

# *CACRC- Main Committee Meeting*

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## ***Design Task Group***

***Status Report***

***May 2007***

***Amsterdam, Netherlands***

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# ***CACRC Design Task Group***

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## **Membership**

### Chair:

Eric Chesmar                      UAL

### Members:

William Arrant                      St-Gobain

Carlos Blohm                      LHT

Ken Griess                      Boeing

Mahyar Rahbarrad                      Boeing

Mark Eldredge                      Boeing

Arne Lewis                      Boeing

### Consultants:

Anapathur Ramesh                      Boeing

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## ***Goals***

- Develop a guide for the Design of Durable, Repairable and Maintainable Aircraft Composites.
  - Develop a "**design and repair focused**" Maintenance Life Cycle Cost Model (MLCC) for commercial aircraft composite components, substantiated with realistic data, and useable by OEM designers to justify the economics of implementing change recommendations identified in SAE AE-27 into both, future and existing designs.
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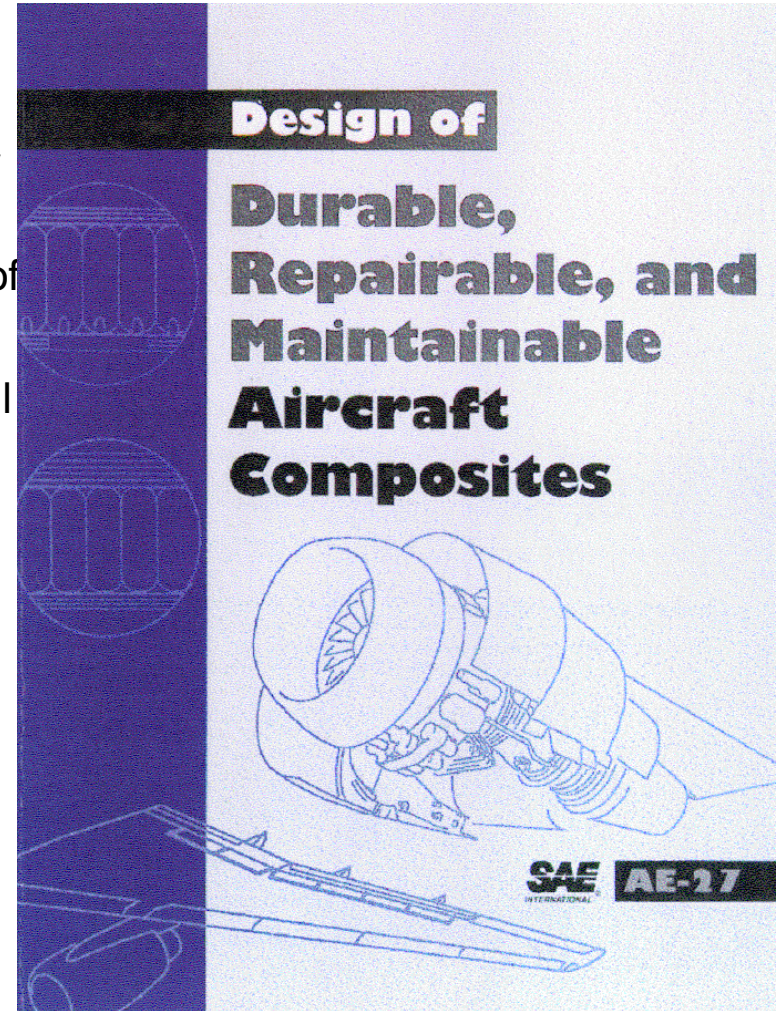
## ***Status of activities - AE-27: Design of Durable, Repairable and Maintainable Aircraft Composites***

For use by OEM and subcontractor designers, and by airlines for modification evaluation

Contains: Feedback from operators, current designs of aircraft composite and alternative design considerations, design case studies presenting a complete discussion on selected problems, successful design case studies.

### **Comments received so far and being worked on for implementation are:**

- Add Airline Repair Conditions Report **electronic version complete posted to SAE website**
- Add photos of damage examples **on hold**
- Add reference to Life Cycle Cost document **on hold**



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## ***Status of activities - SAE AE-27 Review Plan***

- Reissue is intended as an SAE AIR to provide advantage of electronic version and web access.
  - Existing and additional photos will be included in document.
  - Photos have been reviewed, additional ones are still requested.
  - Add more failure modes for solid laminate designs
  - Report “Structural Repair Manual Limitations in Commercial Airline Maintenance” produced by the TG Airline Inspection and Repair Conditions has been reissued electronically and will be included.
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## ***Status of recent activities - Maintenance Life Cycle Cost Model***

### **Software:**

- Distribution and copyright agreement approved by Boeing
  - Boeing will make a specified number of copies and provide them to SAE.
  - Waiting for delivery of written agreement to SAE
- Minor changes implemented in October 2006
- Reviewed changes with case studies

### Open actions:

- Final presentation and software release to be determined.
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## ***Status of activities - Maintenance Life Cycle Cost Model***

### ***Guidebook AIR 4316***

Completed items:

- Guidebook for MLCC of Aircraft Composite Structures has been revised in its final version and is ready for ballot.

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## ***Status of activities - Maintenance Life Cycle Cost Model***

### ***Guidebook AIR 4316***

Open actions:

- Default inputs from other manufacturers' aircraft model shall be implemented in the ballot process
  - Such as: Boeing LB, BAe, Bombardier, Embraer, Saab
  - Inputs needed are: Aircraft model, Fleet size, Flight time per flight, flights per year per aircraft, Cancellation cost, Delay cost, Air turnback cost, Diversion cost, Fuel burn factor, Out of service cost.



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## ***Future Plans***

- **AE-27: Design of Durable, Repairable and Maintainable Aircraft Composites**

Revise document with special focus to expand on:

- Feedback from operators / MROs on additional design problems and develop alternative design considerations.
  - New problem and successful design case studies using the MLCC model to demonstrate the economical impact.
  - Include photographs to illustrate problem areas.
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