

INFORMATION TECHNOLOGY

Decisive technology

The only efficient MRO organisation is one with 100% dispatch reliability, 100% fleet availability and a virtual warehouse which has only those items needed in the right time, in the right quantity and in the right condition

The aviation industry operates in a deregulated and market-driven environment. Volatile fuel prices, fare wars and economic crises are just a few of the economic challenges that affect the industry. Hence an airline needs to operate efficiently as a lean organisation to ensure maximum return on investment (ROI) with minimum impact from unanticipated exigencies.

It is in this context that Information Technology can play a decisive role in a company's ability to thrive. It is important to establish a comprehensive and rugged Information Technology solution that:

- Leverages on the leading technology;
- Seamlessly integrates all business processes to optimise the deliverables;
- Ensures lowest maintenance cost per passenger mile;
- Provides neat and tidy solutions with rich functionality;
- Overcomes functional and geographical borders;
- Improves speed of response to customer requirements and helps provide the highest quality of customer service;
- Provides the valuable Decision Support

System by providing precise data and powerful analysis tools;

- Plans and monitors costs and revenues at all levels; and
- Helps adherence to operational and regulatory safety standards.

One answer is Ramco's Maintenance Repair and Overhaul ERP Solution, designed exclusively for fleet operators and maintenance providers. It is a web-centric, browser-based solution built from the ground up using Ramco's patented Business Process Platform Delivery technology. It offers engineering, planning and scheduling, line, hangar and shop maintenance, materials, logistics, procurement, finance, third-party maintenance management and sales and HR modules plus corporate performance management and collaboration capabilities.

The solution also incorporates modern technologies such as built-in alerts and workflow, digital signature (e-signatures), fax/e-mail interfaces, mobile computing/WAP technologies, bar coding, user reporting tools, a graphical information display and integration with supporting computer systems and on-line catalogues.

This enables the customer to pick not only the technology option, but also the modules or business components that they require. Furthermore they can choose to integrate specific areas with existing systems or replace them with a component from Ramco. For example, Pinnacle Airlines, which operates 137 regional jets, recently selected the software and will add Ramco's Aviation Business Analytics Suite, integrating the whole package into its existing Sabre Flight Control Suite and other IT systems.

Virgin America, which has just started operations, is a Ramco customer that has outsourced the majority of its maintenance and material requirements, particularly to Lufthansa Technik under a Total Material Operations TMO contract. The Ramco system interfaces with a number of Virgin America's vendors' solutions through its Enterprise Collaboration and Application Integration (EAI) Tools.

At Virgin America, the Ramco Maintenance Repair and Overhaul Systems and these interfaces are used to gather information from various vendor systems. An example of such an interface between the Ramco system and a Virgin America vendor's solution, is a part request in Ramco being automatically routed to the vendor's Material System and availability/issue information being sent back to the Ramco System.

The system is based on the "Business Process Delivery System" framework, which allows for easy modification and development. Business can be specified and captured to create a repository.



Pinnacle Airlines uses the Ramco system to look after its 139 Bombardier CRJ200s that fly for Northwest. It will be extended to 16 CRJ900s that will fly for Delta (photo: Bombardier)

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Changes or new applications can be visualised completely and in their final form before development. This reduces surprises in later stages and takes much of the risk out the process. Changes can also be driven as needed by business with a fast response to meet new requirements. The impact of any changes can be measured and understood prior to execution. Consistent and predictable price estimates using industry standard methods, ensuring a predictable total cost of ownership.

It also meets the safety, traceability and reliability needs of the aviation community by focusing on seamless integration of Maintenance Repair and Overhaul EFP processes with other business processes or functions such as human resources, purchasing, inventory management, finance and third-party maintenance and sales.

The system comprises various functional areas such as Configuration, Maintenance Planning and Scheduling, Engineering, Hangar Maintenance,

Shop Maintenance, Line Maintenance, Technical/Flight Logs, Reliability, Inventory Control and Warehousing, Procurement, Warranty Management, Technical Records, Component Tracking, Financial and Human Resources.

