

Ascent™ Combi Boiler

High Efficiency Tankless Coil Boiler Alternative



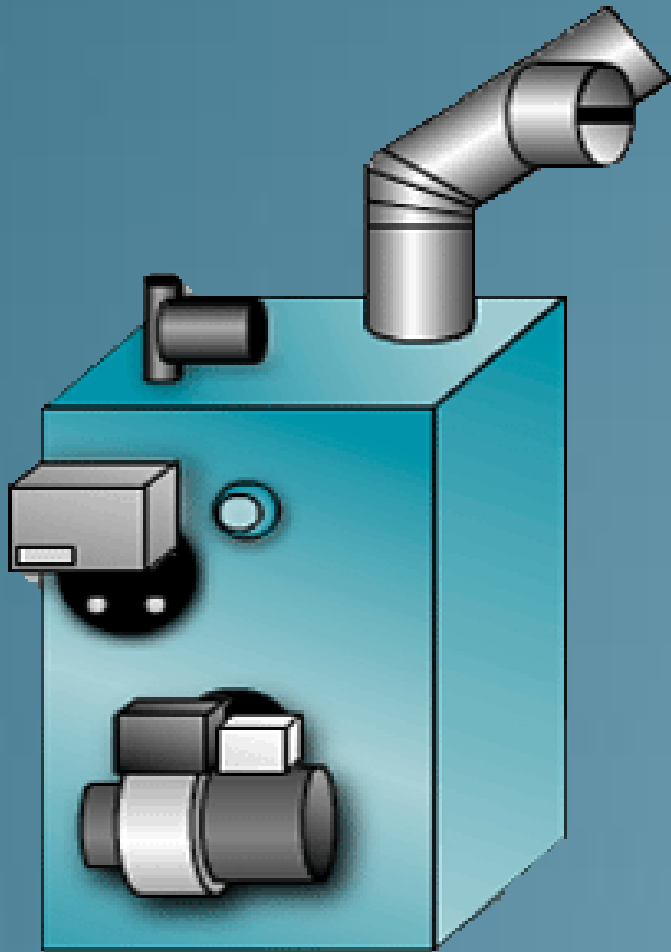
Roger Marran



Research and
Development
Sponsor:



Why does oilheat need an alternative to tankless coil boilers?



Customer satisfaction:

- 1) Better Hot Water Quality
- 2) Higher Efficiency
- 3) Quiet Operation

Industry Perception:

Fuel Conversions vs Tankless Coils

- Oilheat appears inefficient
- Oilheat is loud
- Oilheat runs out of hot water

This false impression is Product based, not Fuel based!

Ascent™ Combi Boiler Design Criteria



- 1) Competitive Price
- 2) Drop-in Replacement for Tankless Coil
- 3) Better Efficiency with Lower Idle Loss
- 4) Better Hot Water Temperature and Comfort
- 5) Long Life Pressure Vessel
- 6) Hard Water Serviceability

