FUEL OIL NEWS

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A New Gun?

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I first got hooked on the issue of smoke and its affect on efficiency way back in 1971. I was working as a serviceman and had been trained on a new federal program about Clean Air. The emphasis was on making sure we had a stable draft and zero to a trace of smoke on every burner we worked on. We were doing wet-kit tests on every tune-up, and now they wanted us to check the draft and smoke on every job. It was these tests and legislation that lead to the code changes that now require whenever we change the characteristics of combustion, we test.

In the 1970s during the Oil Embargoes, the industry learned a lot about fuel prices, combustion testing, the need for new equipment and a host of other issues that today make you wonder if we learned anything from the past. One federal program after another came out that taught us how and why, but it seems to me that for many of us the past never happened.

In 1975 I started my career as a teacher. In the process of teaching basic oil burners I came across some ways to teach cad-cell theory and smoke adjustments using an ohmmeter and developed the now infamous Lanthier Scale. I've always felt that once you establish and stabilize the draft that there is no faster or easier way to setup an oil burner than by knowing what the smoke level is and setting for a true zero reading. In my opinion, there is no faster way than with a smoke gun. Here's what I said about the smoke tester in

an article in 1992:

"A few years ago while teaching a course on combustion, I was asked during a break what I considered to be the most important tool in the service kit. Later that same day, we discussed the importance of that one tool in the combustion kit that has really more value to the serviceman than any other did. The smoke tester, or as many of the old timers call it a 'smoke gun.'Unlike the gunfighter of the Old West, most servicemen do not have to carry a gun to survive while servicing burners, but most good servicemen never go into a basement or boiler room without their smoke gun. By knowing how to use a smoke tester, the entire procedure for servicing burners and leaving them at top performance can be achieved accurately and quickly."

As new combustion test equipment came on the market, I was excited that smoke testers had evolved and found their way into electronic testing equipment. Now it could be fast and accurate and that meant more profitability. But that concept didn't last long. It was found that smoke testing beat up electronic testers, the internal pumps and filters and everything else in these electronic marvels. It shortened the life of the sensors and just generally messed up the insides. I was disappointed and wondered if I would ever see the speed of electronics come back to my favorite test, the smoke test.

Just a few years later in a research project conducted by Brookhaven about smoke testers, it again was felt that we would have to stay with the smoke gun for a while. Again, I was disappointed. Why could we electronically test for draft, temperature, CO^2, CO, SO, NO^X and so much more and we still had to fall back on a device first introduced in 1948? Although the instrument could work well, it had so many variables. Was the tester in good condition? Was it used correctly? What light was the smoke spot looked at in? Just so many variables, and yet I was convinced maybe some day we could do this quickly and accurately every time. Well, the time has come. Let me tell you about my new pet device and just see if this doesn't want you to put a new gun in your holster.

The Testo 308 digital smoke tester, has finally changed 60-year old technology to state-of-the-art. In the 60^{th} year of smoke testing, oil burner technicians finally have a fool-proof way to get to true zero smoke. The 308 is an affordable electronic tester that can be used stand-alone or in conjunction with most of Testo's analyzers. It is fully automatic and ends up giving you both the traditional smoke spot and a digital reading of the smoke. In addition, the readings can be printed or sent to numerous devices by IRDA/Bluetooth technology.

The digital reading takes the area that we once called trace of smoke and breaks it out in a digital format. That's right, the area between zero and a number one smoke now is

broken down into ten digital spaces. So, if you truly believe that a trace of smoke is half way between zero and one, it would appear on the Testo 308 as a 0.5 smoke. In the image is a reading of 0.8, which would be just a bit higher than where you want to be. What's so great about this is the accuracy and the speed. The reason for moving to electronics is speed, but in this case it is also about accuracy that no manual smoke tester can deliver. No missing the ten full strokes, which is probably the biggest mistake made. (You can reference the proper use and maintenance of any manual tester on my Web site at http://firedragonent.com/Article1.pdf)

When setting up an oil burner, you always adjust your draft first. Right now my favorite way is using an electronic analyzer or a digital manometer. By using one of these digital marvels, I can dial in highly accurate draft and air settings. Then, I move to the Testo 308 and fine tune the head or air-gates to get as close to 0.5 smoke (trace) as possible. Now I take a reading using an analyzer or the old shaker bottle and adjust my fluegas by one to one and one-half percent. For those of you using an instrument that measures carbon dioxide, you're looking for a decrease. For those of you using an instrument that measures oxygen, you're looking for an increase. Finally, I just double check myself with my analyzer or shaker bottle, take my temperature and I'm out of there. If you're still using the wet-kit, this makes you a lot more high-tech and accurate in your smoke readings. If you're using electronics it just makes your equipment setups even more reliable and a lot faster and speed turns into money, just like that.

If you're interested in purchasing the 308 get in touch with us since we have the best tech support in the business.

See ya.

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