



MRO Middle East Executive Roundtable

March 24, 2010

The 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 2010 to focus on areas of interest to the maintenance community. The purpose of the February 28 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 business, and define actionable goals.

The roundtable was hosted by Iain Lachlan, Divisional SVP of Emirates Engineering and Ed Hazelwood, Editor-in-Chief Conferences at AVIATION WEEK.

Organizations participating in the roundtable were Abu Dhabi Aircraft Technologies, Aerostar Asset Management, Air Arabia, Air Blue Pakistan, Atlas Air, Bahrain Air, Bombardier Customer Services, Dolphin Air, Dublin Aerospace, EgyptAir M&E Company, Emirates Airlines, Emirates Engineering, Etihad Airways, Flydubai, GE Commercial Aviation Services, Goodrich, Jazeera Airways, Jordan Aircraft Maintenance Limited – JorAMCo, Martinair, MASCO MEA, MTU Aero Engines, National Aviation Services, Pratt & Whitney, Royal Jordanian Airlines, SAMA Airlines, Saudia Airlines, Singapore Airlines, Thomas Cook Airlines and United Airlines.

Roundtable participants were divided into four work groups that were challenged to respond to a set of questions that focused on the following topics: The Middle East Manpower Shuffle, The Right Part at the Right Time, On Wing Vs Off Wing Engine Maintenance, and Profitability Of MROs. Following the discussion, participants prioritized action items.

KEY FINDINGS:

- With many parts coming from outside the region, the customs process needs to be refined in order to have the right part at the right time. Considerations for effectively clearing these parts

across customs include parts identification, efficiency of papers clearance, industry benchmarks/ best practices and fast-track for AOGs (aircraft on ground).

- Competitive recruitment of qualified workers needs to be addressed through collaborative lobbying of the General Civil Aviation Authority (GCAA) to enhance license conversion processes and EASA/FAA/ICAO II recognition to open up overseas labor sources. Regional players also need to develop expat apprenticeship programs to grow the Middle East's own talented workforce pool.
- Communication between MRO, airlines and industry is vital to decrease the workforce competitive shuffle, by sharing market intelligence over external labor trends and avenues for recruitment.
- To ensure profitability of MROs, there should be an MRO alliance, working together with products/capital, procurement and sharing of resources and best practices.

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 2010's MRO Middle East roundtable, the most pressing issues discussed by this group of decision makers were customs processes, sharing best practices and working together, and GCAA licensing practices.

The roundtable provided a unique opportunity to open dialogue between industry peers, whether they are partners or competitors. As was stressed by Chairman Iain Lachlan, the value of the roundtable was in the caliber and experience of the people in attendance. The importance of having senior level delegates from airlines, MROs and suppliers coming together in a neutral environment to discuss vital topics cannot be overestimated.

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

1. The Middle East Manpower Shuffle

When are the MROs and airlines in the Middle East going to stop competing for the same staff? This poaching from colleagues is simply raising the cost of labor for everyone. What innovative means are being used or could be employed to tempt the GCC nationals into engineering? Are programs being developed to train these nationals and also to train the host of expatriate children who live in this region but very often leave once they finish school? Are there any other creative recruitment solutions being utilized to attract staff from previously untapped sources?

2. The Right Part At The Right Time

With so many parts being delivered from outside the region, how can the whole customs clearance process be handled more efficiently to ensure both operators and maintenance providers have the part they require just when needed? What is best practice in the industry, and are there lessons to be learned from other regions? Can the process be made less frustrating by understanding what is required and improving it?

3. On Wing Vs Off Wing Engine Maintenance

Operators continue to focus on off-wing maintenance in a bid to decrease costs. Yet on-wing maintenance can also provide great benefits. Which services traditionally provided off wing might be provided on wing? In the process, how can this help the environment? The result should be a summation of how engine maintenance can be optimized and in doing so be more 'green' in its approach.

4. Profitability Of MROs

In a market where there is overcapacity globally and those in heavy maintenance require a high volume of business but deliver at low labor rates, what can MROs do to compete in order to have a margin-positive business? Just how can MROs look after the bottom line?

