



Plant Engineering & Maintenance Division

Fall/Winter 2012 Newsletter

<http://divisions.asme.org/PEMD>

PEMD Executive Committee 2012-2013

Chair
Sam Black

Vice Chair/Treasurer
David Christiansen, PE

Secretary
Greg Coil

Member-At-Large
Matt Schulte

Advisors/Past Chairs
Eric Huston
Steven J. Kaercher

ASME Staff
Stephen Crane
LaShion Pettiford

[In this Issue](#)

- **Chairman's Corner**
- **Executive Committee Operating Board Notes – July 27-28, Minneapolis, MN**
- **Upcoming Conferences for PEMD Membership Consideration**
- **Dynamic Maintenance Management: Modern Maintenance Management for the 21st Century**
- **The ASME Organization: Part I of a Series**

[Chairman's Corner](#)

Sam Black, PEMD Chair

The 2012 – 2013 fiscal year is well underway for PEMD. We have our new executive committee in place and we are continuing to work a tactical plan to implement our strategic plan that was developed and refined over the last couple of years. We have established a Reliability and Condition Monitoring technical committee. We are moving forward with networking efforts and have established a LinkedIn group called ASME Engineering and Maint Division as well as a Twitter presence @ASME_PEMD. These are both very new so please take the time to check them out and join in. In addition, we are working on participation in conferences and partnering with other ASME groups.

Obviously we exist to serve our professional community and our membership. To that end, we need your active involvement. If you would like to volunteer please contact anyone on the executive committee. You can find our contact information at http://divisions.asme.org/PEMD/Executive_Committee.cfm.

In this issue of our Division Newsletter you will find articles addressing topics like Dynamic Maintenance Management and The ASME Organization. I think you will find them relevant and informative.

We greatly appreciate your contributions to our success to date and we look forward to serving you this year. Get Active and Get Involved by volunteering!

[Executive Committee Operating Board Notes – July 27-28, Minneapolis, Minnesota](#)

The ASME PEMD Executive Committee met in Minneapolis over the July 28th weekend in this summer. Many PEMD items were discussed and below is a brief summary of some of the highlights from the weekend.

- Ideas on how to build and improve team dynamics were discussed
- The Strategic Plan was updated
- A 2013 fiscal year tactical plan was created
- Roles and Responsibilities of Executive Committee members were revised

- A Tactical Plan was developed for the 2014 fiscal year priorities
- Social media was discussed, including how PEMD could use social media to reach new members and existing members more effectively

Upcoming Conferences for PEMD Membership Consideration

David Christiansen, PE, PEMD Vice Chair/Treasurer

PEMD is currently working to put together some professional development courses. Below is a list of items that are currently being considered. If there are any questions or comments on professional development courses, please contact David Christiansen, PEMD Vice President.

- Root Cause Analysis Fundamentals
- Project Management Combo Course
- Operation, Maintenance and Repair of Plant Piping Systems
- Lean Manufacturing

Also, please note that the **Life Cycle Water Impacts of Energy Technologies ASME Webinar** will be held on December 12, 2012 at 1:00 PM EST.

Dynamic Maintenance Management: Modern Maintenance Management for the 21st Century

Bob Sanger

BioAmber, Inc.

www.Bio-Amber.com

Editor's note: This is a selection from Mr. Sanger's maintenance white paper. This paper can be found in its entirety at: <http://files.asme.org/Divisions/PEMD/33607.pdf>

Maintenance has long been defined as a "process" by most experts in the maintenance field. These experts have further defined maintenance as delivering a product called capability, that is, the capacity to produce the product(s) the manufacturing facility delivers to the business. In today's business environment, the manufacturing capability must be highly reliable and competitive on a global basis to remain a viable contributor to business success.

Traditionally maintenance has been viewed as a cost and a service to manufacturing, with any number of attempts being made to gain cost advantage from the maintaining function. These attempts have been considered as a "manufacturing" effort as well as an independent "maintenance" effort. However, most of these initiatives have met with only limited success.

