

WRBA 2016 CONFERENCE MEETING MINUTES

March 8-10, 2016 at the Red Lion Hotel in Portland, Oregon

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Presentation name to open presentation

Company Name to open the company's website

Tuesday March 8, 2016

Presentation #1 - Boiler combustion principals

John La Fond, [Jansen Combustion and Boiler Technologies, Inc.](#)

Discussion/Q&A: 1) How does the definition of biomass change with boiler MACT? There has been some question about ground pallets and old furniture as being noncompliant fuel. As far as I know, these are considered biomass for boiler MACT. The questions have been railroad ties, which have been included within acceptable material for boiler MACT as biomass and OCC rejects have been included. Sludge has been included as biomass for boiler MACT. Certainly pallets and furniture, ground up, waste material like that, would be okay. 2) There was some question about anything that had anything that had paint stain or other residue what would not be considered clean fuel for boiler MACT. That is a possibility with furniture. The locations we have been at are untreated trimmings and shaving, so paint and resins has not been an issue. You would have to check with your local regulatory agency.

Presentation #2 - [Boiler camera and site glass system](#)

Jeff Kite, [Babcock and Wilcox](#)

No questions/answers on this one.

Presentation #3 - Water chemistry improvements

John Zora, [Nalco](#)

No questions/answers on this one.

Presentation #4 - MACT rules

David Bagwell, [Montrose Air Quality Services](#)

Discussion/Q&A: 1) This was brought to my attention more than a year ago on a federal guideline pertaining to how often we were supposed to check the boilers, etc. I have yet to see anybody. The people I called did not have any information for me, so who actually is going to check? It should be your state agency. Not all the states have delegating authority. Here in Oregon, they do not have delegating authority yet. I think they are trying. In Washington, the local agencies have delegating authority. 2) Clarify between major source and area source. Area source, you would not fall under that if you are less than 10 tons of any single HAP or 25 tons of total HAPs. There are some other rules. There are the CISWI rule, the boiler MACT, and the area source rules. The EPA has made it fairly complicated.

Presentation #5 - [Hog fuel bin design](#)

Jamil Bundalli, [Kamengo](#)

No questions/answers on this one.

Wednesday March 9, 2016

Presentation #6 - [Resin sampling](#)

Frank Desilva, [Loprest Water Treatment Company](#)

No questions/answers on this one.

Presentation #7 - [Hog fuel management](#)

Kevin Tangen, PE, [Evergreen Engineering, Inc.](#)

Discussion/Q&A: 1) What size did you screen through to separate mulch from fines? We were working with a local vendor. We just ran some testing. Honestly, I don't know. I wish I could tell you. I can find out and we can go from there. I can find out exactly if you would like to know. 2) When you were talking about moisture content, are you doing that on a wet basis or a dry basis? A wet basis. 3) So 100% is the weight of the whole wet sample? Yes. 4) When you were talking about the BTUs required to dry the moisture off, now then do I have to take that calculation against my burn sufficiency? My firebox is 70% efficient and do I have to calculate that in? That is straight without the firebox sufficiency, so you would have to start including your firebox efficiency into that number. 5) In Case Study #3, you mentioned an over-fire burner in the boiler versus a direct fire dryer. What was the difference economically in terms of operating costs moving at thin capacity requiring a burner versus a dryer system? That was directly based on what we got from the vendors about what it would take to do exactly what the operators were talking about. You are talking about the dollars for operational costs? Yes. That is the number straight from the vendors about what their performance guarantees would be. 6) How does it compare? Substantially different. When we put the flame inside the firebox, it was much, much more efficient than a dryer (factors of five.) It was massively different. The one thing I will warn you with an over-fire burner, your firebox has to be able to handle it, so if you do not have a good enough size of your firebox, it is going to be a problem for you to have a direct fire burner over the top of your hog fuel. In that case, you need to have somebody come out and inspect your firebox to make sure that is really an option for you. There are vendors out there that will do that for you.

Presentation #8 - [Turbine overhaul](#)

David Robbins, [Dresser-Rand](#)

Discussion/Q&A: 1) Can you go back to the importance of the dynamic balancing? You said they go only to 600 RPMs? Typically we do 600 RPMs because we do not have a high speed test. 2) What would you normally require? Isn't there a transitional test at about 900 RPMs? It is just a balance check. We have always done that. We do up to 1000 on single stage. It's just when you start getting up to 1000 RPMs and over on multi-stages with the types of blades that they have, you need to have some type of protection, some type of a bunker and we don't have that, but we go out with companies that do have that. 3) What is your risk level if you do not do a high-speed test? None that I am aware of because typically we do not them, but we have some clients that request and require them as part of their procedures that their equipment be balanced at high speed, their normal running speed.

Presentation #9 - [Cooling tower 101](#)

Steve Beckman, [Midwest Cooling Towers](#)

