



## The American Society of Mechanical Engineers

### Chair's Letter

Another August has arrived and I start my second year as the ASME Philadelphia Section Chairman. Many of our programs last year were well attended; we hope this year's program will be interesting to section members.

In September we have a Trash to Steam plant tour in Conshohocken. Come out and see how trash is used to generate steam. In October Bartley Eckhardt will present a talk on forensic engineering. Accidents happen, often with legal consequences. Learn how engineers sort through accidents and their legal ramifications.

November will find us at Widener University staring through telescopes at the skies. Come out and see the skies first hand.

When January arrives,, so will a talk by Roy Blanchard on the latest technology in the railroad industry. Engines, cars and controls continually improve. Learn about some of them.

We will continue holding section meetings through the area. Dinners will be light meals at minimal or no cost. The current economic situation will not be an excuse to forego a meeting.

Once again we will have only one mailing of programs, all subsequent notifications will be by e-mail. Visit the section website for current information and activities.

Our senior director, Julie Bachmann, guided a successful program for new and young engineers to meet in a more social setting. This program will continue and we encourage more young engineers to try it. Visit the website or contact the senior director for activities and additional details.

As usual we are always looking for new ideas, suggestions, volunteers and board members. If there is a topic or idea you are interested in contact a board member. Even better, come to a board meeting and help implement the idea.

In all cases we encourage everyone to come out to a meeting, learn something new and meet old and new friends.

Fred. Willis, Section Chair, 2009 - 2010

### AIAA/ASME Symposium Update for Spring

The annual symposium, which the Philadelphia section jointly sponsors with the Philadelphia section of the American Institute of Aeronautics and Astronautics in Plymouth Meeting, will be held in the Spring of 2010. The

## Philadelphia Section Newsletter

[www.sections.asme.org/philadelphia](http://www.sections.asme.org/philadelphia) August 2009

purpose of the symposium is to present the latest developments in the local aerospace and mechanical industries.

This daylong event presents topics of engineering interest on recent developments in the Philadelphia area. A paneldiscussion is also held to discuss the engineering environment in the Philadelphia area. Topics include education and training requirements for new and experienced engineers plus other subjects of interest.

If you are working on something interesting or have a presentation of historical interest, consider making a presentation at the symposium. More details will be available during the year.

Many companies have an extended approval process for employees who make public presentations about their work. If your company requires this type of approval, consider starting the process now. Even though we don't have the exact date of the symposium, if you are not available on the actual date, maybe someone else in your organization can make the presentation.

### Upcoming Section Meetings

**September 15, 2009**  
**Tour of the Montenay Energy Resources**  
**Steam Plant**  
**Conshohocken, PA**

**October 13, 2009**  
**Forensic Engineering**  
**Villanova University**

See back page for details.

### Update your ASME email address

This year the section will be mailing only one printed copy of the newsletter: this one issue. All other issues will be posted on our web site for members to read. When the newsletter is posted an email will be sent to all members telling them a new newsletter is available on our web site.

Over the last few years the section has made extensive use of email to communicate with our members. The newsletter editor uses the capabilities of bulk email to send individual emails to each member who has a valid email address in the ASME database. If you have not received emails from the section, either you do not have email, or your email address is not in the ASME database or your email address is in the database incorrectly.

When we send out emails, a significant number are returned as invalid. It is not possible to easily determine which email addresses are in the invalid list. If the emails are returned from one email service provider, the returned email will have a number of invalid addresses listed and they are buried in text. The amount of time required to sort and track the invalid addresses is prohibitive.

There are currently almost 1400 email addresses in the database and we have almost 2000 members. We understand that many members do not want to receive extra emails. But if you would like to receive email reminders about section events, make sure your email is correct. Only you can check and update your email address on the ASME web site.

To check your email address, go to the ASME web site ([www.asme.org](http://www.asme.org)). Click on **Members Only** in the upper right corner of the page. Enter your member number and last name in the boxes. The left side of the next window will list all your current member information. Click on the appropriate information to update.

If you don't know your member number, click on the link "Problems logging in? Click here." Your email program should start and you can contact ASME to get your member number.

We want to be able to contact the majority of our members by email. We can notify members that our web site is updated with the current newsletter and event information. If we could use the current available tools, we could save a significant amount of money which we currently spend on postage. Please update your email address so that we may efficiently use this new system.

