

From: [Jim McLucas](#)
To: [Kathleen Truesdell](#);
CC: [Greg Darwin](#);
Subject: RE: good combustion practice
Date: Tuesday, August 31, 2010 3:48:35 PM
Attachments:

Kathleen -

The 7FA+e is the PG7241 gas turbine model, which GE is now calling the 7FA.03. This is the model that is installed at PG&E's Gateway plant. The OpFlex packages are essentially after-market modifications for the 7FA.03. Many of the features/software included in the various OpFlex packages are being incorporated in the base design for the 7FA.05. Wide Wobbe deals with changes in fuel composition, which we don't expect to see at Oakley. Ambient Adapt is similar, but deals more with the air side of the equation, such as changes in ambient conditions (i.e. temperature and relative humidity), compressor degradation, and sensor drift.

Thanks!

- Jim

-----Original Message-----

From: Kathleen Truesdell [mailto:ktruesdell@baaqmd.gov]
Sent: Tuesday, August 31, 2010 2:32 PM
To: Jim McLucas
Cc: Greg Darwin
Subject: RE: good combustion practice

Jim,

I see some information about OpFlex AutoTune on GE's website, but I can't find anything about the Ambient Adapt Software. Is it similar to the Wide Wobbe?

http://www.gepower.com/prod_serv/serv/env_serv/en/downloads/gea17061_opflexa_utotune.pdf

http://www.gepower.com/prod_serv/serv/env_serv/en/downloads/gea14918_widewobe.pdf

What does "+e" refer to for 7FA+e ?

Thanks,
Kathleen

-----Original Message-----

From: Jim McLucas [mailto:jim.mclucas@radback.com]
Sent: Tuesday, August 31, 2010 1:08 PM
To: Kathleen Truesdell
Cc: Greg Darwin
Subject: RE: good combustion practice

Kathleen -

I had been waiting for more detail from GE on the model based controls for ammonia injection, but haven't yet received anything. In the mean time, I hope this is of use.

Attached is a GE report on the evolution of their DLN combustor design (which I understand you may already have). Although this report is now 10 years old, it contains a description of the DLN-2.6 combustors that remain the design currently used by GE for the 7FA gas turbines. The DLN-2.6 discussion begins on page 12. The Appendix, which begins on page 16 contains some good general information.

While the heart of the "good combustion practices" are a result of using the DLN-2.6 combustors, GE has further improved the performance using advanced controls software and Continuous Dynamics Monitoring (CDM) enhancements. The CDM enhancements include onsite visual tools for monitoring combustion dynamics and performing diagnostics. The following are general descriptions of several of the software packages that are used to improve the emissions performance:

OpFlex* Ambient Adapt Software

Leveraging proven F-class Model-Based Control (MBC) technology, coordinated air-to-fuel scheduling and advanced fuel split biasing, this option provides a robust combustion tuning response to ambient changes as well as enhanced grid stability.

OpFlex* AutoTune Software

By integrating a closed-loop combustion dynamics model into the control system, the control system can respond to varying operation conditions in real time, simultaneously protecting the gas turbine components, maintaining emissions and optimizing performance.

GE also has developed MBC software for the control of ammonia injection, the result of which is a reduction in NOx during startups and the ability to

operate with low ammonia slip during normal operations.

* Trademark of General Electric Company

Thanks!

Jim McLucas

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-----Original Message-----

From: Kathleen Truesdell [<mailto:ktruesdell@baaqmd.gov>]

Sent: Tuesday, August 31, 2010 10:15 AM

To: Jim McLucas

Subject: good combustion practice

Jim,

Have you had a chance to write up a more detailed discussion about good combustion practice and the computer based controls to be used at OGS?

Thanks,

Kathleen Truesdell

Air Quality Engineer

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