

# Composite Materials Handbook-17

## Tutorial - CERTIFICATION

### February 28, 2011



#### OVERVIEW

The Composite Materials Handbook provides world-class engineering information, including databases, standards and guidelines for structural applications of composite materials. Its primary purpose is the standardization of engineering information for current and emerging composite materials. The Handbook, therefore, constitutes an overview of the field of composites engineering and technology in an area which is advancing and changing rapidly.

A six-hour tutorial session will be presented as part of the next CMH-17 meeting emphasizing Volume 3, Chapter 3. This chapter has been developed to provide general information on the regulatory and technical issues that need to be addressed when showing compliance with certification requirements relating to composite aircraft structure. To achieve aviation safety, certifying agencies require certification of design, production, maintenance and operation at different stages in the aircraft program development. Certification of design and production are to ensure the initial airworthiness of the aircraft. The compliance with maintenance requirements is necessary to ensure the continued airworthiness of the aircraft.

The tutorial provides an overview of the subjects of certification, regulations, design substantiation, and essentials of production and maintenance delivered by subject experts, with an emphasis on structural substantiation. Design substantiation covers many discussion points, including, for example, survivability, the importance of achieving repeatable results, and lightning protection requirements. The linkage among design, production, and maintenance functions in the context of unique material properties of composite materials has long been recognized as a critical part of safe and efficient certification. Developing an awareness of regulations and their role is another essential understanding for practitioners engaged in certifying aircraft.

The tutorial begins with general certification topics related to product development, continued airworthiness, product modification, and the need for a qualified workforce working in a team environment. This discussion is followed by a summary of regulations associated with attaining production approval, structural design and maintenance and repair. Two other segments of the tutorial include production and maintenance, addressing important topics such as production substantiation and implementation, quality control, and defect disposition requirements. The importance of various aspects of maintenance in order to maintain the same performance requirements as the base aircraft structure is presented.

## LOCATION

Embassy Suites Kansas City - Plaza  
220 West 43rd Street  
Kansas City, Missouri 4111  
Ph: 1-816-756-1720  
Fax: 1-816-756-3260

Hotel Room Rate: \$99 (plus tax)

**Call direct for reservations (1-816-756-1720)**

**Identify meeting as CMH**

**Cut-off date February 4, 2011**

## REGISTRATION

- **Registration Form** attached - return by February 4, 2011  
Please register early - class size limited to 50 students
- **Cost:**  
Certification Course: \$500  
(Includes registration for CMH-17 Working Group Meetings throughout the week, including luncheon on March 1)  
Payable in advance or at meeting registration desk  
Cash, Check or Credit Card (VISA, MasterCard, American Express)
- Tutorial registration starts at 7:15 a.m. on Monday, February 28.  
**Advance registration** will reduce registration time at meeting.
- **Mail** registration form to:  
Materials Sciences Corporation  
Attn: MJ Schnabel  
135 Rock Road  
Horsham, PA 19044  
**OR** Fax 1-215-542-8401  
**OR** e-mail: [mj@materials-sciences.com](mailto:mj@materials-sciences.com)

Additional information on the CMH-17 meeting is available at the CMH-17 web site (<http://www.cmh17.org>).

## QUESTIONS

Contact:

Rich Foedinger (1-215-542-8400; [foedinger@materials-sciences.com](mailto:foedinger@materials-sciences.com))

# CMH-17 TUTORIALS

## AGENDA - CERTIFICATION

FEBRUARY 28, 2011 - MONDAY  
8:00 A.M. TO 3:30 P.M.

