VIESSMANN

climate of innovation

Vitodens 200, B2HA / B2HB - Product Introduction

Vitodens 200, B2HA / B2HB

Wall Mounted, Gas-Fired Condensing Boiler

Vitodens 200, B2HA / B2HB

A member of the Viessmann family of heating products

Solar systems

DHW tanks
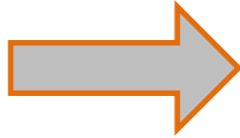
AirFlow*PLUS*
Hydronic Air
Handler

- Condensing boilers
- System controls

Vitodens Boiler History

Vitodens 200, WB2A
2000 – 2009

Vitodens 200, WB2B
2009 - 2012

Vitodens 200, B2HA – B2HB
2013 to today

Vitodens Boiler Family Today

Vitodens 100, WB1B
2 sizes
37 - 118 MBH

Vitodens 200, B2HA / B2HB
10 sizes
12 - 530 MBH

Vitodens 222-F, B2TB
2 sizes
12 – 125 MBH
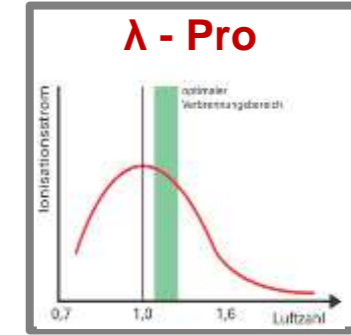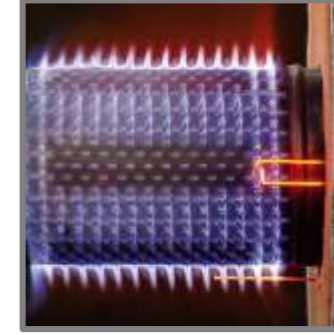
Vitodens 200, B2HA / B2HB

Features:

- Wall mounted gas-fired condensing boiler

- 10 sizes: from 68 MBH to 530 MBH
  - Stand alone or multi-boiler

- Fuel saving, highly efficient condensing operation

- Up to 95% A.F.U.E efficiency

- Compact design and modern appearance

- Zero clearance to combustibles

- Whisper quiet operation

- Fast and easy to install, simple to service

- Flexible venting options

Vitodens 200, B2HA / B2HB

Features:

- InoX-Radial corrosion resistant stainless steel heat exchanger

- MatriX-Cylinder burner (NG or LP)

- Full modulation with up to 6.6:1 turndown

- Low NOx emissions < 20 ppm

- High altitude operation up to 10,000 FASL

- Lamda Pro Combustion Technology

λ - Pro

Vitodens 200, B2HA / B2HB

Features:

- Vitotronic 200, HO1B boiler control with black interface for easy programming and set up

- Comes internet ready for:
  - Vitocom 100 LAN1 module and Vitotrol App
  - Vitogate 300 for BMS network integration

- Full line of Viessmann System Technology accessories available:
  - Low Loss Headers
  - Mixing valve and actuators
  - Remote controls
  - Custom control panels
  - Boiler stands

Vitodens 200, B2HA / B2HB

Benefits:

- **Long service life**

- **Lowest possible fuel consumption**

- **Reliability:** Proven Viessmann Heat Exchanger, Burner and Control designs

- Suitable for a **wide range of applications** from small condo, to custom home, to large commercial

- Perfect for multi-temperature **heating + DHW systems**

- **Fast and easy** to set-up and service

Vitodens 200, B2HB

Five Sizes Available

Natural Gas Capacities - MBH

Model	Min	Max
B2HB-19	12	68
B2HB-26	19	94
B2HB-35	19	125
B2HB-45	32	160
B2HB-57	32	199

Notes:
- Different Min. inputs for LPG

Vitodens 200, B2HA

Five Sizes Available

Natural Gas Capacities - MBH

B2HA-80
71 — 285

B2HA-88
71 — 311

B2HA-100
71 — 352

B2HA-112
113 — 399

B2HA-150
113 — 530
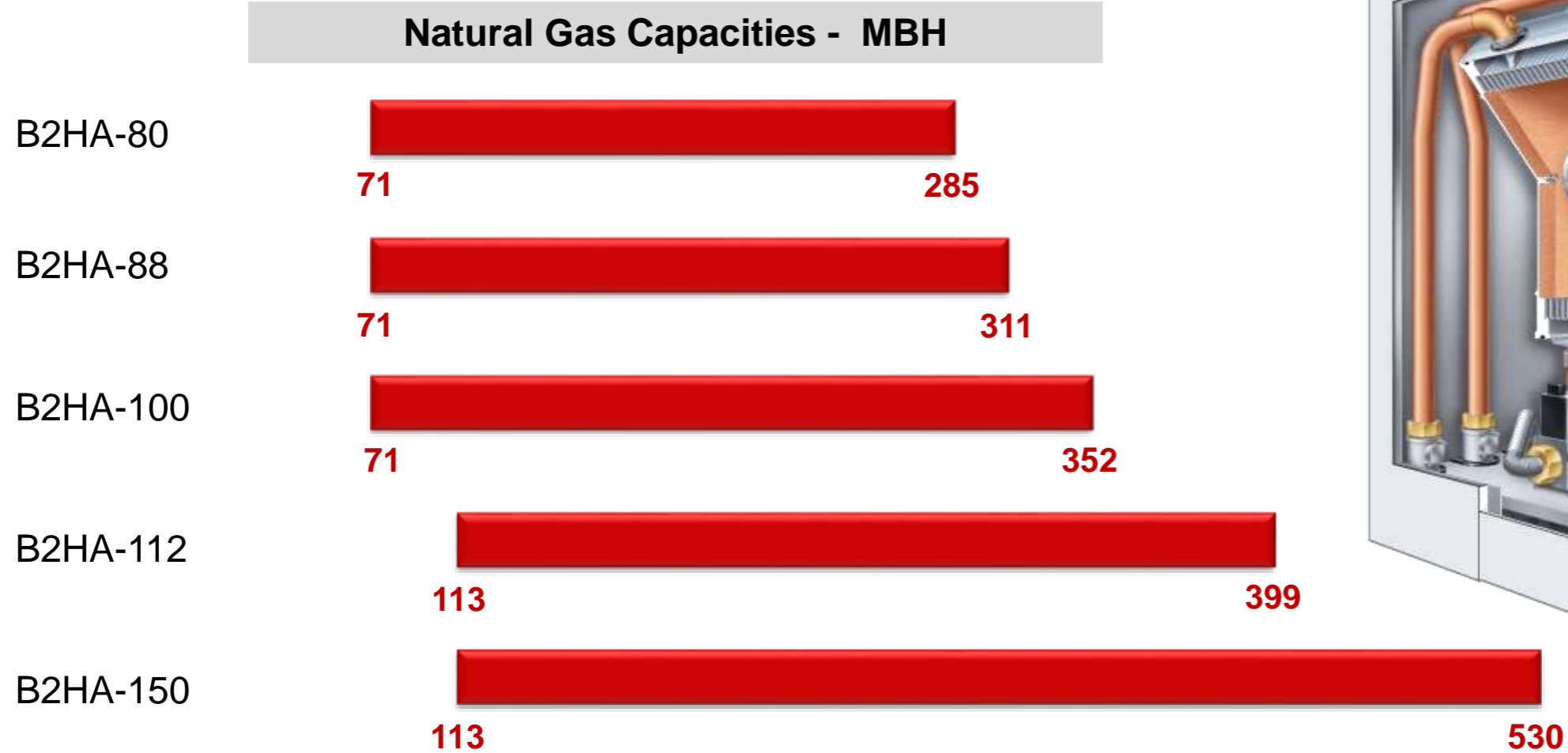
Notes:
- Input must be de-rated for high altitude.
- Different Min. inputs for LPG

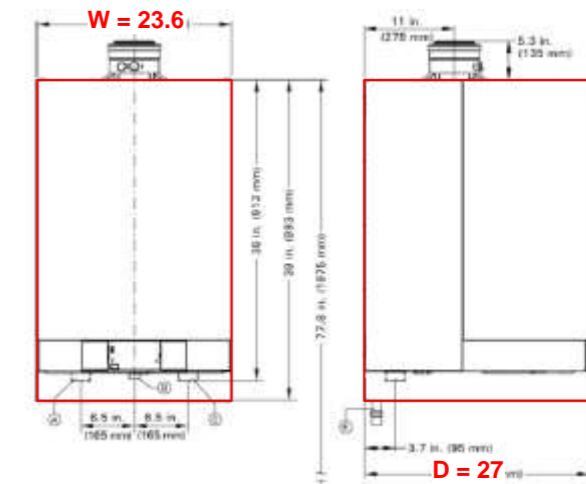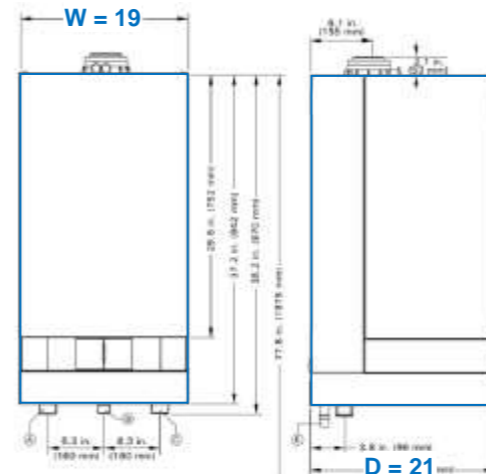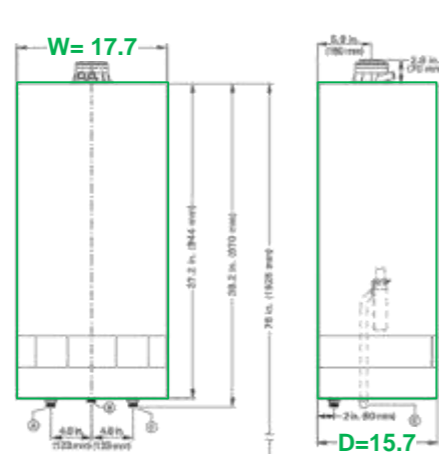# Vitodens 200, B2HA / B2HB

Multi-Boiler Cascade up to 8 boilers

- For systems **up to 8 boilers**

- With Vitotronic 300K, MW2C Cascade Control

- Common venting up to 4 boilers

- Total capacity **up to 4,240 MBH**
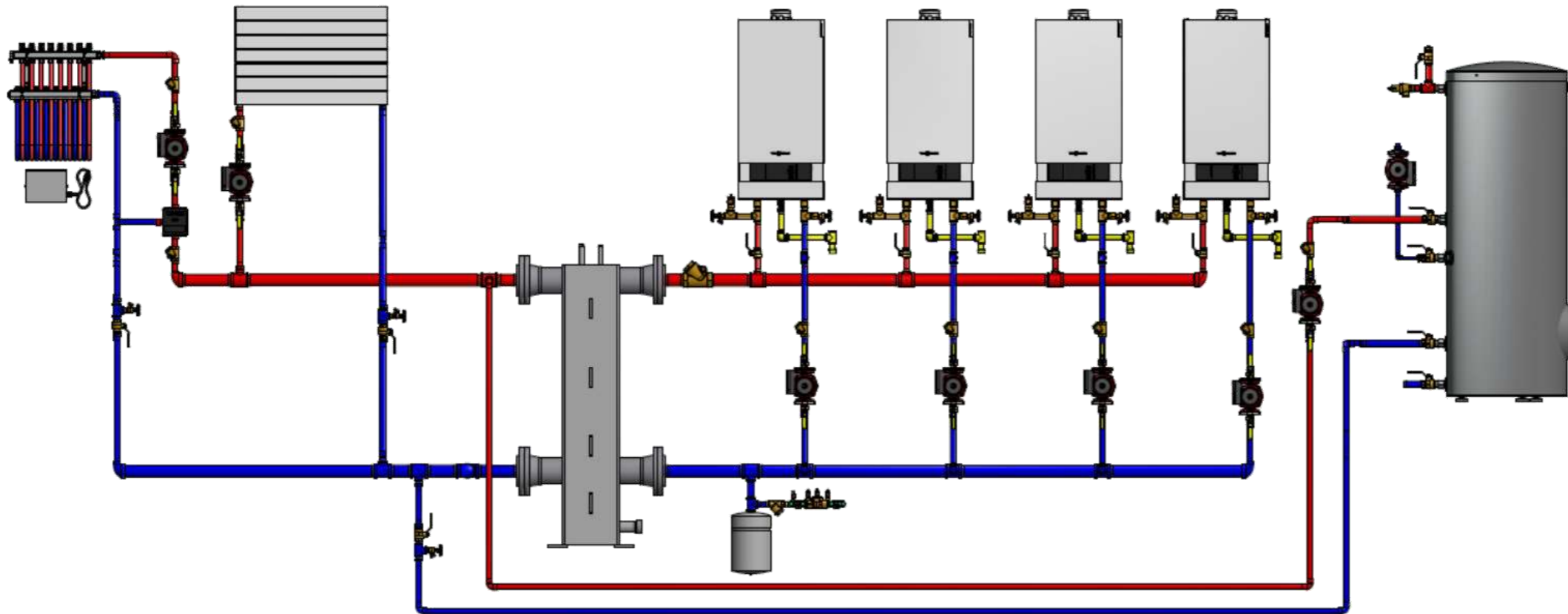
Vitodens 200, B2HA / B2HB

Specifications

Model		B2HB-19	B2HB-26	B2HB-35	B2HB-45	B2HB-57	B2HA-80	B2HA-88	B2HA-100	B2HA-112	B2HA-150
Overall Dimension	D W H	15.7" 17 ¾" 41"	15.7" 17 ¾" 41"	15.7" 17 ¾" 41"	21" 19" 43 ½"	21" 19" 43 ½"	21" 19" 43 ½"	21" 19" 43 ½"	21" 19" 43 ½"	27.1" 23 5/8" 44 ½"	27.1" 23 5/8" 44 ½"
Weight		110 lbs	110 lbs	110 lbs	210 lbs	210 lbs	194 lbs	194 lbs	194 lbs	298 lbs	298 lbs
Heating S/R Connections		¾"	¾"	¾"	1 ½"	1 ½"	1 ½"	1 ½"*	1 ½"	2"	2"*
PRV		¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Drain		¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
Gas		¾"	¾"	¾"	1"	1"	1"	1"	1"	1"	1"

Vitodens 200, B2HA / B2HB

Pressure And Temperature

Model		B2HB-19	B2HB-26	B2HB-35	B2HB-45	B2HB-57	B2HA-80	B2HA-88	B2HA-100	B2HA-112	B2HA-150
Maximum working pressure	psig	45	45	45	60	60	60	60	60	80	80
Maximum working temperature	F (C)	165 (74)	165 (74)	165 (74)	165 (74)	165 (74)	176 (80)	176 (80)	176 (80)	180 (82)	180 (82)

Need higher working temperature?

Vitocrossal 300, CU3A
Max. Temperature
194°F (90°C)
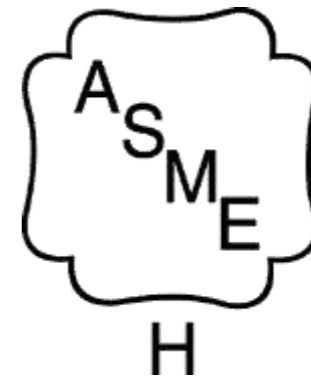
Vitodens 200, B2HA / B2HB

Rated Efficiencies

Model	B2HB-19	B2HB-26	B2HB-35	B2HB-45	B2HB-57	B2HA-80	B2HA-88	B2HA-100	B2HA-112	B2HA-150
A.F.U.E.	95.0	95.0	95.0	95.0	95.0	92.0				
CSA Thermal /Combustion Efficiency *1							94.5	94.5	93.9	93.5

Standards tests prove the Vitodens 200 B2HA / B2HB boiler to be among **the most efficient in the industry.**

AHRI CERTIFIED™
www.ahridirectory.org

1 Tested to U.S. Standards ANSI Z21.13/CSA 4.9.

Vitodens 200, B2HA / B2HB

Boiler Efficiencies vs Return Water Temperature
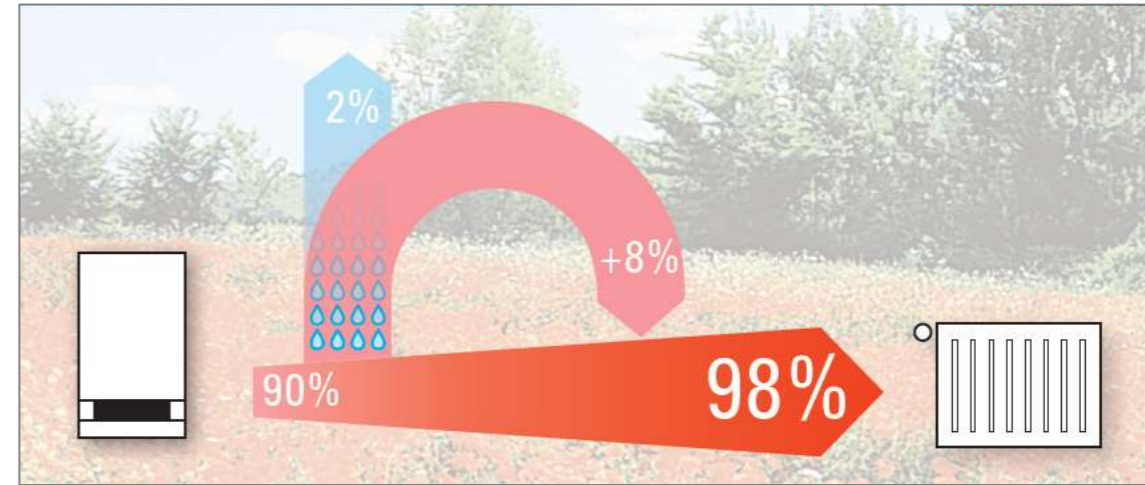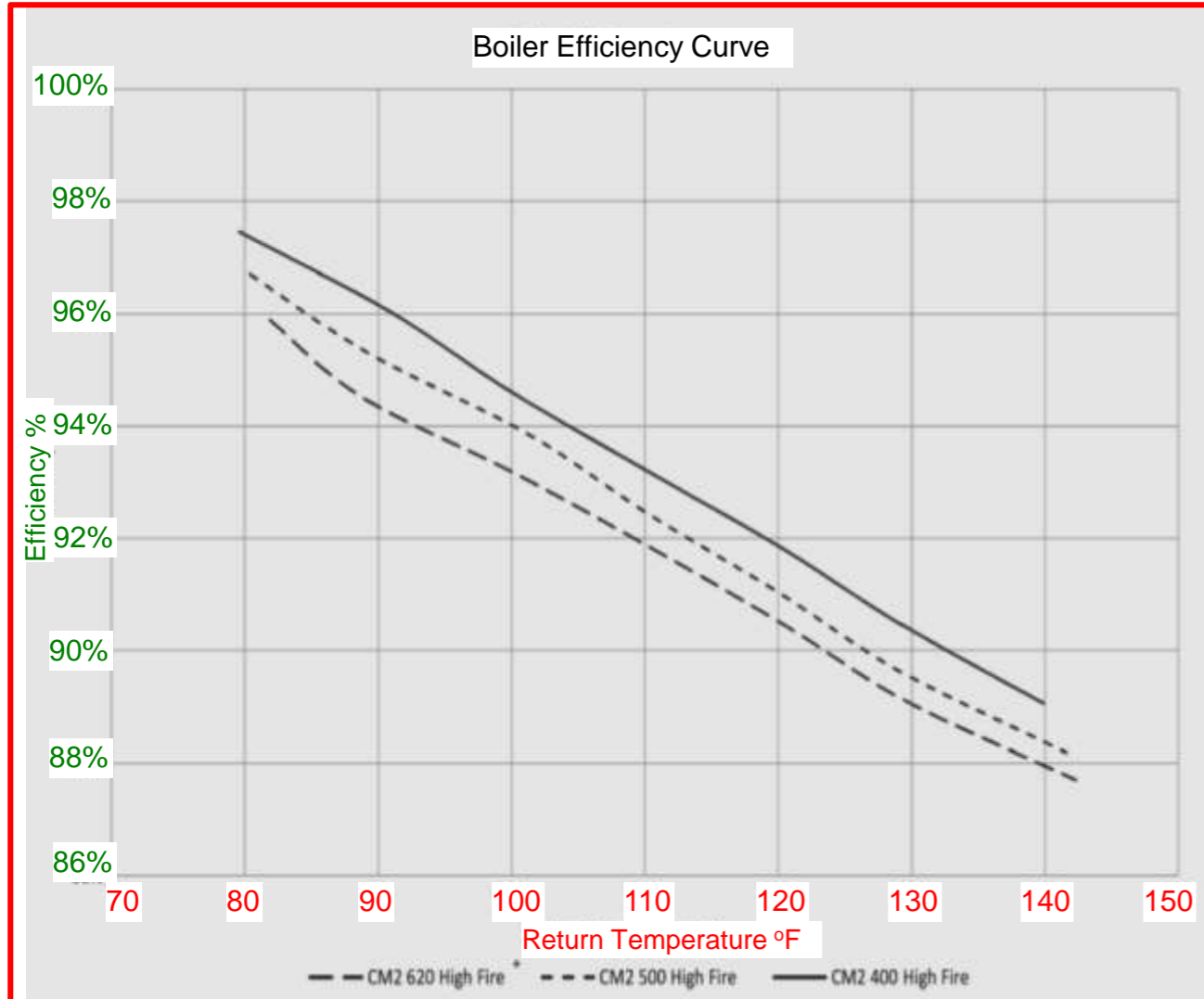
Boiler *return* water temperature determines condensing boiler efficiency

