Fuel saving strategies might reduce fuel costs by up to 5%. A number of software solutions have been developed to help identify the potential of different strategies and measure their performance in practice. These solutions are reviewed.

Fuel management software – the options for managing fuel efficiency

The cost of jet fuel has more than tripled over the past 10 years. As a result, fuel now accounts for the largest percentage of all costs for some airlines. In many cases it represents more than a third of total operating costs.

Some estimates suggest that introducing fuel-saving strategies can provide a number of benefits to airlines, including reductions in fuel costs by up to 5%, and in total operating costs by 1-2%, as well as reductions in CO_2 emissions. This will become increasingly important when charges are imposed by emissions trading schemes (ETSs). For a fuel savings programme to be effective, airlines need to identify the potential of these different strategies and closely monitor their performance carefully.

Fuel saving strategies

One approach to segmenting fuel saving strategies into different categories is suggested by Captain Frank Lumnitzer, head of fuel, environmental and air traffic management at Frankfurt-based leisure airline Condor.

Flight planning

Fuel saving strategies in this area include reviewing flight-planning processes and software.

The most advanced systems have a cost-index facility, which at the most basic level is the ratio between time-related operating costs and fuel costs. Flight plans based on an airline's computed cost-index will optimise speeds and flight tracks to achieve the lowest cost operation based on balancing flight time and fuel costs.

Other strategies include optimising lateral and vertical flight paths and live route updates or mission management.

Flight operations

Lumnitzer categorises flight operations initiatives as those tactically performed during a flight. Potential fuel saving strategies include: engine-out taxi, reduced flap settings for take-off, and optimised climb and cruise profiles and speeds. Other strategies are continuous approach profiles, lower flap settings and extending flaps as late as possible when landing, and idle thrust reverse.

The suitability of these initiatives will vary by operator, with flight safety always taking the highest priority. Lumnitzer points out that a comprehensive risk analysis is crucial before implementing any flight operations-related strategies.

Reducing aircraft weight

To reduce an aircraft's operating empty weight (OEW) strategies include replacing flightdeck paper with electronic flight bags (EFBs), using lighter weight seats and in-flight entertainment (IFE) systems, and minimising on-board catering, duty-free goods and amount of potable water.

From a maintenance perspective, airlines might replace items with lighter alternatives, and reduce dust, dirt and the weight of aircraft paint. They could also use zonal drying.

For cargo carriers, reducing the tare weight of unit load devices (ULDs) is also a consideration.

Reducing fuel loading

Less fuel means a lighter aircraft with lower fuel burn. Initiatives for optimising overall fuel load include reducing alternate fuel, contingency fuel, additional/company fuel, extra fuel, and taxi fuel.

Lumnitzer maintains that, regardless of potential savings, the most important factor is having the right fuel loading for safe operation. Condor does not restrict pilots in terms of allowable extra fuel but concentrates on educating pilots in using enhanced statistical data to aid in fuel load decision-making.

APU use

Minimising APU use will reduce fuel burn. One strategy is to use ground power units (GPUs) if available.

Maintenance

Maintaining an aircraft in good condition can result in fuel burn savings, with engine condition particularly important. As blade tips wear, engine efficiency is reduced, resulting in higher fuel burn. Using de-rated engines on take-off can reduce engine wear, while regular water washing can recover some of the loss in fuel burn efficiency.

It is crucial to monitor aircraft cleanliness, the condition of paintwork as well as the optimum position of control surfaces.

Other

Other initiatives include optimising an aircraft's centre of gravity to reduce in-flight drag, and advance planning to take fuel on-board where the cost is cheapest.

Fuel management software

Airlines collect a lot of relevant data from multiple sources that can help assess and measure the impact of fuel saving strategies. "Most airline departments collect their own data, and the same information is often collected several times," explains Captain Marcel Martineau, president of fuel management

Aviaso's Fuel Efficiency software is interfaced with various airline systems. It is consequently able to track more than 1,000 flight parameters. The Fuel Efficiency application quantifies potential savings in its 'savings calculator' module.

specialist TFM Aviation Inc.