	<b>Topic / Section</b>	<b>Syllabus</b>	<b>Instructor</b>
8:00 a.m. to 8:10 a.m.	<b>INTRODUCTION</b>	Background, organization, purpose and scope of Volume 3, Chapter 3.	<b>Larry Ilcewicz</b> FAA, Chief Scientific and Technical Advisor  <b>Charles Seaton</b> Principal Investigator for FAA composite materials education
8:10 a.m. to 8:50 a.m.	<b>CERTIFICATION</b>	This section will give the student a review of general certification topics related to product development, continued airworthiness, product modification, and workforce qualifications.	<b>Hank Offermann</b> FAA (retired)
8:50 a.m. to 9:25 a.m.	<b>REGULATIONS</b>	Students will be able to describe aviation regulations related to structure, design and construction. Regulations as related to production approval and continued airworthiness will be examined.	<b>Hank Offermann</b> FAA (retired)
9:40 a.m. to 10:00 a.m.	<b>PRODUCTION</b>	This section will acquaint the student with the most important aspects of composite materials fabrication, including production substantiation. Critical elements associated with manufacturing quality control, defect disposition requirements, and procedures required for modifications in the production process will be discussed.	<b>Larry Ilcewicz</b> FAA, Chief Scientific and Technical Advisor
10:00 a.m. to 10:15 a.m.		Break	

	Topic / Section	Syllabus	Instructor
10:15 a.m. to 11:45 a.m.	<b>DESIGN SUBSTANTIATION</b>	Students will gain understanding of the critical technical issues associated with composite design substantiation. Documentation will be described which is required and associated with designs and processes. Materials and adhesives qualification activities to support the control and reproducibility of manufactured composite materials to ensure adherence to type design will be addressed. Other topics will include aero-elastic stability, fire protection and flammability, lightning strike protection, and passenger survivability under aircraft impact conditions.	<b>Simon Waite</b> EASA, Materials/ Structures Specialist, Certification Directorate
11:45 p.m. to 12:15 p.m.	<b>DESIGN SUBSTANTIATION</b>	This section focuses on the effects of environmental exposure, how process and design considerations are important to bonded structure, the achievement of repeatable results, defect detection, and in-process conformity.	<b>Hank Offermann</b> FAA (retired)
12:15 p.m. to 1:30 p.m.		Lunch (Lunch not included in registration fee)	<b>Simon Waite</b> EASA, Materials/ Structures Specialist, Certification Directorate
1:30 p.m. to 2:30 p.m.	<b>DESIGN SUBSTANTIATION</b>	Students will understand the process of and issues associated with structural substantiation.	<b>Simon Waite</b> EASA, Materials/ Structures Specialist, Certification Directorate
2:30 p.m. To 3:30 p.m.	<b>MAINTENANCE</b>	Students will be able to describe why maintenance is essential to assuring continued airworthiness, and how substantiated repair designs and processes must meet the same performance requirements as the base aircraft structure. An overview of the importance of teamwork in proper composite materials maintenance including damage detection, and bonded and bolted repair processes. This section will conclude with a brief summary of where to access guidance and reports by the major regulatory bodies.	<b>Hank Offermann</b> FAA (retired)  <b>Charles Seaton</b> Principal Investigator for FAA composite materials education

**REGISTRATION FORM**

**COMPOSITE MATERIALS HANDBOOK  
(CMH-17) TUTORIAL - CERTIFICATION**

**28 February 2011, Kansas City, MO**

NAME: \_\_\_\_\_ (MS/MR/DR)

ORGANIZATION: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE/COUNTRY: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_ DSN: \_\_\_\_\_

FAX: \_\_\_\_\_ NAME PREFERENCE FOR BADGE: \_\_\_\_\_

EMAIL: \_\_\_\_\_

**PLEASE COMPLETE AND RETURN BY FEBRUARY 4, 2011 TO:**

Mrs. Mary Jane Schnabel (FAX: 215-542-8401 or e-mail to [mj@materials-sciences.com](mailto:mj@materials-sciences.com))  
Materials Sciences Corporation, 135 Rock Road, Horsham, PA 19044

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**Advance Registration** (signed receipt available at meeting; credit cards will be processed after you register in Atlanta)  
Please register early - class size limited to 50 students

<p><b><i>Please indicate if you will attend the luncheon on Tuesday, March 1, 2011</i></b> Yes <input type="checkbox"/>      No <input type="checkbox"/></p>
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**Registration Fee:**

**Certification: \$500**

Registration fee for CMH-17 Tutorials also includes registration for the Joint Composite Materials Handbook / NCAMP / AMS-P17 / ASTM D-30 Meetings (including luncheon on March 1) from February 28 through March 4, 2011 and access to the CMH-17 Members Web Site. Additional information on the CMH-17 meeting will be available at the CMH-17 web site (<http://www.cmh17.org>).