As a result, maintenance today represents **the last frontier** to make a significant contribution to throughput, quality, yield and profit in modern manufacturing.

This discussion will explore the **Dynamic Maintenance Management System** as a continuous performance improvement process, based on a business management model. Additionally, maintenance will be introduced as a **business within a business** and examined from the perspective of delivering equipment uptime at a competitive cost to the manufacturing environment.

OVERVIEW of DYNAMIC MAINTENANCE

Dynamic Maintenance Management System – In order for maintenance to successfully contribute to manufacturing efficiency, it must be worked as a business process within the manufacturing process -- a **business within the business**. Maintenance has its own set of business needs complete with products, measures and costs. It is also a closed-loop process which, when implemented and managed correctly, will deliver continuous improvement in manufacturing reliability and uptime as well as improvement in unit manufacturing cost through lower maintenance cost.

Figure 1 represents a simplified view of maintenance as a process. When implemented holistically it integrates a series of functions that in today's organizations are often worked separately or included as part of the generic "manufacturing" process.

Planning and **Scheduling** is the most widely used “maintenance best practice” in the current manufacturing environment. It is intended to be the chief means of improving maintenance productivity. Yet it has failed to deliver sustainable results. It is most often implemented as merely a scheduling exercise without the appropriate emphasis on the thorough and detailed job-step planning required to deliver quality results.

Backlog management is the most important element in the maintenance process. It is the order book of the **Business of Maintenance**. Backlog management is the means by which a maintenance organization delivers capability with the appropriate focus and priority to effectively support the manufacturing process.

Maintenance Materials are often treated as a “procurement” initiative or a separate “stores” project to gain value from excess inventory or unused parts. **However, as can be seen in Figure 1, the materials function exists to provide parts and materials for planned, ready-to-schedule maintenance work. Dynamic Maintenance Management**

Work Execution is often measured by “schedule compliance” without respect to “productivity” or value of the work performed. In the **Business of Maintenance** the biggest component of maintenance cost is craft labor, sometimes as high as two to three dollars for every dollar spent on materials. Contract labor costs as well as internal labor costs need to be considered when addressing productivity as internal craft resources succumb to attrition and are replaced by contract maintenance or purchased services.