Data collection methods are often a manual process. "Not only is this time-consuming, but will generate a large number of errors," claims Martineau. "A significant period of time is then required to clean the data. The errors will often result in an inability to use the data at all. Data accuracy is essential if it is to be used for operational purposes."

In recent years a number of software solutions have been developed to help airlines tackle these issues and manage their fuel efficiency programmes.

Aviaso

The Aviaso/Fuel Efficiency software was first deployed in 2009 and is now used by more than 10 airlines.

"The Aviaso/Fuel Efficiency software provides four main functions to help airlines achieve fuel savings: data collection, data quality assurance, analysis and communication," says Rudolf Christen, chief executive officer (CEO) at Aviaso.

"The Aviaso/Fuel Efficiency software can be integrated with various airline IT systems," continues Christen. "These include flight scheduling/operations, flight planning (OFP), flight data monitoring (FDM/FOQA), departure control (DCS), ACARS, fuel accounting/inventory and EFB systems. Information is imported from these systems into a powerful data warehouse where more than 1,000 parameters can be stored for each flight."

Following software integration, data import takes place automatically. Aviaso has developed ready-made import adapters for most of the standard airline IT systems. "A data import adapter is software that automatically extracts data from the IT systems described," explains Christen. "We have been able to develop these due to our extensive experience in system integration work. Since 2003 Aviaso has completed more than 50 different IT system integration projects. This means we can do most of the integration work for airlines, saving them time and money."

Once data have been collected they are checked for errors. "You cannot perform an accurate analysis if you do not have good data," says Christen. "It is important to identify data that contain incorrect information so that they can be excluded from analysis. There are more
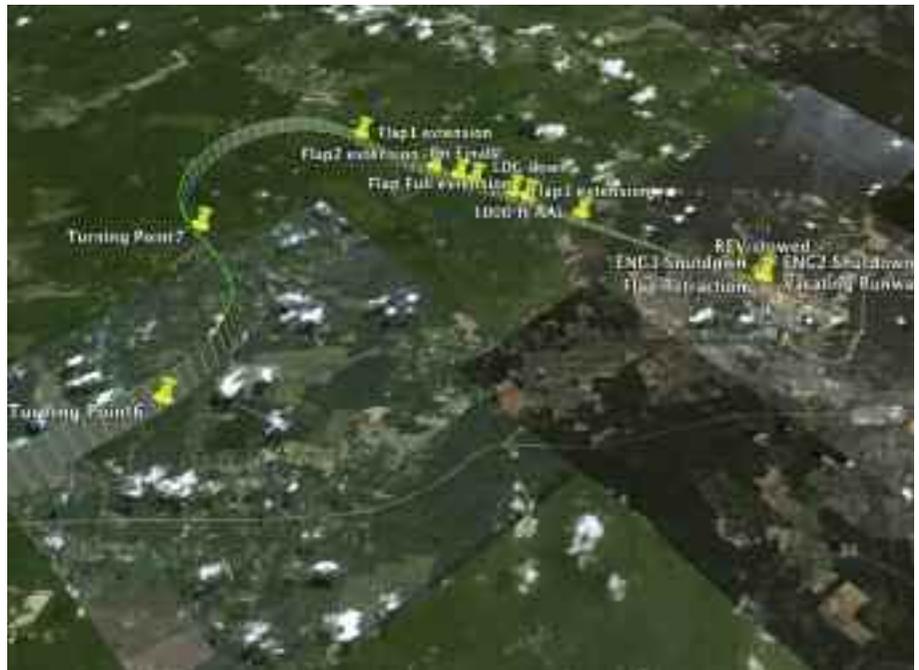
than 300 built-in checks, and airlines can easily define data quality requirements." Data with errors or missing parts are logged so that airlines can investigate the issues.

