



2011 MRO Middle East Executive Roundtable

February 16, 2011

The 2011 MRO Middle East Executive Roundtable is one of many roundtables hosted by Aviation Week throughout the world to help put a spotlight on areas of significant concern and interest to a broad range of aerospace and defense organizations. Aviation Week began holding roundtables in 2004 to bring together multiple stakeholders in a neutral environment to address issues critical to various sectors of the aerospace and defense community, with the goal of identifying actions to be taken by individuals or organizations that will benefit the enterprise as a whole.

As the Middle East is a significant region in the global MRO market, a roundtable was hosted as part of MRO Middle East 2011 to focus on areas of interest to the aviation maintenance community. The purpose of the February 1 roundtable held at the Dubai Airport Expo was to gather 40 Managers and Executives from the world of Aviation MRO to debate some of the key topics affecting this industry, and define actionable goals.

The roundtable was hosted by Eng. Hisham Nasser, Quality Assurance Director of Egyptair Maintenance and Engineering. Organizations participating in the roundtable were Air Arabia, AeroStrategy, Airblue Limited, BAE Systems, Bombardier, Egyptair Maintenance & Engineering, Etihad Airways, flydubai, GE Aviation, Jazeera Airways, Jordan Aircraft Maintenance Limited – JorAMCo, Kuwait Airways, Lufthansa Technical Training, MASCO, MASCO MEA Airlines, MTU Aero Engines, National Aviation Services, Oman Air, Onurair, *Overhaul & Maintenance*, Pratt & Whitney, Royal Jordanian Airlines, South African Airways, TeamSAI, Turkish Technic and Wataniya Airways.

Roundtable participants were divided into four working groups that were challenged to respond to a set of questions that focused on the following topics:

1. What Makes a Good MRO/Operator Partnership?
2. The Cost of New Maintenance
3. Customized Maintenance Programs vs. A Common Approach
4. Strategies for Recovery

KEY FINDINGS:

- To form ideal partnerships between the airline and MRO, contracts have to be mutually beneficial in a “win-win” situation throughout the full workscope of the entire term. Satisfactory agreements must have the flexibility to handle unexpected changes or requirements, as well as terms to ensure ongoing competitiveness.

- Pooling of materials, manpower and capabilities is a key strategic solution to benefit the aviation industry in the Middle East. A prime example is the Arab Air Carriers Organization's (AACO) initiatives on various joint projects among their airline members. Combined with pooling for efficiencies, manpower costs can be optimized through multi-function positions, variable pay and right-sizing.
- Although customization is preferred for maintenance on existing aircraft, there must be competency and organization to analyze information properly on receivables management (outputs and inputs).
- Process optimization and technology utilization on existing operations, such as purchasing, inventory control and maintenance planning, is critical to prosper and recover from the turbulent economy.

EXECUTIVE SUMMARY

MRO roundtables provide a 'think tank' environment that pulls top executives from all sectors of the industry to brainstorm solutions to today's biggest operational and financial challenges, as well as to discover ideas for innovation. At 2011's MRO Middle East roundtable, the most pressing issues discussed by this group of decision makers were determining the important factors of a good MRO/Operator partnership, and maximizing existing and available processes for strategies on recovery.

The roundtable provided a unique opportunity to open dialogue between industry peers, whether they are partners or competitors. As was stressed by Chairman Hisham Nasser of Egyptair M&E, the roundtable is a vital meeting to discuss key impacts on the Middle East aviation industry, such as recovery from the downturned economy, recent political uncertainties, increasing fleets and new aircraft deliveries into the region and the value of standardizing existing MRO policies and procedures.

The key findings are based on the details of topical conversations in the working groups, which addressed the following topics and relevant questions:

1: What makes a good MRO / Operator Partnership?

Is it about value for money, consistent performance, accurate paperwork? Is it about flexibility? Is it based on trust or strong communication? In reality, it's a combination of all of these and more. In this session, the table will put forward their ideas on what are the most important aspects of this partnership and identify in order of priority the key areas that make for a win-win long term relationship.

2: The Cost of New Maintenance

With all the new technology being utilized on airframes and engines and with new materials such as composites taking centre stage, how is this affecting the cost of maintenance for operators? It certainly appears to be quite expensive. Is this really the case or as, is put forward, are maintenance costs for newer generation engines, components and airframes actually lower due to the longer time on wing over which the maintenance cost is amortized? Also, are there ways to help operators better spread the cost of maintenance in today's cash-intensive environment?

