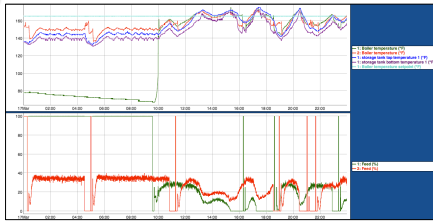




Boiler Monitoring

For Superior Performance



NE Biomass Heating EXPO – April 10, 2014





Performance Monitoring

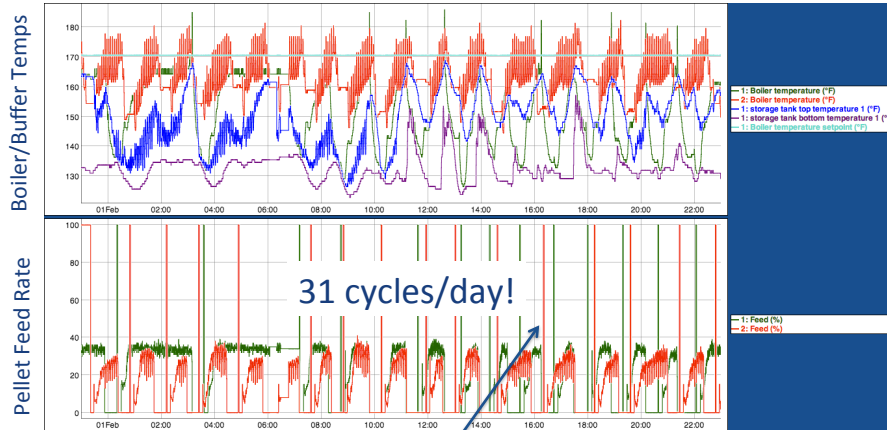
- Graphical tracking of boiler performance
- A graph is worth a thousand words

Lists of numbers mislead...

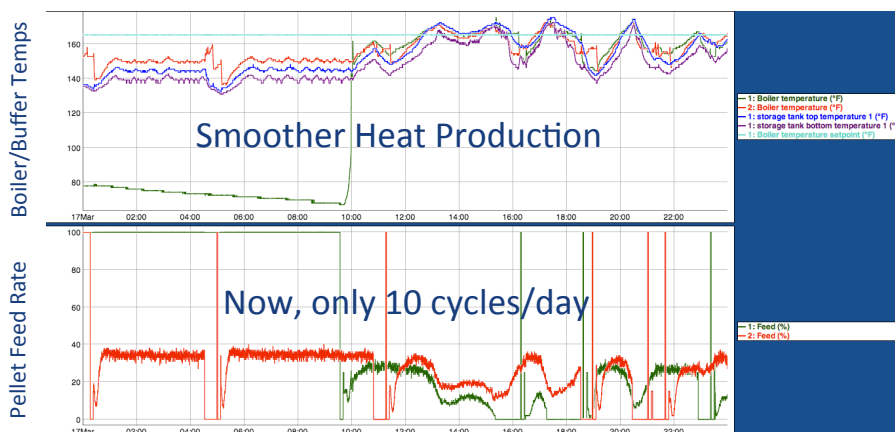
...plots of numbers reveal!



No Customer Complaints... But Is Everything Really OK?!



