



Thursday, October 13, 2011
Oak Ridge Chapter of ASM International's
National Involvement Night

“THE VACUUM HEAT TREATMENT OF TITANIUM ALLOYS FOR COMMERCIAL AIRFRAMES”

Robert Hill, Jr., ASM International Trustee

President, Solar Atmospheres of Western Pennsylvania

From a materials' point of view, the Boeing 787 Dreamliner is one of the most revolutionary leaps in the history of manufacturing. By designing the 787 airframe with 50% of its weight as composites, it precluded the fact that more titanium and higher strength, near beta alloys, must be utilized.

Fifteen percent of the 787's airframe is titanium. The five main areas where the largest concentration of titanium is used are: (1) Landing Gear (Ti 10-2-3), (2) Fittings (Ti 5553), (3) Floor Structure (Ti 6-4), (4) Extrusions (Ti 6-4), and (5) Nacelles (Ti 6-4).

For this discussion we will review basic vacuum and pyrometry technology. We will then relate this information to the critical heat treatment of airframe components. The talk will conclude highlighting some of the major pitfalls inherent within aerospace's antiquated titanium heat treating specifications.

Speaker's Bio

Robert Hill Jr. received a B.S. from Millersville University and a degree in Metallurgy from Spring Garden College. He has over 30 years of experience in heat treating. In 2000, Bob took on the responsibility of starting Solar Atmospheres' second plant in Hermitage, PA. Twelve vacuum furnaces are located there, including the world's largest, which is 36 feet long with a weight capacity of 150,000lbs. This 60,000 square foot facility primarily services titanium applications for aerospace, medical, and power generation arenas throughout the world. Bob has been a member of ASM since 1980 and has widely published and presented his work on vacuum technologies and vacuum heat treating. In 2000-2001, he chaired Philadelphia's Liberty Bell Chapter of ASM. Additionally, he co-chaired the 2003 and 2005 ASM Heat Treating Society Conference and Exposition. In 2009 Bob was bestowed International Titanium Association Achievement Award, and in 2010 was appointed to ASM International Board of Trustee's.

Registration (Guests Welcome!)

<http://www.discoveret.org/orcasm/events.html>

Cost: \$20 for dinner Season Pass: \$75

Students: Free if RSVP; \$5 if RSVP late

RSVP by noon on Wednesday October 12th

Contact: Melanie Kirkham

kirkhammj@ornl.gov 865-574-6538

Rothchild's Conference Center

8807 Kingston Pike

(865) 690-0103

Thursday, October 13th Schedule

5:30 pm– Social Hour

6:30 pm– Dinner

7:30 pm–Talk