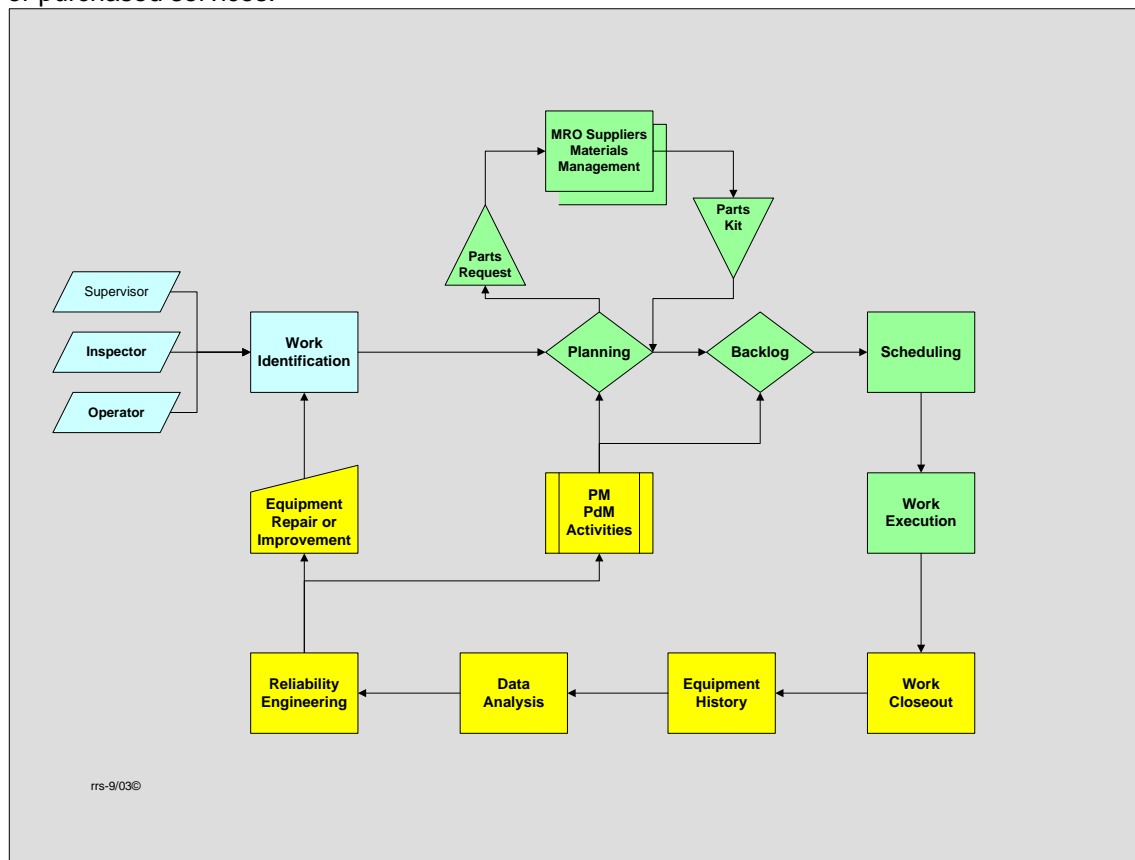


Figure 1: Dynamic Maintenance Management System

In the contemporary integrated manufacturing model, **work execution** is often the endpoint of the process. Production needs have been satisfied, the identified work is complete, and the focus is moved to the next production-defined equipment PM problem or issue.

However, in the **Dynamic Maintenance Management System**, work execution is just the beginning of the continuous improvement process. The **Computerized Maintenance Management System**

(CMMS) is designed to support and stimulate continuous improvement in maintenance. Unfortunately, it is often highly underutilized for the purpose for which it was designed.

Equipment History and Data Analysis are the tools used to define the opportunities for maintenance improvement. Hours of crafts worked, repairs made and processes used, parts and materials consumed, all provide a history and database that form the basis for evaluation of the effectiveness of the maintaining function. Add to this the cost to maintain, equipment failure frequency and duration, and the business plan goals of manufacturing and we have now defined the appropriate and timely contributions that maintenance can make to the success of manufacturing.

Reliability Engineering is the vehicle by which maintenance defines its performance and expectations. The Reliability Engineer has many tools at his disposal to inspect, monitor, analyze, measure and improve the performance of maintenance. This process starts with **Equipment History and Data Analysis** and integrates its engineering tools into **Predictive** and **Preventive Maintenance** activities designed to deliver manufacturing process reliability, thereby reducing maintenance workload. This systematic analysis defines and indeed encourages corrective work meant to improve the life of the equipment as well as preventative or predictive maintenance activities to insure the health of the manufacturing process.

Preventative Maintenance Compliance becomes the tool with which the base work load of the maintenance organization is defined. Reliability Engineering owns this critical measure and monitors it on a weekly basis to insure that the PM activities that have been entered in the work order system are being completed in a timely fashion.

Closing the loop on the maintenance process enables the **Business of Maintenance** to provide a sustainable and reliable manufacturing capacity while delivering it at a competitive manufacturing unit cost. The business processes incorporated in the **Dynamic Maintenance Management System** include elements of measurement systems monitored by the Reliability Engineer. By monitoring the health of the equipment, complementing the robustness of the maintenance process, the Reliability Engineer can steer the maintenance process in the proper direction for delivery of its two important missions: **Maintenance Efficiency and Maintenance Effectiveness**.

Dynamic Maintenance Management System

Effective implementation of the **Dynamic Maintenance Management System** principles can only be achieved within a framework of appropriate control and monitoring by management. There are two principal process outputs, (**Maintenance Efficiency and Maintenance Effectiveness**) which define the **Business of Maintenance** with all other measures being subsets of these two. Equipment uptime and maintenance cost are the result of the how effectively Maintenance Managers and Reliability Engineers manage these two principles.