WORK GROUP FINDINGS:

MIDDLE EAST MANPOWER SHUFFLE

1. Communication *[5 votes]*
 - Focus on more open communication between MROs, airlines and organizations across the industry
 - Focus on sourcing talent from outside the region
 - Less focus on regional shuffle
 - Share market intelligence over external labor trends/avenues for recruitment
 - Hold frequent open forums
2. GCAA Licensing Requirements *[10 votes]*
 - Collaborative lobbying of GCAA to enhance the license conversion processes
 - EASA / ICAO II / FAA recognition to open up overseas labour sources
 - Bridging courses *[1 vote]*
3. Promotion of Aviation Engineering Careers
 - Collaborative approach to brand-neutral promotion of aviation engineering as a career
 - Target the region's young demographic
 - Liaise with school guidance counsellors, provide promotional material/literature – DVDs/handouts
4. Academic Program Alignment with Industry Needs
 - To ensure employability and expectation management
5. Expat Apprenticeship Programmes *[9 votes]*
 - Grow own talent

THE RIGHT PART AT THE RIGHT TIME

1. Customs Process *[15 votes]*
 - a. parts identification
 - b. efficiency of papers clearance
 - c. industry benchmarks – best practices
 - d. fast-track for AOGs
 - Customs education & awareness programs
 - Common policy
 - Domestic and internal benchmarks
 - Web-based support functions
2. Domestic Capability
 - a. domestic vs. abroad
 - b. parts pooling
 - c. AOG services
 - Interest by airlines
 - Central data base on components
 - Information exchange (web?)
3. OEM strangle hold *[8 votes]*
 - Increase capability (MRO)
 - Domestic
 - Staffing?

- Vendor selection process
 - Ensure availability of CMM and freedom to share with MRO of choice

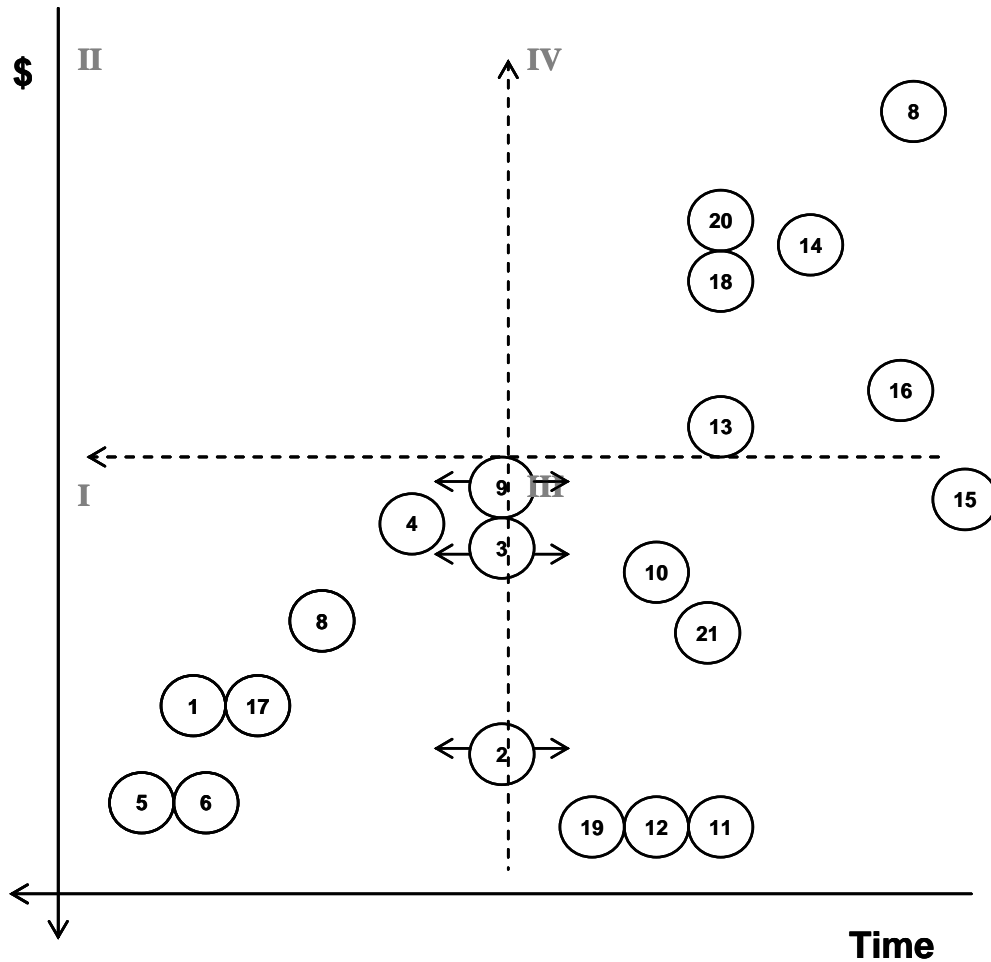
4. Buy or lease concept [5 votes]

- Airline interest increasing
- In combination “one-stop shop”
- Interest in learning about financial results
- Available offers today?

