

Controller Tuning & Design, LLC

The Process Control Professionals!



How to Select an Engineering Firm to Tune Your Boiler

With so many engineering firms to choose from how do you know who to choose? The OEM, the large A&E firm, the seat of the pants cowboy, or a quality firm that knows the profession?

The proper operation of your boiler can mean the difference between being able to bid into the spot market or being left behind. Your equipment must be able to respond to changing load demand as quickly as possible while still maintaining proper control and stability. This means that your boiler tuner must understand the principles behind tuning from a scientific point of view and not from, the all too common, 'seat of the pants' point of view.

While the majority of tuners can talk a good talk the reality is that the end result will be tuned far too conservative for your unit to be competitive in the market place.

As an example, if today your unit is tuned in such a way to allow the load to change at 3MW/min and the LMP goes to \$100/MW/hr then you need to increase load to the maximum of the plant as quickly as possible without the controls becoming unstable. With the proper tuning of your unit you may be able to increase your load at 7MW/min. At \$100/MW/hr or \$1.67/MW/min you would be able to capture \$6.67 every time the load changed. If we conservatively estimate 10 load changes per hour of, for simplicity, 4 MW each, this would amount to \$66.70/hr or \$160/day increased revenue.

The actual margin will vary widely from this example depending on the current LMP. However, if your boiler is not tuned for peak performance you are always leaving money behind!

Now that we have established the importance of proper tuning of your boiler, how can you select a tuner that can provide you with the best return on your investment? By asking the following questions!

1. Describe the method(s) you use to determine the tuning values.
2. Would previous tuning records be helpful for you?
3. How do you measure the quality of the tuning you perform?
4. Do you provide detailed reports of each loop tuned?

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5. What is contained in these reports? Is a sample available?
6. Do you model the process for each loop to be tuned?
7. What order is this modeling reported at?
8. Do you measure the following,
IAE, ISE, ITAE, SV, A_m , P_m , ω_{cg} , ω_{cp} , Robustness, t_{cl} , ω_n , ω_d , t_s , %Overshoot, ζ
9. Are there any addition performance measures you provide?
10. Do you provide 'As Found'/'As Left' records of the tuning performance?
11. Do you provide 'As Found'/'As Left' of any of the following charts
or graphs of each process loop?
Bode, Root Locus, Nyquist, Nichols, Robustness, Simulation Results

When you receive the answers to these questions from all of the vendors you will be able to choose your tuning specialist quickly and confidently.

If you would like a quotation for the services we can provide please feel free to contact us at info@controllertuning.com