Options

- ✓ Whisper Quiet Operation
- ✓ Hot water operating modes

Ascent™ Combi Overview

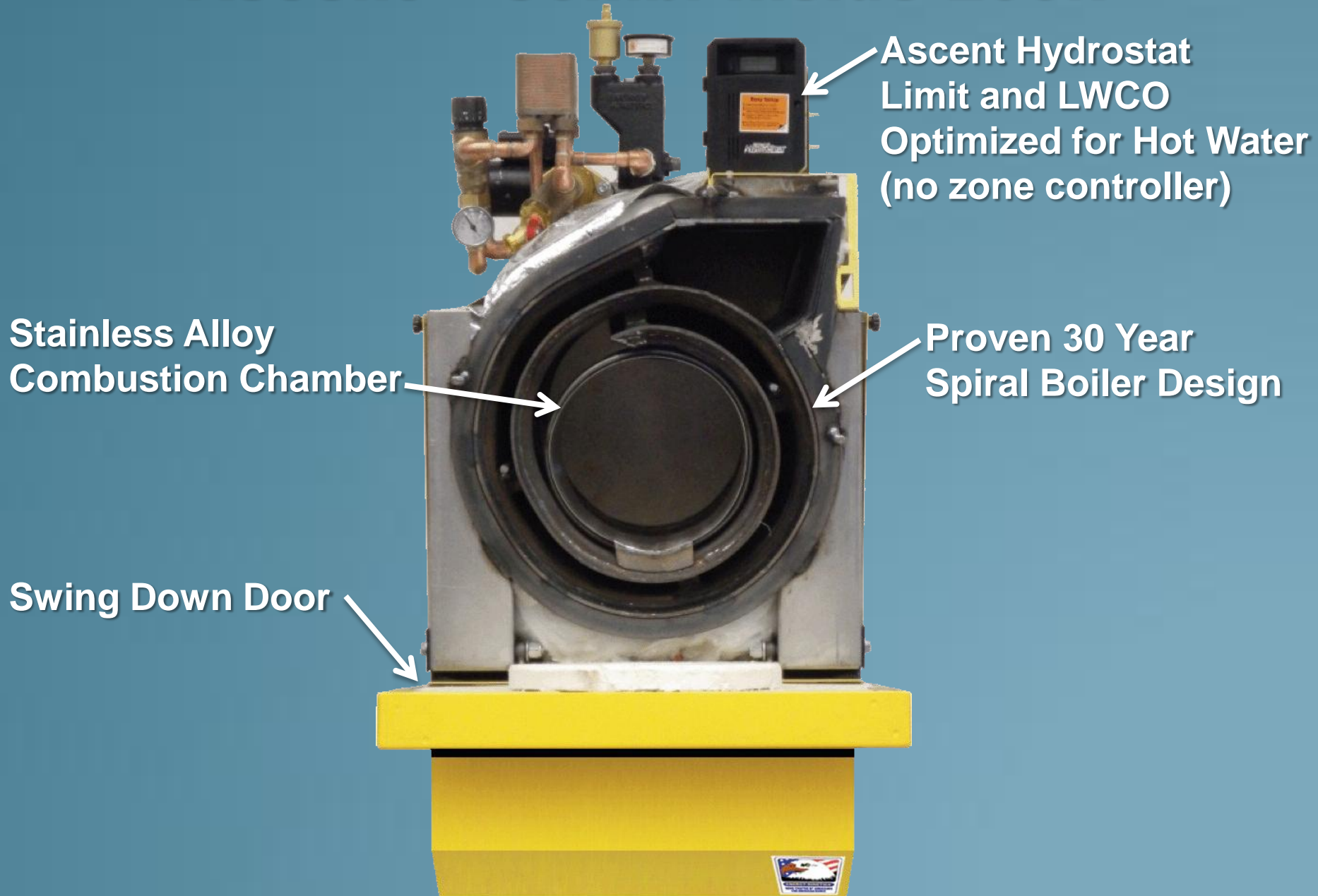


- ✓ 0.85 GPH to 1.25 GPH
Replaces up to 4 section boilers
- ✓ 87 AFUE with Low Idle Loss

Pre-mounted Stand
Optional Silent Burner Cover



Ascent™ Combi Inside Look



Ascent™ Combi CIP and Features

Flow Switch

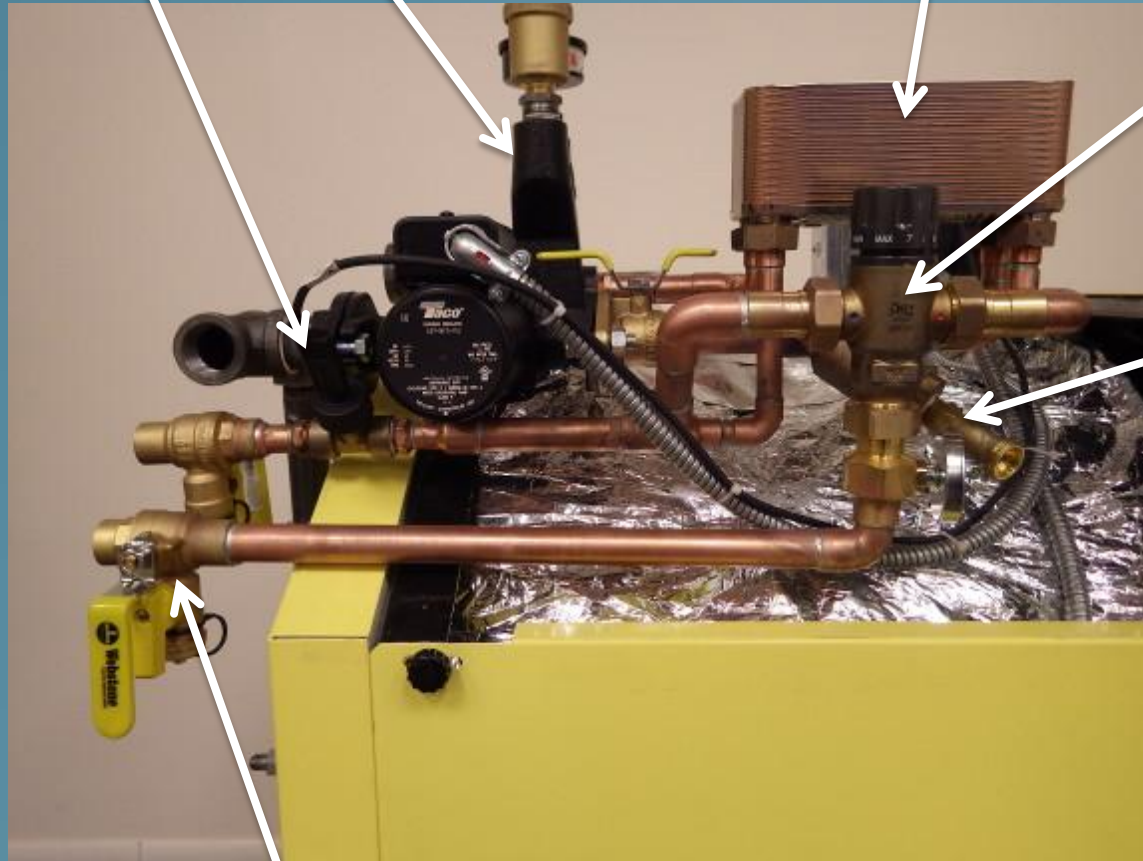
Air Elimination

Heat Exchanger (CIP)

Mixing Valve
(CIP)

Hydronic
Y-Strainer

LEFT SIDE
VIEW
(Top Removed)