Examples of validation processes in the software include checking that every field from every source contains data, that data available from multiple sources are consistent, and that data values are above or below certain thresholds.

Following quality checks, Aviaso Fuel/Efficiency provides analysis of the collected data.

Aviaso/Fuel Efficiency provides more than 100 ready-made analysis reports. It is also a straightforward process for operators to create their own airline-specific reports.

There are various ways to filter, compare, combine and drill-down the data. Examples include analysing the data by city-pairs, time periods, aircraft type, registration, runways and flight type. The latest version allows analysis according to forecast and actual weather conditions. The Aviaso/Fuel Efficiency software uses FDM data for comprehensive aerodynamic analysis and to measure the compliance of fuel efficiency initiatives. FDM data can also be used to draw the lateral and vertical flight paths of one or more executed flights.

To help quantify potential savings, the Aviaso/Fuel Efficiency software includes a 'savings calculator'. It calculates the fuel savings for each initiative an airline wants to implement, based on a current baseline and savings targets.

Aviaso/Fuel Efficiency can also monitor the progress of all the initiatives put into practice and identify how they are performing against targets. "We strongly believe that airlines have to measure in order to manage their fuel programmes," says Christen. "At the end

of the day the airlines have one goal, to save on their fuel costs. We can show them day-by-day and flight-by-flight how they are doing."

The final function of the software is to clearly communicate and present the fuel saving data and analyses. "In Aviaso's experience, improvements in fuel efficiency typically require procedural changes within an airline, and effective communication is a crucial factor in making these happen," says Christen. "Our software communicates fuel saving potential, targets, and the current state of the fuel efficiency programme to the various stakeholders in formats that are tailored to them. These include dashboards, bulletins and news.

The dashboards can show graphs, text and any kind of Key Performance Indicator (KPI)."

Aviaso Fuel/Efficiency has open interfaces that allow it to work with other Aviaso or third-party software. It can upload data to flight briefing packages to give flight crews access to route-specific fuel information. "The goal of the flight briefing function is to provide crews with more information relevant to their flights, since this will typically lead to more informed decisions and improvements in fuel efficiency," says Christen. The Fuel/Efficiency software can also be used in combination with Aviaso's EU ETS reporting module, and integrate with an airline's IT portal or intranet.

Aviaso Fuel/Efficiency can be accessed through any common web browsers. The software can be hosted remotely at the Aviaso data centre, or at an airline's own data centre. Depending on the complexity of an airline's IT systems, data integration with the Aviaso software will take several months, although initial analysis results can be available in about a month after

The OSyS visium fuel management solution is used by 14 airlines. One module of the system is Lost Opportunity, which highlights instances where expected fuel saving goals have not been reached.

about the first month.

Aviaso operates a subscription pricing policy with charges based on the number of aircraft. If there is airline interest, Aviaso is also able to provide fuel efficiency consultancy linked to the use of its software.

OSyS

Optimised Systems and Solutions' (OSyS) visiumFUEL™ fuel management solution was first deployed in 2009 and is now used by 14 airlines.

There are two parts to OSyS's fuel management services. "The visiumFUEL™ software is one part of the provision, but we can also offer experienced consultancy," says Simon Mayes, senior consultant at OSyS. "The main functions of the software are to combine, validate and present data relating to fuel use. Before setting up the software we examine the airline's operation and procedures to identify potential fuel saving opportunities."

The first function of the visiumFUEL™ software is to import data from multiple airline systems into a single data warehouse. "There are up to 12 main sources from which data are exported, including flight operations, flight planning, flight data management and engineering systems," says Mayes. "Different airlines have different combinations of software vendors. Data formats and quality also vary. It can be quite daunting for airline fuel managers to access data from the various systems, especially if they do not have an IT background. OSyS can establish data exports for them. We work with airline IT departments or third-party software vendors to set up regular data exports. Following an initial configuration the data transfer process is automated.

