Committee Meeting
Agenda & Minutes

Market Trends Committee

Committee Meeting Objective: The Committee provides a forum for market trends within the power generation industry to be discussed and analyzed.

Date and Time: Monday, September 12, 2016
Location: Sacramento, CA
Time: 3:00-5:00 pm
Chairperson: John Hoeft

Preparation

This meeting will engage all participants allowing each to have a higher level of contribution to the subjects. Come to this session prepared to be a subject matter expert (SME) or to learn more about these issues. We will also be electing new committee officers.

Schedule

List leaders and a description for each topic or activity.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>Welcome</td>
<td>Call to order, Approved Minutes, Market Trends Initiatives,</td>
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<td>Breakout Instructions</td>
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<td>- 30 minutes discussion, 10 minute report out</td>
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<td>- Team Leads</td>
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<td>- Facilitate and promote discussion</td>
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<td>o Educate</td>
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<td>o Market Trends</td>
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<td>o Topics</td>
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<td>Fuel Quality</td>
<td>Leaders: Brad Holmes</td>
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<td>Fuel quality issues/mishaps and impact on power-gen installations</td>
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<td>Ultra-low sulfur diesel impacts on diesel (Corrosion/bacteria/time degradation)</td>
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<td>Engine emissions evolution and influence on Tier IV engines</td>
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<td>Fuel Quality takeaways:</td>
<td>Reliable supplier (Quality, does it comply with standards?)</td>
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<td>Maintenance program (Special focus on tank corrosion, etc.)</td>
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<td>Keeping water out (Microbial induced corrosion caused by Ultra-Low Sulfur diesel)</td>
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<td>- “normal free-flow vent” can ingress water by condensation</td>
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<td>- Impact on ancillary equipment (Senders, fuel level probes, etc.)</td>
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<td>Type of fuel (Bio vs. straight diesel)</td>
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<td>Factory approved additives (Dosage)</td>
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<td>Most common diesel used today has shelf life of 28 days</td>
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<td>Chemistry/content of nat’l gas (Distribution issue, flare gas, etc.)</td>
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### Disruptive Technologies & Incentives
- Identification of alternative energies and impact to diesel power-gen market
  - Natural gas, renewables, micro-grid, storage influence on:
    - Data centers/IPP/ Cogen/ Critical and standby
  - Has government funding of subsidies influenced development?

### Leaders: Mike Sanford

### Disruptive tech. takeaways:
- Stored energy / power electronics
  - Complement to diesel generation (Or adapted diesel generator solution – i.e. variable speed)
- Emissions
  - Not just impacting USA (Euro 5, etc.)
  - Detractor in terms of reliability and increased cost (Makes customers consider other options)
- Micro/distributed generation
  - Hybrid systems
- Gas
  - Natural gas are viable alternative to diesel power-gen (In some cases advantageous i.e. emissions requirements)
  - Bi-fuel/dual fuel
- Telematics
  - Proactive maintenance based on actual data
  - Time based maintenance vs. needs
  - Possible negative impact of failure being advertised to broader audience
  - Information security
  - Health and safety (Remote start vs. local maintenance being performed)
- Geographical redundancy
  - Software driven, capable of shifting data center demand/need

### Peak Shaving Management Issues
- Peak shaving and demand response trends (Water districts, utilities, etc.)
- ISO/PJM/ERCOT trends
- CHP
- Control technologies that influence

### Leaders: Hans Melberg

### Peak shaving takeaways:
- Invite utility to speak to group
- Educating the customers
- Webcast of groups (en-lieu of giving physical presentations)
- Tax credits (What are available, how to locate/navigate)
- Dept. of Defense (Invite?)
- Fuel supplies
Green  
Faster on line = more money  
Utility interruptible rate  
Tier IV emissions, on-demand response  
Switching diesel to gas engines  
Switchgear fairly simple, depends on utility  
Flare gas probably not economical  
Capture state-by-state emissions programs for demand response  
Interconnection topics  
Impact of coal fired plants (Closing due to new policies?) – new opportunities for onsite power?

### Market opportunities for Onsite Power
- Regional niche market successes  
  (Applications/industries such as data center, hospital, education, water & sewer)  
  - kWe mix, LV/MV/HV, amperage limitations  
- International market opportunities  
  - Possibility of serving international markets with surplus, lower tier rated engines

### Leaders: Bob Apple & Don Kujowski

### Health care/elder care (Growing market need based on aging population)
- Require smaller more remote sites
- Big pharma – new drugs require refrigeration door to door
- Data sites
- Driven by very large, modular sites (Cloud, IOT)
- Big box stores: seeing business need that they didn’t recognize 5 years ago (Lost revenue)
- Telecom/5G introduction and infinite growth of utilization
- Re-applying lower Tier product for export to new markets
- Telematics: more and more visibility demand
- Micro-grid (Blended solar, wind, recip.)
- Gas stations/requirements along evacuation routes
- Portable power use is growing (Rental markets serving concerts, sporting events, etc.)
- “Black Swan” event
- Land fills
- Waste treatment
- Service aspect growth (Reliability/uptime and load banking requirements in legislation)
- Question: what impact do we see as opportunity in wastewater treatment (Methane capture and reuse)?

### Market opportunities takeaways:

### Pulse Report
John Hoeft

### New Business
John Hoeft

### Election of New Officers
John Hoeft & David Brown

### Actions from meeting:
- Complete MOM, attendee list, presentations for submittal to EGSA and membership
  Justin McMahon (9/14/2016)
- Assemble working group to develop Webinar or education session on
  Joe Z., Justin M., Chris N. (Volunteer help offered by: Dane Olson: Generator Solutions, Inc)
| telematics       | Mike Sanford: Cummins Power Gen |