Vitodens 200, B2HA / B2HB

Extremely Quiet Operation

▪ Matrix burner has very **quiet operation**

▪ Usual operation at less than **45dB (**with the front cover installed)

WOW! A boiler that's **quieter than a typical refrigerator.**

Model		19	26	35	45	57	80	88	100	112	150
At **MIN** burner input	dB	35	36	36	39	39	38	38	38	40	40
At **MAX** burner input	dB	41	48	51	56	67	56	69	69	57	61

Vitodens 200, B2HA / B2HB

Construction Details
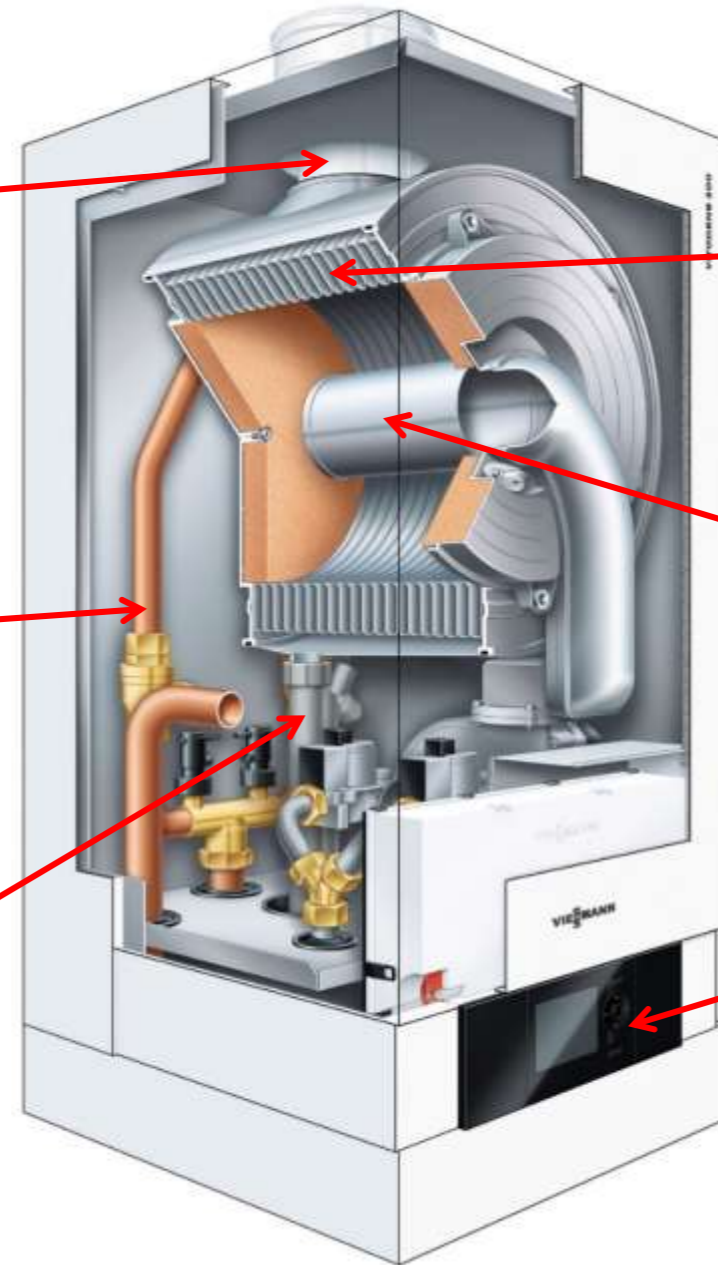
Flue gas outlet

InoX-Radial stainless steel boiler heat exchanger

Boiler S/R piping (connections at bottom of boiler)

MatriX cylinder burner with Lambda Pro combustion technology

Condensate P-trap and drain pipe

Vitotronic control with user friendly interface

Vitodens 200, B2HA / B2HB

Easy To Install
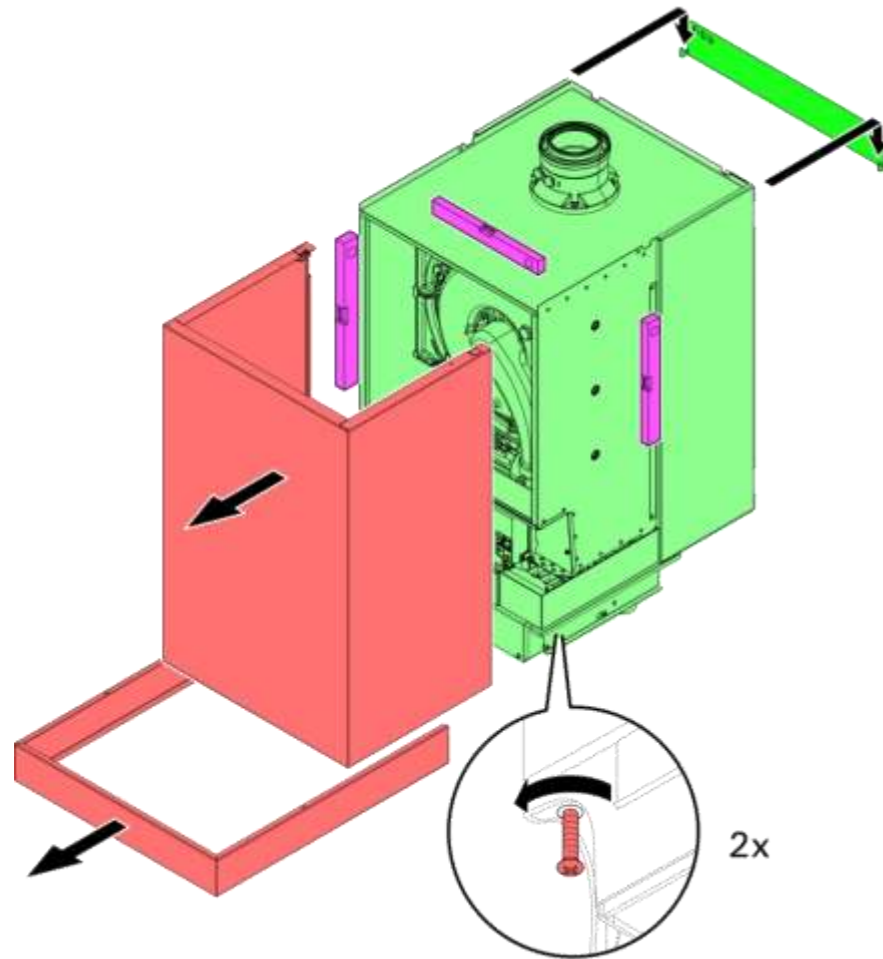
Wall mounted wall with bracket
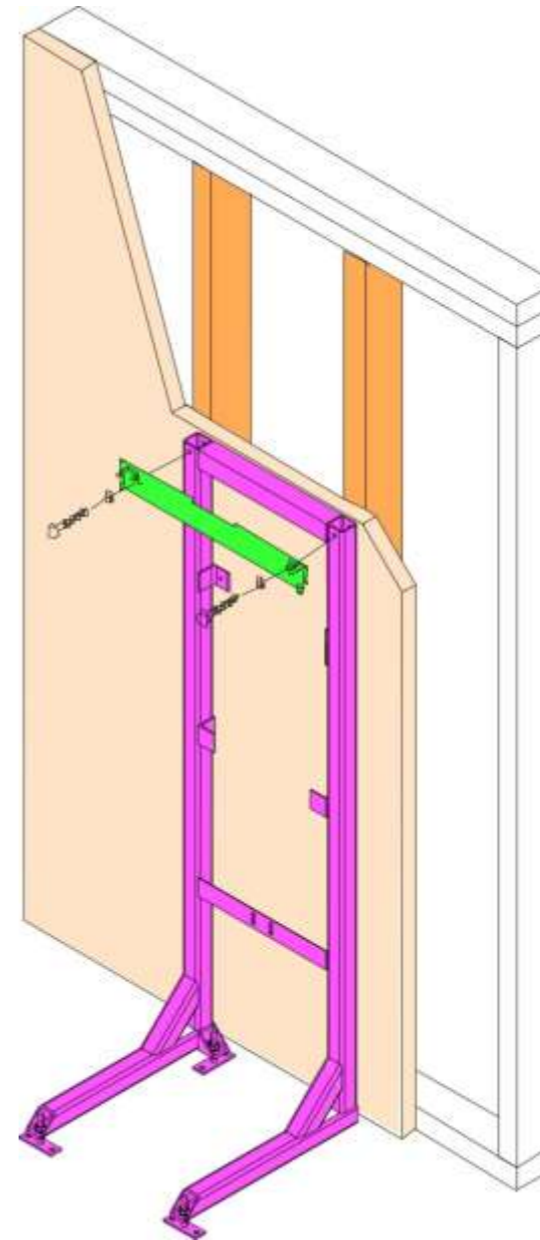
Boiler stand
- For wall support **or** freestanding

Vitodens 200, B2HA / B2HB

Multi-Boiler Cascade up to 8 boilers

- Optional multi-boiler **manifolds** and large **Low Loss headers** available

- One manifold size for all B2HA models from 45 -150
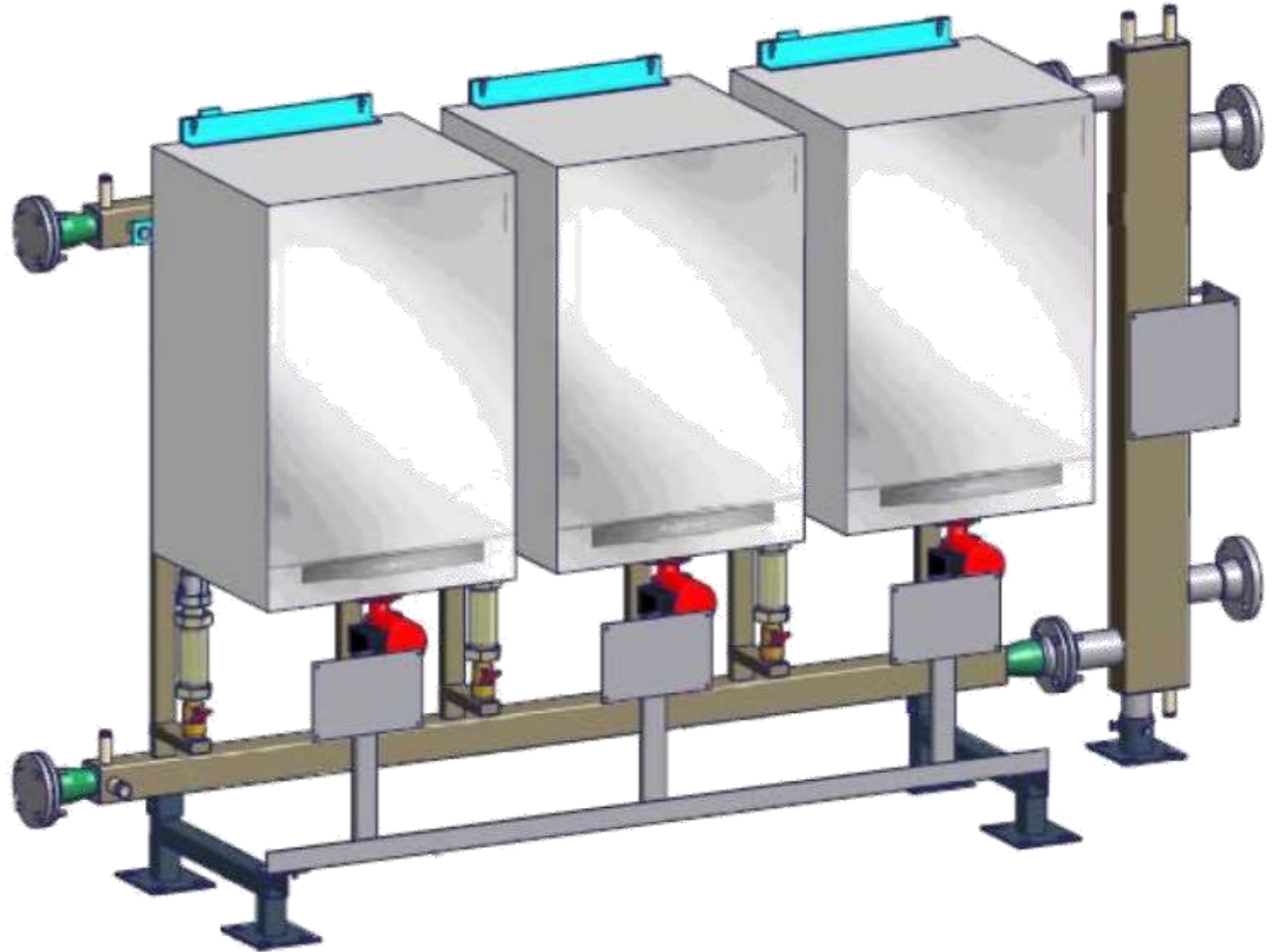
Vitodens 200, B2HA / B2HB

Multi-Boiler Cascade up to 8 boilers

- Optional multi-boiler **manifolds** and large **Low Loss headers** available

- One manifold size for all B2HA models from 45 -150

- 2 and 3 boiler manifolds:

  - Multiple configurations

  - Corner or back to back
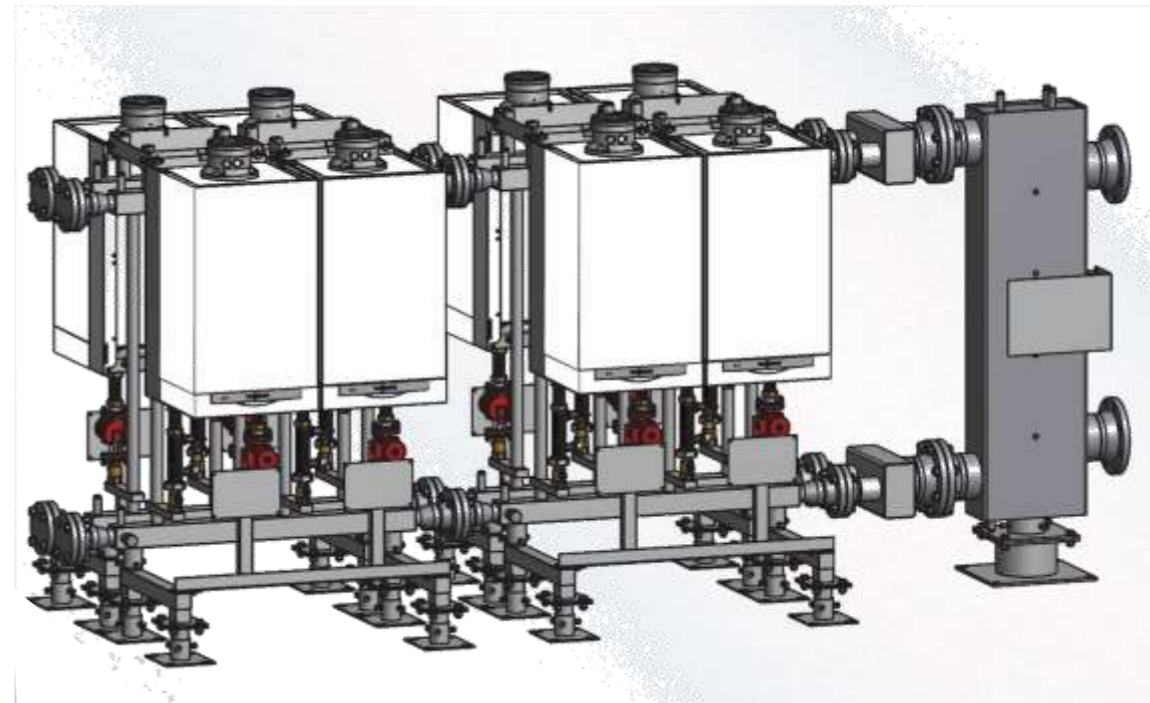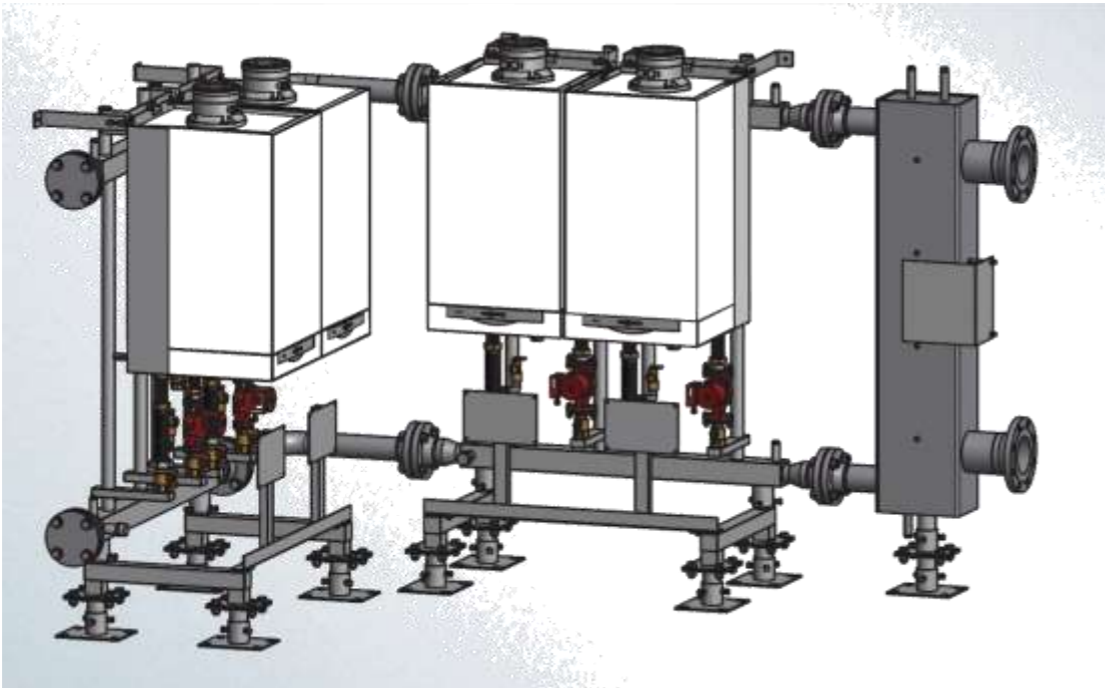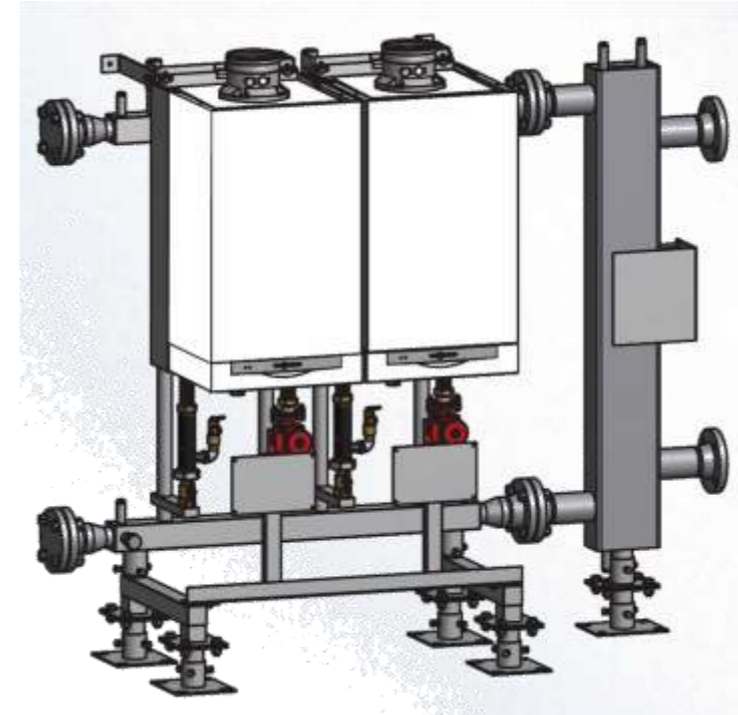
Vitodens 200, B2HA / B2HB

Piping Connections For 19 - 150 kW

- All fittings are NPT for all sizes

- NEW! Thermometer (not shown) is now included in the fitting kits for the boiler supply.