To continue reading Mr. Sanger's white paper on maintenance please visit <http://files.asme.org/Divisions/PEMD/33607.pdf>

The ASME Organization: Part I of a Series **Greg Coil, PE, CEM, PEMD Secretary**

Preface: To help our membership understand more about ASME and the value of membership, we are going to include a series of articles in our newsletters about the organization.

ASME is comprised of four sectors. These sectors are Institutes, Knowledge and Communities (K&C), of which the Plant Engineering and Maintenance Technical Division is a part, Public Affairs and Outreach, and Standards and Certifications. Organization charts for three of the sectors are shown below in **Figures 1, 2, and 3**. The Public Affairs and Outreach Sector is governed by a council, for which a roster exists, but no organization chart is available.

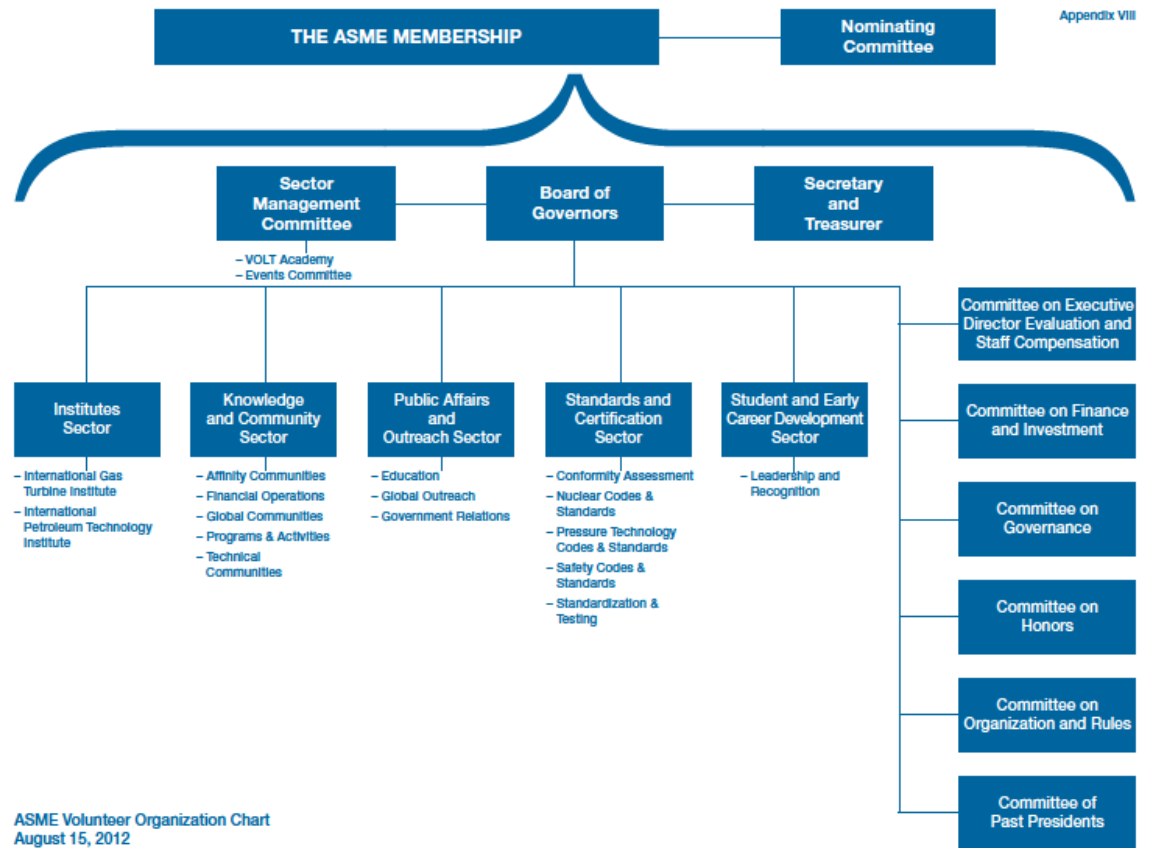


Figure 1: Overall ASME Volunteer Organization Chart

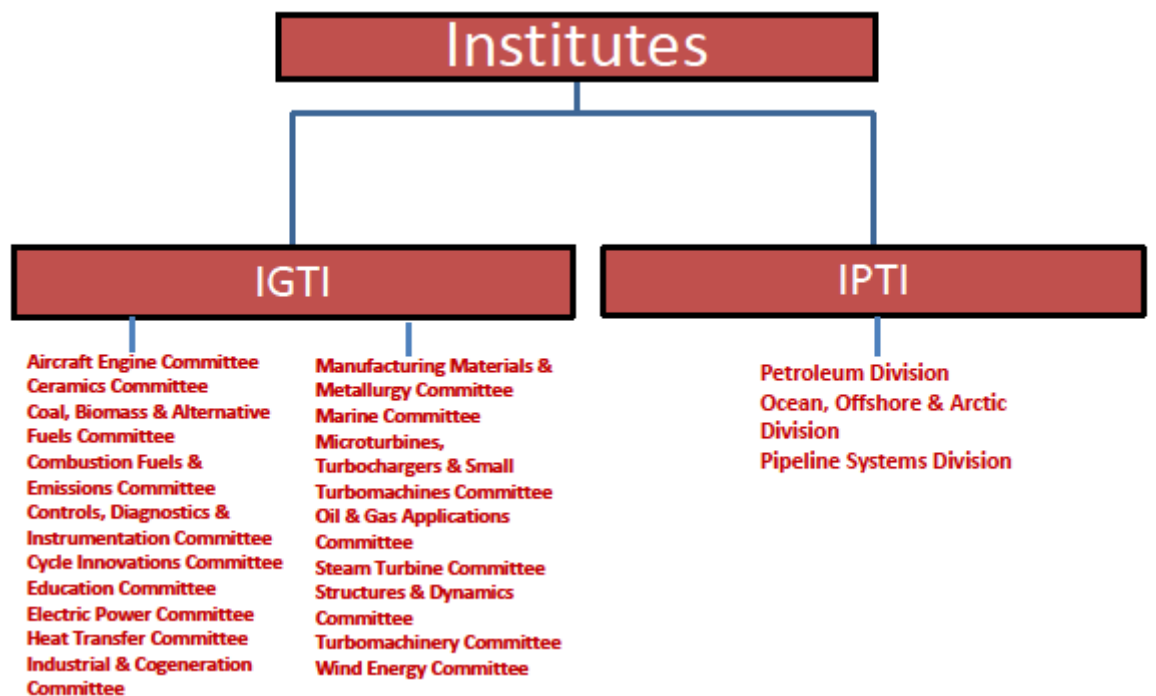


Figure 2: Overall ASME Volunteer Organization Chart

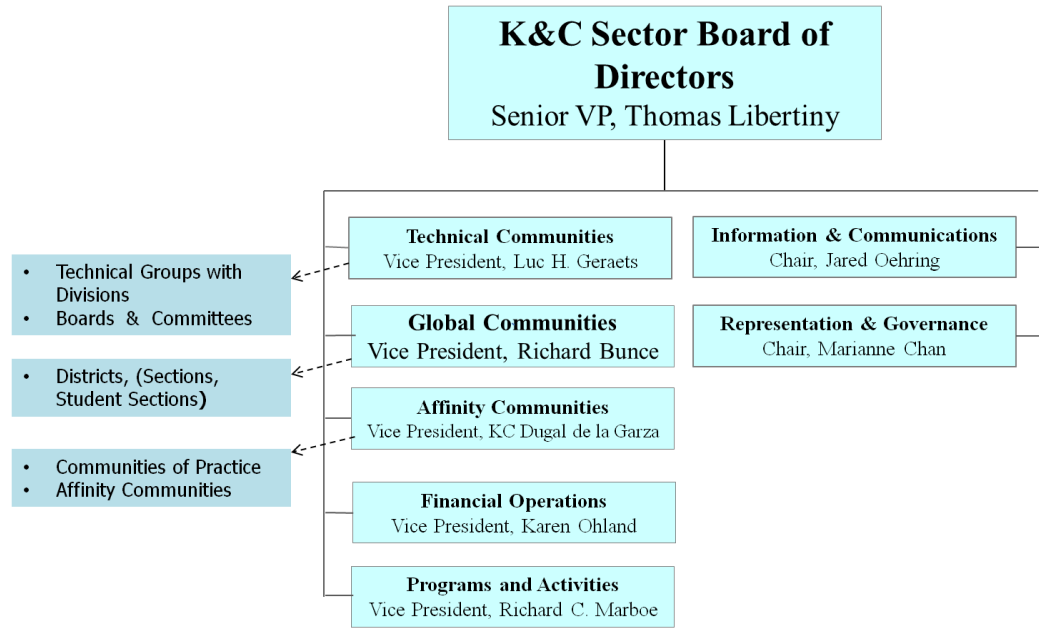