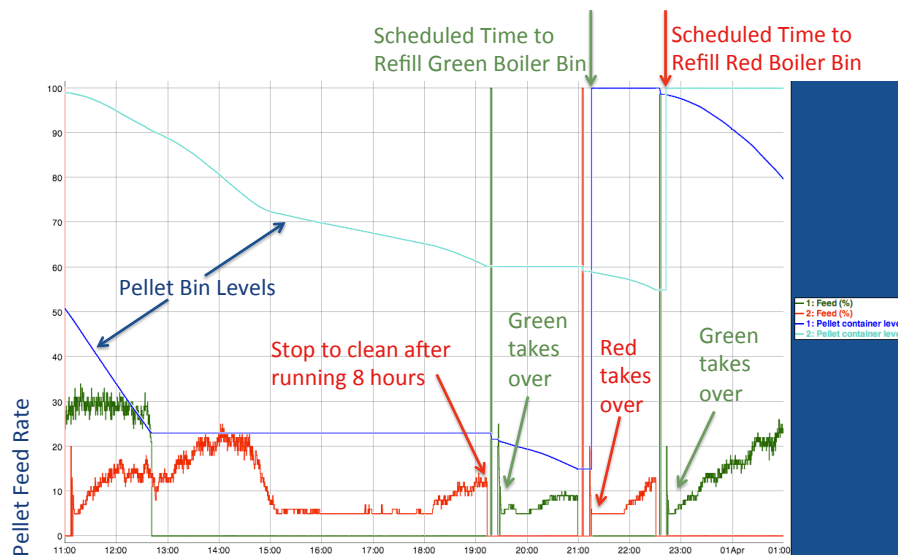
Add One Skilled Technician With a Monitor on His Mobile Phone...



Critical Elements To Monitor

1. Short cycling is bad
 - Inefficiency, emissions, wear and tear
 - Waste of oil/propane!
 2. External control of boilers can be harmful
 3. Boiler hygiene matters!
 4. Is heat distributed properly?
 - Are circulators doing their jobs?
 - Does distribution interfere with heating plant?
- Substantial fuel savings are possible!

Short Cycling: Parameter Choice Matters!



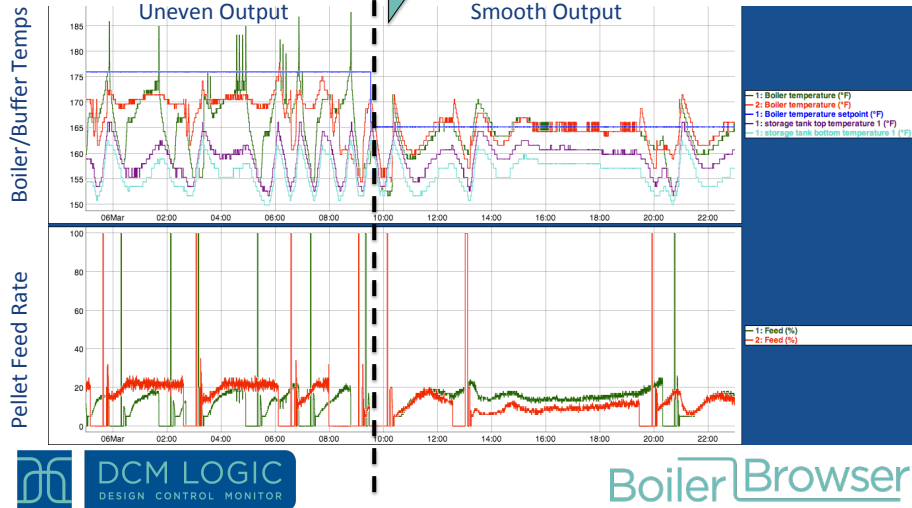
Short Cycling: Skillful Parameter Adjustments

Before

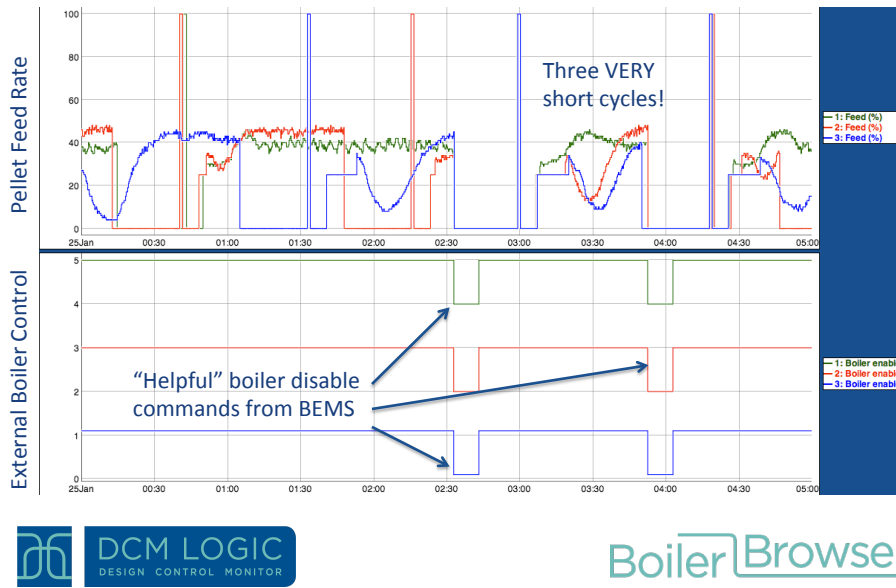
Short Cycling
Boiler Temp Spikes
Uneven Output