"There are several processes to identify erroneous data," explains Mayes. "These include cross-checking, when the same information is available in multiple fields. visiumFUEL™ applies a confidence rating to the collected data. Rather than

excluding errors, they are highlighted so that relevant groups or departments can fully understand the cause."

VisiumFUEL™ presents the validated data in appropriate formats for key user groups. "OSyS has an established pedigree in presenting data, due to its background in engine health monitoring (EHM)," claims Mayes. "The presentation style is dashboard-based, and usually displays trends through charts. Users can sign in to the system and access data that are customised to their particular group or department. For finance there might be a focus on monetary savings; for pilots, time savings; and for ground operations, fuel volumes consumed. Airlines can use the dashboard reports to justify a fuel saving initiative, and, once it has been put into action, measure its compliance against a set target. OSyS refers to this as initiative management. Along with pre-defined reports, user-defined parameters can also be developed that are specific to an airline's operation. "The system allows an unlimited number of reports to be created," claims Mayes.

There is a criterion in visiumFUEL™ called Lost Opportunity, that highlights any instances in which expected fuel-saving goals have not been reached.

In addition to the analysis and reporting tools in the visiumFUEL™ software, OSyS representatives work collaboratively with airlines to identify potential fuel saving initiatives for the year ahead. They might also analyse data on a consultancy basis. "Our service is more than just software provision," claims Mayes. "We have expert staff with a lot of airline experience. It is effectively like having another fuel manager alongside the airline employee." Limited consultancy is offered as part of the standard product. Extra consultancy can be provided at additional cost.

The visiumFUEL™ software is remotely hosted and accessed through a web browser. The amount of time required for software integration varies with the complexity of an airline.

"The speed of implementation has increased rapidly, because we have gained experience with the main third-party airline software," says Mayes. "In many cases the return on investment is accelerated because we can help airlines to establish new fuel saving strategies before set-up is complete."

The cost structure of OSyS's visiumFUEL™ service is flexible, and can vary depending on the airline department running the fuel management programme. "The IT department might want to be charged on a quarterly or yearly basis, while operations and engineering might prefer to be charged on a flight-hour basis," explains Mayes. The extent of charges is generally related to the number of flights operated and data that are generated.

Mayes believes that OSyS's position as part of the Rolls-Royce group brings added value to its visiumFUEL™ product. "OSyS is well backed by Rolls-Royce with its strategy of working more closely with airlines through growing areas of data acquisition," he says. "OSyS is in the process of integrating visiumFUEL™ into a package of services that also includes EHM and component reliability. The company believes this will help customers optimise maintenance and operational efficiencies."

GE Aviation

In 2009 GE Aviation acquired BMB Fuel Consulting and its fuel management software. This was incorporated under the GE Fuel and Carbon Solutions banner. It has more recently been included as part of the GE Flight Efficiency Services (FES) portfolio.

"The FES Fuel Management product includes a data-driven consultancy service, in addition to a fuel management software solution," explains Andrew Jones, regional programme manager at GE Aviation, Flight Efficiency Services. These are designed to help airlines identify potential fuel saving strategies, support implementation, and then measure their impact. Airlines can receive the combined software and consultancy or the software as a stand-alone service.

The fuel management software was first deployed under the GE Aviation Fuel Decision Support brand in 2010, and is now in operation with eight airlines.

The main functions of the software are to collect and validate customer data

from multiple sources before consolidating the data into a single, central system. There are then various reporting tools to track trends and performance.

"The unification of data is challenging," says Jones. "Our software is data agnostic. It does not matter what the airline system is, provided the format is appropriate for exporting. To get the best insight at the reporting stage the aim should be to get as broad a set of data as possible. Actual flight data, flight planning and weight and balance systems are some of the usual sources. ACARS is also a rich source for some parameters." Weather data can be included if GE's flight analytics data module is selected.

