

Tooling Design and Materials Overview for Composite Manufacturing

February 29 – March 1, 2012
8:30 a.m. – 5:00 p.m.
Sheraton Park Hotel at the Anaheim Resort
1855 South Harbor Boulevard, Anaheim, CA 92802

To register contact Priscilla at Priscilla@sampe.org or +1.626.331.0616, ext. 610.

Day 1*

- **Composite manufacturing/tooling introduction**
 - Composite materials & processes
 - Test coupon considerations
 - Tool surface designations
- **Types of tools used in manufacturing**
 - Primary Tools: Layup molds, fixtures, jigs, etc.
 - Secondary Tools: Ply Kit Templates, locator jigs, etc.
 - Transportation cards & dollies
 - Automated Systems:
 - Ply Cutting Systems
 - Laser projectors
 - Robotic AFP & ATL technologies
- **Types of tools used for tool fabrication**
 - Master models, transfer tools, etc.
- **Tooling materials & properties**
 - Metals: Invar, steel, nickel, & aluminum
 - Composites: GFRP, CFRP, & FRE
 - Fiber and matrix selection
 - Fiber-form selection
 - Invar-faced composite molds
 - Model board materials
- **Day One - Summary, Wrap-up**

Day 2*

- **Tool laminate/layup design fundamentals**
- **Tool design standards:**
 - Part design considerations/manufacturability
 - Part configuration: complex vs. simple shapes
 - Part size vs. tool size
 - Weight considerations
 - Lightweight/low thermal mass designs
 - Integrating structure & minimizing substructure
 - Multi-piece tooling: split molds that do not leak
 - Part removal considerations
 - Lifting, transportation and storage considerations
 - Tool identification, tool codes, etc.
 - Tool/part index systems
 - Molded Index Features vs. Tooling Holes, Pins, & Bushings
- **Thermal profiling and tool categorization**
- **Day Two - Summary, Wrap-up**

*Presentation order subject to change.

Instructor: Louis C. (Lou) Dorworth has been working in the advanced composites industry since 1978. He has been associated with Abaris since its inception in 1983 and has been employed by Abaris Training since 1989. His background includes many years of education and experience in composite materials research & development, manufacturing engineering, material & process engineering, and tool design and fabrication. His aerospace composite background includes work on such programs as the Lear Fan 2100, Beechcraft Starship 1, B-2 bomber, C-17 transport, MD-11, Boeing 777, Airbus A-330/340, as well as many more projects and programs. In addition, Lou has been involved with a number of non-aerospace programs, ranging from wind blades to snowboards to marine vessels to submersibles.

Contact Priscilla Heredia at Priscilla@sampe.org or +1.626.331.0616, ext. 610 with any questions or to register.