PRV:	Pressure Relief Valve
GC:	Gas Connection
BD:	Boiler Drain
BF:	Boiler Fill
DS:	DHW Supply
DR:	DHW Return
BS:	Heating Supply
BR:	Heating Return
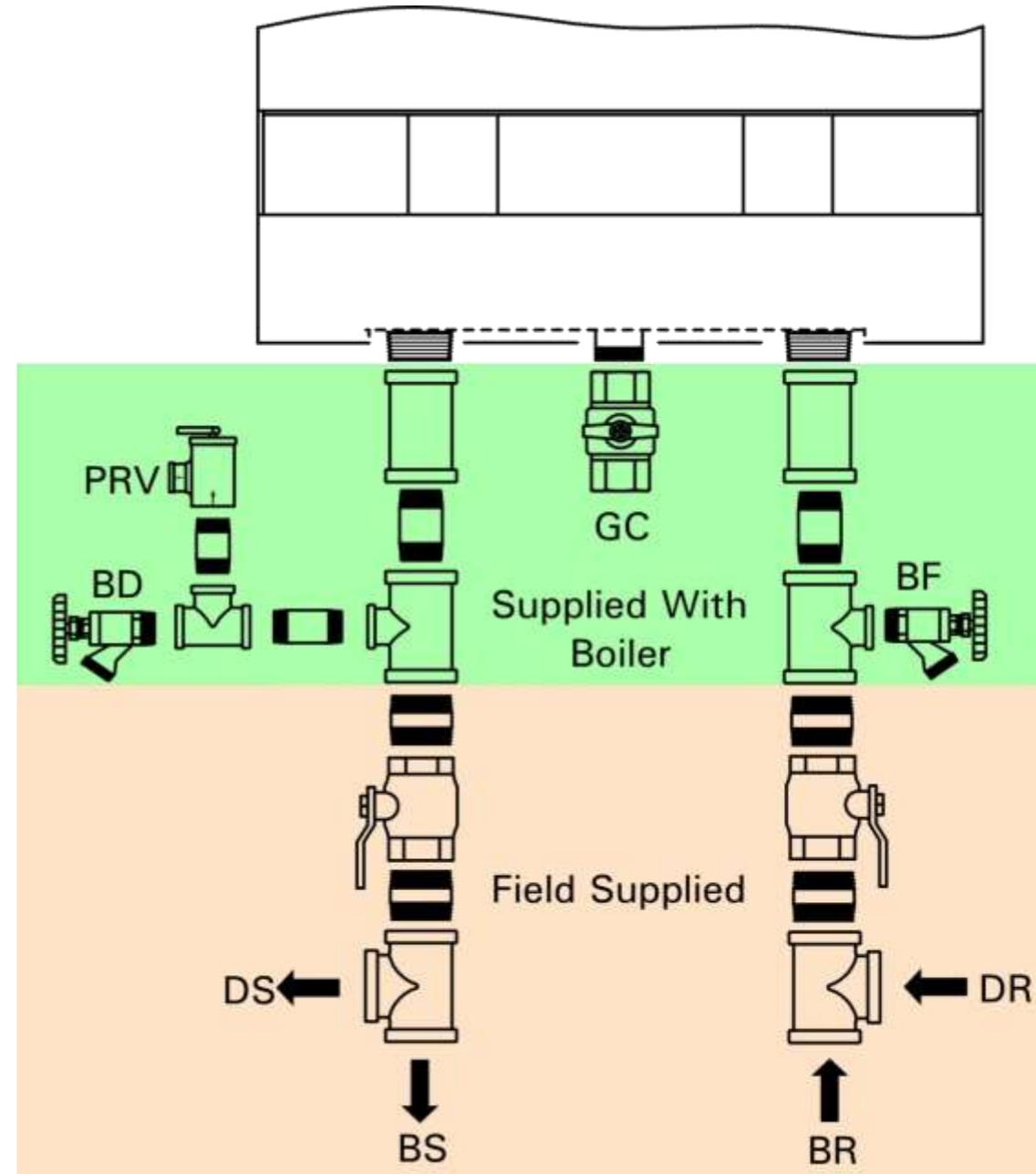
Vitodens 200, B2HA / B2HB

Condensate Traps

- Easy to service condensate traps.

B2HB 19-35 kW

To drain

B2HB 45-57 kW

To drain

B2HA 80-150 kW

To drain
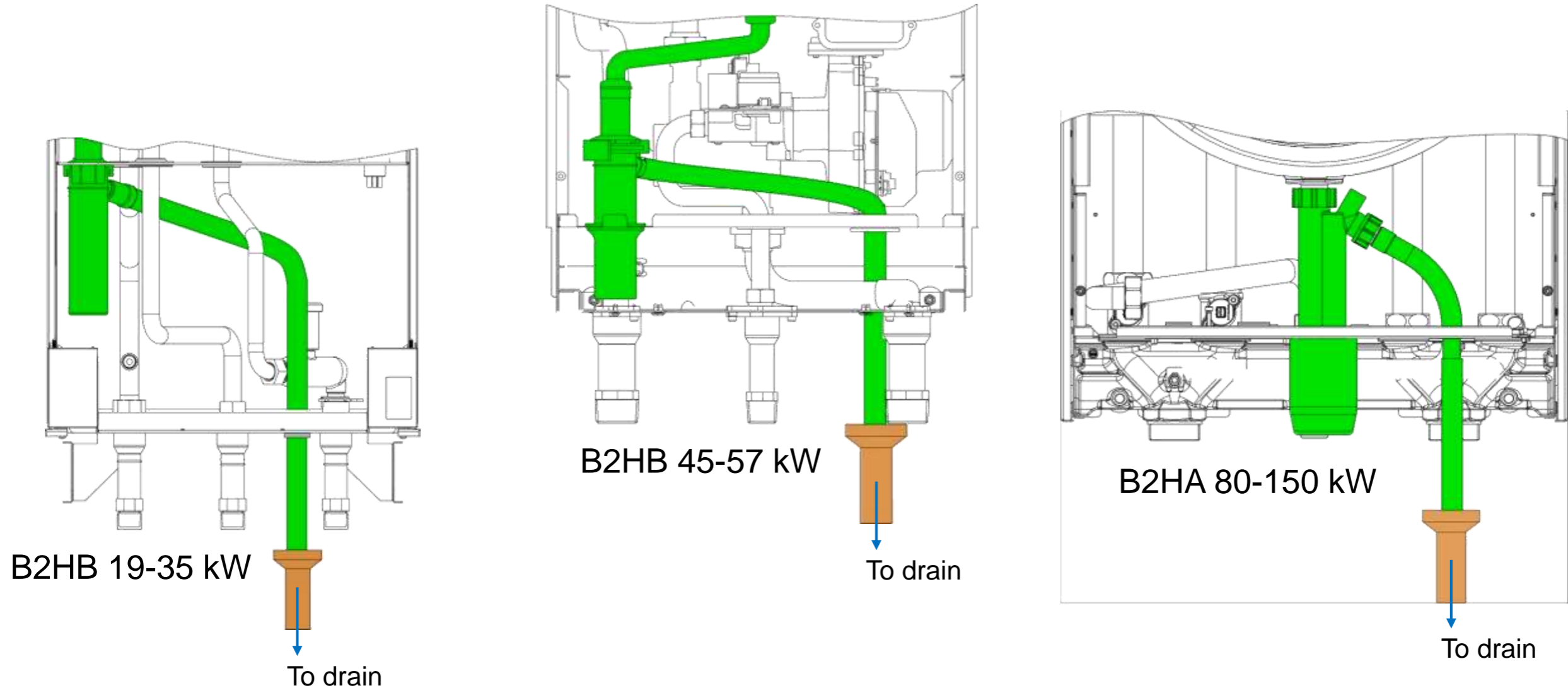
Vitodens 200, B2HA / B2HB

Access To The Control Panel

- Control Panel tilts down for easy access for:
  - Temperature sensor wiring
  - Communication boards
  - Fuses
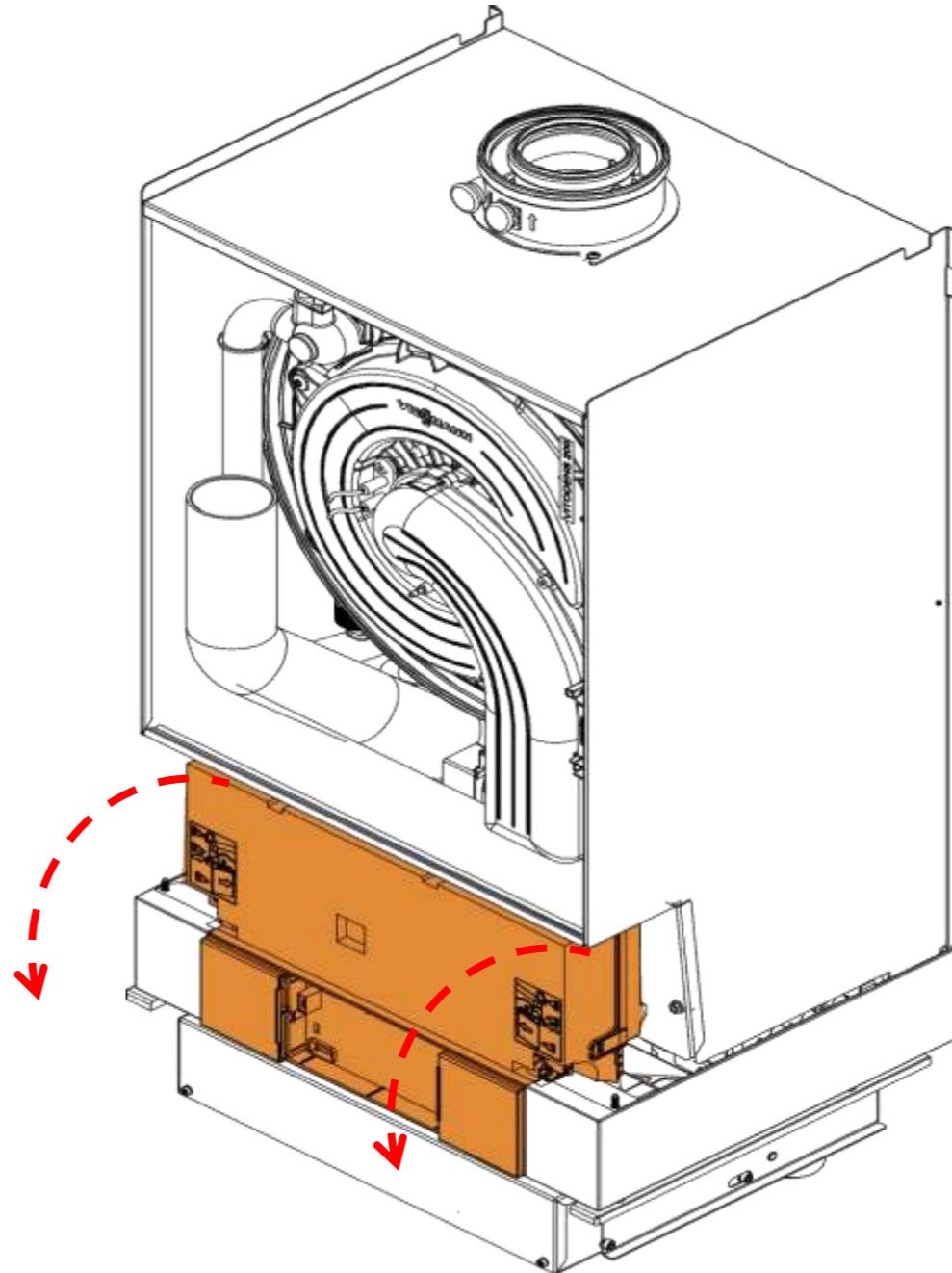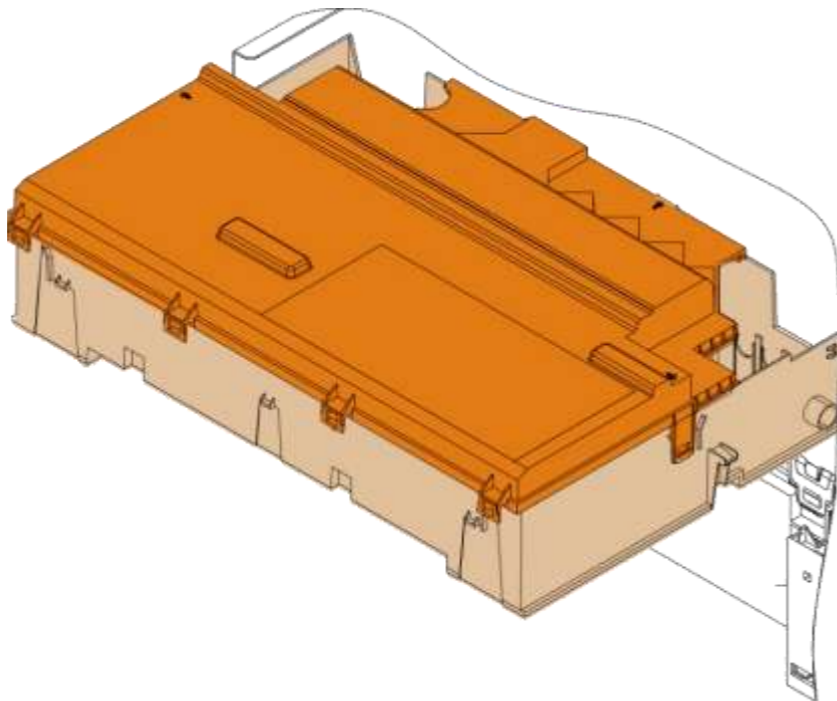
Vitodens 200, B2HA / B2HB

Control Board Tipped Down
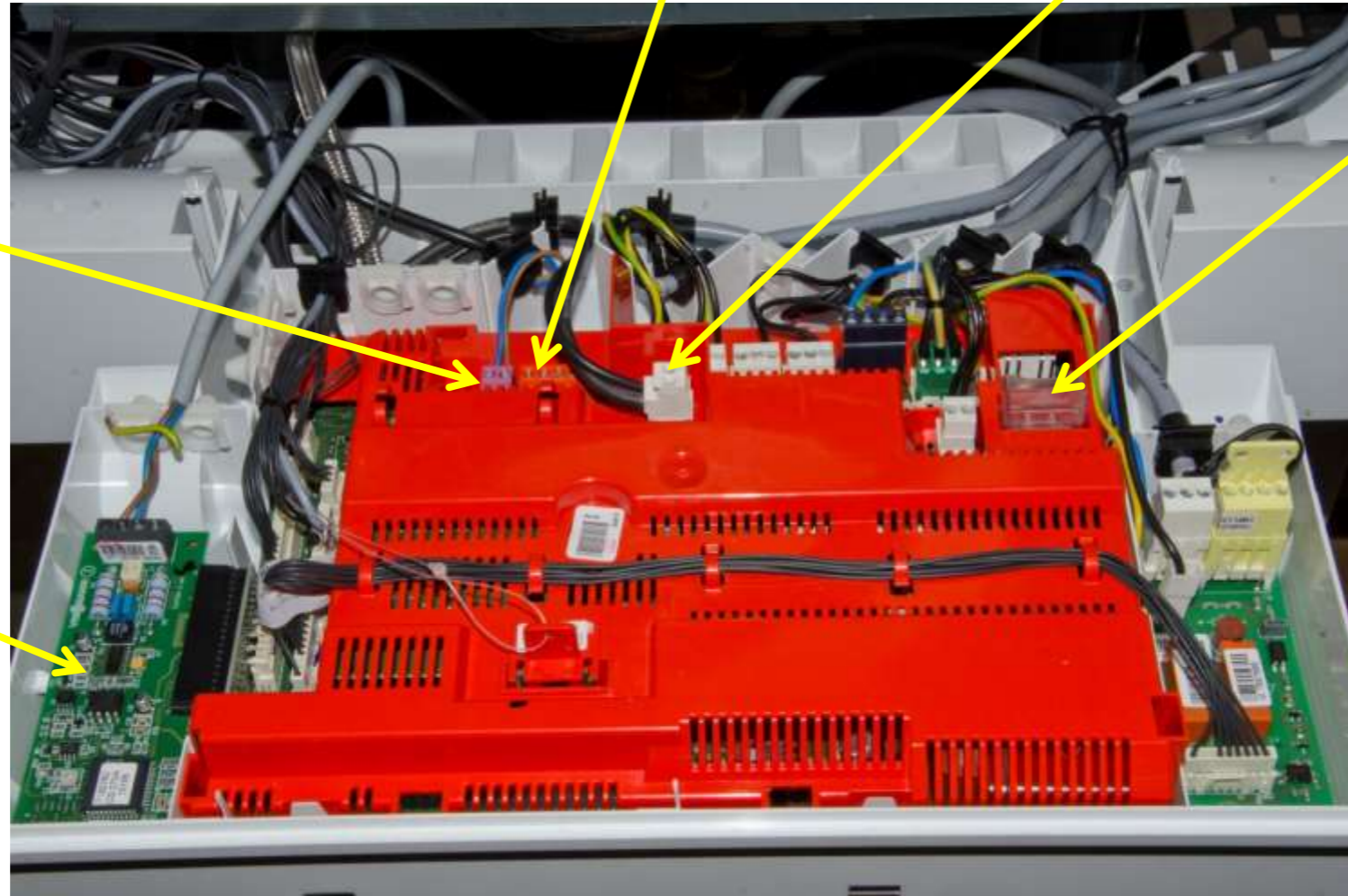
- Shown with back cover removed

Sensor inputs:
#1 Outdoor temperature
#2 Low Loss Header

Ionization signal

Fuse

KM Buss

LON Communication Card

Vitodens 200, B2HA / B2HB

Power / Pump Module Wiring Enclosure

- Located in a swing down enclosure at bottom of boiler, below the controller interface.

Vitodens 200, B2HA / B2HB

Power / Pump Module Wiring Enclosure

- Swing down the connection box.