Method of Payment: \_\_\_\_\_ Check      \_\_\_\_\_ Credit Card

(VISA    MasterCard    American Express)

Please make checks payable to Materials Sciences Corporation.

Card Number: \_\_\_\_\_ Card Expiration Date: \_\_\_\_\_

Name of Cardholder: \_\_\_\_\_

\_\_\_\_\_  
Signature

Total Received: \$ \_\_\_\_\_

Date: \_\_\_\_\_

Received by: \_\_\_\_\_



## Embassy Suites Kansas City - Plaza

220 West 43rd Street, Kansas City, Missouri, United States 64111  
Tel: 1-816-756-1720 Fax: 1-816-756-3260

### Directions and Transportation

#### Directions to our Hotel

City Center Downtown

South on Main Street toward @ 12th Street, turn right onto W 43rd Street hotel is located on right hand side

From I-70 East or West Bound - Exit onto I-35 south bound. Exit #1B, 27th/Broadway (exit is on left side of interstate). Follow exit straight onto Broadway all the way to 43rd Street. Turn right onto 43rd Street, the hotel will be on the right.

From the North - Take I-35 to exit 1B, 27th/Broadway (exit on left side of interstate). Follow exit straight onto Broadway stay straight all the way to 43rd Street. Turn right on 43rd street, the hotel will be on the right.

From the South - Take I-35 to Mission Rd/Hwy. 69. Turn right on Mission Road. Turn left on 43rd Avenue. Stay in left lane until you see the Amoco Station then get in right lane. The road will split, the right lane is 43rd street, stay straight. Follow 43rd for 4 blocks, the hotel will be on your left.

From the Airport - Take I-29 South to 169 Hwy South Bound. Stay on 169 Hwy for several miles it will take you straight into the downtown area and the street will become Broadway. Stay south on Broadway all the way to 43rd Street. Turn right on 43rd Street. The hotel will be on your right

### Local Airports

#### ■ Kansas City International Airport

- Distance from hotel: 22 mi.
- Drive time: 25 min.

**Directions:** I-29 SOUTH TO I-35 SOUTH TO BROADWAY; TURN RIGHT ON 43RD STREET

Get turn by turn directions.

#### Transportation to and from the Airport

Type	Typical Minimum Charge
Taxi	33.00 USD

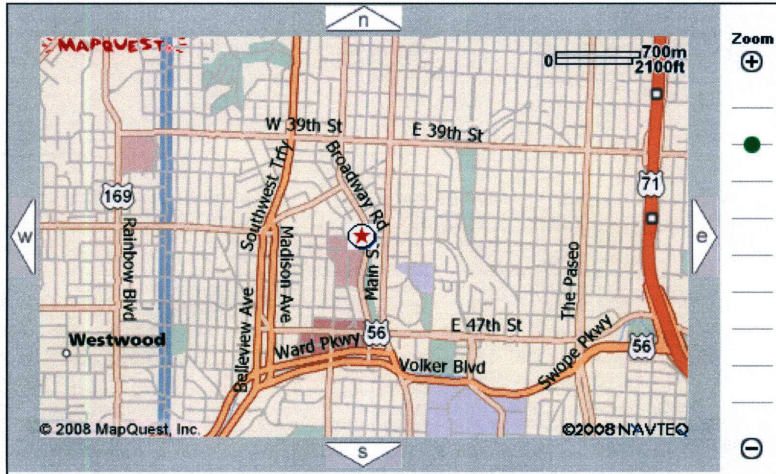
■ **Kansas City Downtown Airport**

- Distance from hotel: 10 mi.
- Drive time: 15 min.

**Directions:** I-69 south to I-35 south to Broadway- veer left take Broadway to 43rd street make a right turn at the light and hotel is located on the left hand side

Get turn by turn directions.

**Local Map**



**Note:** The map and directions are informational only. Please verify specific routes. The map and directions shown are provided as a guide for your convenience.

**Hotel Parking**

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Self Parking:	Call hotel for information
In/Out Privileges:	--
Secured:	Available
Covered:	Available

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