Clean in Place (CIP) Valve for Plate
Heat Exchanger and Mixing Valve

1 GPH Tankless Coil Boiler (2.6% Idle Loss)

916 Gallons per Year

*Based on preliminary testing data

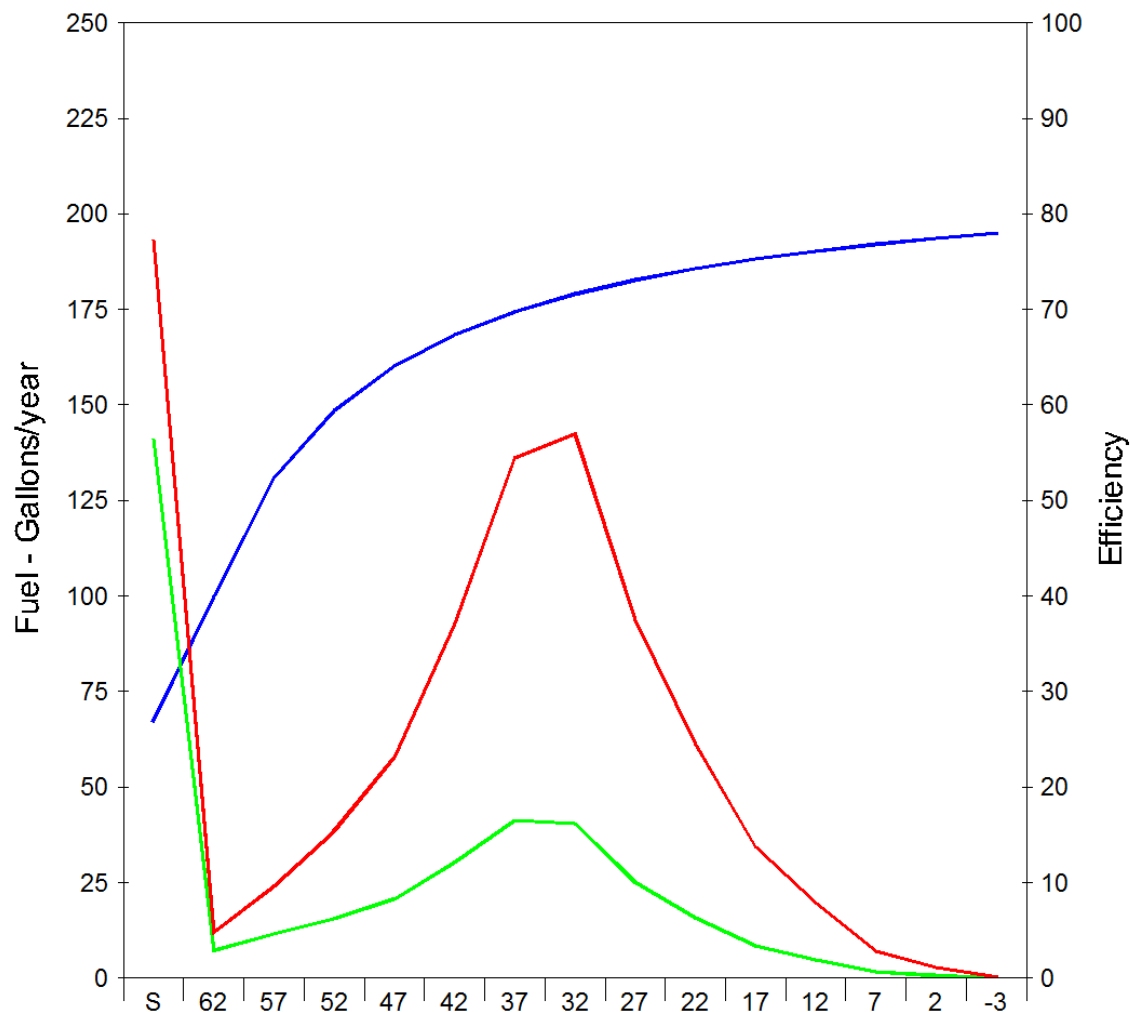
Inputs

Steady State Eff.	83.7
Idle Loss (%)	2.6
Oversize	4.7
Heating on/off - 1/0	1
Design Day Heat Load	30000
Domestic Hot Water (gal/day)	64.3
Oil Price (\$/gal)	2.25
Inside / Isolated Location Factor	0

Calculate

Results

Seasonal Efficiency	60.2
Annual Oil Used (gal)	916
Annual Oil Cost (\$)	2060
Amount of oil wasted (gal)	364