Vitodens 200, B2HA / B2HB

Power / Pump Module Wiring Enclosure

- Modules inside wiring enclosure

EA1 Module

Power / Pump Module
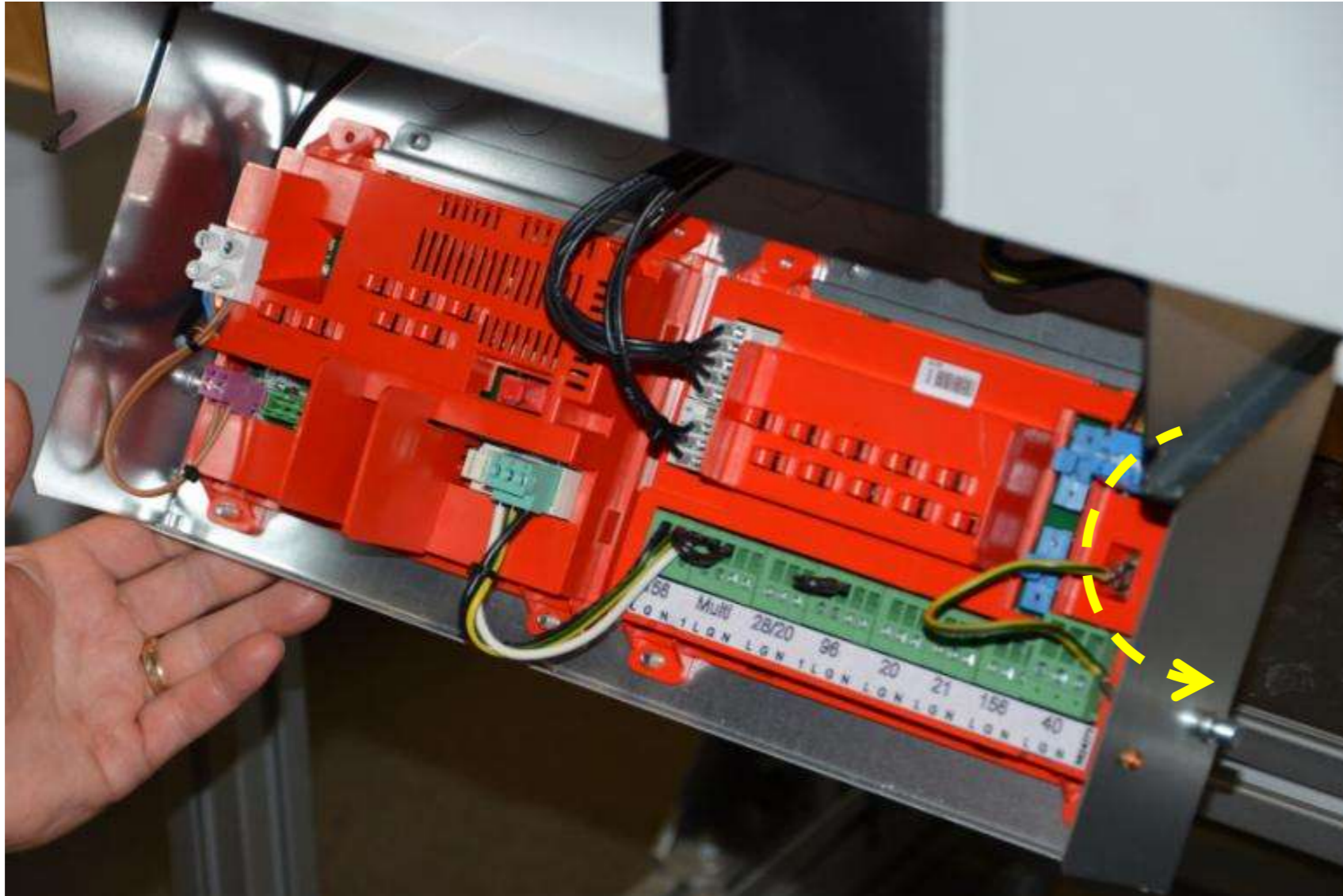
Vitodens 200, B2HA / B2HB

Inox-Radial Heat Exchanger

- High grade SA240 - 316Ti Stainless Steel.
    - Excellent corrosion resistance
    - Excellent heat transfer
    - Easy to clean
    - No special system fluid fill or pH

- **Developed** and manufactured by Viessmann in Germany
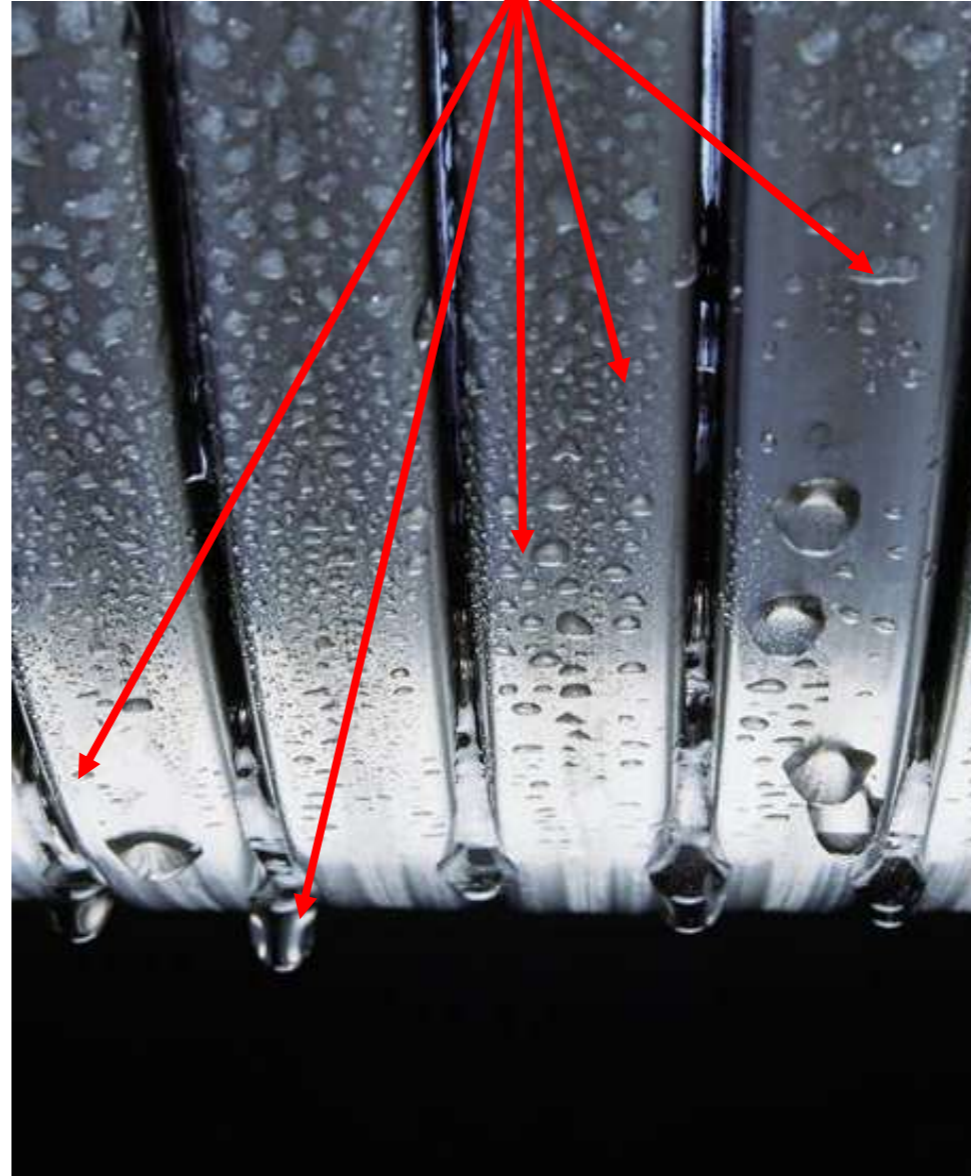
- **Time tested** reliability for over 15 years
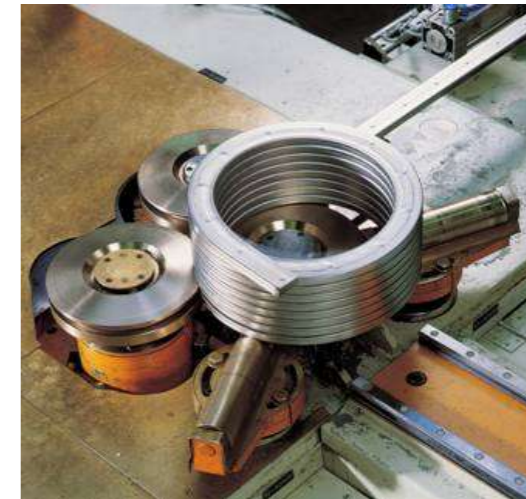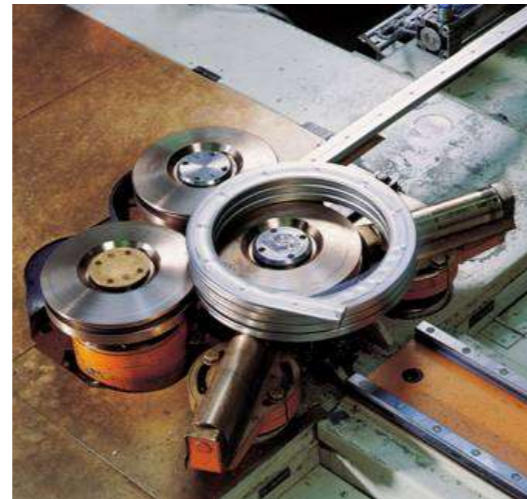
Vitodens 200, B2HA / B2HB

Inox-Radial Heat Exchanger

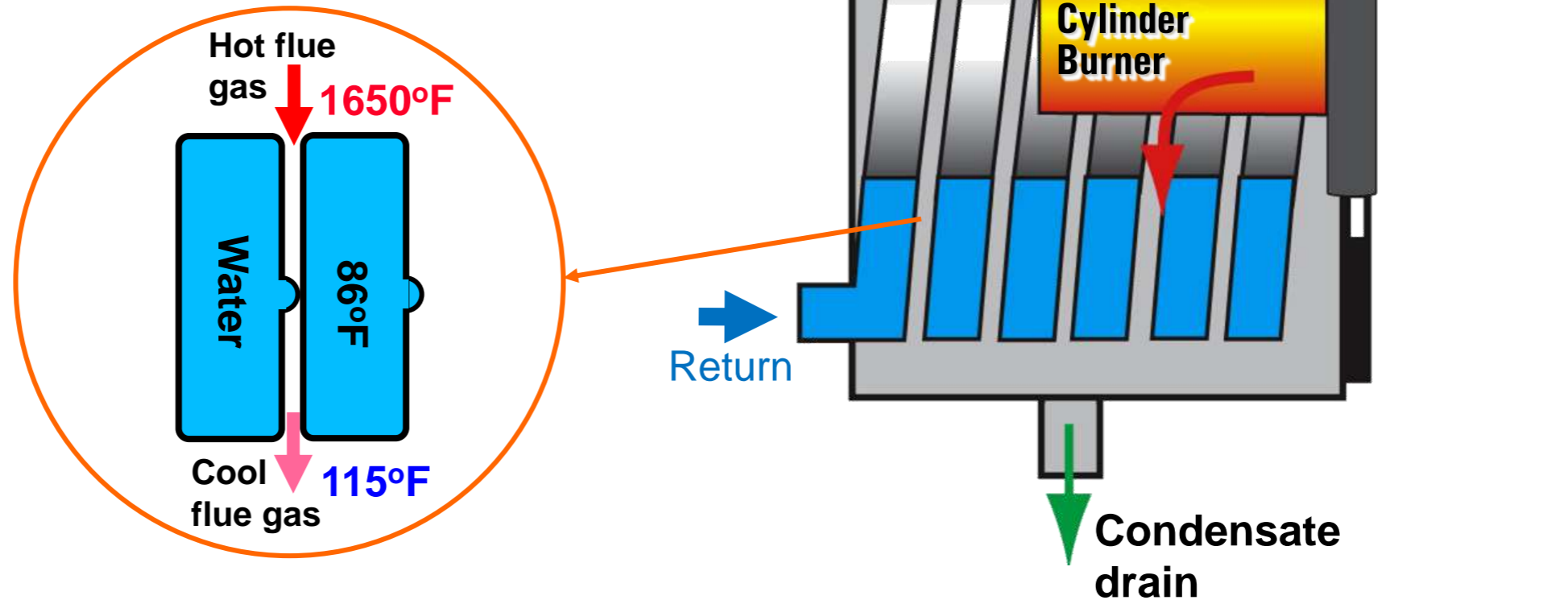- Condensation occurs on the outside of coil

- Self-cleaning on condensing surface of heat exchanger
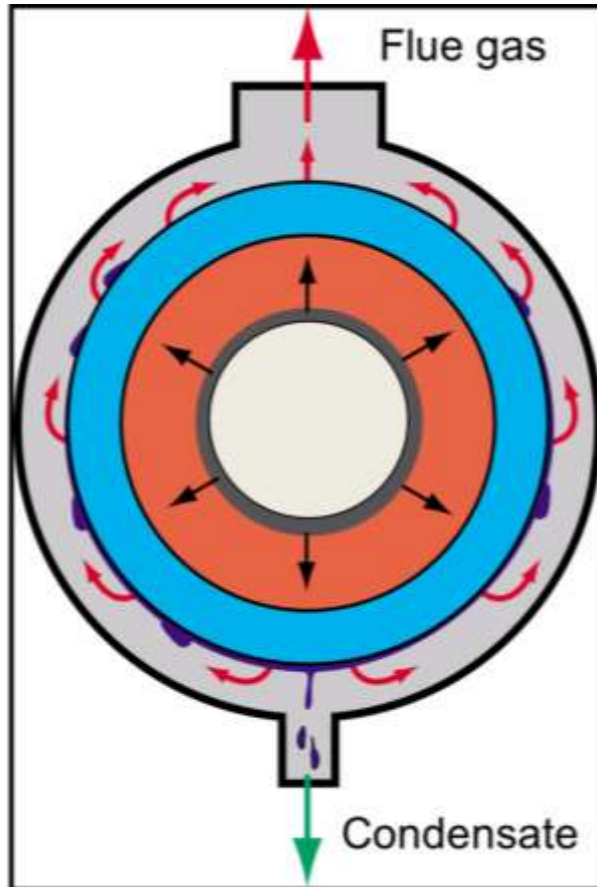
The entire surface is condensing!
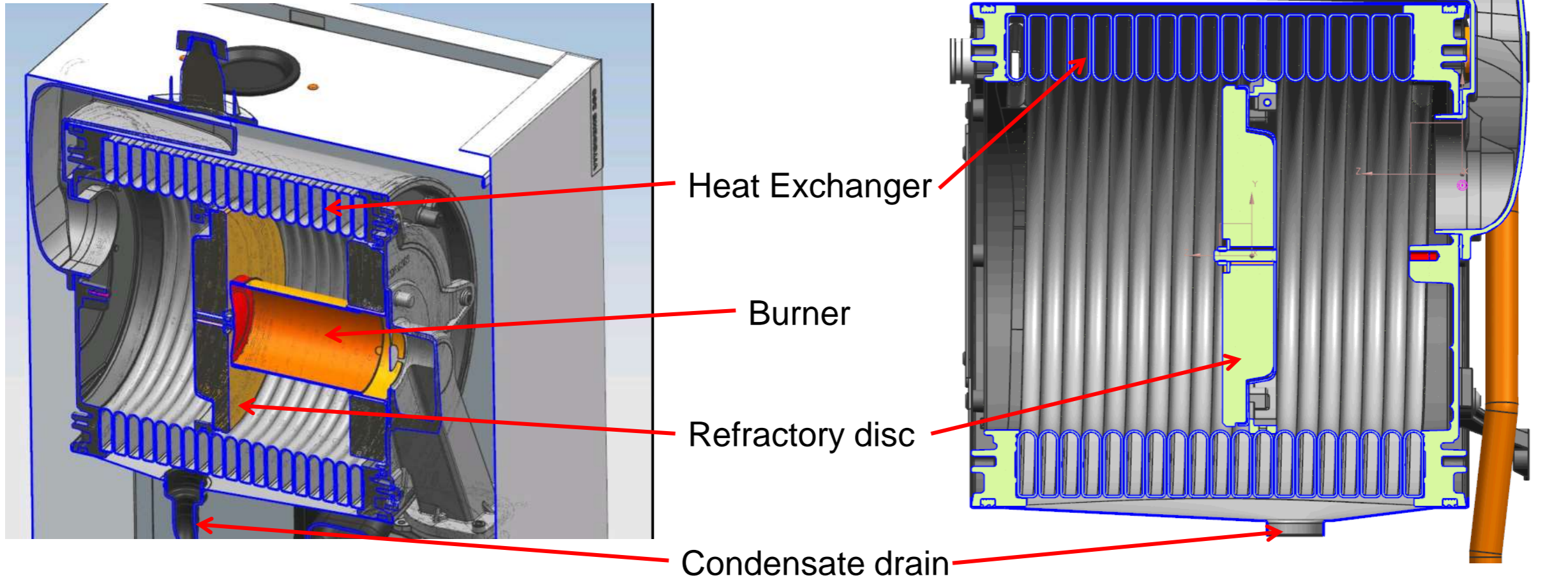
Vitodens 200, B2HA / B2HB

Inox-Radial Heat Exchanger

- Precise 0.8 mm gaps for highly intensive heat transfer

- Sensible and latent heat extracted

Flue gas

Supply

MatriX Cylinder Burner

Return

Condensate drain

Hot flue gas 1650°F

Water

86°F

Cool flue gas 115°F

Vitodens 200, B2HB

Heat Exchanger Update For Sizes 19 to 57

- New baffled Inox-Radial design maintains full condensing surface.

- Fully self cleaning behind centre refractory disc (does not need to be removed when servicing the boiler)

Vent connection

Heat Exchanger

Burner

Refractory disc

Condensate drain

Vitodens 200, B2HB

Heat Exchanger Update For Sizes 19 - 57

- Increased heat transfer **surface area at rear** of HX enhances the full condensing effect

Direction of flue gas flow

Temperature

[C]
1661
1559
1457
1355
1253
1151
1049
947
845
743
641
540
438
336
234
132
30
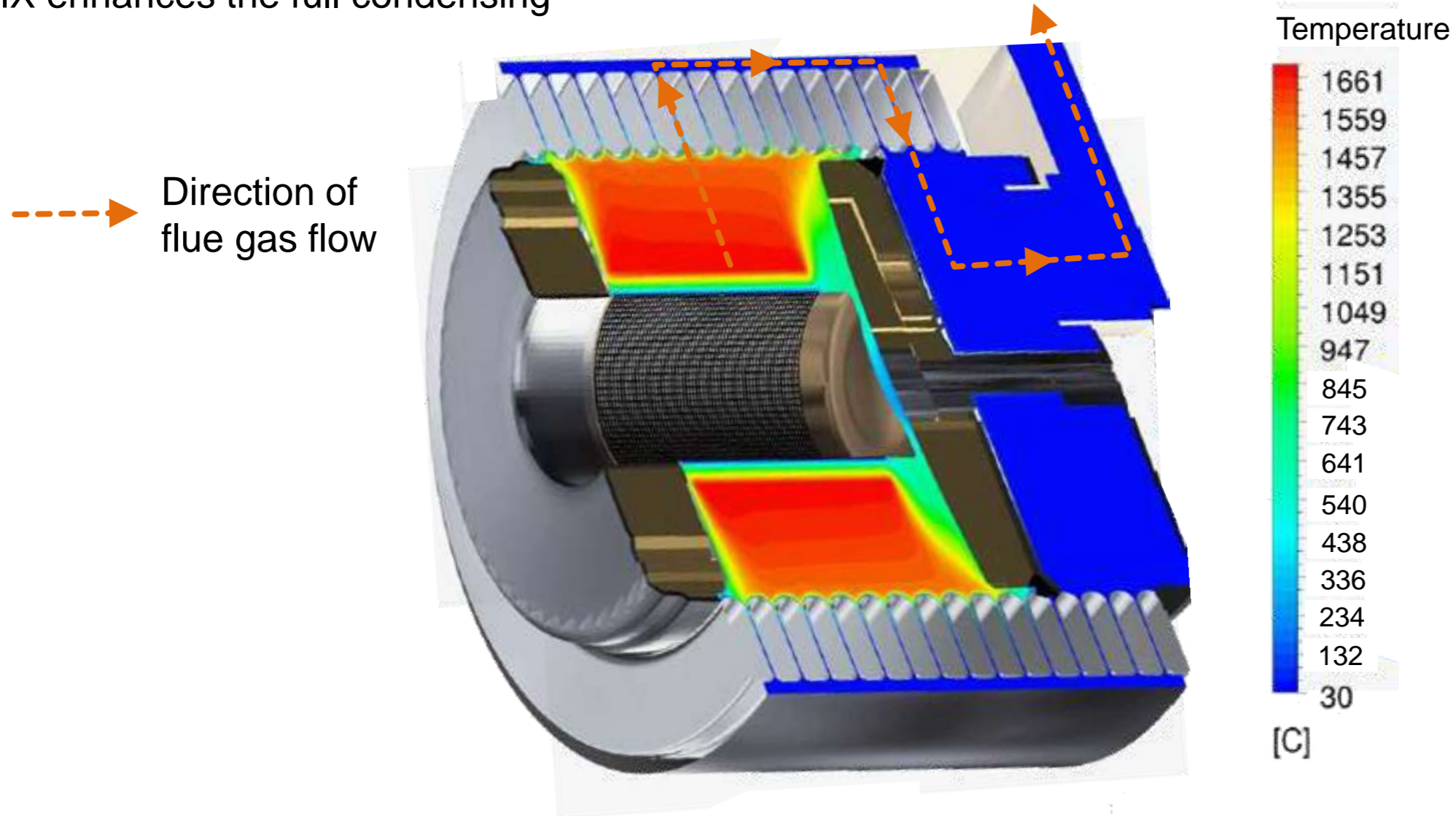
Vitodens 200, B2HA