3: Customized Maintenance Programs vs. A Common Approach

There are two schools of thought. One believes that standardizing maintenance programs helps eliminate waste, improve efficiencies and ultimately facilitates compliance with Regulators. But the other side believes that if you adapt your work packages to your operating environment, this flexibility and customization will bring significant cost benefits. In the Middle East, what is the tables view on this subject and also on the relationship between Regulator and MRO?

4: Strategies for Recovery

Operators, MROs and some specialists get together to thrash out every possible solution to help MROs and the operators (from a maintenance perspective) survive and prosper in these turbulent times? Looking at people, processes, products and beyond, each member brings to the table a sharing of ideas and knowledge and prioritizes solutions to benefit all.

WORK GROUP FINDINGS:

[** = indicates Key Finding by Group]

WHAT MAKES A GOOD MRO/OPERATOR PARTNERSHIP?

- The definition of an “ideal MRO/Operator relationship”
 - Contract between MRO and Airline has to cover all aspects of activity (mutually beneficial -> win-win situation) [12 votes] **
 - Important that it's concise and covers entire workscope of the entire term
 - Flexibility to handle unforeseen requirements or changes/to accommodate each other – key factor in a satisfactory contract [9 votes] **
 - Level of capabilities of the MRO covers most expected requirements
 - Support shops that support MRO has to be up to par as well
 - Subcontractors must already be in place so that the supply chain delivery is not any longer
 - Good supply chain delivered by MRO
 - No delays due to material handling
 - Clear line of communication between airline and MRO (daily)
 - Quality of work and consistency of work output (cost and delivery) [1 vote]
 - Mutual trust between MRO-airline – no overcharging or under paying
 - Good IT system to integrate data [2 votes]
 - Good turnaround time (TAT) and on-time delivery (OTD)
 - COLLABORATION
 - The contract must be FAIR

THE COST OF NEW MAINTENANCE

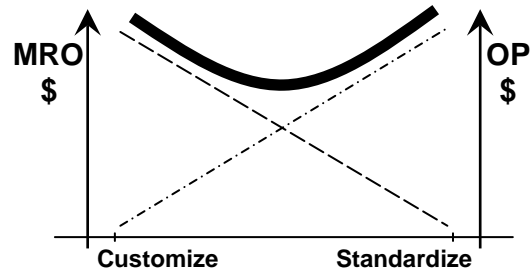
- How will industry participants address challenges of new technologies?
- Broke it down by industry participants – airlines, MROs, leasing companies, and independent MROs – what challenges each are going to face and solutions they can implement
- AIRLINES
 - Using the A380 maintenance as example – facilities have to be specially built = cost
 - Challenges:
 - Facilities
 - tooling impact
 - Human resources/training – significant investments to train and recruit
 - Spares inventory - what sort of initial provisioning will be needed?
 - IT systems/infrastructure – new e-docs to interpret/analyze/process [3 votes]
 - Maintaining airworthiness knowledge
 - Strategies:
 - Maintenance cost guarantee
 - Long-term service agreements (\$/efficiencies)
 - More outsourcing (reducing costs on training/personnel)
 - Contract terms to ensure ongoing competitiveness (checks) [5 votes]

- Investment in new facilities/systems
- Fewer, more integrated suppliers to receive broader offerings
- Phased inventory build-ups - OEMs have a lot of recommended inventory, but it would be better to acquire this in phases
- LEASING COMPANIES
 - Challenges:
 - Unsure of costs, scrap rates
 - How to set maintenance reserves
 - Unsure of residual value, so challenged to determine rates
 - Strategies:
 - Use diagnosis, prognostics to ensure longer time on wing (TOW), fewer unexpected engine removals (UER)
 - Use historical data for pricing
 - Lobby effectively for better regulatory outcomes (e.g. emissions)
- ENGINE OEMs
 - Challenges:
 - Product manufacturing costs
 - Design lives
 - Strategies
 - Guaranteed maintenance costs
 - Lower production costs [1 vote] – labor, location, materials, design life of life-limited parts (LLP), time on-wing (TOW), yield/scrap rates
 - Repair development for new materials (titanium aluminum (TiAl)), new designs (ex. blisks), new shapes, new structures (ex. composite fan cases)
 - Long-term service agreements
- MRO
 - Challenges [5 votes]
 - Higher maintenance costs
 - More training required
 - New infrastructure, systems
 - Access to data, documentation, repairs, tooling
 - Strategies
 - New relationship/partnerships with OEMs
- AIRFRAMERS [2 votes]
 - Challenges
 - Manage complex supply chain
 - Delivery risk
 - On-time development
 - Cash flow
 - Strategies
 - Focus more on aftermarket
 - Tools/processes for supply chain management
 - Vertical integration of their supply chain

CUSTOMIZED MAINTENANCE PROGRAMS vs. A COMMON APPROACH

Operator dollar cost vs. MRO dollar cost

- Operator: If everything is standardized, it is high cost for operator.
- MRO, if everything is customized with new tools and hours of analysis, then it is higher cost for MRO.