1 GPH Ascent Combi (0.92% Idle Loss)

725 Gallons per Year

*Based on preliminary testing data

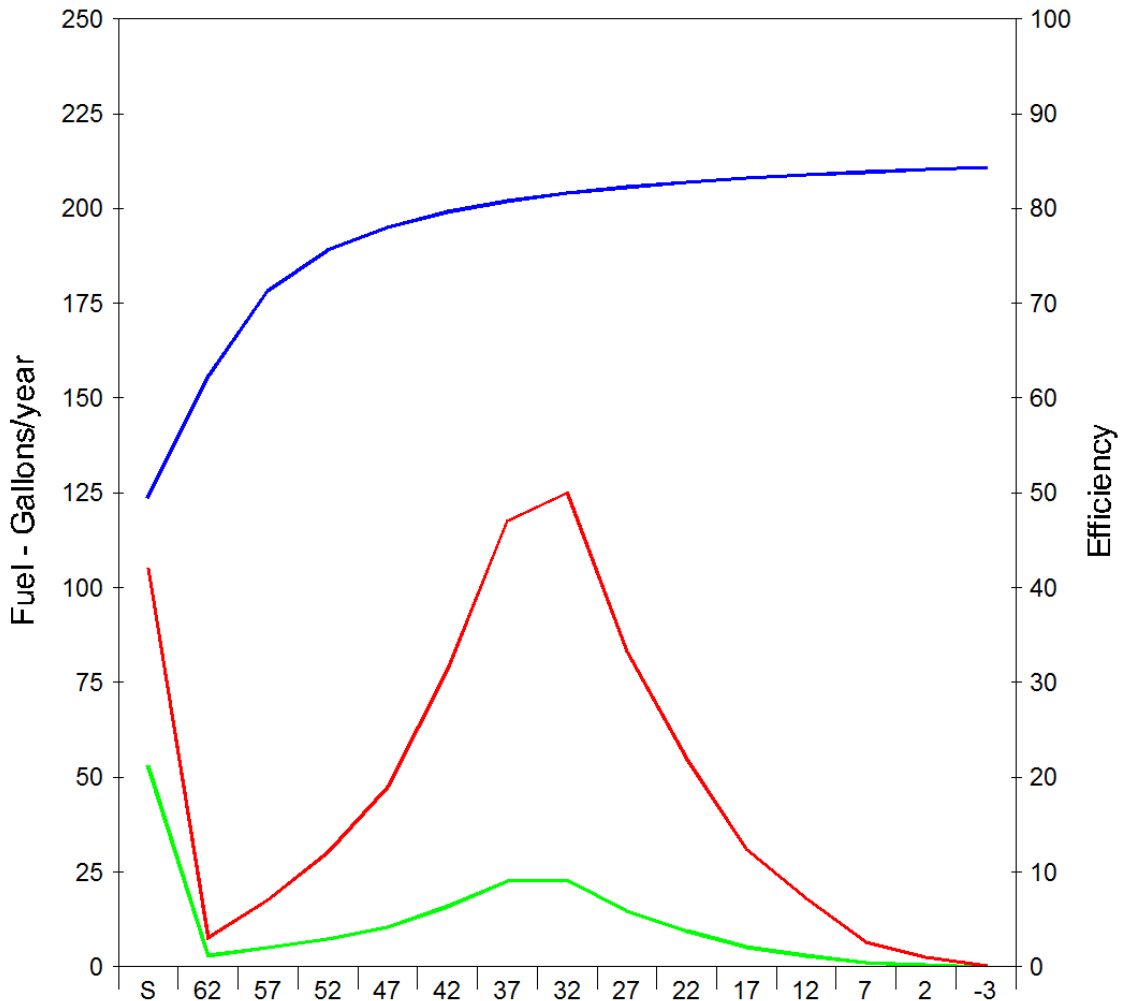
Inputs

Steady State Eff.	86.5
Idle Loss (%)	.92
Oversize	4.7
Heating on/off - 1/0	1
Design Day Heat Load	30000
Domestic Hot Water (gal/day)	64.3
Oil Price (\$/gal)	2.25
Inside / Isolated Location Factor	0

Calculate

Results

Seasonal Efficiency	76
Annual Oil Used (gal)	725
Annual Oil Cost (\$)	1632
Amount of oil wasted (gal)	174



Estimate: Save 191 gallons and 20.8%

Ascent™ Combi Hot Water Modes

UP TO
87%
AFUE



Simple Operating Modes (easy select)

- 1) Always Ready Instantaneous Hot Water (Plate Warming Mode)
- 2) On Demand...hot water is ready in about 2 minutes from cold start (winter ready with heat calls)
- 3) Smart Learning – no delay



