



WELDING & METALS ENGINEERING

How Comparison and Process Optimization Testing Can Save You Money

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Not all research is pie-in-the-sky. Sometimes a little applied lab work can save you significant amounts of time, money, and aggravation.

Although many companies think of lab testing as "send samples, get lab results," there are actually three levels of lab care:

- **Option 1:** Testing and lab results only.
- **Option 2:** Testing and lab results with minimal interpretation (good when you don't want to give a failed test to a Client and want quick input on your remediation options).
- **Option 3:** Comparison and process - optimization testing, including detailed evaluation of the results and recommendations for possible future actions.



**Were time and materials
used optimally in this
production weld?**

Although some companies never explore past Options 1 and 2, Option 3—comparison and process optimization testing—is where the **potential for cost savings** lies.

Have you ever watched the welds cool and wondered something like the following:

- We could weld this job vertical up or vertical down—what's the bottom line for costs and quality?
- If we used 300°F as a maximum interpass temperature instead of 350°F, would the improvement in weld quality be worth the slowdown?
- We're using electrode XYZ, but someone else swears by electrode ABC. Both are acceptable for our application. Can we determine which electrode is better for performance and bottom line?

Getting answers to these kinds of questions can provide significant opportunities to cut costs and improve quality.

How to Carry Out Comparison and Process Optimization Testing

Comparison and process optimization testing usually involves one of two scenarios:

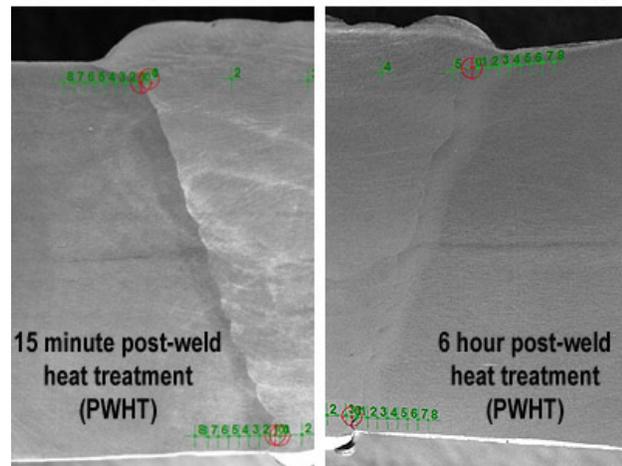
- Which of these alternatives is best in terms of cost, time, quality, or some combination of factors that the Client deems important.
- How can we manipulate the following inputs: [X,Y,Z] to get the best output in terms of production rates, consumable costs, quality of finished work, etc., as important to the Client.

Here are some examples of the kinds of testing projects that Clients can bring to **Qualimet**:

Here are four different filler metals. Test them and advise us on the relative merits of each for our application, and mention any hidden factors we may have overlooked.

- We plan to purchase new welding equipment. Carry out testing to quantify the merits and limitations of the welds produced by one machine versus another. For the types of welding we do, which machine is best?
- We just purchased new welding equipment. Is it set up to give us the best value? If not, how do we fine tune it? How do we compensate for any weaknesses? Perform testing to answer all these questions.
- Here are two procedures. How big is the heat affected zone for each one, and what difference will it make in our project?
- Here's the weld procedure we're using on a job. Why aren't the welds passing the required testing? Propose solutions and validate them with a testing program.

Two coupons prepared by same welder, same materials & processes (GTAW bottom passes, SMAW upper passes)



Differences in heat affected zone (HAZ) correspond to differences in test performance (pass/fail)

A typical testing program begins with a clear and specific question, and ends when:

- Interpretation of test results provides a reliable answer, and
- any additional information uncovered during testing has been evaluated and its ramifications understood.

A successful testing program provides hard data for effective decision-making. As such, it opens up possibilities for major cost savings and/or quality improvements.



Qualimet's Team Delivers Cost-Effective Applied Testing Programs

To benefit from Qualimet's years of in-depth experience, just give us a call. Working within your budget and timelines, we'll be happy to explore ways that comparison and process optimization testing can reduce your costs and improve quality. For more information, contact John at 780-641-0760 or john@qualimet.ca.