The GE Fuel Management software includes various checks for data errors. One example includes cross-checking. "A record might be considered erroneous if it does not match over multiple sources," explains Jones. "The data set that is used for reporting is cleansed of all errors, but we never delete a data record. Any erroneous data is stored in a separate data set and fed back to the airline for investigation of the cause and record correction."

The monitoring functions within the GE Fuel Management software can reflect changes in fuel efficiency performance in different ways, including dashboard and report formats. The software tailors these reporting tools to specific users. "It is about providing the right information in

the right format," says Jones. "At executive level the user will want to see high level KPIs, while the fuel management team will require more granular detail. This might be as specific as individual flight events." The software melds a number of standard reports, with the ability for an airline to create its own customised versions.

When consultancy is included as part of the service, GE will analyse an airline's existing fuel use and procedures before helping to identify the most suitable fuel saving strategies. "We have personnel with the experience to establish operational targets for each initiative," explains Jones. We can then quantify the impact of each strategy against these targets.

"The Fuel Management software is delivered as a hosted solution under the 'software as a service' model and is accessed via a GE portal through a web-browser. We refer to the integration process as on-boarding," continues Jones. "Once an airline's systems have been mapped, it usually takes 30-60 days to go through the on-boarding process. We want to limit the impact on operations as much as possible, so most of the integration work is performed by GE. The integration phase continues to be optimised and our team has a great deal of experience with the major operational software systems."

There are several pricing models for GE's Fuel Management solution. When

consultancy is included, the airline usually pays a share of the savings realised by introducing the recommended fuel-saving techniques. "This is structured around established targets and has the benefit of avoiding any up-front capital expenditure," explains Jones. When the software is selected as a standalone product, customers are charged a subscription fee based on the complexity of the data. This might vary with fleet size, fleet mix and number of data sources used.

Jones believes the combination of data integration and analysis tools with the GE team's fuel efficiency and change management expertise is a differentiator. GE Aviation has recently brought four separate components under its Flight Efficiency Services portfolio. Along with the fuel management software this includes flight data analytics, navigation services and fleet synchronisation. "The fuel management service can be delivered as part of an overall package that provides increasingly sophisticated analytical information and operational insight," says Jones.

ETS Aviation

ETS Aviation's Aviation FuelSaver™ product has been in operation for 12 months and is in use with 11 airlines. "Our customers range from multinational operators, such as the TUI Travel Group, to turboprop operators like SkyWork Airlines in Switzerland and low-cost carriers like Tiger Airways in Singapore and Australia, says Paulo Aguiar, business development manager at ETS Aviation.

The Aviation FuelSaver™ solution includes a consultancy service and software product. The software and consultancy can be taken separately or together. "We recommend taking the combined package," says Aguiar. "Identifying potential savings is the easy part. The key is having the capability to accurately track, monitor and report them - and that is where our team adds real value."

Aguiar believes that the key selling points of Aviation FuelSaver™ are its functionality, simplicity and value for money.

The Aviation FuelSaver™ service, including consultancy, involves a three-stage process. The first step consists of an assessment of an airline's current operating procedures and fuel saving

ETS Aviation's FuelSaver solution includes software and consultancy services. Airlines can use the software to monitor the impact of fuel saving techniques.

initiatives by ETS consultants. The next step involves establishing benchmarks and agreeing procedural changes to help improve fuel efficiency. At the same time ETS will integrate its Aviation FuelSaver™ software with the necessary airline IT systems.

In the final stage of the process, airlines use the software to measure, monitor, report and forecast the impact of fuel saving strategies.

The main functions of the Aviation FuelSaver™ software are collecting and validating data from multiple airline systems, and providing analysis and reporting tools to monitor fuel saving initiatives.

