Chicago Regional Chapter
ASM International

Sept. 8th, 2009
Tuesday
Joint meeting with
ASME

"Challenges in Wind Turbine Components"

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Abstract

The rapid expansion of wind generated electricity capacity in the United States presents large challenges to our manufacturing community at a time it is already reeling from the effects of the economic downturn and outsourcing. The prospect of participating in a growing, long term domestic market is very attractive to beleaguered metal working firms. Successful market entry will depend on understanding the problems of quality, size, and quantity.

Quality:
Wind turbine components typically have aircraft level tolerances on physical dimensions, material quality, metallurgical structure, and surface finish.

Size:
As Wind Turbines become larger so do the components. The typical wind turbine gear, for example, is over 10 times the mass of the typical automotive or aircraft gear. This makes them too large for the existing production lines, especially those associated with closed die forgings, gear cutting, and heat treating.

Quantity:
The Department of Energy "20% Wind by 2030" report projects a need for 7,000 large turbines (2.5 mW or larger) per year from 2016 thru 2016. At current prices this is a $30 billion a year market. This unit quantity represents less than a half day's automobile production and is far less than a year's worth of construction equipment. Successful producers will need to lose the "job shop" mind set and avoid the pitfalls of the "assembly line" world.

Failure to master these challenges can result in that $30 billion per year business being outsourced to our global competitors. Current wind turbines have less than 25% domestic content.

Biography

Charles D. Schultz has been active in the gear industry since 1971. A registered professional engineer in Wisconsin and Pennsylvania, Mr. Schultz has written for leading industry publications and presented a paper at the AGMA Fall Technical Meeting. In addition to writing a short book for gear novices "An Introduction to Gear Design", he will be presenting a paper on gearbox design for wind turbines at the 2009 AGMA Fall Technical Meeting in Indianapolis on September 15th. His work has included engineering over (500) custom

gearboxes, supervising a large industrial engineering department, managing a custom drive system division, designing heat treat equipment, conducting field service operations, writing a product catalog, supervising a sales and marketing department, cost estimating, and teaching gear and heat treat courses for co-workers and customers. His experience also includes a wide range of gear drives ranging from medical devices to bridge machinery, including metal processing equipment and wind turbine gearboxes.

Location:

NIU Naperville campus
1120 E. Diehl Rd.
Room:161 B
Naperville, IL 60563
Phone: (630) 577-9101

Directions:

From I-88, exit Naperville Road going south. Turn right onto Diehl Road. Turn left on Centre Point Circle and then left into the NIU parking lot. Parking is free; no permits are needed.

***** RSVP by Friday, Sept. 4th, 2009 *****

Pre-registration by Friday prior to meeting: $10. Registration at door: $15
Pre-registration for Students: Free. Registration at door for Students: $5
To make your reservation, please go to http://www.chicagoasm.org/