Inox-Radial Heat Exchanger for sizes 80, 88, and 100

Two coils

One HX

Inter-twined

Vitodens 200, B2HA

Inox-Radial Heat Exchanger for sizes 80, 88, and 100

- 2 circuit heat exchanger design

Dual redundant thermistors

Internal to boiler

Isolation valves

Flow switches

External pump

Heating system

Low Loss Header
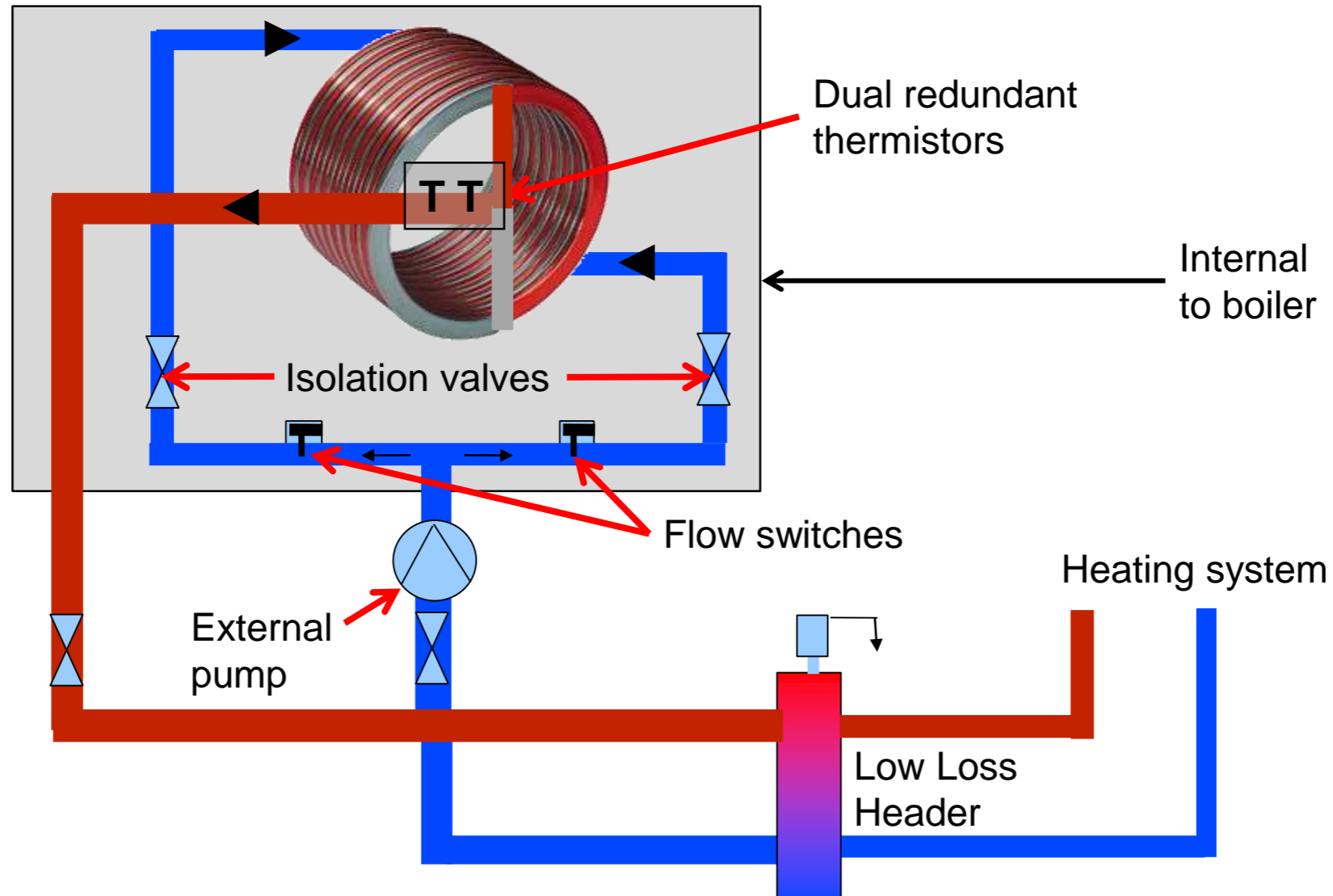
Vitodens 200, B2HA

Inox-Radial Heat Exchanger for sizes 112 and 150

- Multi circuit heat exchanger design

Air venting ridge

Supply ports

Manual air bleed

Return ports

Ultrasonic flow sensors

Heating supply

Gas

Heating return
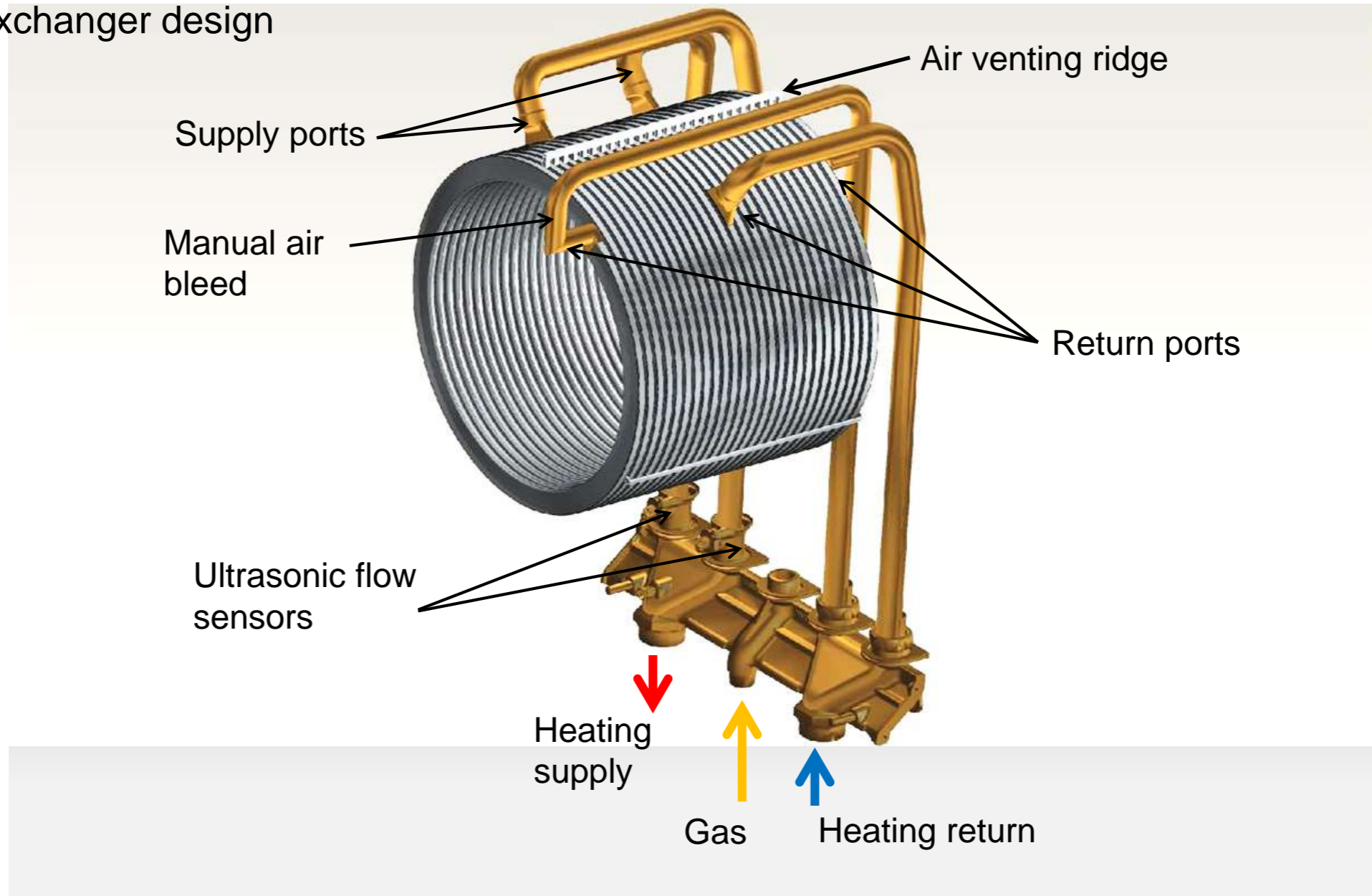
Vitodens 200, B2HA

InoX-Radial-Heat Exchanger 112kW – 150kW

Vitodens 200, B2HA / B2HB

Matrix Cylinder Burner

- Fully **modulating** burner
  - Up to 6.6 :1 turndown

- Natural gas or LP gas

- **Lambda Pro** Technology

- **Low NO$_x$** emissions (< 20 ppm)

- **Easy** to setup and service
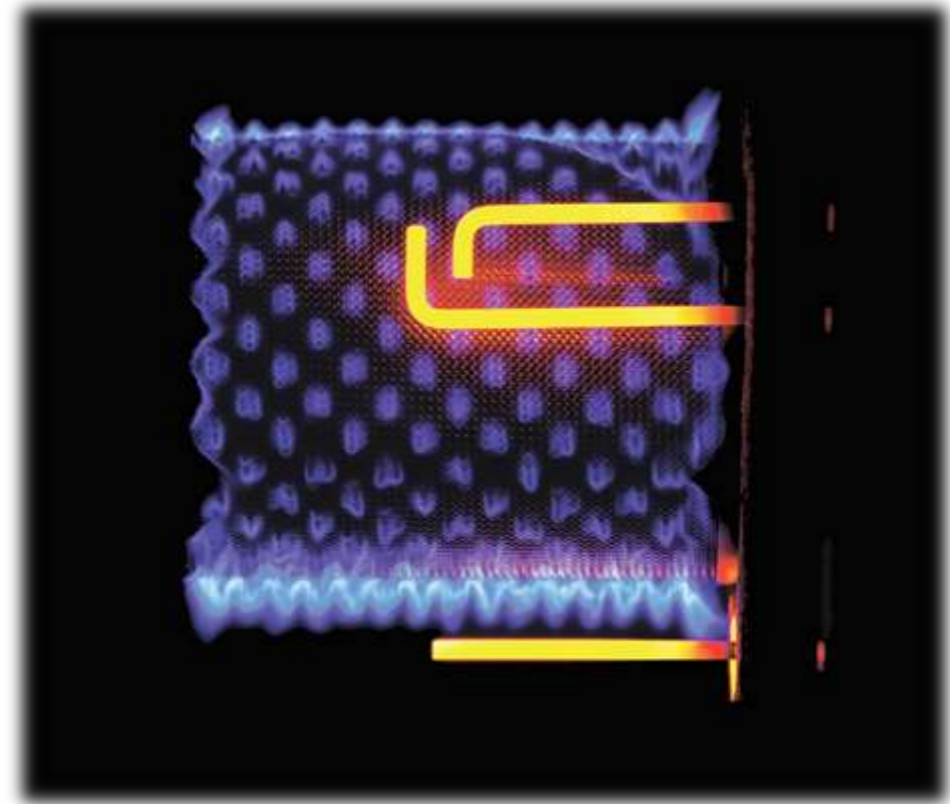
Vitodens 200, B2HA / B2HB

Matrix Cylinder And Dome Burners

Production Plant Viessmann Allendorf
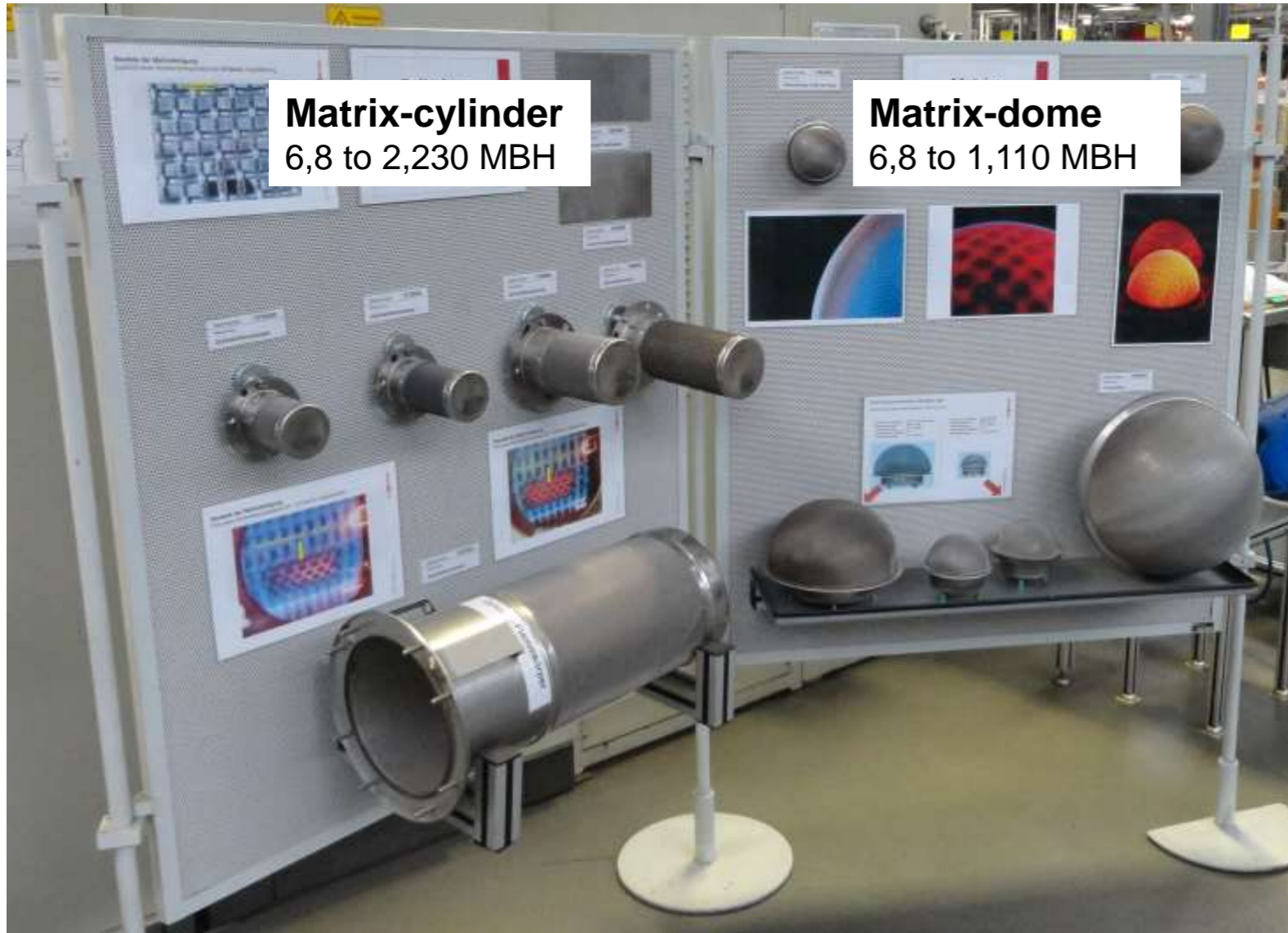
Matrix-cylinder
6,8 to 2,230 MBH

Matrix-dome
6,8 to 1,110 MBH

Developed and manufactured by Viessmann.

Used for floorstanding and wallhung boilers for over 15 years

Vitodens 200, B2HA / B2HB

Matrix Cylinder Burner

Lambda Pro Technology: What is it?

- **Self calibrating** burner and combustion management

- Automatic adjustment to **varying gas** quality / conditions

- Ensures **optimum combustion** and constant high efficiency at all times

- Easily adjusts to **NG or LP**
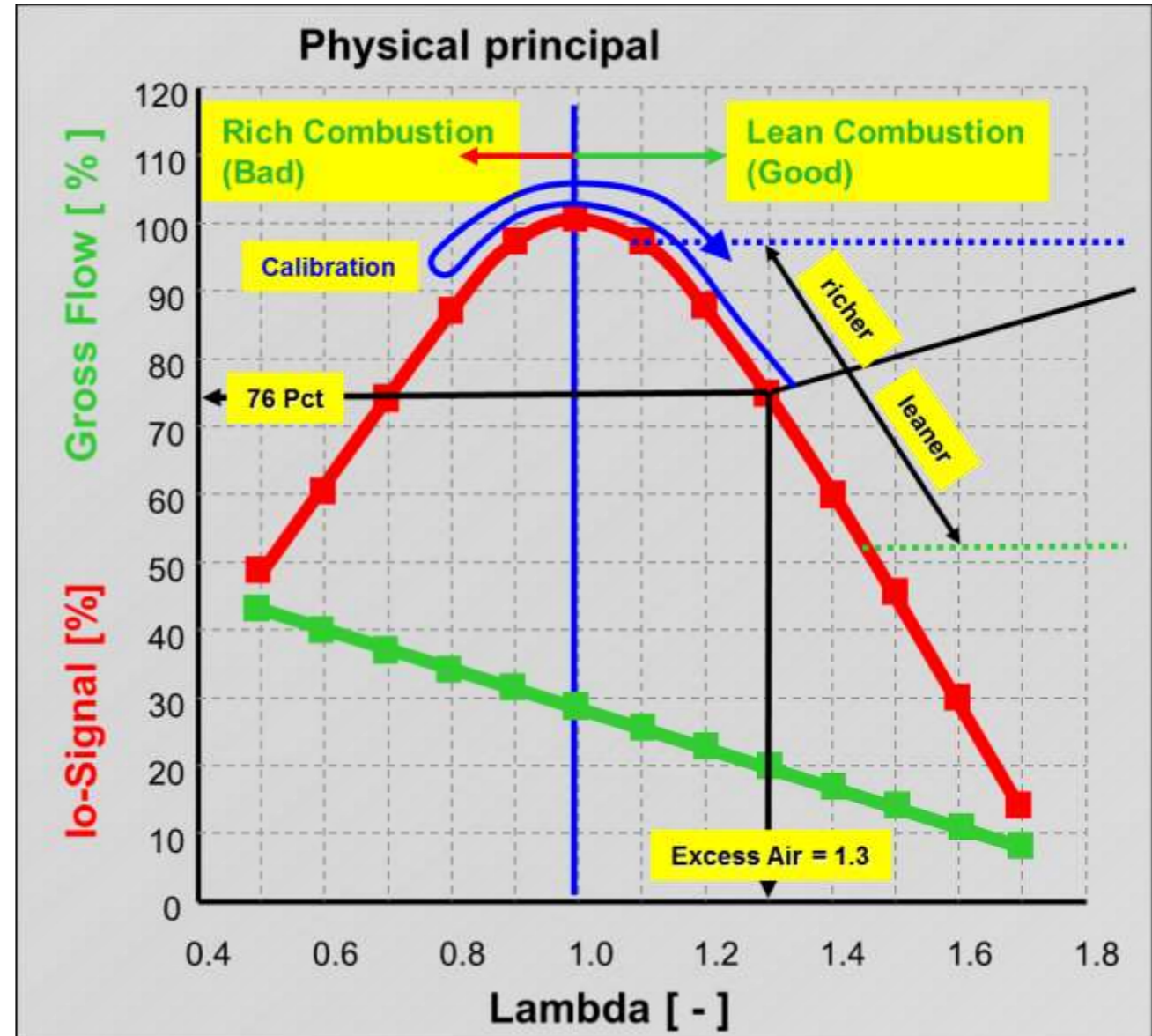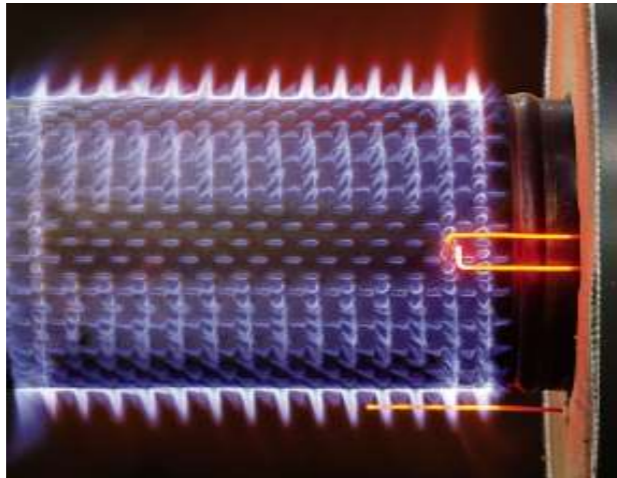
Vitodens 200, B2HA / B2HB

Matrix Cylinder Burner

Lambda Pro Technology: How it works:

- Controls gas and air independently of each other

- **Ionization current** indicates flame quality

- Gas and air control **constantly** adjusts to changes

- **No** field adjustments required
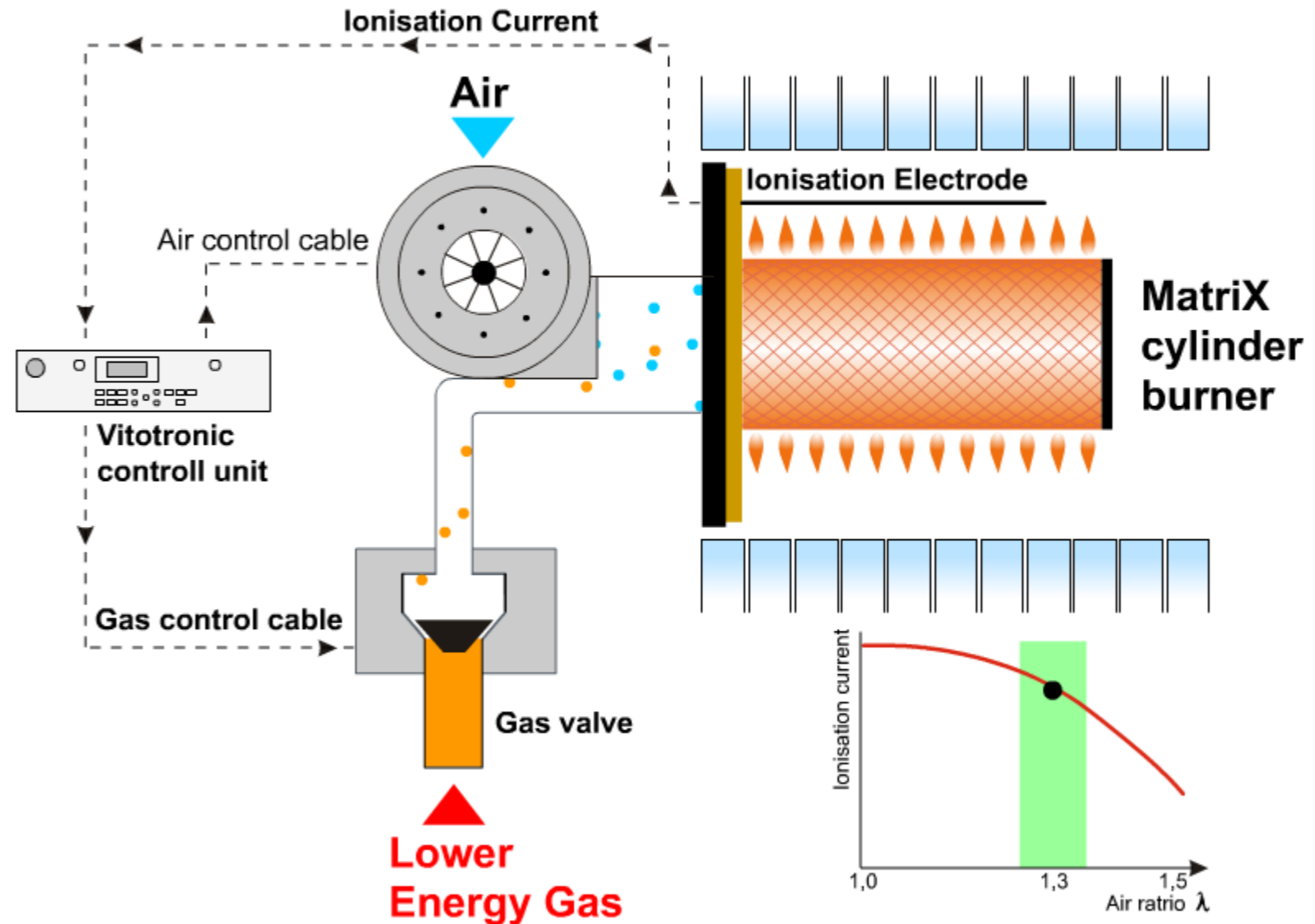
Lambda Pro Technology

Benefits :

Vitocrossal 300

Vitodens 222-F

Vitodens 200

Always optimum combustion

Benefits for Boiler Owner:
→ Constant high efficiency, safety and comfort
→ Automatically adjusts to varying gas quality
→ Low susceptibility to interference

Automatic adjustment to the gas quality

Benefits for Installer:
→ Simple, fast commissioning
→ No field adjustments or calibration required
→ Easy adjustment for NG or LPG

Changes in Gas supply structure = fluctuating gas quality

Fracking Shale gas   **LNG**   **Bio-gas**

***Combustion control** is the answer to* future developments of gas quality

Vitodens 200, B2HA / B2HB

Natural Gas **or** LP Gas Operation

- Boilers are factory adjusted for **Natural Gas**

- **No additional parts** needed for conversion to LP Gas.