Figure 3: K&C Sector Organization Chart

Most ASME members participate in membership in the K&C Sector, with some participation in the other three sectors through specific activities undertaken as part of the ASME volunteer organization. Note that ASME maintains a staff for each of these sectors, but that much of the execution of the ASME activities occurs through the activities of volunteers on various organizations.

STANDARDS AND CERTIFICATION ORGANIZATION

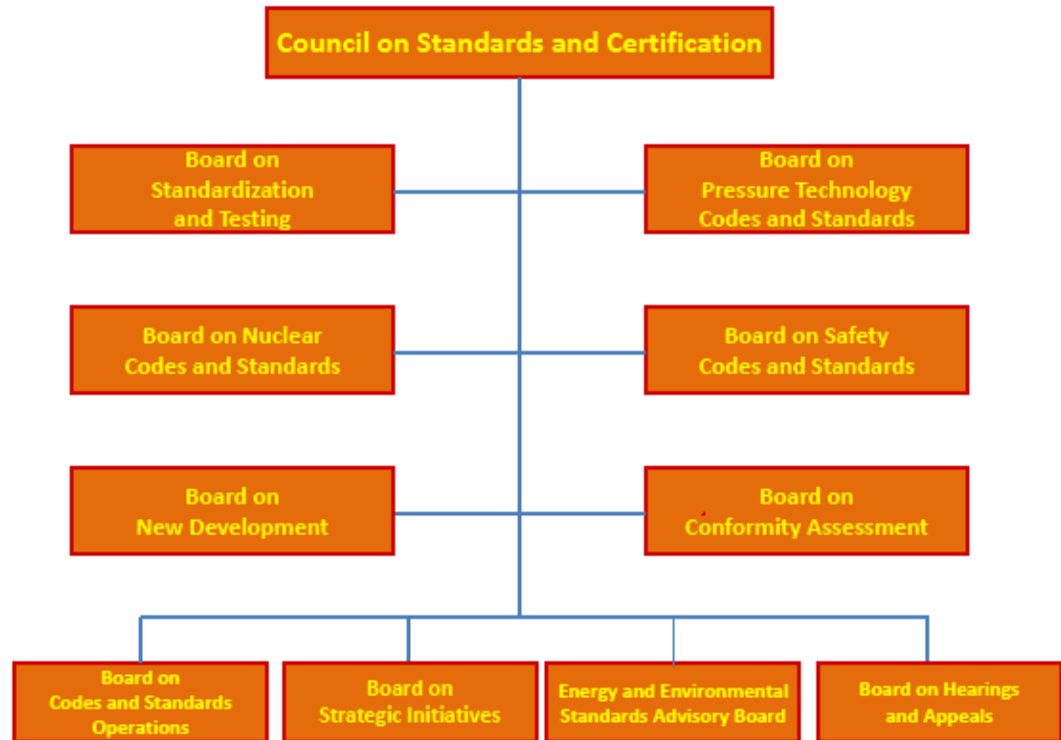


Figure 4: Standards and Certification Organization Chart