Two Quick on/offs of the
hot water tap signal
Ascent to make hot water

Ascent™ Combi Hot Water Output

UP TO
87%
AFUE



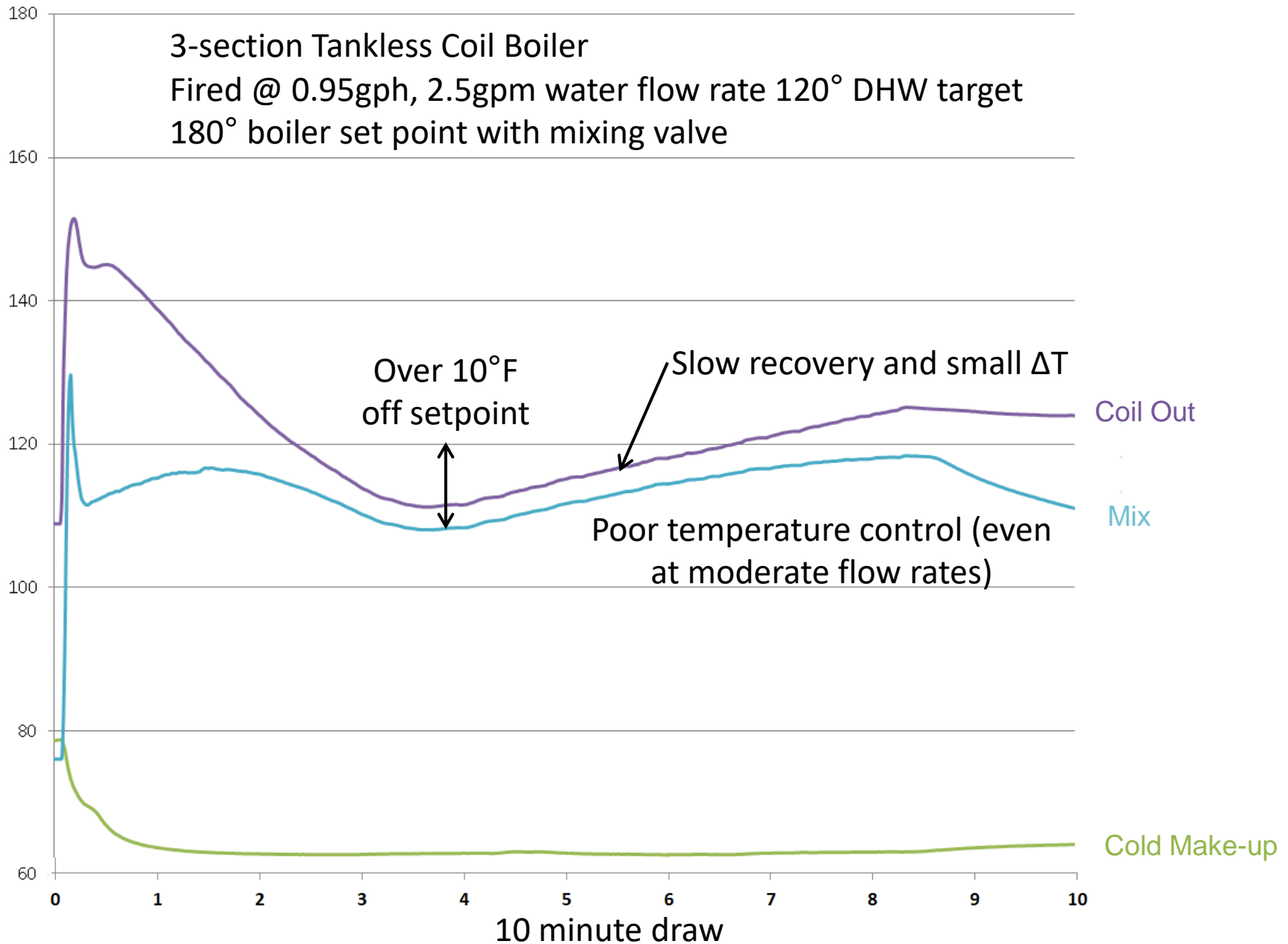
Nearly 4 GPM

**Continuous Flow with
77° F Rise**

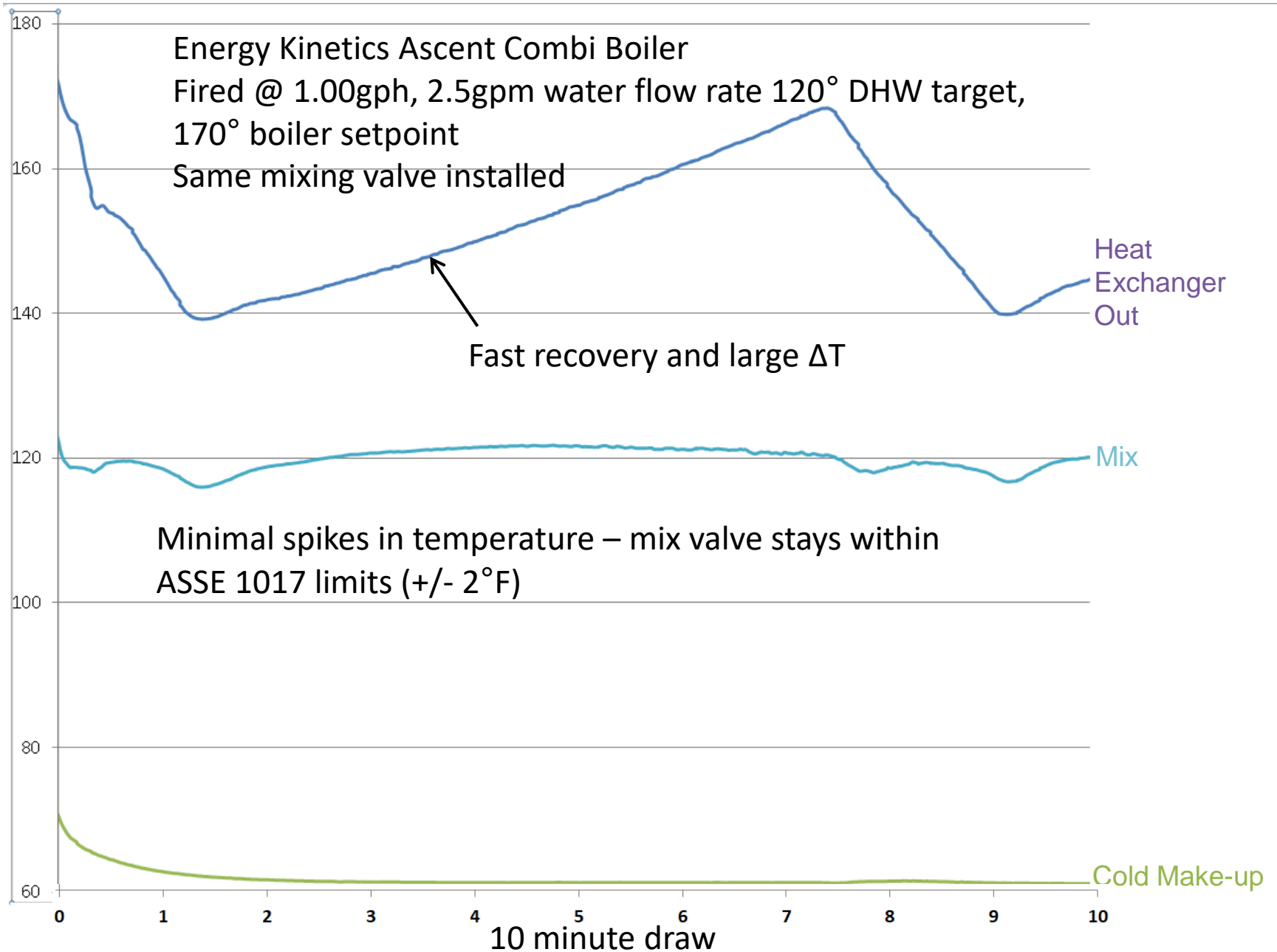
**Much better than tankless
coil boiler hot water.**

***For high flow showers, fast fill
tubs, and even higher efficiency,
System 2000 is recommended**

Tankless Coil Hot Water with Mixing Valve



Ascent Combi Hot Water



Ascent™ Combi Brochures

**ENERGY KINETICS
JUMPS FAR AHEAD
of old fashioned
tankless coil
technology!**

INTRODUCING ...
Ascent™
Combi boiler by Energy Kinetics

Simple technology that cuts the
high fuel bills of tankless coil boiler systems
- and **learns** your daily routines!*

UP TO
87%
AFUE

Plus! Your family
enjoys peaceful quiet
thanks to our
boiler design - and,
with the silent burner
cover, Ascent is more
quiet than a small
microwave oven!
Other boilers are 30
times noisier!

Exceptional Benefits:

- **Proven** 30 year boiler!
- **Whisper quiet with silent burner cover** - no need to turn up the TV!
- Combined heat and hot water in one boiler with **hot water priority!**
- **Replaces 2, 3 and 4 section oil boilers!**
- **Lifetime Limited Warranty**

For high flow showers, fast fill tubs, higher efficiency and more fuel savings, or if you currently have a hot water tank, ask about our other great Energy Kinetics products! (See back cover.)

