

## Use of Combustion Instruments for Diagnosing Service Problems, Setup of Heating Equipment and Preventing Future Service Calls - VTF-1

**F.W. Webb - 240 East Road - Bennington, VT - June 21, 2022 – 8:00AM – 4:00PM**  
**6 NORA CEUs & 8 VT Oilheat CEUs - includes the required two hours of CO/Venting instruction**

**PLEASE NOTE: STUDENTS NEED TO BRING A COMBUSTION ANALYZER TO CLASS.**

This Vermont Fuel Education Center (VFEC) course features hands-on, live fire equipment. This one day seminar is for heating service technicians, HVAC sales personnel, service managers, DSM personnel, plumbing & heating contractors and others.

### Topics:

- Why combustion analysis instruments are a must with today's heating equipment
- Know what you are testing for, and how your tests must combine for peak efficiency
- In depth discussion of draft, smoke, carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), stack temperatures and excess combustion air
- The importance of setting your equipment to manufacturers' specifications and what happens if you don't
- Locating and diagnosing problems with instruments, instead of trial and error
- Using combustion instruments on service calls to detect future problems, before they become costly service calls or callbacks
- How to visually detect a problem and the use of combustion instruments to pinpoint the cause
- Communicating with customers and the office
- Your findings and recommendations using your combustion analysis data
- Care and maintenance of your combustion instruments
- Knowing when to RED TAG a heating unit

### Training Boiler (what it can do, what it can simulate):

- Fuel Pumps:** High vacuum, cavitation of pumps, suction leaks, low operating pressure, poor atomization of fuel, effects of cold oil, poor fuel cutoff
- Draft:** High draft, low draft, uncontrolled draft, noise & smells from draft problems, importance of draft regulators, high stack temps
- Nozzles:** Poor atomization, soot, odors, cold oil, suction leaks, sizing
- Combustion Zone:** Chambers, chamberless firing, air leaks, low CO<sub>2</sub>, vaporization, efficient combustion
- Stack Temps:** High stack readings, low stack readings, condensation in fluid gases, effects of condensation
- Ignition:** Poor starts, plugged nozzles, smooth starts, pre-ignition, intermittent and interrupted ignition, carbon bridging of electrodes

### Instructor –

Steve Goodrich, 30 years of experience:

- Installation, service and repair of heating equipment
- Managing of service departments and training of personnel
- Customer communications, explaining service, updating or replacing heating equipment
- Founder of Quality Plumbing & Heating and Kelly Fuels, both of Bennington, Vermont
- Vermont licensed Master Plumber
- Vermont Licensed Type S Journeyman electrician
- Vermont licensed oil heat technicians
- Massachusetts licensed journeyman plumber, oil burner technician
- PMAA Certified oil heat technician
- Past president of Vermont PHCC
- Past Instructor to the Vermont Apprenticeship Program

### THE DETAILS:

- Certificates: Are suitable for framing, will be sent to all students completing all requirements of this seminar AFTER the seminar date. VFDA reserves the right to withhold certificates for students who depart prior to the end of the class or arrive late.
- This course qualifies for 6 hours of NORA & 8 Hours of VT oil heat continuing education, includes the required 2 hours on CO/Venting Instruction. VFDA will notify NORA of your successful completion of this seminar and report your credits.
- Documentation Requirements: there are no documentation requirements for this course.
- Hand-outs: Materials will be provided. It is suggested, but not required, that students with a NORA Silver or Gold manual bring this to the class for reference.
- Late Arrival/Early Departure: Please be on time for class. Certificate will only be issued to students completing all aspects of the class including a 10 question exam.
- Lunch is on your own. Students have 30 minutes for lunch.
- No Shows: Firms registering students and failing to attend without notice to VFDA on or before the registration deadline date will be billed for and liable for the full amount of tuition.
- Payment: Checks may be made payable to "VFDA" and must accompany registration form.
- Pencil: All students testing should bring a number 2 pencil to class.
- Pre-Registration Deadlines—Advance registration is required. Registrations must be received by the date(s) noted on the registration form. VFDA does not, in any way, represent that it can accommodate walk-in students. Registrations are processed on a first come, first serve basis. Paid Registrations are given priority over registrations received without payment. Advance registration is required. You must register by the deadlines shown above.
- Schedule: 7:45 a.m. early arrival & coffee/Danish (if available at the facility) // 8:00 a.m. training begins // 12:00 p.m. Lunch Break // 3:00 p.m. seminar ends and exam begins (approximate time). Most students should be done by 4:00 p.m.

**Questions?** - Contact VFDA at 802-223-7750 or email [steph@vermontfuel.com](mailto:steph@vermontfuel.com).

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<b>Use of Combustion Instruments for Diagnosing Service Problems, Setup of Heating and Preventing Future Service Calls</b>  Class held on June 21, 2022  <i>Student Name</i>	<b>COST:</b> \$225 - VFDA Member \$300 - Non-VFDA Member <i>Limited to 20 Students.</i>
1	\$ <span style="float: right;">\$225 Members \$300 Non-Members</span>
2	\$ <span style="float: right;">\$225 Members \$300 Non-Members</span>
3	\$ <span style="float: right;">\$225 Members \$300 Non-Members</span>
4	\$ <span style="float: right;">\$225 Members \$300 Non-Members</span>
Not a VFDA member? Call 802-223-7750 or go to <a href="http://vermontfuel.com/join">vermontfuel.com/join</a>	\$ _____ <b>TOTAL</b>

**PLEASE NOTE: STUDENTS NEED TO BRING A COMBUSTION ANALYZER TO CLASS.**

We have read, understand and agree to the policies and details as outlined in this notice. We will ensure that students arrive at class with the necessary materials.

Company \_\_\_\_\_ Contact \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

<input type="checkbox"/> Check Enclosed	<b>Payment by Credit Card:</b>
<input type="checkbox"/> Payment to Follow	Name _____
<input type="checkbox"/> Bill Us ( <i>members only</i> )	Card # _____
<input type="checkbox"/> Credit Card	Exp. Date _____ CVV _____

**FAX TO VFDA: 802-419-3313**  
 or mail to VFDA - PO Box 1370 - Montpelier, VT 05601