After

Long Run Times
No Temp Spikes
Smooth Output



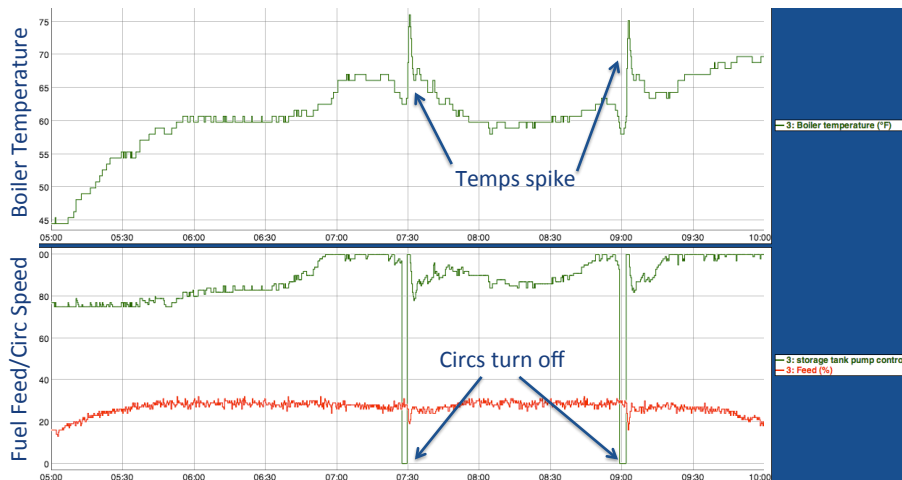
Be wary of too many cooks...



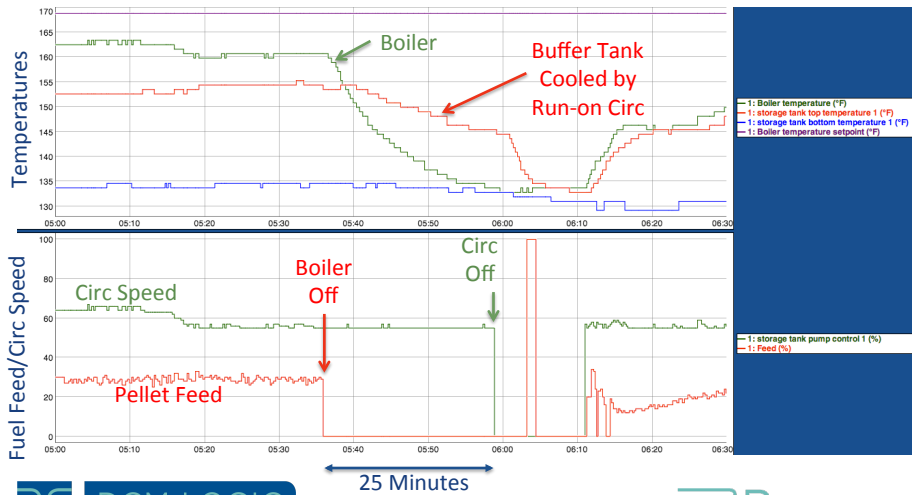
Boiler Hygiene

- Cleaning the boiler can boost output > 10%
 - Efficiency improves
 - Fossil backups less likely to come on
 - Moving parts less likely to bind and break
- Do you have a regular, documented cleaning program?

Heat Distribution: Circulators Take a Rest



Heat Distribution: Too Much of a Good Thing!



Monitoring + Adjustment = Savings