- **Easy conversion** to LP:
  - ¼ turn on gas valve set screw
  - Change two addresses in Coding 2
  - A combustion setting adjustment is **not normally** required
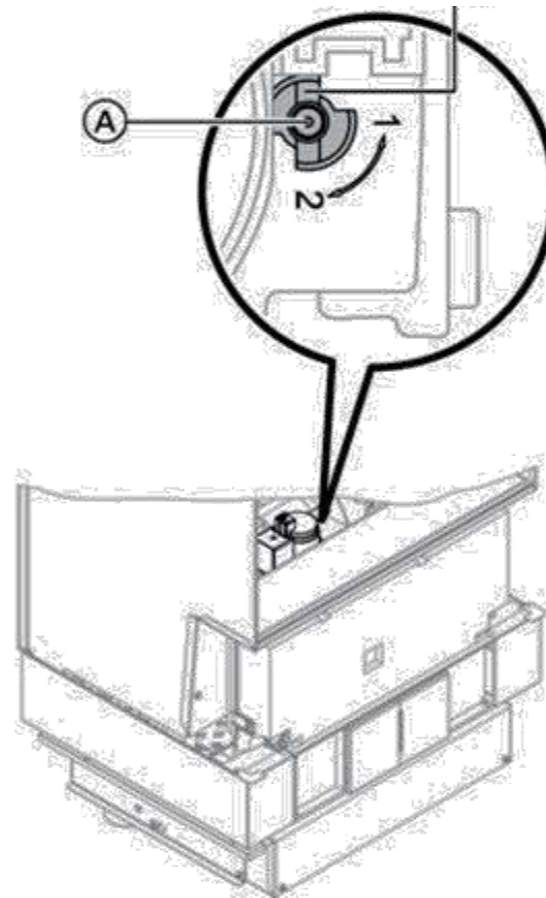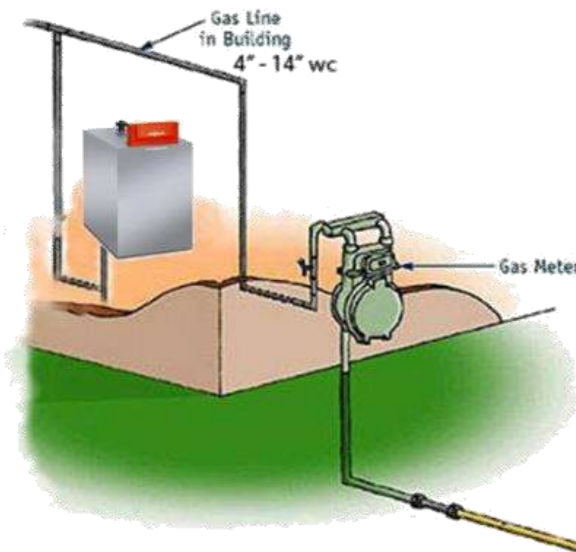
Gas Pressure requirements: B2HA/B – All models	
Min Press. NG	4" wc
Min Press. LPG	10" wc
Max Press. NG/LPG	14" wc

Gas Line in Building 4" - 14" wc

Gas Meter

PROPANE

VIE**S**MANN

Vitodens 200, B2HA / B2HB

Integrated Vitotronic 200, HO1B control

- Built-in **multi-function** outdoor reset boiler and system control

- **Clear text** display and graphic support

- **Multi-temperature** space heating and DHW controller:
  - 1 high temperature heating circuit
  - 2 low temperature heating circuit
  - Domestic hot water priority function
  - Integrated digital clock with daily and weekly program

- **Easy communication** with BMS or Internet:
  - Vitocom 100 LAN1 – Internet communication
  - Vitogate 300 – BMS Gateway

Vitodens 200, B2HA / B2HB

Integrated Vitotronic control

Weather responsive control automatically **adapts boiler** water supply temperature to **changing outdoor** temperatures

- **Reduced fuel consumption** by up to 15% per year
- Provides **enhanced comfort** for occupants

Boiler supply temperature °C

Outside temperature °C

Outside temperature sensor

Boiler supply
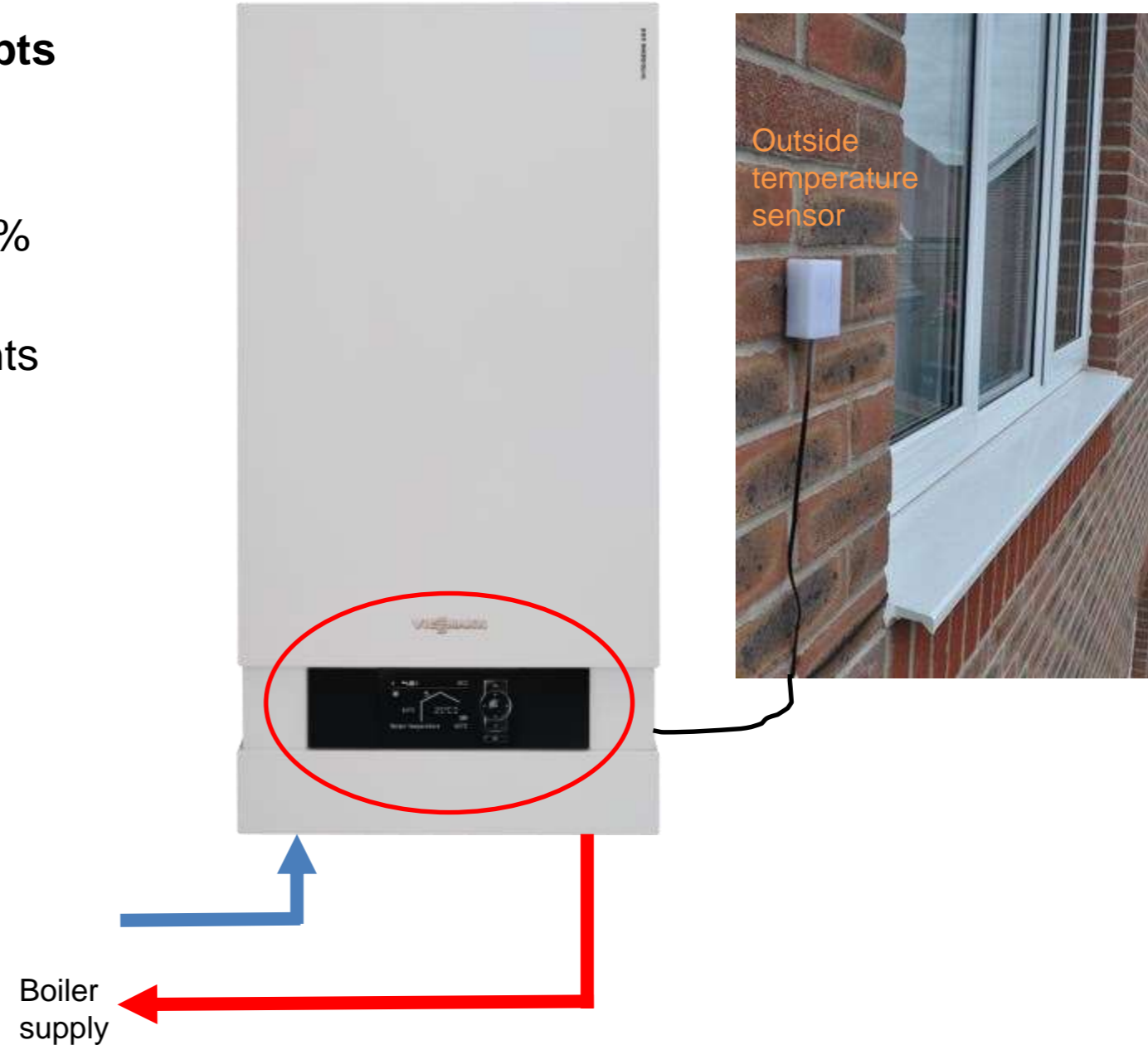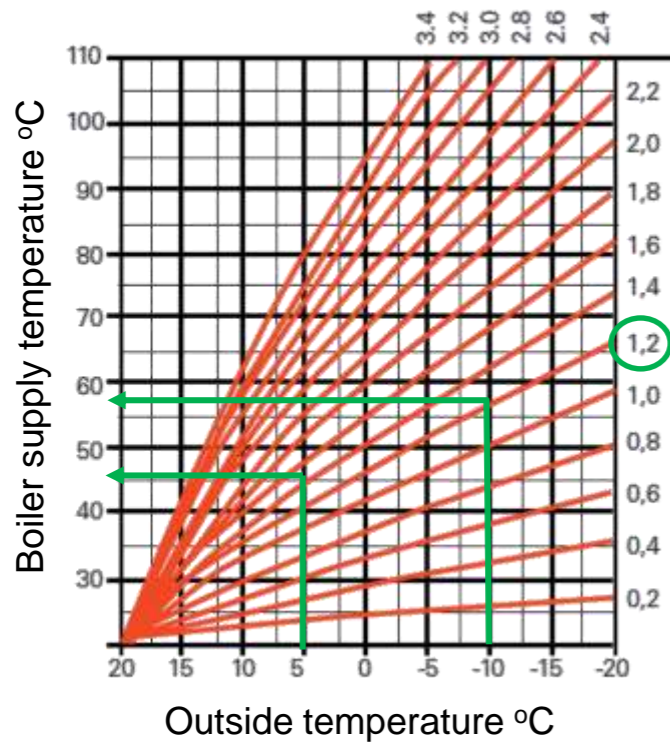
Vitodens 200, B2HA / B2HB

Integrated Vitotronic control

- Bright white text on black background for **easy to read** information.

- Easier to use with more **intuitive programming** functions, graphically displayed information & more features.

Main home screen
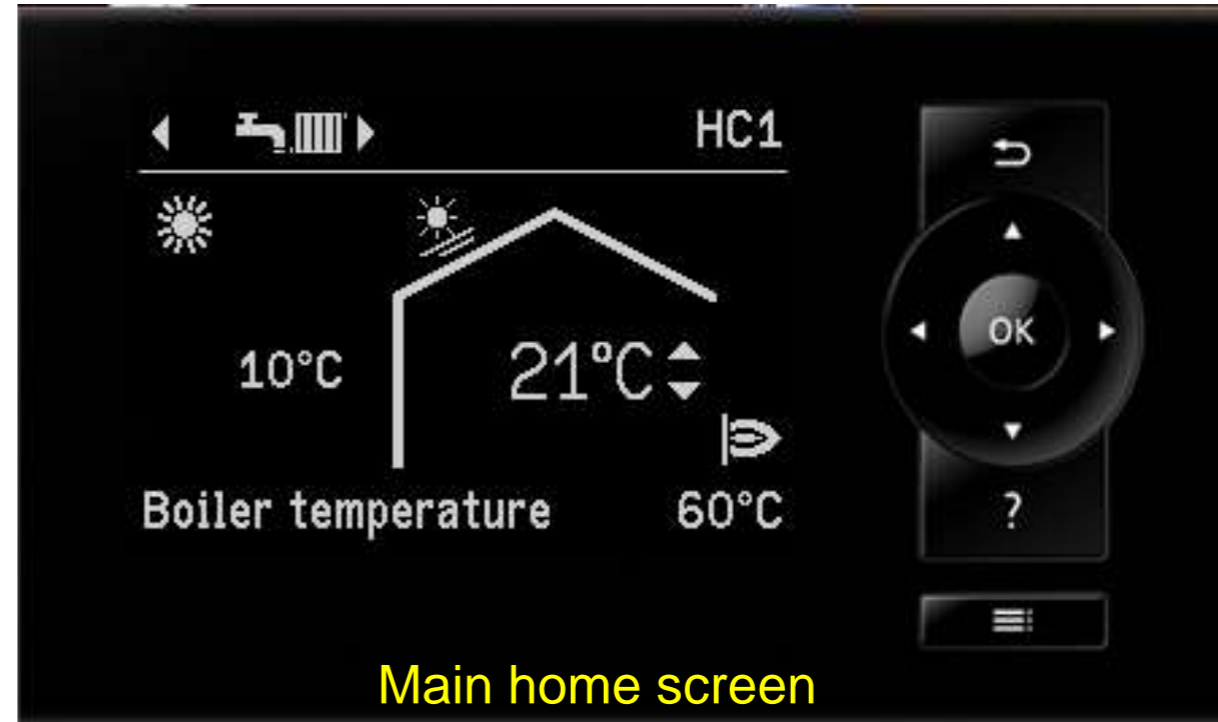
Vitodens 200, B2HA / B2HB

Integrated Vitotronic control

Easy to navigate with plain text and graphics
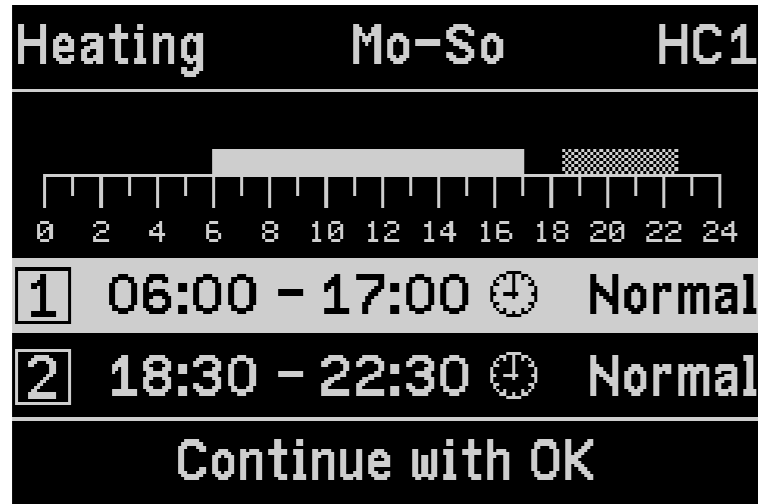
Setback timers
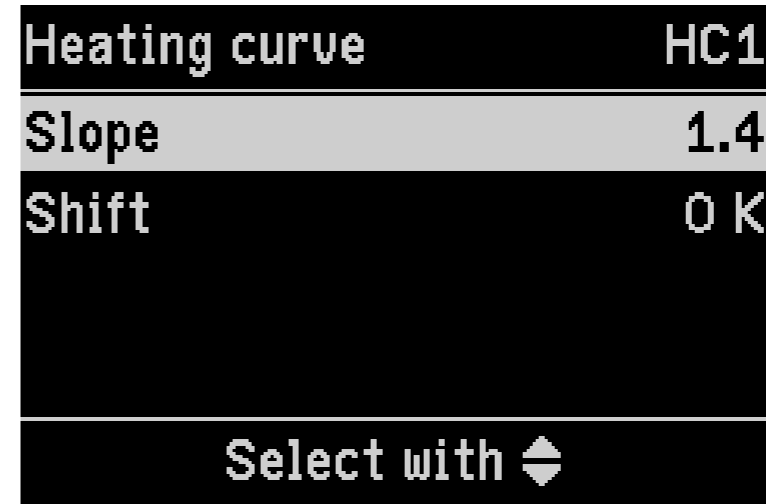
Change units

Heating curve adjustment
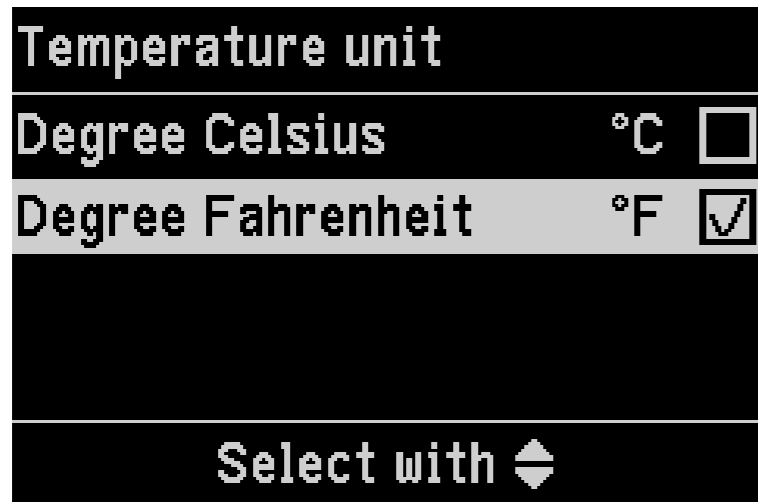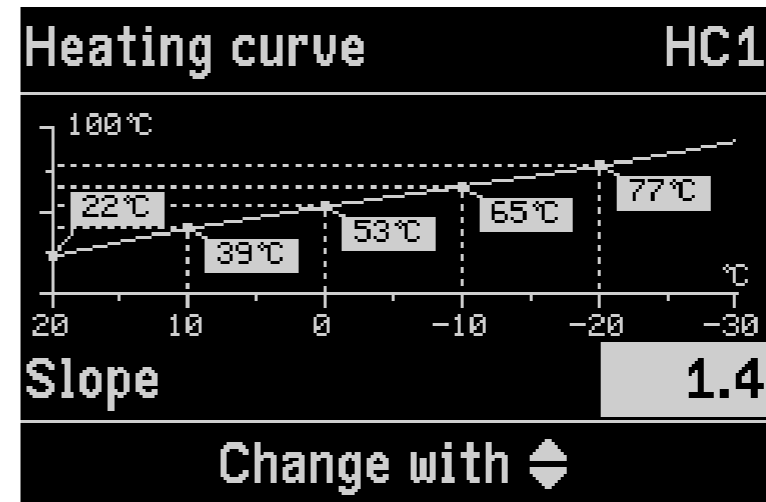
Vitodens 200, B2HA / B2HB