- Have maintenance programs (MP) approval from CAA
 1. Receivables (RCB) outputs and inputs management
 - New aircraft entry to service -> traditional
 - For new AC – follow standard MP as being recommended by OEM
 - For operating AC – customization is preferred
 1. MP approval from CAA [1 vote]
 2. CAA inspector training [3 votes]
 3. RCB information management
 4. Feedback from service provider
 5. Communication with MRO, OEM and other operators [2 votes]
 6. Competency and organization to analyze information [6 votes] **
 2. Competency and organization to analyze task cards feedback and service provider reports
 - Segregation between task cards which are performance-oriented from the others
 - Use E&M data to improve engine performance on wing
 - Sharing information between operators from same environment
 - Make use of health monitoring data and link with OEM
 - Communication between OEM, MRO and customer is critical!
 3. CAA training education involvement with the operator to establish the MP
 - Engine work package definitions/references
 - Feedback from Part145

STRATEGIES FOR RECOVERY

Considered various options that are already available for us

- Process (purchasing, inventory control, maintenance planning) optimization and utilization of technology [12 votes] **
- Focus on quality improvement as a recovery strategy [3 votes]
 - As MRO, focus on quality, instead of pricing. Dropping pricing is not a sustainable solution
- Pooling of material, manpower, capabilities (ex. AACO initiative) [11 votes] **
- Manpower cost optimization through multi-function positions, variable pay, right-sizing (combined with pooling to provide better efficiency) [5 votes]
- Convert fixed costs into variable costs – outsourcing of non-core operations [2 votes]
- Consignments from OEM and suppliers
- Enhance revenue through customized offerings

BACKGROUND INFORMATION:

Written by Elyse Moody and Helen Kang

With political instabilities and rising oil prices, the aviation industry in the Middle East is challenged with economic pressures on airlines and aircraft maintenance providers, whether they are internal departments or third parties.

Even with the surge of new aircraft deliveries into the region, airlines are focusing more on their core business of transportation and implementing cost-cutting measures in other areas. Outsourcing non-primary operations have provided maintenance and engineering (E&M) departments and MRO providers with more component work. Hence, new trends to package and customize services have developed in face of increased competition for contracts. As airline customers demand more comprehensive solutions at a competitive cost, they also demonstrate a need for new services from third-party suppliers. Component maintenance is a traditional MRO revenue base that continues to see growth, particularly for new types of value-added service agreements.

The Middle East, where investment activity remains vibrant, continue to see higher growth in passenger traffic – 18.3% (according to IATA), which is almost double the global rate of 10%. TeamSAI notes that while profits have been "pretty elusive" for aftermarket companies so far, "a lot of positive developments [have taken place] here, recognizing the growth that will exist." In the next 10 years the total aftermarket spend base in the region (including military and business aviation work as well as civil helicopter and air transport) is expected to grow substantially, with 5.3% annual increases driving the total from \$7 billion in 2010 to \$11.2 billion in 2019, according to AeroStrategy figures. Based on this growth pattern, MROs and airline maintenance organizations continue to grow capabilities based on rising demand. The volume of work is here, but much of it is divvied up among existing stakeholders.

Growth opportunities in the aviation aftermarket are continuing to expand in the Middle East via collaborative partnerships. Mubadala Aerospace is working its partnership via subsidiary Abu Dhabi Aircraft Technologies (ADAT) with GE and the Engine Alliance on engine maintenance, bringing the first network overhaul provider approved by the original equipment manufacturers (OEM) to the region. In addition to collaboration with industry partners, OEMs and MRO organizations in the Middle East continue to stress a focus on fleet performance.

In the next ten years of new aircraft deliveries, equipped with newer technologies, new spares requirements and new-generation engines, Sanad estimates \$7.5 billion to \$9 billion addition to the value of required spares, using today's \$1.5 million requirements per aircraft figure.

For the full article, please see *Aviation Week & Space Technology's* February 21, 2011 issue.