



## American Society of Mechanical Engineers - Fox Valley Section

### **Short Course - Mechanical Test Data**

**Presenter: Bill Shust**

**IIT Rice Campus, Wheaton, IL**

**Wednesday, April 18, 2007**

The April meeting is a two-hour short course on Mechanical testing. It will review time, frequency & amplitude domain methods for the mathematically challenged. It will help you answer the question, "I have outsourced a mechanical test; what do the results mean?"

This succinct review is offered for the busy engineer working inside or outside the lab. Many of the topics discussed have arisen again and again, both for new and seasoned engineers. Dynamic and structural test labs have common tests and analyses across industries (defense, transport, utilities, etc.). The course will examine the most common data analysis techniques used by labs everywhere.

#### Single Channel Investigations

- Time Domain to Amplitude Domain conversions (Histograms)
- Time Domain to Frequency Domain conversions (PSDs)
- Blacksmith's Explanation of FFT. (without the calculus)

#### Dual Channel Investigations

- Linear System? Non-linear?
- Gain & phase characteristics of Transfer Function

#### Results of Filtering Data

- ISO 2631, dBA weighting
- Lowpass noise removal
- Transducer effects

#### Applicable measurements:

- Vibration
- Forces
- Strain
- Deflection
- Noise
- Temperature
- Pressure

#### Case Studies

- Vibration Isolators
- Bucket Loader Strains
- Locomotive Vibration
- ISO Shipping Container Shock
- Coal Hauler Stresses

The course will help decipher these reports and make you a smarter test consumer. Learn the first four questions to ask of every test engineer, on every test.

Bill Shust, P.E., is President of Objective Engineers, Inc [www.objective-engineers.com](http://www.objective-engineers.com) and is a mechanical engineer with nearly two decades of test and analysis experience in railcar & highway truck ride/vibration and process machinery dynamics. He holds B.S. and M.S. degrees in Mechanical Engineering from Michigan Technological University. Mr. Shust has authored over 50 technical reports and articles, and is a member of the Fox Valley Section. His specialties involve problems in the railway and highway truck industries, as well as process machinery dynamics.

**LOCATION AND DIRECTIONS:**

Illinois Institute of Technology Rice campus  
201 East Loop Road  
Wheaton, Illinois 60187-8489  
[www.rice.iit.edu](http://www.rice.iit.edu)

**From I-88**(East-West Toll way), take the Naperville Road exit. At the traffic light, turn left onto Naperville Road and continue north for 1½ miles to Rt. 56/Butterfield Road. Turn right onto Rt. 56/Butterfield Road and proceed 1/4 mile to the first traffic light (East Loop Road). Turn left on to East Loop Road, (Big Bowl Restaurant and Phillip's 66 Gas station on the corners); the campus will be on your right about a block north of Butterfield Road.

**SCHEDULE:** 5:30 to 6:30PM Registration & Light Dinner, 6:30 PM Presentation

**DINNER:** A light dinner of sandwiches will be provided. Vegetarian available if requested at time of reservation.

**COST:** \$15.00 payable at the door, by check or cash.

**RESERVATIONS:**

Send e-mail to [mjm@packereng.com](mailto:mjm@packereng.com) with the subject 'ASME Meeting' and include your name, phone number, ASME membership number, company name, address and choice of entree. If you do not have e-mail access, call (630) 505-5722, and leave a message stating this is a reservation for the ASME Meeting April 18 and include the above information.

**DEADLINE:**

5 PM on Thursday, April 12, 2007. Please cancel if your plans change.

**Other Business**

**Election of Chapter Officers 2007-2008**

Enclosed in this newsletter is the recommended list of officers for the next ASME year. Please cast your votes and return the ballot after applying a stamp.

**Clean up of Your Email Addresses**

As most of you know, we have been sending most of our communications to you by email. We have reports that many of your email addresses are incorrect. This is due to change of jobs or email providers over the recent past. It is your responsibility to revise your email address in the ASME database. To do this you can E-mail the changes to [infocentral@asme.org](mailto:infocentral@asme.org); or call Information Central at 800-843-2763.