The Viessmann System Approach

Vitotrol 200/300
Communication
Thermostat

Vitotronic Boiler
and System
Control

Mixing valves +
Motorized
actuating motors
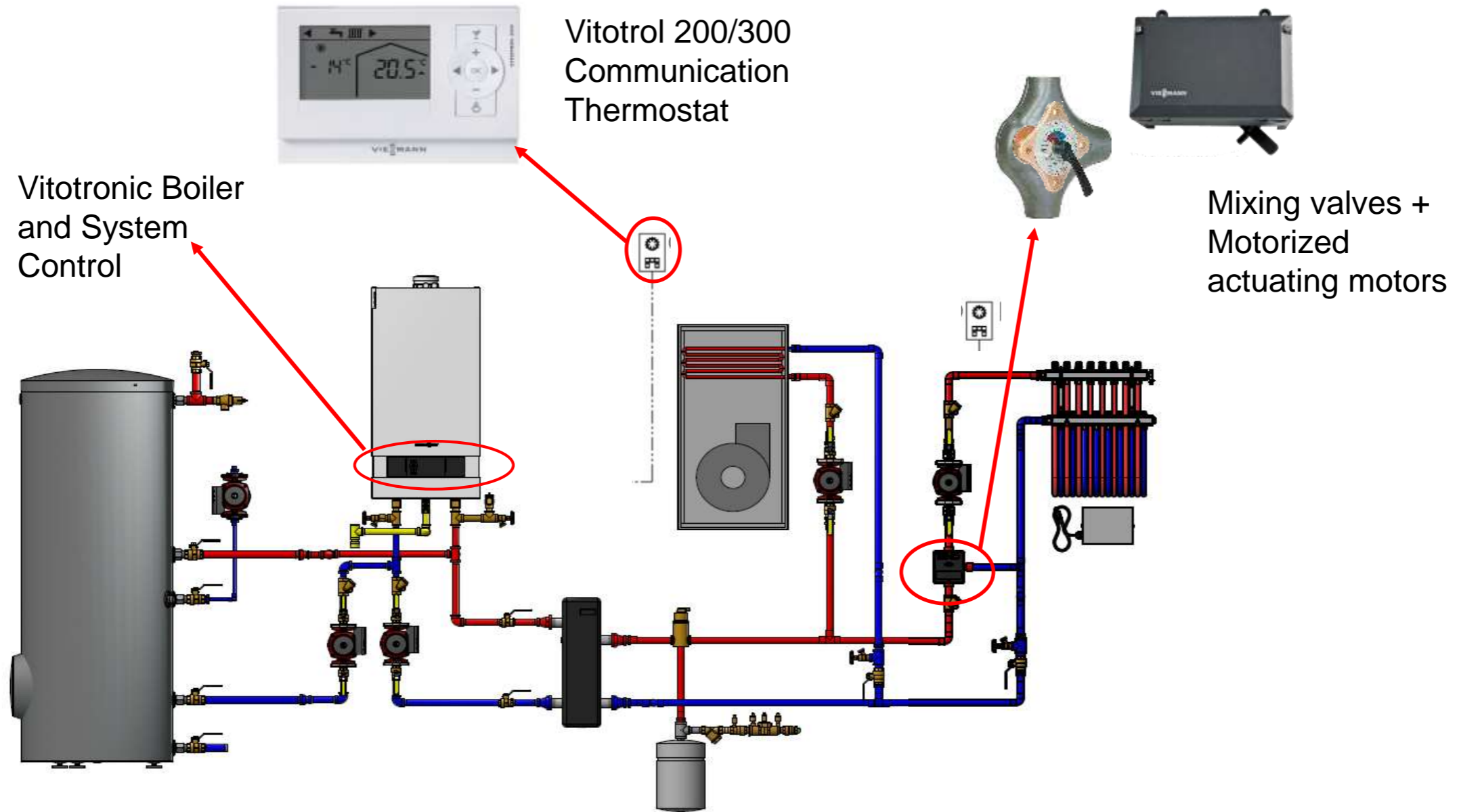
Vitodens 200, B2HA / B2HB

Vitogate 300 - BAS Communication Gateway

BAS Management Layer

BACnet

Modbus

System Integration Layer

BACnet / Modbus communication controller

Vitogate 300

BACnet

Modbus

Two versions available:
- LON to BACnet.
- LON to Modbus.

Mechanical System / Device Layer

LON

LON

LON

...

...
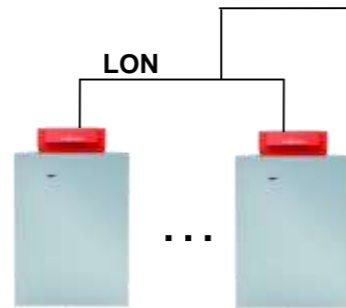
Vitocrossal 200, CM2 with GW6B
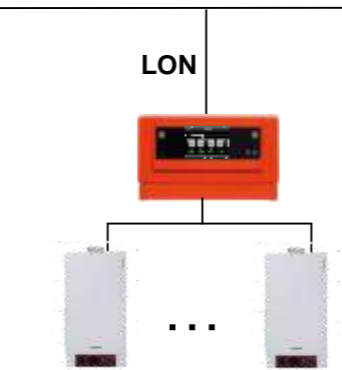
Vitodens 200 with or without MW2C

Other Viessmann boilers with Vitotronic boiler controllers

Vitodens 200, B2HA / B2HB

Internet communication with Vitocom 100 LAN1 module

LON

LAN*

LON-Module

**Vitocom 100
LAN1**

Router

Internet

Vitotrol App
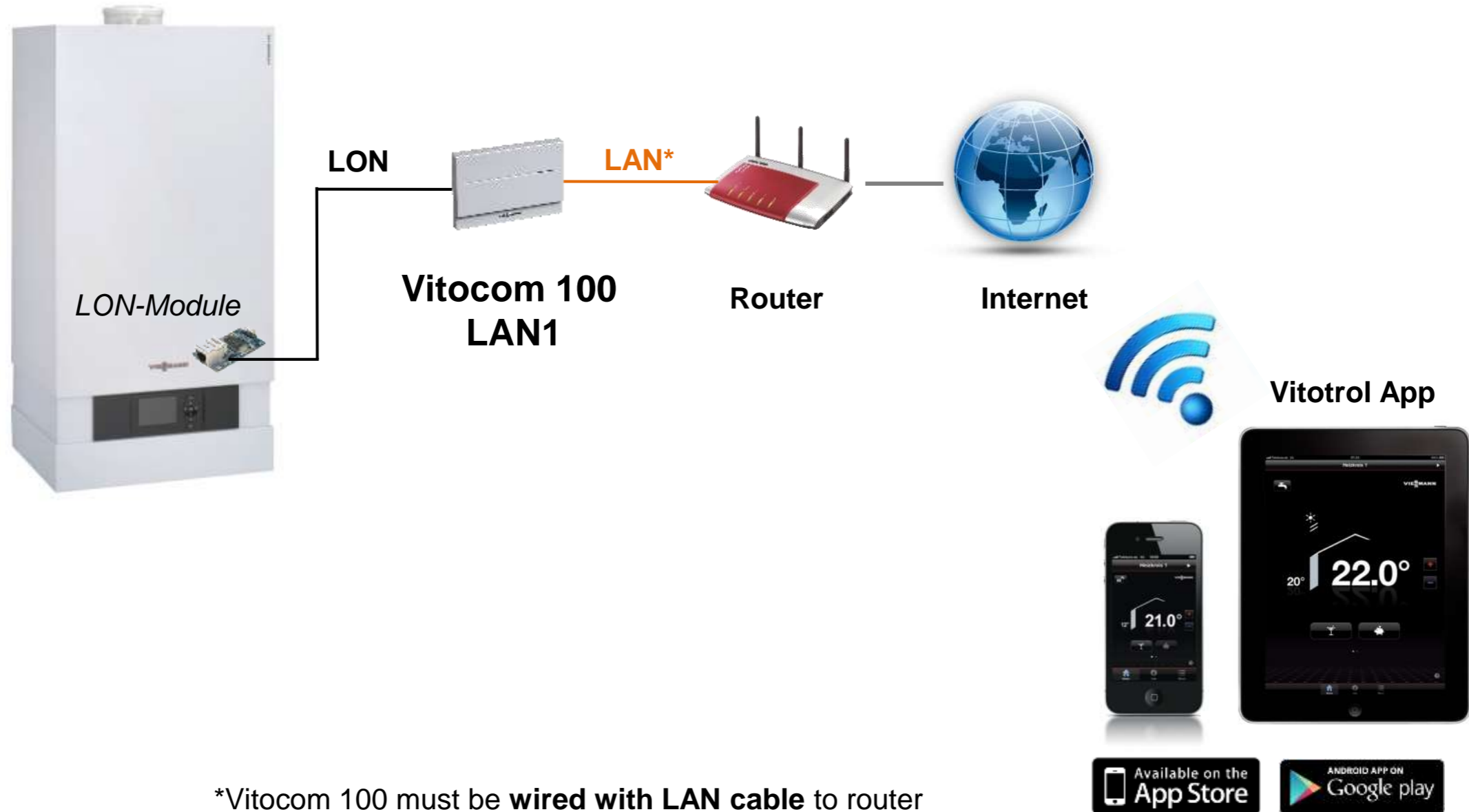
*Vitocom 100 must be **wired with LAN cable** to router

Vitodens 200, B2HA / B2HB

Multiple venting options

- Venting made easy with **multiple vent material options**

- Separate flue gas and combustion air openings on boiler

- Approved materials:
  - Coaxial PPs
  - Rigid PPs
  - Flexible PPs
  - CPVC
  - Stainless Steel
- Equivalent lengths **up to 180 ft**.

Pipe in pipe
- Coaxial PPs

Single wall pipe:
- PPs Rigid
- PPs Flexible
- CPVC
- Stainless steel

Gas Vent Type BH Class 11B 90°C c▨us System 636 Ⓜ

or System 636 Ⓜ Gas Vent Type BH Class 11B 90°C IPEX
IPEX x" (mm) CPVC c▨us Intertek Warnock Hersey ULC 636

Vitodens 200, B2HB

Venting Connections On The Boiler 19 – 35kW

- Combustion Air connections at **(A)**

- *Flue Gas connection at* **(B)**

Cover

2 pipe option

Coaxial or room air dependent option
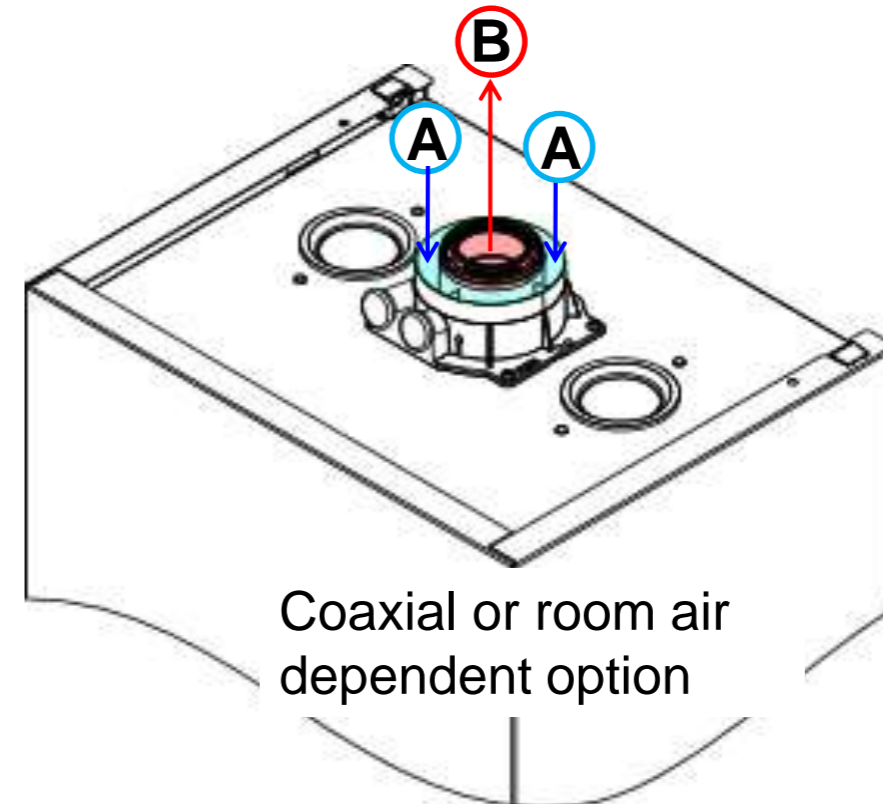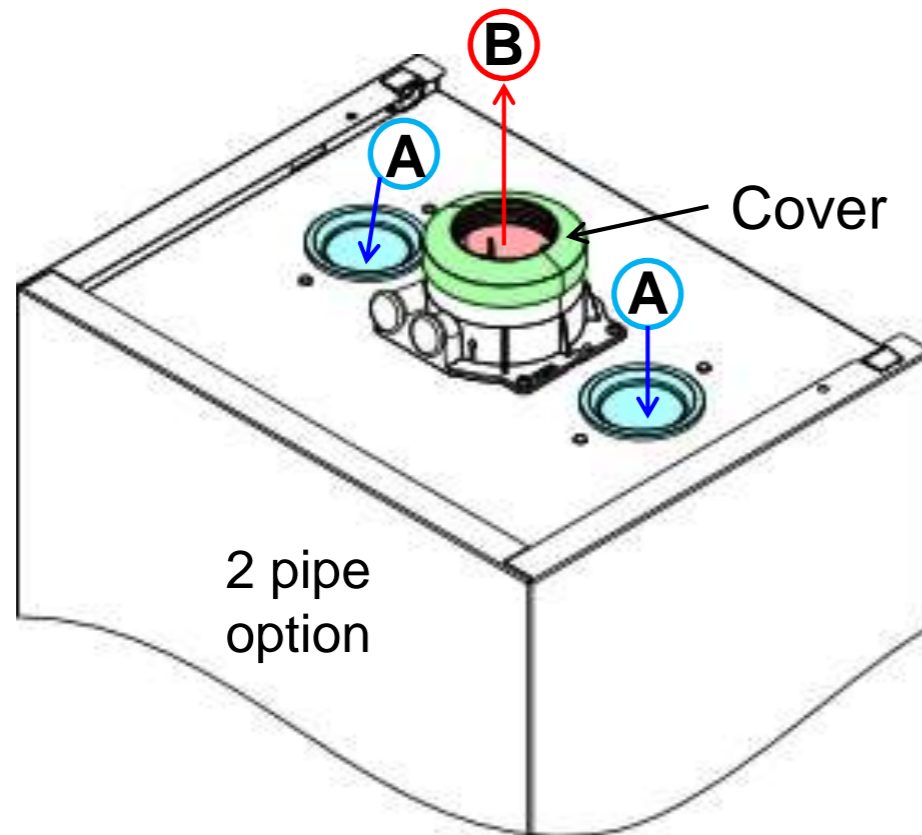
Vitodens 200, B2HA / B2HB

Venting Connections On The Boiler 45 – 150kW

- Combustion Air connections at **(A)**
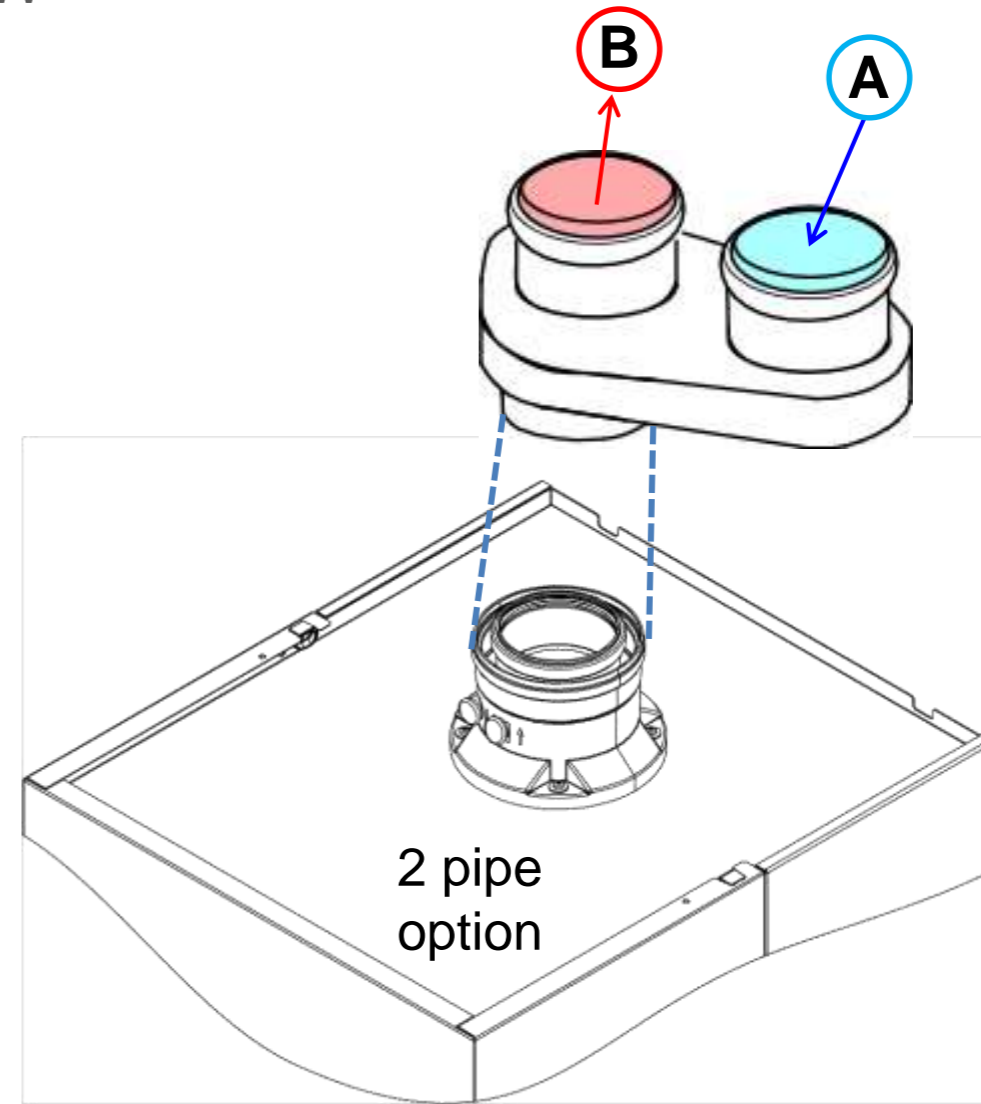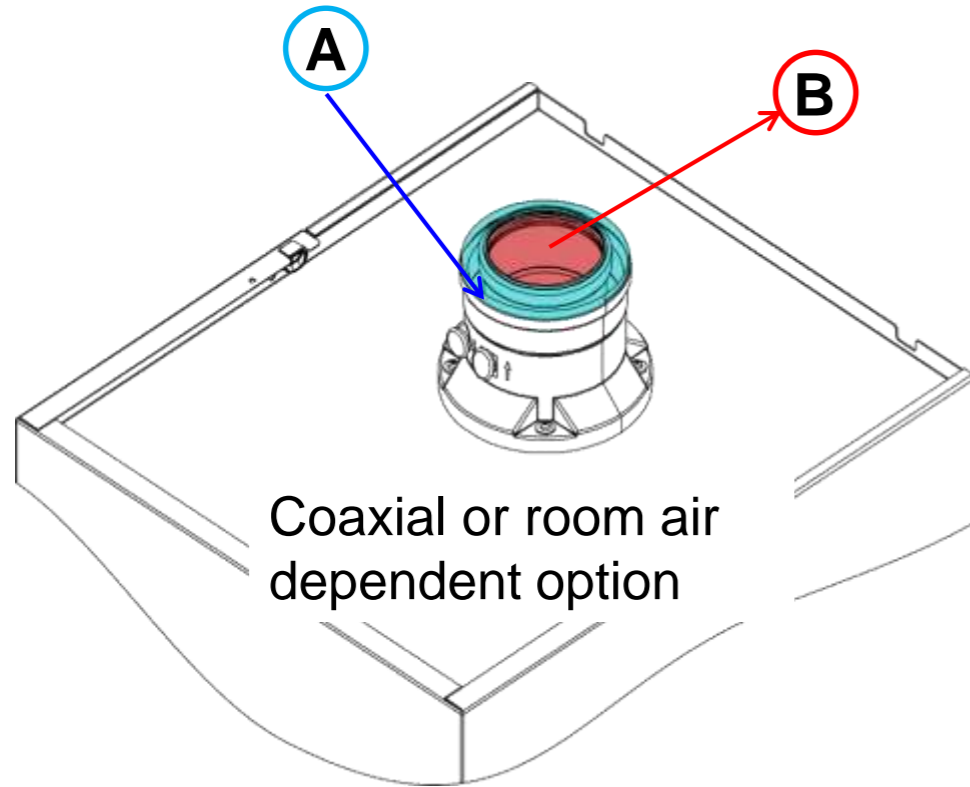
- *Flue Gas connection at* **(B)**