"Aviation FuelSaver™ processes data extracted from a range of flight planning and operating systems," says Aguiar. "These include flight planning, flight monitoring, departure control, ACARS, fuel accounting/inventory, tech log and other EFB systems." Data from more than 90 parameters are processed for every flight. Information from multiple sources is imported into a single, dedicated, Aviation FuelSaver™ database.

"We establish an independent, secure database for each customer, which is hosted on ETS Aviation servers," explains Aguiar. "A key part of the set-up is to ensure that all the data feeds from our customer's operational systems are automated."

A number of quality checks are performed before the cleansed data are presented to users. "During this process individual parameters are validated against defined limits," explains Aguiar.

The Aviation FuelSaver™ software provides a number of different ways to analyse the data using charts and graphics. "The software has over 1,000 different statistical calculations," claims Aguiar. The data can be presented to provide a high level overview of the whole operation or as a precise report by 'drilling down' to the detail of an individual flight. Users can set up any number of customised charts and graphical analyses specific to their own operation or fuel saving initiatives. Having all the data in a single place enables airline management to test ideas and make accurate assumptions of the potential versus actual value of any existing procedure or new initiative."

Data presentation in Aviation FuelSaver™ is broken down into the different phases of flight. Each fuel saving strategy can be monitored individually and compared with alternative initiatives. "A key strength is the pilot interface, which allows flight crew to interact with Aviation FuelSaver™ via their iPads or handheld devices," claims Aguiar.

The Aviation FuelSaver™ software is web-based. "The system is software as a service (SaaS)," says Aguiar. "Customers do not need to install any programmes, ensuring minimal IT investment. It usually takes four to eight weeks to get a new airline up and running. We work to make implementation as smooth as possible and to minimise costs and demands on an airline's internal resources. That means providing IT and data management support alongside our fuel saving expertise."

The charging structure aims to appeal to operators of all sizes. "We charge an annual subscription fee that includes support from our team of fuel saving experts, a secure database with 24/7 access and full IT support," explains Aguiar. "The size of the fee depends on the size of an operation. This aims to give smaller airlines access to software and expertise previously only within the reach of large operators."

Aviation FuelSaver™ can interact with other business intelligence modules by providing them with a data feed. ETS Aviation has a common portal that allows customers to access its emissions data management system, Aviation Footprinter™ and its air passenger duty (APD) monitoring system, Aviation PassengerDuty™, alongside Aviation FuelSaver™.

Smart4Aviation

Smart4Aviation has developed a suite of aviation software products made up of more than 20 different modules in areas that include flight operations and flight briefing. In partnership with TFM Aviation, it has developed a fuel management software solution called Smart Fuel Manager. This is currently under evaluation with several airlines.

In partnership with TFM, Smart4Aviation has developed both the Smart Fuel Manager software and Smart Fuel Consulting service. These products can be selected together, as part of a larger suite of operations services, or individually. If an airline adopts the Smart Fuel Consulting service alongside the Smart Fuel Manager, software users are guided through a three-stage programme.

The TFM and Smart4Aviation team is experienced in airline fuel management and operational efficiency. During stage 1 the team assesses operating procedures and fuel saving practices.

During stage 2 Smart4Aviation assists the airline in identifying a strategy to improve fuel savings and helps implement these changes. It is at this stage that the implementation and integration of Smart Fuel Manager takes place.

Stage 3 is a post-implementation assessment to evaluate progress.

"The Smart Fuel Manager software has back-end and user functions," explains Michael Lewis, CEO at Smart4Aviation Technologies. The back-end functions include data collection and validation, while the user functions allow airline personnel to measure and communicate the performance of fuel saving strategies. "The software can act as a standalone intelligence tool, or be connected to other software modules including briefing systems," adds Lewis.

"Data are collected from all relevant operational systems and integrated into a common data model," says Lewis. Flight planning, ACARS, reservation, and

digital flight data recorder (DFDR) systems are some of those from which information is exported.