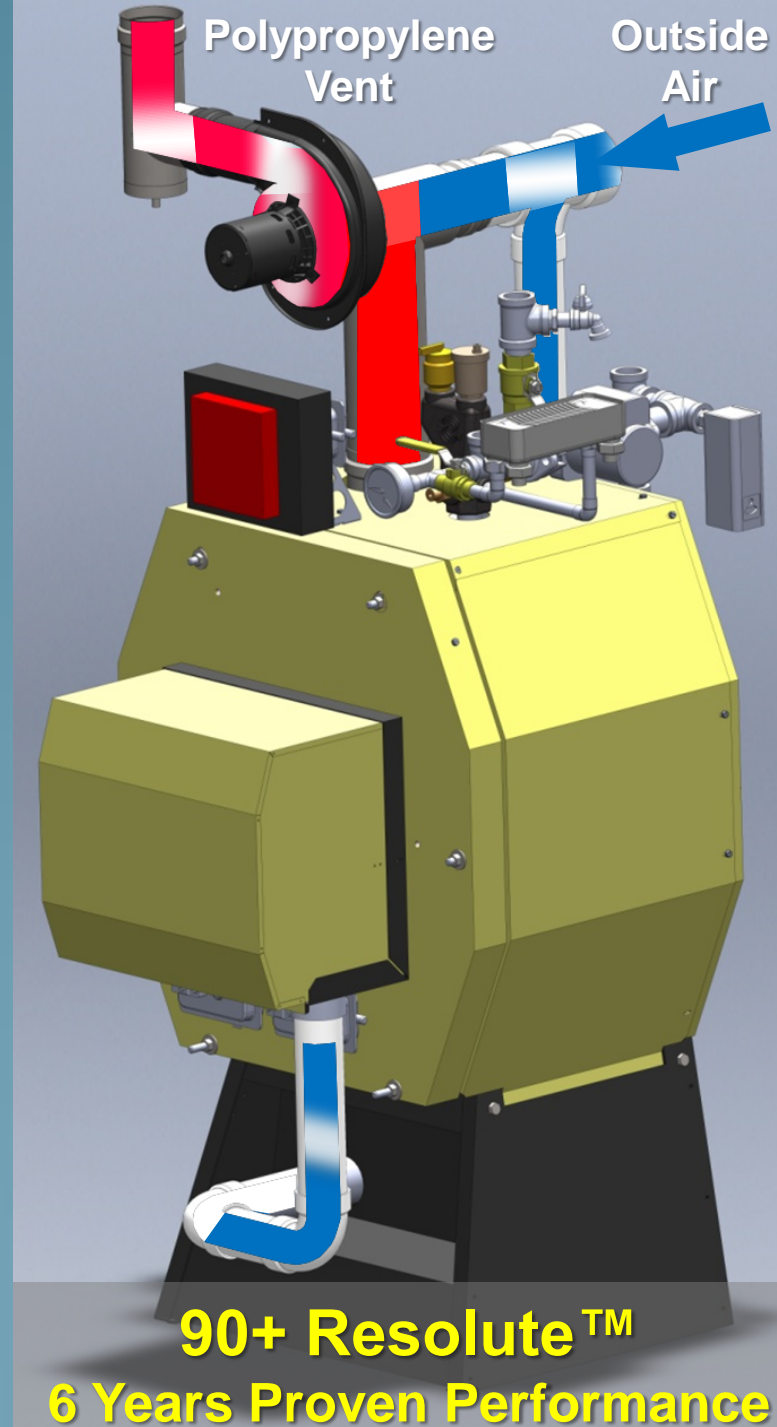
SHOWN
WITH OPTIONAL
SILENT BURNER
COVER

*SEE PAGE 2

Dilution Air Venting

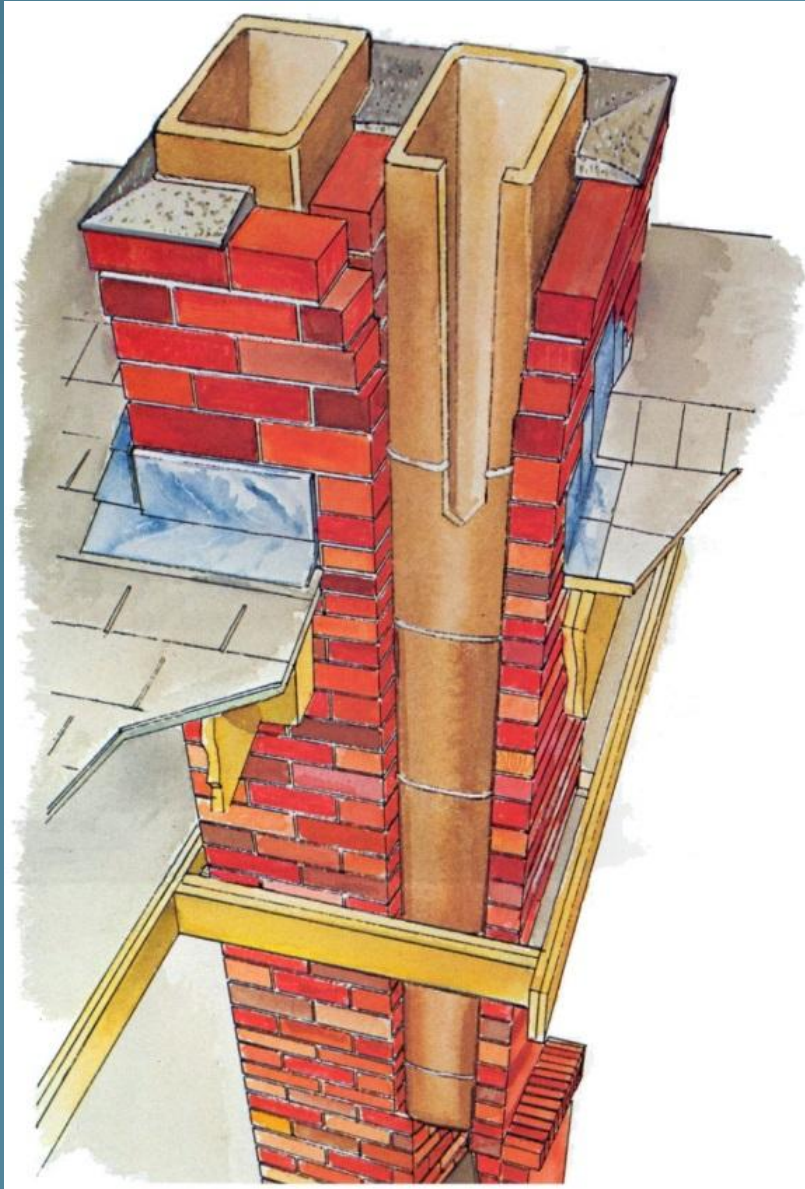
An Enabling Technology for Oilheat Advances