The Configuration module provides the detailed definition of all maintainable entities in the organisation. Using the Configuration module, the primary information pertaining to various aircraft and all its traceable components can be identified and managed. It also facilitates configuration tracking by defining generic configurations for a set of aircraft and their components. Variations to the generic configuration can be tracked for each entity separately. Integration points are available to interface the system with real-time data such as ACARS or engine condition systems.

The Maintenance Planning module allows planners to track all maintenance events for various fleets. It also provides elaborate functionality to define compli-

ance requirements, work forecasts and visit package assembly.

The Engineering module allows registering, tracking and analysis of various types of modifications such as SBs, Ads and service letters. It also allows generation and tracking of engineering advice notes as well as engineering orders. The engineering module can be integrated with third-party content authoring and document management systems.

The Hangar Maintenance module provides a complete solution for the hangar staff, on production planning and scheduling, tracking labour and material requirements and usage. It automatically updates the planning system with information on deferrals and its accomplishments. The Hangar Maintenance module also provides facility for efficient labour tracking and electronic sign-offs.

As part of Line Maintenance, details of journey logs and technical logs can be recorded in the flight/technical log system. Journey data can either be

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manually entered or be interfaced with a flight tracking/following system. The line maintenance module facilitates recording of journey details such as snags/discrepancies, engine conditions and fuel logs. Line maintenance such as overnight checks, pre-flight checks and unscheduled removals of line replaceable units/components (LRUs) are performed in line repair stations. The module also provides for centralised/decentralised discrepancy management.

The Component management module provides extensive capability for component tracking and management, which includes tracking on-wing changes, component logistics, repair, overhaul and shop control. This component management module is tightly integrated with the configuration module, which dramatically improves data accuracy. Using this module the organisation can easily track all registered components, both on- and off-wing.

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ical analysis, in the form of reports and queries, of historical data on component performance to gauge the system reliability of an individual aircraft or the aircraft fleet. A host of analytical reports needed for regulatory compliance help in initiating corrective actions to the on-going compo-

nent or aircraft maintenance programme.

The Inventory module handles all warehouse transactions. The module supports multiple warehouses and provides instant visibility of parts across the organisation. Various inventory control features help in optimising the inventory. The inventory module is tightly integrated with the maintenance and finance modules, thus allowing advanced inventory planning and material cost analysis. The inventory module can be easily extended to enable advanced supply chain management.

The Procurement module provides comprehensive features for centralised, as well as decentralised purchasing activities. These include tracking purchase requests, processing vendor quotations against RFQs and managing the purchase orders till the receipt of goods. Repair orders manage service related purchases and are integrated with component service records. The procurement module also enables in generation and tracking of loan and rental orders.