Smart Fuel Manager performs validation checks or inspections on the collected data. "The software detects any inappropriate data," says Lewis. "It will interrogate information to see if it is realistic and mark any potential errors for the appropriate department to investigate."

The performance of initiatives can be monitored with charts, graphs and reports. Some of these are interactive, while others are static. "Smart Fuel Manager has about 50 built-in static reports and 50 dashboards," explains Lewis. "The dashboards contain charts and graphs, some of which are interactive. The main KPIs can be monitored in the dashboard views. There is also the flexibility for airlines to create their own custom reports and dashboards.

"Smart Fuel Manager takes more external factors into account than competing software solutions," claims Lewis. "Fuel management reports may be looked at by people who do not fully understand all of the variables influencing fuel usage. This may lead to inaccurate conclusions about the effectiveness of a particular fuel saving strategy. It is important to try and bridge this knowledge gap. With some fuel management software it is difficult to determine if fuel burn fluctuations are the result of controllable internal initiatives or external factors. We try and provide more contextual information by collecting as many causal data factors as possible."

This includes weather and notices to airmen (NOTAMs). NOTAMs are filed by local aviation authorities and include information about potential issues or hazards either en route or at destination. These might include: closed runways, out-of-service navigation aids, extra holding requirements due to airspace congestion, and other interruptions in airspace. "We understand how to integrate NOTAM information because of our experience in developing a flight briefing software module," explains Lewis. "Smart Fuel Manager can correlate NOTAM and en-route weather information with fuel performance to add extra context to fuel-usage statistics.

Smart Fuel Manager can work with other operations modules in Smart4Aviation's Smart Portal. "This is a one-stop-shop for flight and cabin crews to brief prior to flight," explains Lewis. The availability of historic fuel statistics can help pilots make more informed fuel upload decisions.

"If customers purchase Smart4Aviation's Communication and Alerting module alongside Smart Fuel Manager they can catch issues at the flight-planning stage before fuel is loaded on the aircraft," claims Lewis. "For example, the software might detect that an unnecessary alternate airport has been included in the flight plan. It can alert the appropriate personnel, who might be able to change the alternate to a closer airport, thereby reducing the required fuel load. One way of alerting the flight crew to such issues is via an ACARS message."

Timescales for initial integration between airline data sources and Smart Fuel Manger will vary according to the complexity of the initiatives an airline wants to monitor. "Software integration is a core competency because Smart4 started as an integration company," says

Lewis. "We have worked with most main operations software suppliers and are familiar with how to interface with them." Integration of the software generally takes one to two months. A stepped or phased integration can be applied."

Smart Fuel Manager is accessed through a web browser and can be hosted on an airline's own server or remotely. The cost structure is generally dependent on fleet size.

Smart Fuel Manager system can interact with other third-party business intelligence tools.

Airline Experience

A number of airlines representing a broad range of business models and aircraft fleets were asked to discuss their experiences of third-party fuel management software systems.

Condor

Condor has been using the Aviaso/Fuel Efficiency software for over two years. "One of the real strengths of the software is the level of automation with which it collects, validates and presents data," says Lumnitzer. "It would be possible to manage and analyse the data in Excel, but this would takes weeks. As an airline fuel manager I need to concentrate on monitoring the data. I do not want to spend an excessive amount of time cross-checking data for errors every month and manually processing it in Excel files. The Aviaso Fuel/Efficiency software is really a process optimisation tool.

"Aviaso Fuel/Efficiency can quantify the potential of a fuel saving initiative and track those in use very accurately," continues Lumnitzer. "The ability to integrate the Aviaso software with other airline systems is another strength. We have integrated the dashboard on our intranet so that different departments and personnel can monitor the performance of fuel saving initiatives. We also have an interface between the Fuel Efficiency software and our flight briefing system. This means that when a pilot makes a final fuel upload decision, that pilot will have access to historic fuel use statistics for the city-pair being operated. This allows pilots to move away from

subjective, experience-based decisions to objective, data-based decisions on fuel upload. This can lead to less fuel being uploaded and burned."

