

presented by

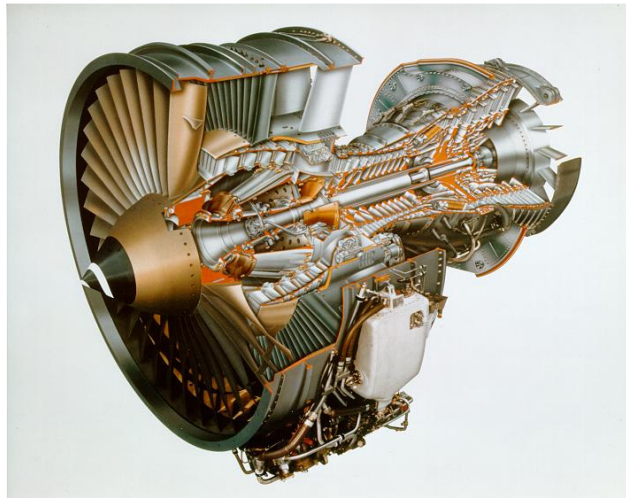
**CA Advisors**

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# Advanced Engine Maintenance Planning



**A TWO-DAY WORKSHOP**  
for planning and  
operations executives



# Advanced Engine Maintenance Planning Workshop

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## The critical role of planning

There are three primary functions involved in aircraft engine maintenance: planning, production, and engineering. In today's highly-competitive, constantly-changing environment, planning for engine maintenance offers a unique challenge.

If you handle maintenance in-house, accurate, intelligent planning ensures that you have the necessary resources – minimizing production delays and staying within budgets. If you outsource maintenance, quality planning not only leads to more precise forecasting and a better allocation of funds, but also provides critical data for the third-party maintenance facility.

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## Making planning a process

To achieve optimum results, engine maintenance planning must be approached as a process. Without proper planning, operators suffer from either costly shortages or an excess of resources. By incorporating the latest analytical techniques into a well-defined process, you can eliminate crucial miscalculations and respond to the growing challenges while achieving significant cost reductions.

Advanced Engine Maintenance Planning will cover all aspects of a state-of-the-art planning process. The workshop is being presented by CA Advisors, a leading consulting firm that specializes in the application of quantitative techniques to complex problems.

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## Applying advanced analytical tools and techniques

During the two-day workshop, you will explore how to apply a number of advanced analytical techniques for high-quality decision making. Topics will include an overview of the key elements of the planning process, discovering how improved planning can optimize your use of resources, and understanding how to use the powerful planning tools that are now available.

In addition, we will discuss how you can design, develop, and implement solutions that best meet your planning requirements, and will also demonstrate ways to incorporate decision-support system solutions.

## Workshop agenda...

# DAY ONE

This is a practical, *how-to* workshop. The material will be covered in an organized way so that you can immediately apply these techniques within your organization.

## INTRODUCTION

- The task of engine maintenance for air transportation operators
- The scope of engine maintenance
- Functional responsibilities for engine maintenance
- Planning considerations for engine maintenance

## MAINTENANCE PROGRAM

- The structure of modern turbofan engines
- The concept of Reliability-Centered Maintenance (RCM)
- Fundamentals for developing a turbofan engine maintenance program
- Details of applied maintenance programs

## SYSTEM FRAMEWORK

- Using information systems for engine maintenance
- System requirements for various areas of powerplant technical operations
- The information system structure
- Information system applications for maintenance planning

## PLANNING PROCESS

- The framework for engine maintenance
- Elements of the planning process
- How better planning can optimize resources
- Advanced concepts in maintenance planning

## ENGINE RELIABILITY ANALYSIS

- The principles of reliability analysis
- Methods for quantifying the reliability parameters
- How to incorporate the inherent reliability of engine types into the planning process
- Tools for systematic monitoring of reliability performance

## REMOVAL FORECASTING

- Why forecasting engine removals matters
- Various types of engine removals
- Four different ways to incorporate reliability parameters and operational data in removal forecasting
- Short-term versus long-term forecasting

# DAY TWO

## SPARE ENGINE INVENTORY MANAGEMENT

- Managing spare engine inventory
- Optimizing spare engine volume
- Multi-echelon inventory management for repairables
- How multi-echelon inventory model provides answers for spare engine planning

## LIFETIME OPTIMIZATION

- The dependency of engine lifetime on life-limited parts
- Merging the life limit considerations and engine reliability parameters
- Reducing the maintenance cost by better planning for life-limited parts
- How to plan for life-limited parts replacement

## SHOP CAPACITY ANALYSIS

- Overview of engine maintenance overhaul operations
- The conceptual framework for determining shop capacity
- A queuing model representing the key elements of shop operations
- Using the information provided by the model to perform capacity analysis and planning

## SHOP WORKLOAD SCHEDULING

- Scheduling considerations for shop operations
- Concerns for prioritizing the shop workload
- Scheduling techniques for the in-process workload
- Smooth production control through better scheduling

## MATERIALS MANAGEMENT

- The primary balance between turn-around times and inventory levels
- Coordinating production control and materials management by applying advanced analytical techniques
- A multi-level inventory model for management of engine parts
- Controlling inventory of parts internally and through manufacturers/suppliers

## DATA CONSIDERATION

- Illustrating the principles of decision-support system development for engine maintenance planning
- Data requirements for reliability analysis, removal forecasting, spare engine management, and life-limited parts planning
- Data sources and structured approach to data collection
- Implementing decision-support tools

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## Benefit from experienced practitioner

*An expert who combines extensive experience in engine maintenance operations with an understanding of advanced quantitative planning techniques will present the workshop.*



Mr. Jahan Alamzad, Managing Principal of CA Advisors and its leader of Airline and Aerospace Practice, brings three decades of experience in the aviation industry. A specialist in aviation MRO (maintenance, engineering, and overhaul), Mr. Alamzad has worked for United Airlines and American Airlines, and has consulted for numerous other aviation companies worldwide. He has also led a number of workshops on engine maintenance practices. He has also served as Director of Strategy and Analytics at PricewaterhouseCoopers, and as Director of Airline, Aerospace, and Operations Research Practice at Applied Decision Analysis, which was acquired by PricewaterhouseCoopers.

Mr. Alamzad holds a masters in management science and engineering from Stanford University, as well as a masters in industrial and systems engineering from the University of Southern California. He earned bachelor degrees in civil engineering and electrical engineering from the University of Illinois. He has served on the faculty of the Department of Aviation at San Jose State University, lecturing in aviation management. and has collaborated in publishing a textbook entitled *Airline Management*. He is currently serving on the faculty of Notre Dame de Namur University, School of Business and Management, lecturing in entrepreneurship and innovation management.

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## About CA Advisors



CA Advisors is a leading consulting firm that specializes in applying quantitative techniques to help clients improve their decision making and gain a competitive advantage. Throughout many years of professional work, we have combined state-of-the-art analytical methods with practical experience to consult on projects in a wide variety of areas, ranging from operations management and planning to decision analysis and R&D. To enhance the results, CA Advisors collaborates closely with clients, communicates clearly about problems and solutions, and provides scientifically-based tools that are easy to use.

CA Advisors has core expertise in air transportation, with a focus on powerplant maintenance. Our consulting services consist of a unique blend of academic expertise and practical hands-on experience in engine maintenance planning.

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