Kaitlin
Daughter of Barry M.
Delta TechOps Technician, Atlanta

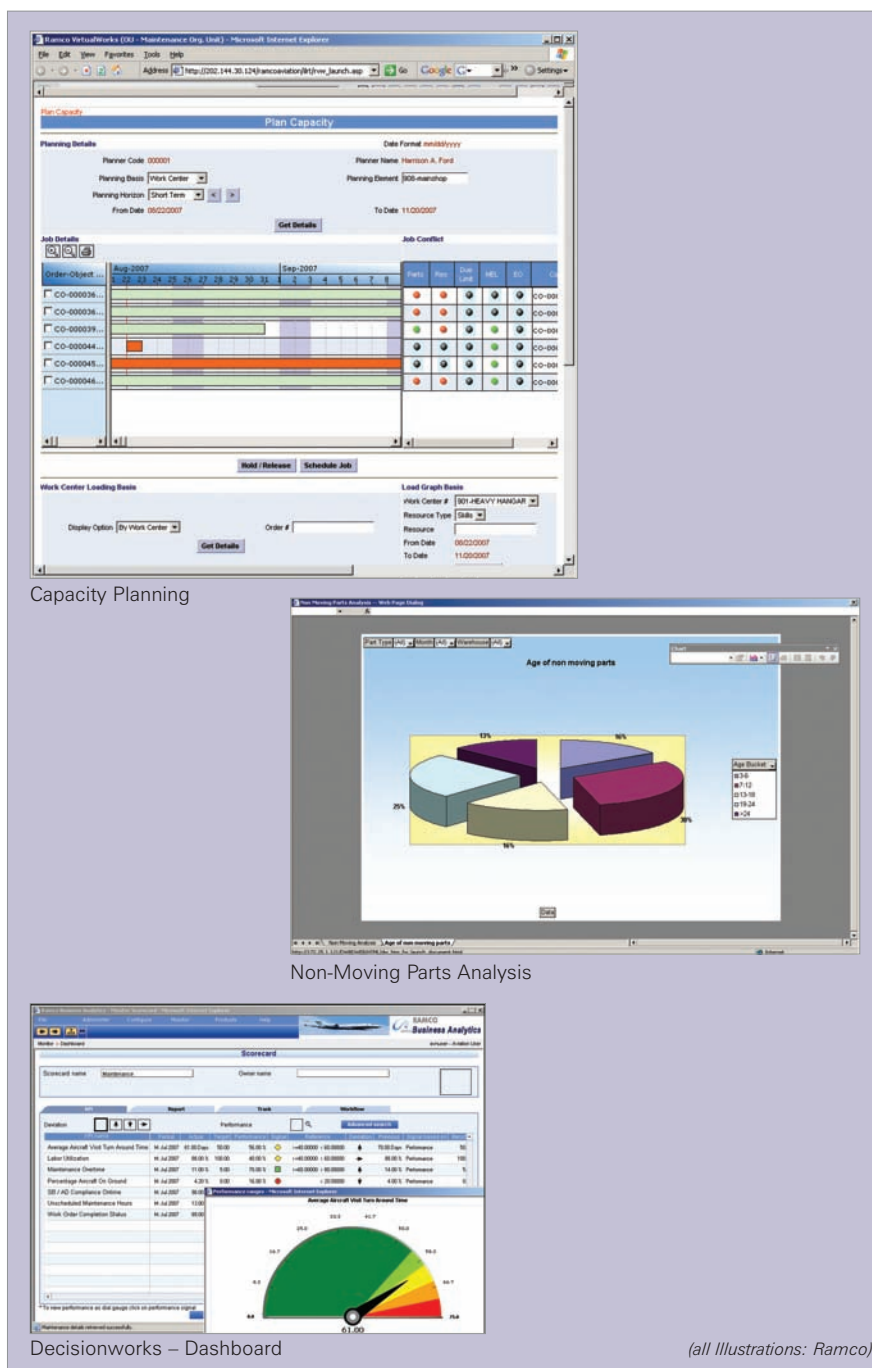
The Component Warranty management module allows tracking of various types of warranties, which includes warranties on new purchase, repairs, modifications and service.

The Sales module handles various processes pertaining to service providers who extend third-party maintenance to airline operators, which includes support for functions pertaining to pure MRO service providers as well as internal facilities offering maintenance services to other airline operators.

The Financial module provides comprehensive financial capabilities covering payables, receivables, fixed assets, general accounting and costing integrated with core aviation maintenance functions. The financial solution is capable of catering to the requirements of multi-national global enterprises as well as small organisations with local operations. It can track revenue and non-revenue flight hours, perform job order costing and track and value fixed assets as they are installed and removed on various aircraft. It can

also administer payables and receivables through seamless integration between financials, sales and execution functions.

The Human Resource module keeps track of employee skills, licenses, utilisation and efficiency. Time management functions in the system provide the much needed decision support for the planner to facilitate availability determination, shift assignments, and alternate employee locators, as well as to reschedule and redistribute work loads to ensure smooth completion of maintenance work at hangar floors and component shops.



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Ramco’s Maintenance Repair and Overhaul ERP has been constructed not only to insure aircraft airworthiness status and fleet dependability, but also to maintain inventory and purchasing at minimum levels. These objectives are met while achieving maximum productivity of manpower, materials, facilities, tools and equipment. Most importantly, the solution will give organisations the capability to increase operational performance while decreasing operational costs and ensuring regulatory compliance and safety.

Ramco customers include Virgin America, Caribbean Airlines, AeroLitoral (AeroMexico’s regional airline), JEJU Air, Indian Airlines, SpiceJet, Vueling, KD Avia, Air New Zealand’s Safe Air, Pinnacle Airlines, Alsalam Aircraft and TACA Regional Airlines. ■