Thomas Cook Airlines Belgium

The Belgian arm of Thomas Cook Airlines has been using the Aviaso/Fuel Efficiency product since June 2011. "We selected the Aviaso software because of its user customisation options, the incorporation of FDM data and the retained data quality," says Carl-Philippe Combes, safety manager at Thomas Cook Airlines Belgium. "The facility to monitor initiatives, the continuous development of the software and Aviaso's customer-driven approach were also crucial.

"The Aviaso software takes data from our FDM, crewing and flight planning systems," adds Combes.

Virgin Atlantic Airways

Virgin Atlantic is currently rolling out OSyS's visiumFUEL™ software.

"We have been running a fuel efficiency programme since 2005," says Claire Lambert, fuel-efficiency manager at Virgin Atlantic.

"Initially we measured the performance of fuel saving initiatives using Excel. We have used various methods since then, and have recently migrated from a business objects database to OSyS.

"The main reason we chose visiumFUEL™ is that it enables us to bring various data sources together that were previously separate," continues Lambert. "This means we can spend less time manipulating data and more time analysing it. One of the initiatives we can

now measure is reduced engine taxi."

Virgin Atlantic uses the visiumFUEL™ software to identify the potential of new fuel saving strategies, as well as for measuring existing initiatives. Data are collected from the airline's scheduling, flight-planning and engineering systems.

The airline also uses the consultancy option within the visiumFUEL™ service.

United Airlines

United Airlines also uses OSyS's visiumFUEL™ software to measure its fuel savings initiatives.

"We chose the OSyS software following a vendor selection process," explains Captain Joel Booth, managing director for fuel efficiency at United. "This process included grading the software based on pricing, current market share, deployment levels at other carriers, and the vendor's level of aviation experience.

"At United we already had a well-established fuel savings programme prior to adopting the visiumFUEL™ solution," adds Booth. "The primary savings drivers for moving to the OSyS software were reducing the need for manual data extraction and report generation.

SkyWork Airlines

Swiss regional operator SkyWork Airlines implemented ETS Aviation's Aviation FuelSaver™ software in April 2013.

"Before Aviation FuelSaver™ we did not have any third-party software to help monitor fuel-saving initiatives," explains Stefano Mauro, deputy director of flight operations at SkyWork. "We were

already following best operational practices to save fuel whenever possible, but realised that an IT tool was needed to monitor and track the savings.

"We realised the great potential of ETS's Aviation FuelSaver™ module from the first demonstration of the software," continues Mauro. "We use it to monitor planned versus actual fuel usage. It allows us to carry out in-depth analysis of potential savings and provides an immediate monetary value to help prioritise strategies. The software is intuitive and easy to manage. One day of training is sufficient to provide an overview of the main functions."

SkyWork accesses the web-based Aviation FuelSaver™ software remotely. Initial software integration took about four weeks.

Air New Zealand

Air New Zealand was the launch customer for what is now GE's Fuel Management software. The carrier adopted the solution for its mainline jet fleet.

"The ability to integrate data from multiple disconnected sources along with the data-cleansing capability are both important," says Bob Fletcher, head of operations support at Air New Zealand. "Other key benefits include the self-serve data exploration and analysis capability, and the ability to export reports to other formats. The automatic generation of reports is also an important function. The fact that the software is remotely hosted means there is no need to install hardware to facilitate access."

"The BMB/GE team was able to work with us to develop a software tool that was tailored to meet our particular requirements," continues Fletcher. "They carried out the vast majority of the integration work. We worked with the BMB/GE team to plan and execute a structured development programme with several 'releases' of the software. Each of these added extra functionality. The BMB/GE team delivered two days of on-site training for the initial release, with follow-up user support." **AC**