ON WING vs. OFF WING ENGINE MAINTENANCE

I. Engine monitoring

- International data



Airline

- 1) Smart work scope [2votes]
- 2) In-house/outsourc – Lowest replaceable unit (LRU)
- 3) On-wing MRO efforts
 - modules (pooling)
- 4) Modules vs. engine
 - work scope
 - change High Pressure Turbine Blades

- 5) Better planning, better prevention
 - 6) Health checks for station time
 - Smaller steps
- ** #7 was not in the original document/discussions.*

OEM

- 8) OEM and PMA Work
- 9) On-site repair at customers
- 10) MRO to expand scope
 - cost/benefit for airlines (Lowest Replaceable Units (LRU))
- 11) Streamline/order
 - Line maintenance
 - Base
- 12) Better communication to improve value
- 13) Pooling components
- 14) Develop repair with OEM
- 15) Understand the problem
 - root cause [1 vote]
 - repair

MRO

- 16) Center of excellence [4 votes]
- 17) Specific solution - way the engines are operating
- 18) \$/services
 - targeting results
 - what they can use
 - cost vs. benefits
- 19) Long-term partner
 - make sense both sides
- 20) Innovative repairs on-wing
- 21) Look at operating costs not just maintenance costs [2 votes]

PROFITABILITY OF MROs

- MRO working together [13 votes]
 - product / cap
 - resources sharing
 - procurement
 - best practices sharing
 - Value-based pricing [9 votes]
 - better planning
 - standardized processes
 - best practices
 - longer term agreements
 - Avoid duplication of costs between airlines and MROs (ie. insurance coverage) [1 vote]
- MRO Alliance
- Higher fix prices [5 votes]

BACKGROUND INFORMATION:

2010 Commercial and Military Market Forecasts

The Middle East's fast-expanding fleets make it a candidate for burgeoning aftermarket services. In its 2010 survey for *Overhaul & Maintenance*, aerospace consulting firm TeamSAI finds that the number of commercial aircraft in the Middle East will follow closely behind Eastern Europe, India and China, where fleets will double over the next decade.

The forecast predicts the Middle East—along with Eastern Europe, China, India, Latin America, the Caribbean, and Asia Pacific —will log higher MRO growth rates over the decade, with Africa, North America and Western Europe scoring the lowest.

On the military side, a joint venture soon opening in the United Arab Emirates aims to become a profitable Middle East hub for military aircraft MRO. The JV between Mubadala and Sikorsky will be based in Abu Dhabi and will support the UAE Armed Forces' fixed and rotary wing aircraft. It remains to be seen whether it can attract military MRO from other countries in the Middle East or North Africa.

A new AeroStrategy study on Middle East sustainment found that the largest sustainment budgets exist in Israel (\$2.308 billion), Egypt (\$1.103 billion) and the UAE (\$784 billion).

Fighter aircraft account for the biggest portion of both Israel's and Egypt's fleets, and countries in this region tend to complete fighter MRO in-house due to the work's perceived prestige and security concerns. The bulk of the largest collective fleets in the region are fighters, with F-16s leading the way by far with about 600 of the total 3,557 Middle Eastern military aircraft. Egypt flies more than 200 F-16A/B/C/Ds, the average age of which is 24 years, and Israel operates 78 F-16 A/Bs that average 29 years, 125 C/Ds that average 21 years, as well as some newer versions.

The rest of the top five fleets include the Northrop F-5, Boeing F-15, Boeing Apache AH-64, which each account for approximately 150 aircraft, and the Tornado rounding out fifth place, with less than 100 total aircraft, according to the AeroStrategy study.

If you take the 10 most populous fleets in the region, they account for 51% of the total fleet yet contribute 64% of the sustainment spend. The F-16 not surprisingly accounts for the biggest fleet MRO spend, with fighter/attack jets in total contributing more than 50% of the total annual Middle East military maintenance spend, with rotary wing aircraft making up roughly 25%.

The rotary wing fleet in the region is very fragmented, which means efficiencies probably could be gained through parts pooling or other cooperative sustainment activities. For Sikorsky Aerospace Services, this means that through the JV with Mubadala it can pitch such service solutions, as well as gain support opportunities for a broad range of helicopters.

For the full article on on-wing engine repairs, please see *Overhaul & Maintenance's* April 2010 issue.