about providing the management team with the capability of easily running future projections before making policy decisions. It could be that it's used to plan how to complete a volume of required maintenance work over the next 18 months or to assess what maintenance capacity will be available in five years time and whether a company should be thinking about outsourcing or offering excess capacity to third parties."

The system also proves its value in predicting the impact of unscheduled maintenance resulting from changes in aircraft type, operational profile or airworthiness issues. A classic scenario considers a failure, perhaps in a turbine blade affecting the same engine type as those on the Aerogility customer's fleet. Entering any subsequent inspection or airworthiness requirements into the system enables a maintenance department to plan the necessary work as efficiently as possible for minimal impact on fleet availability.

"It could be projecting forward over the next few months, or the next 30 years, modelling using the interaction between intelligent agents – each of which represents an individual aircraft, maintenance facility, maintenance manager, supply chain element or other factor. The intelligent agent concept came from AI research, and what Aerogility creates is almost an AI model of how an airline works, with the agents 'appearing' as 'actors' within a 'simulation'," Vickers explains.

Gary Vickers (L) MD at Aerogility and Swaran Sidhu Head of Fleet Technical Management at easyJet *(Aerogility)*