Research and
Development
Sponsors:



90+ Resolute™
6 Years Proven Performance

Chimneys Applications



- Can require a liner
\$2,000 to \$3,000
- Consumer fuel switching
- Low cost plastic venting helped make gas water heaters a competitive option
- ✓ Bring lower cost reliable options to Oilheat

Dilution venting

A page out of the water heater playbook...



Dilution
air



Mixed
Flue Gas



Flue Gas

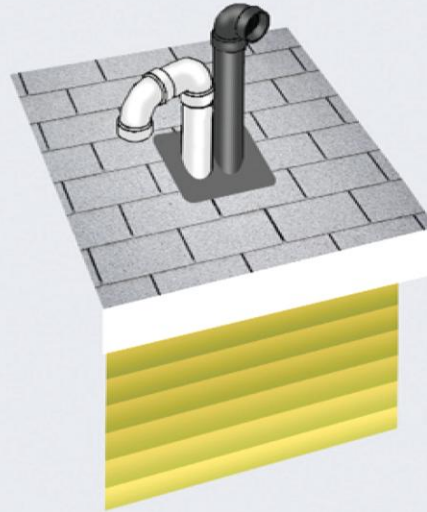
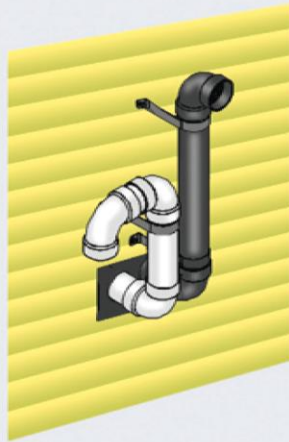


Venting Solutions

(Centrotherm Example)



Sidewall low profile



Through the roof



Flex Chimney

Vent with 3" Polypropylene or Stainless Steel (cleanable)
248°F Max Flue Temperature Rating for Oilheat (100°F to 150°F)
Pipe air intake with PVC or Polypropylene
Maximum length 50' equiv. intake plus 50' equiv. exhaust

Address Design Concerns

✓ Cold weather

- ☐ Will it condense?
- ☐ How cold is too cold?
- ☐ Impact on components?

✓ Humid make up on hot summer days?

- ☐ Lower relative humidity with burner running.

✓ Vent system condensing?

- ☐ No. Provision for rain or condensate built in.

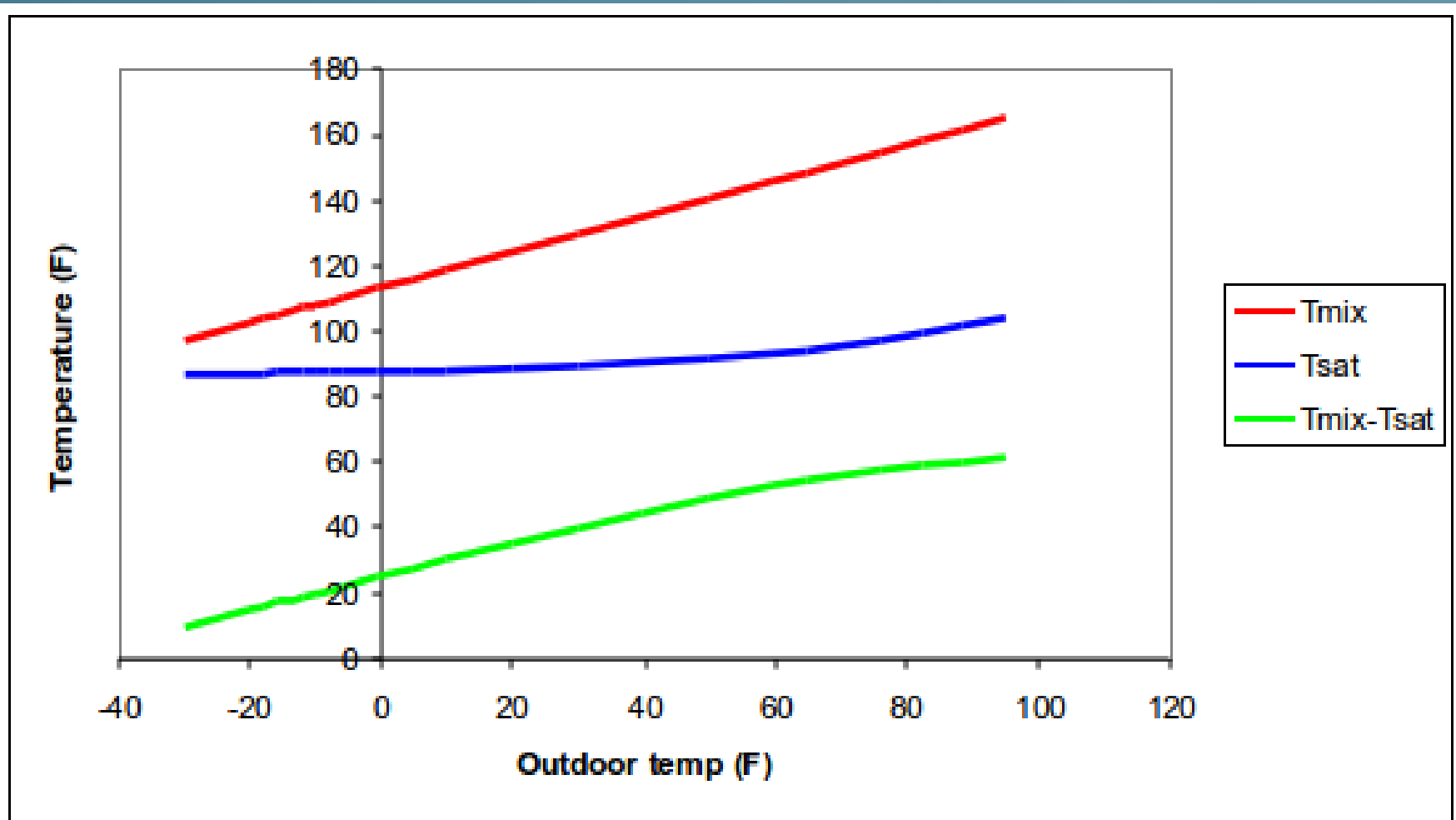
✓ Wind loads?