### **Philadelphia Area Engineer of the Year Award**

Every year for Engineers Week, the local engineering societies elect an Engineer of the year. This year the Philadelphia Section of the American Society of Mechanical Engineers supports the nomination of Dr Seluck Guceri for Delaware Valley 2010 Engineer of the year.

Dr Guceri has a long and distinguished career in education and research. He is currently the Dean of Engineering at Drexel University. Previously he was the Department Head of Mechanical Engineering at the University of Illinois at Chicago and a professor of Mechanical Engineering at the University of Delaware

Dr Guceri is a fellow of ASME, the author of over 100 technical articles and the founding editor of two professional journals. His area of expertise is in composites and their fabrication. He holds degrees from the Middle East Technical University and North Carolina State University.

During his tenure at Drexel, Dr Guceri has increased the faculty size, operating and research budgets. Drexel is rated as one of the top fifty engineering schools in the country.

Based upon his research, teaching and management leadership, ASME supports the nomination of Dr. Seluck Guceri as the Delaware Valley 2010 Engineer of the year.

### **Forensic Engineering Presentation**

Speaker - Bart Eckhardt, P.E.

Bart is a 1979 graduate of SUNY Maritime College at Fort Schuyler (B.E., Marine Engineering). He is a licensed engineer in more than seven states and holds various engineering licenses in the Merchant Marine. After sailing in the Merchant Marine, Bart spent the bulk of his career designing, building, troubleshooting, testing and documenting custom turnkey systems, equipment and machinery for marine and industrial applications.

Bart joined Robson Forensic as a Marine and Mechanical Engineer in 2001. He held collateral positions as Area Manager, Operations Manager and since 2006, President/CEO of Robson Forensic. Bart provides technical investigations, analysis, reports and testimony toward the resolution of litigation involving marine, industrial and other mechanical engineering issues.

### **Directions to Villanova University**

Take I476 (Blue Route) to exit 13. Go east on Lancaster Avenue and cross Route 320. There is a Shell gas station on the northeast corner. Go to the next traffic light and make a right into the main parking lot of Villanova University. After parking, cross Lancaster Avenue at the Chapel light (Closest to I476). This is the light where you turned. Walk up toward the chapel. At the top of the steps, turn left and go for about 500 feet. The stone building on your right is Tolentine. Room 215 is on the second floor.

Be aware that the parking lot can be very full with a large number of night school students.

### **Directions to trash to steam plant**

Take I476 (Blue Route) to exit 18B. If you are coming from the south, at the end of the exit ramp turn right onto Chemical Road. At the next traffic light, turn right onto Ridge Pike going toward Norristown. If you are coming from the north on I476, at the end of the ramp turn right onto Ridge Pike. Go four lights and turn left on Conshohocken Road (at the fourth light) Norris Sales Company is on the left corner. Go approximately one mile and at the top of the hill is the entrance to the Montgomery County Fire Academy. The steam plant shares the same driveway. Turn left into the driveway past the Academy to the plant entrance.

## Philadelphia Centre Square Waterworks



Center Square  
Pump House

In 1799, the city of Philadelphia began work on its first municipal water system. The system was not the first in the country. Other towns had installed water collection and distribution networks using gravity to collect water and move it to a central location for citizens to use. But Philadelphia's was the first in the new United States to use steam engines to collect and distribute water to the city in a network of underground pipes.

The city needed water to supply its ever growing population. From 1790 to 1800, population had doubled. But the reason used to justify the expense was a series of yellow fever epidemics starting in 1793. Practically every summer since then, there was an outbreak in the city. In 1793 over 5000 people died from the outbreak, over 10% of the city's population. The epidemics were used to justify the construction, even though mosquitoes not "bad water" caused the outbreak. Of course with a reliable water supply, it was possible to keep the city cleaner and eliminate the standing water pools which breed mosquitoes.

By the end 1798, the city decided that a water system would be built. City Council had requested a proposal from Benjamin Henry Latrobe who was in town to discuss building the Bank of Pennsylvania building. Latrobe would become well known for the work he did on the Capitol Building in Washington. Ironically he would die in New Orleans of yellow fever while building that city's water system in 1820.

His proposal for Philadelphia included a pump house at 23<sup>rd</sup> and Chestnut Street on the Schuylkill River. Another pump house would be located at Centre Square, the site of present day City Hall. A 6 foot diameter tunnel under Chestnut Street would connect the two pumping stations.