Discussion/Q&A: 1) What do you recommend in terms of water treatment and filtration? Most everybody here has some sort of water treatment and some of them use biocides, some of them do not. What we do not recommend for water treatment is surfactant use because it puts a film on the fill media and it makes it very slippery. The whole concept of evaporative cooling is surface contact time. The longer that water stays in contact with the fill before it discharges out and into the basin, the better the cooling. Surfactants cause that water to slide through there faster and we have seen issues with performance, so we do not recommend surfactant usage with any type of a water treatment program if it can be avoided. Filtration, there is many different methods out there. To me, if we have a water analyses and we understand what the TSS is, which is the most important component in the coolant tower part, to determine the correct fill median for the project, this goes a long way towards lessening or eliminating the need for any type of filtration, in our minds. This unless something later on, be it airborne, etc., causes something to change. Then you may do sweeper piping or something like that in the basin to try to eliminate some of that. 2) On an ACC unit, what is the typical end use of the cooling air? Do people ever use that in an air heater for a boiler or is it just exhausted? Most often, it is just exhausted, because typically most of the ACC designs are an A-frame type design, so that discharge air is just basically going up through that A-frame, condensing that steam, and basically it becomes exhausted. 3) Do you have any experience with the direct drive motor? You mean eliminating the gear and drive shaft and gearbox? We do have some. In a nutshell, our recommendation is if you are installing a new cooling tower, it may be of benefit to look at it or if you are installing something new, we can look at the design. What we are finding is 75hp and under, when we look at is the design changes that are required in beefing up the structure to make it work and it tends to be economical. Anything over 75hp on the fan motors, the structural modifications needed to support it, the issues with the motor directly in the moist environment inside the discharge area and the height of those units, they get rather high and quite a bit taller than the gearbox. If your output shaft with the direct drive motor is sitting 12 inches higher than it would have been with the gearbox, then you have to look at your stack. What we found with 90% of these redesigns is that the direct drive motor is so much taller, that all of the sudden, your fan is running outside of the existing stack profile, and many times, a new stack will be needed.

Presentation #10 - [Steam leak detection](#)

Pam Grigas, [Mistras Group](#)

Discussion/Q&A: 1) If you get one of these things, do you train the individuals on how to read these, or do you send that report to you, and you interpret it? We will come out and train the plant and the surveillance service is extra after the first six months. It is included with the purchase of the system for six months. It helps you get set up, helps you get used to looking at the data, and the system is baselined. We do have some plants that choose not to utilize the surveillance service, but they do have a dedicated person that is looking at this all the time. Other plants that do not have this dedicated person have us do that. We also have a 24/7 hotline managed by a surveillance analyst that is very used to looking at this data, so that if there was something that occurs in the middle of the night on a holiday or weekend, you can call that 24/7 hotline and get information. There is support after hours. 2) I thought I heard you say that you would have one sensor and one detector? On an economizer, it depends on the two bundles. 3) How large of an economizer? It depends on the site view drawing. We typically locate the sensors between the bundles so we have some economizers that have six sensors, eight sensors, or as few as four or sometimes two. 4) A four-foot long header, would that require one sensor? A couple of sensors? I would say we would probably start with two sensors. We would ask for that drawing, then work with you, and determine what would be the best way to go about this. There are some other leak detections that are not 24/7 monitoring that has a sensor input and 4-20mA output to the DCS for certain areas that are small for monitoring for a tube leak. 5) Once you have a sensor in place, are you able to insulate up to it or is that going to attenuate the signal? We would attach to the wall and then we would just cut a little bit away from the lagging. We do not want the lagging to hit the rod because that would cause vibration on the rod. 6) How much would you have exposed? About two inches. 7) Could you put it in a sleeve? It depends on the wall construction. We have multiple ways of attaching the wave-guides, depending on wall construction. We have an applications engineer that works with us. He was a boiler engineer, who happens to be my husband. He has come up with different methods of attaching these wave-guides. If we do not have it fully developed, like a drawing ready, we work with you, and then we find a way to attach the wave-guide.

Thursday March 10, 2016

Presentation #11 - Rotary valves

Darren Coutts, [Precision Machine](#)

Discussion/Q&A: 1) Your rotary valves, you are able to reverse. Do you have them doubled on both edges? No. The one you have is square and you can go either way on that one.

Presentation #12 - CEMS

Wade Day, [STI Cems](#)

No questions/answers on this one.

Presentation #13 - [Boiler silica carry-over](#)

Mike Dunham, [Columbia Water Tech](#)

Discussion/Q&A: 1) Is the overuse of amine a problem because it distorts the cation conductivity reading or is it an issue because it can cause scaling in the turbine? The amine typically you would not get deposits. Normally feeding amine you would not get deposits at all, so you can take that out of the picture. The problem with the cation conductivity to get a true cation conductivity your turbine manufacturer wants, you have to pull the CO₂ out. What creates most of your CO₂ is overfeed of amine. They are all carbon molecules and break down under high heat and pressure. So will most of your oxygen scavengers that you are using at this pressure.

Presentation #14 - Steam Principals

Bob Smith, [Bay Valve](#)

Discussion/Q&A: 1) Referring to the slide presentation, there was no flow in P1 while the steam is pumping and there is no flow on the condensate, so we are backing up that line. That is why we have a reservoir. Some manufacturers tolerate having a little bit in the belly of your heater. We say no, we do not want any condensate in there at all. We want it drained completely, which is why we are using 36" versus our competition with 42". This is because we do things a bit differently.

Presentation #15 - Control system upgrade paths

Jeff Geiger, [Taurus Power & Controls](#)

Discussion/Q&A: 1) What is the difference between thin client project and VMware? The thin client is looking for all of its information at the server level. If I am going to deploy 50 thin clients, I will need a lot of hardware and a lot of bandwidth because it is passing all of the data back to a single server. You know they are consumable. Because a thin client only costs \$150.00 each, it is easy to replace, and they are interchangeable. It is very easy to deploy. There are times when you want that fit client where you want a little bit of computing horsepower when you are not taking up all that bandwidth, but if you have the bandwidth, I would not see any reason to do it. The facility we did for Scott is mostly thin clients. 2) What about having a single client failure now for a VMware server? If you filled Scott's second floor up with water and you destroyed that server, that system could be deployed, repaired, and brought back on line in less than an hour. Everything in his plant has been on our desk all week running on a little \$200.00 Nook. It is not fast, but we can deploy that image and bring any plant back up, which is the beauty of this virtualized solution. When you talk about the VMware, there are options and levels of that software that allow you to migrate. Let's say one of the servers is not feeling well, it will literally migrate on the fly the images that are running on that server off it and then flag you and say you need to come fix that server.