- ☐ 60 MPH sustained winds, 80 MPH gusts

✓ Burner Clean Operation?

- ☐ Light off comparable to a very good chimney (no draft loss on light off)
- ☐ Chamber delivers exceptionally clean performance at low and high draft, cold and warm temperatures

Calculation Results Example



$T_{\text{exhaust}} = 250 \text{ F}$, $R = 1.2$ (dilution/flue), $RH = 100\%$, $CO_2 = 10.6$

Field Results: Fairbanks Alaska

Combination Hood
Stainless Steel “Nozzle”



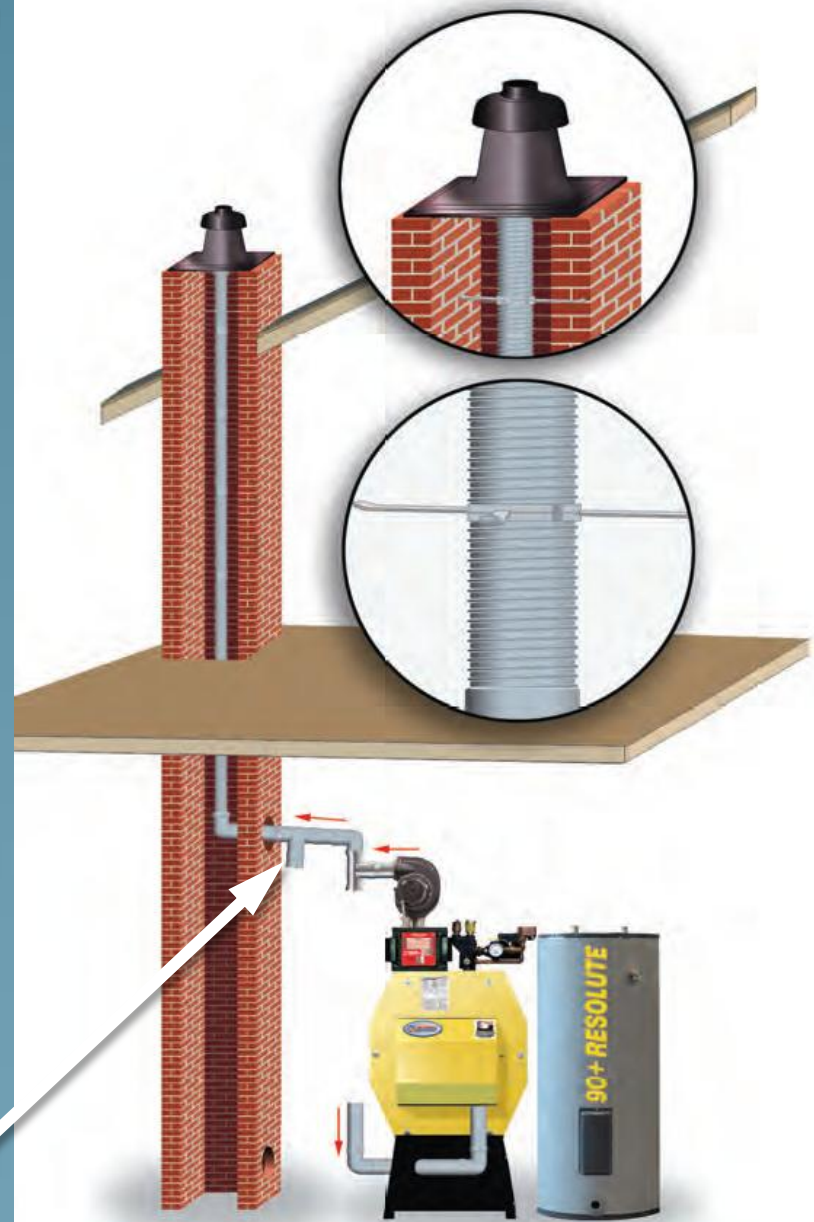
Temperature: -50°F

Combination hood preheats dilution air.
No issues at sustained -60°F temperatures.
Condensing gas boiler hotel example.

Venting Vertically with 3" Centrotherm Flex Polypropylene

Air intake from side wall
-or-
Second Flex line

Rain Trap at Thimble
(dries out)
No draft regulator



90+ Resolute Boiler

6 Years Proven Performance



0.68 GPH to 1.0 GPH
Multi-Fuel



Most Efficient
2017
www.energystar.gov