The Centre Square pump house would pump water to a 22,500 gallon reservoir at the top of the building. The water would flow by gravity to the pipes under the city streets in the built up section of the city. In 1799, Philadelphia was populated east of 9<sup>th</sup> Street.

Construction began in Spring of 1799 with the construction of the 6 foot tunnel, connecting the pump houses. In July, a report to city council stated that 722,474 bricks had been laid

in the tunnel. 710 yards were finished with 698 yards were still to be completed.

The pipes under the streets were hollowed out logs which were connected by conical iron fittings. Each end of a log was forced onto the fitting until a seal was obtained. Obviously this method was not very reliable but it was all that was available. Hollow logs were generally the type of pipes that were used because of cost. Cast iron pipes were available but limited in availability and were very expensive. The stand pipe to the reservoir in the Centre Square pump house was cast iron. Wooden pipes served the city well for many years. In the 1980s, workers on the Philadelphia commuter tunnel found a wooden pipe with the metal connector.

The system began operation on January 27, 1801. But there was still much work to be done. The pump houses were not complete although they were functional. By the end of 1801, 29,963 feet of pipe were laid under the streets. Pipe would continually be added into the suburbs of Northern Liberties and Southwark.

By 1812 the city recognized many limitations to the system. The limited capacity of the reservoir at Centre Square required the engine to operate almost continuously and the engines reliability was not adequate for the demand. By 1815 a new system, the Fairmount Water Works was operational at the base of the current Philadelphia Art Museum. A reservoir was located at the top of the hill where the Museum now stands. Engines were more reliable although still very expensive to operate. By 1848 the steam engines were replaced by water wheels which may seem like a step backwards in technology. But they were much more reliable and much less expensive to operate.

The Fairmount Water Works continued operating until 1900. Because of the water quality of the Schuylkill River, the main water supply was relocated in the Torresdale section of the city. A filtration plant was built on the Delaware to supply the city with water. Development continued for the next century and the city now has clean, dependable water that we consider a normal part of life. But the water that flows from the pipes is a result of a lot of hard work over the past 200 years.

### **George Sylvestri Appointed to the Consumer Advisory Council**

On June 18, the Pennsylvania Public Utility Commission announced a number of appointments to the Commission's Consumer Advisory. One of the appointments was George Sylvestri, a member of the Philadelphia section and a member of the section's Executive Committee. The council provides advice to the PUC on consumer related issues.

George also has a page on our web site where he comments on current energy related issues.

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**ASME Fall Events  
September 15, 2009  
Tour of the Montenay Energy Resources Steam Plant  
Conshohocken, PA**

Location: Montenay Energy Resources, 1155 Conshohocken Road, Conshohocken, PA 19428

Time: 6PM

Light food (sandwiches and/or pizzas and sodas) will be available. There will be no charge for this event.

The waste to energy plant (WTE) in Conshohocken accepts 1,200 tons per day of municipal waste from Eastern Montgomery County and converts it to 36 MW of electricity. The power is used by PECO Energy in the Philadelphia area. See the website [www.veoliaes.com](http://www.veoliaes.com) for more information about the company.

Our tour will include the entire plant. We will see the waste receiving and processing plant and the power production equipment. When you make a reservation, you will receive a release form which you will sign and bring with you the night of the tour.

See page 2 for directions to plant

For reservations, contact (by September 10): John Wolf [john.j.wolf@villanova.edu](mailto:john.j.wolf@villanova.edu) (610 519 6129)

**October 13, 2009  
Forensic Engineering  
Villanova University  
Villanova, PA**

Time: Reception 6 PM with dinner at 6:15 and our speaker at 6:45

Location: Villanova University, Villanova, PA, Tolentine Hall Room 215

Cost: \$10, No charge for students

Dinner Choice: sandwiches and salads

Speaker: Bartley J. Eckhardt

See page 2 for directions to Villanova and Tolentine Hall.

Contact (by October 8): John Wolf [john.j.wolf@villanova.edu](mailto:john.j.wolf@villanova.edu) (610 519 6129)

A brief overview of forensic engineering will be presented, followed by examples of cases involving injury, death and/or significant economic loss. Case examples will be of specific interest to mechanical engineers and will include combustion, boiling liquid-expanding vapor, and pressure explosions; contact with moving parts and/or entrapments involving machinery; and workplace incidents. Proactive discussions about the cases will be encouraged.