Coaxial or room air dependent option

2 pipe option

Vitodens 200, B2HA / B2HB

Venting Layouts Supported

- **Coaxial, (concentric)**
  - Vertical
  - Horizontal

Flue gas

Combustion air
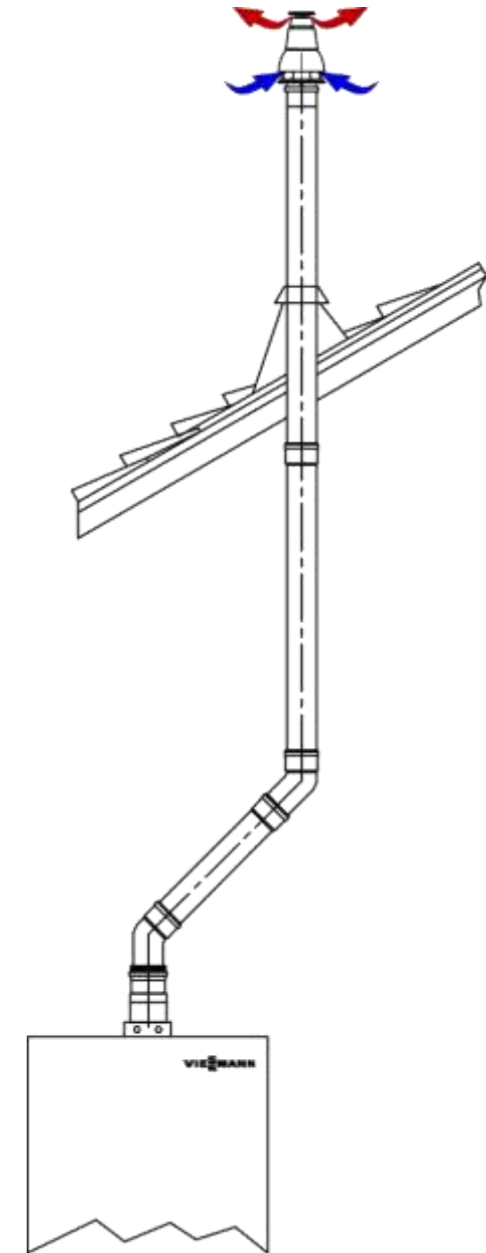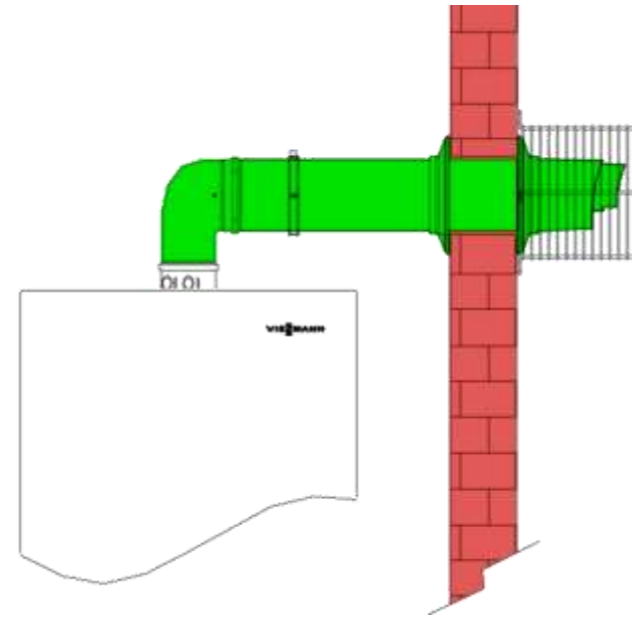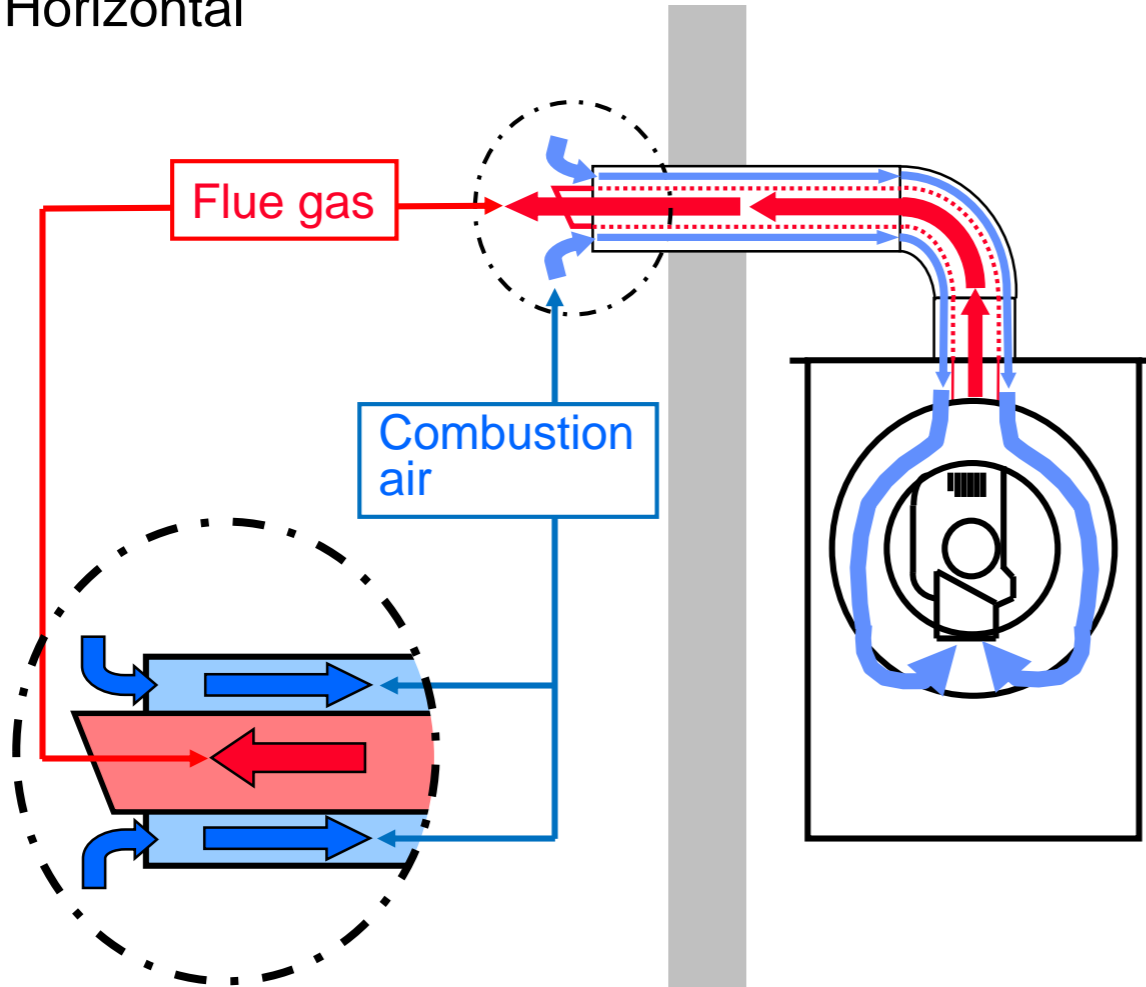
Vitodens 200, B2HA / B2HB

Venting Layouts Supported

- Coaxial, (concentric)
    - Vertical
    - Horizontal

- **Two Pipe**
    - Vertical
    - Horizontal
    - Hybrid

Vitodens 200, B2HA / B2HB

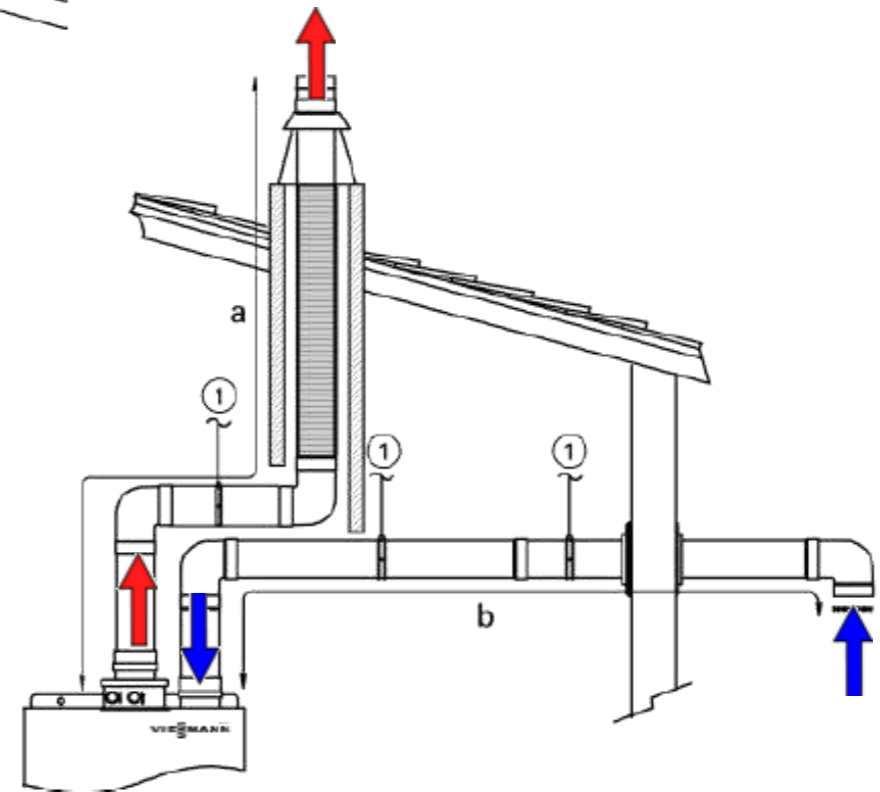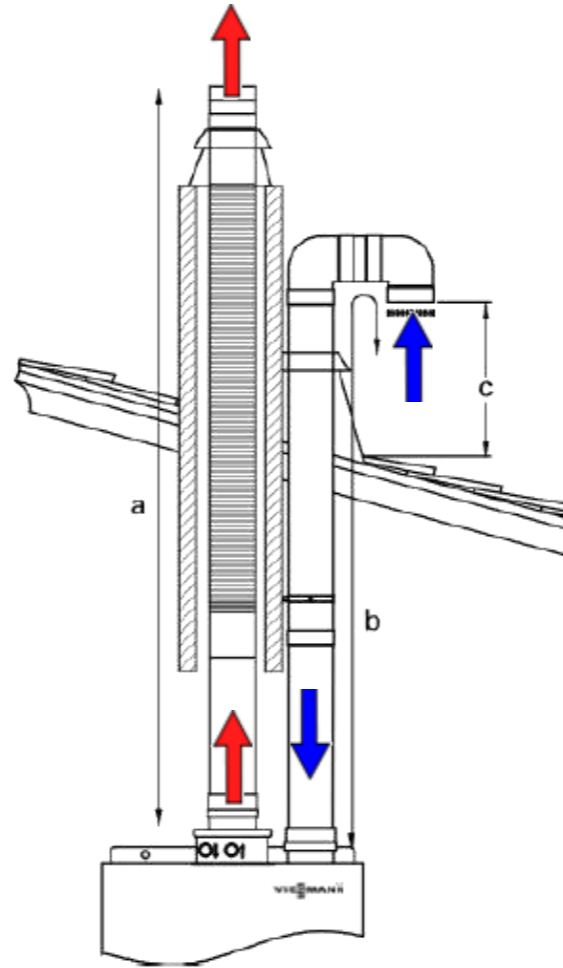Venting Layouts Supported

- Coaxial, (concentric)
  - Vertical
  - Horizontal.

- Two Pipe
  - Vertical
  - Horizontal
  - Hybrid

- **Single Pipe (room air dependent)**
  - Vertical
  - Horizontal
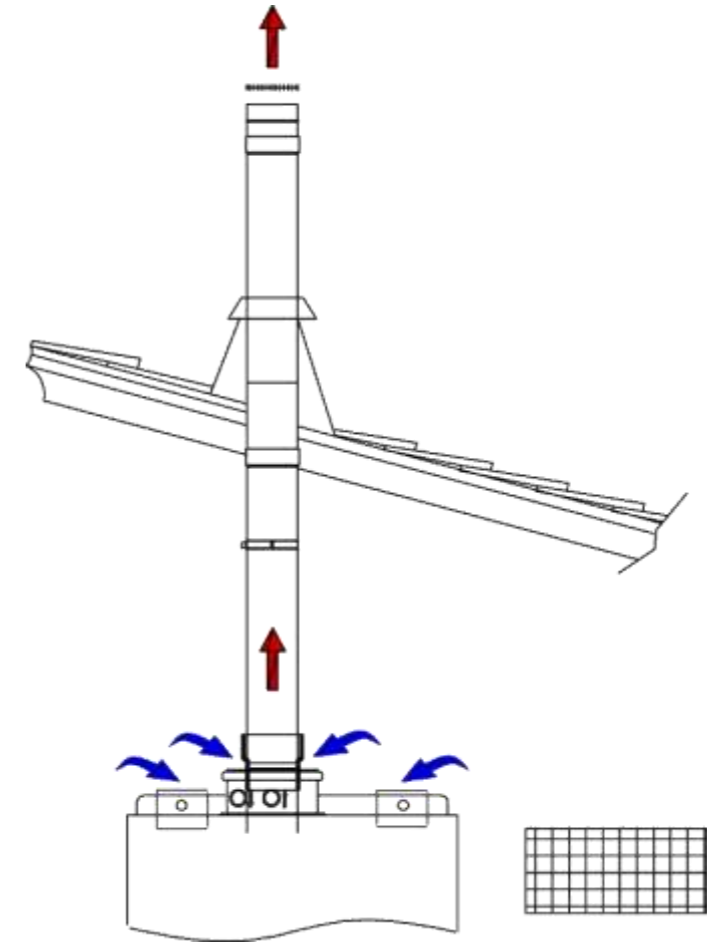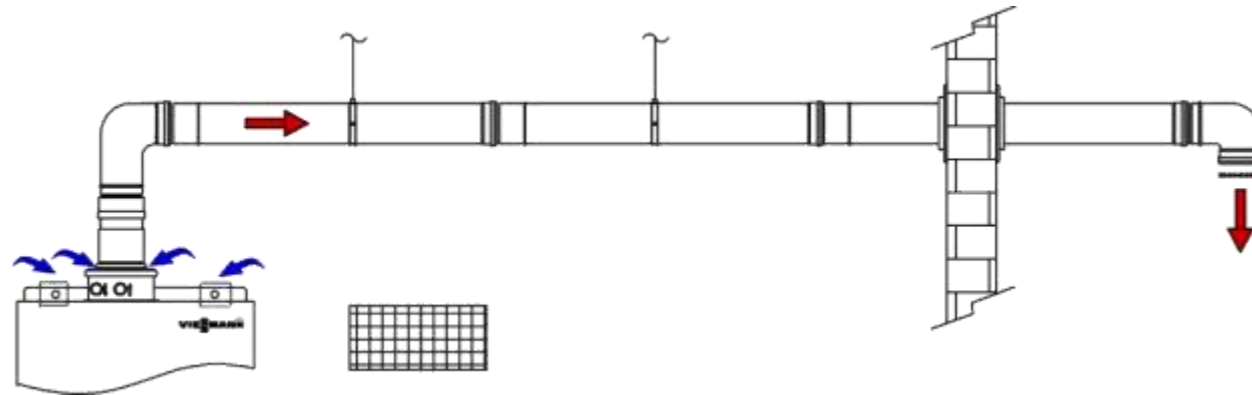
Vitodens 200, B2HA / B2HB

## Venting Layouts Supported

- Coaxial, (concentric)
  - Vertical
  - Horizontal.

- Two Pipe
  - Vertical
  - Horizontal
  - Hybrid

- Single Pipe (room air dependant)
  - Vertical
  - Horizontal

- **Flexible with PPs**

Vitodens 200, B2HA / B2HB

## Common Venting For Multiple Boiler Installations

- **Up to four boilers** into one common vent

- Multiple combustion air options:
    - Room air dependent
    - Individual boiler intake
    - Common intake (up to four boilers)

- **Vertical** vent termination <u>only</u>
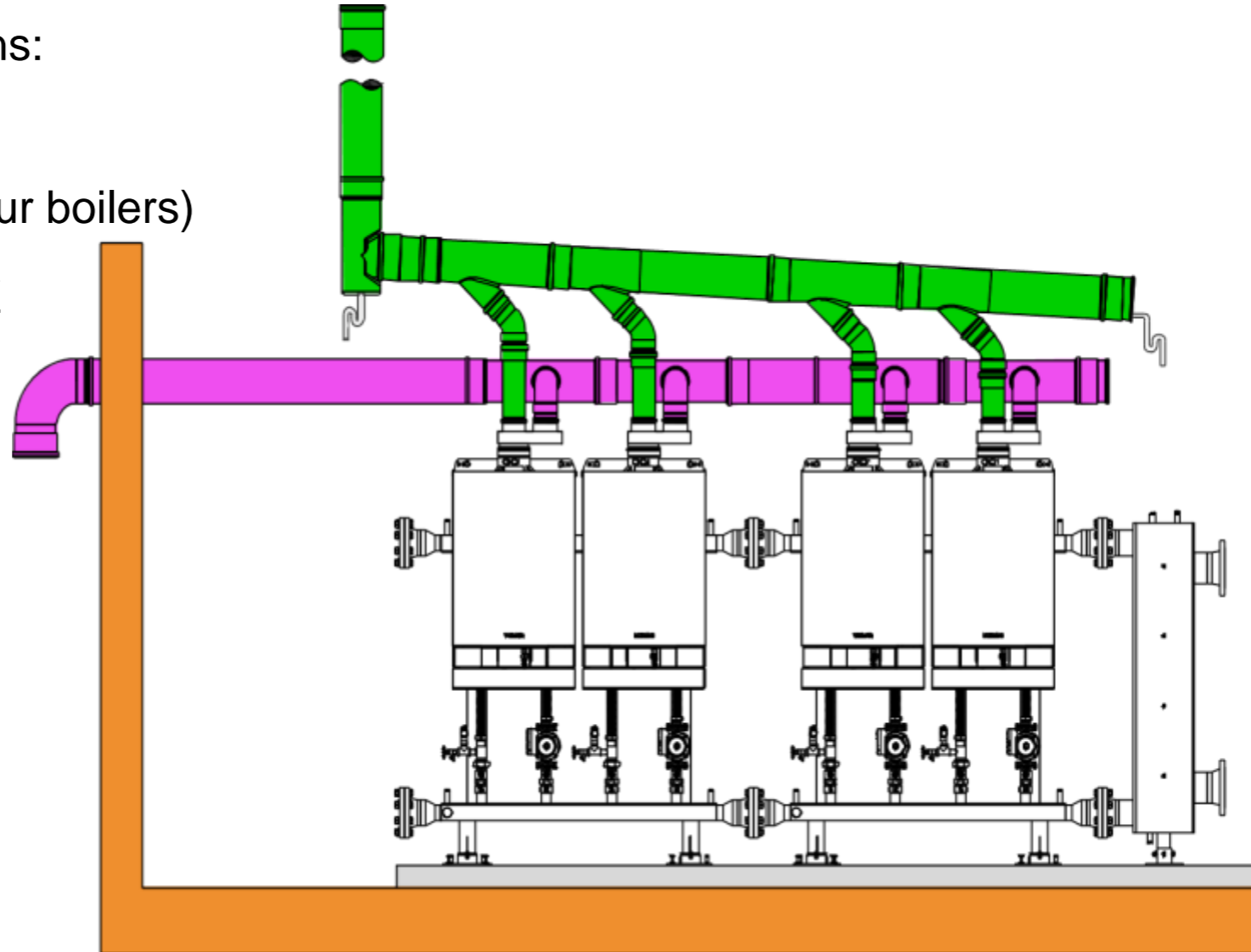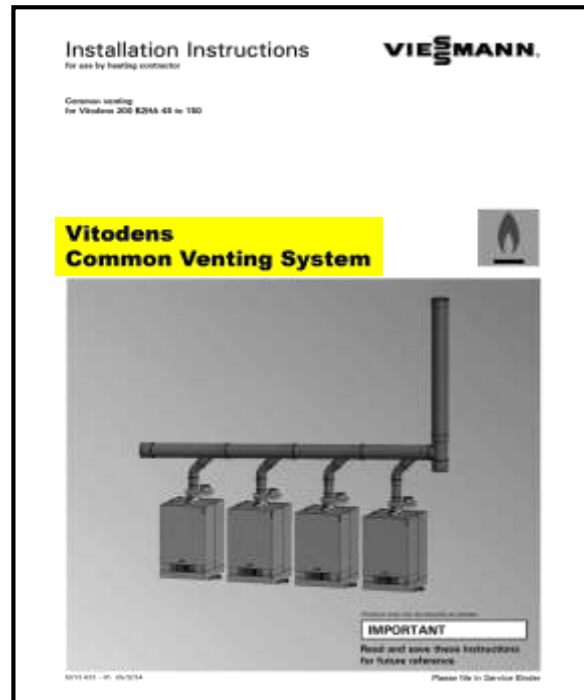
Vitodens 200, B2HA / B2HB
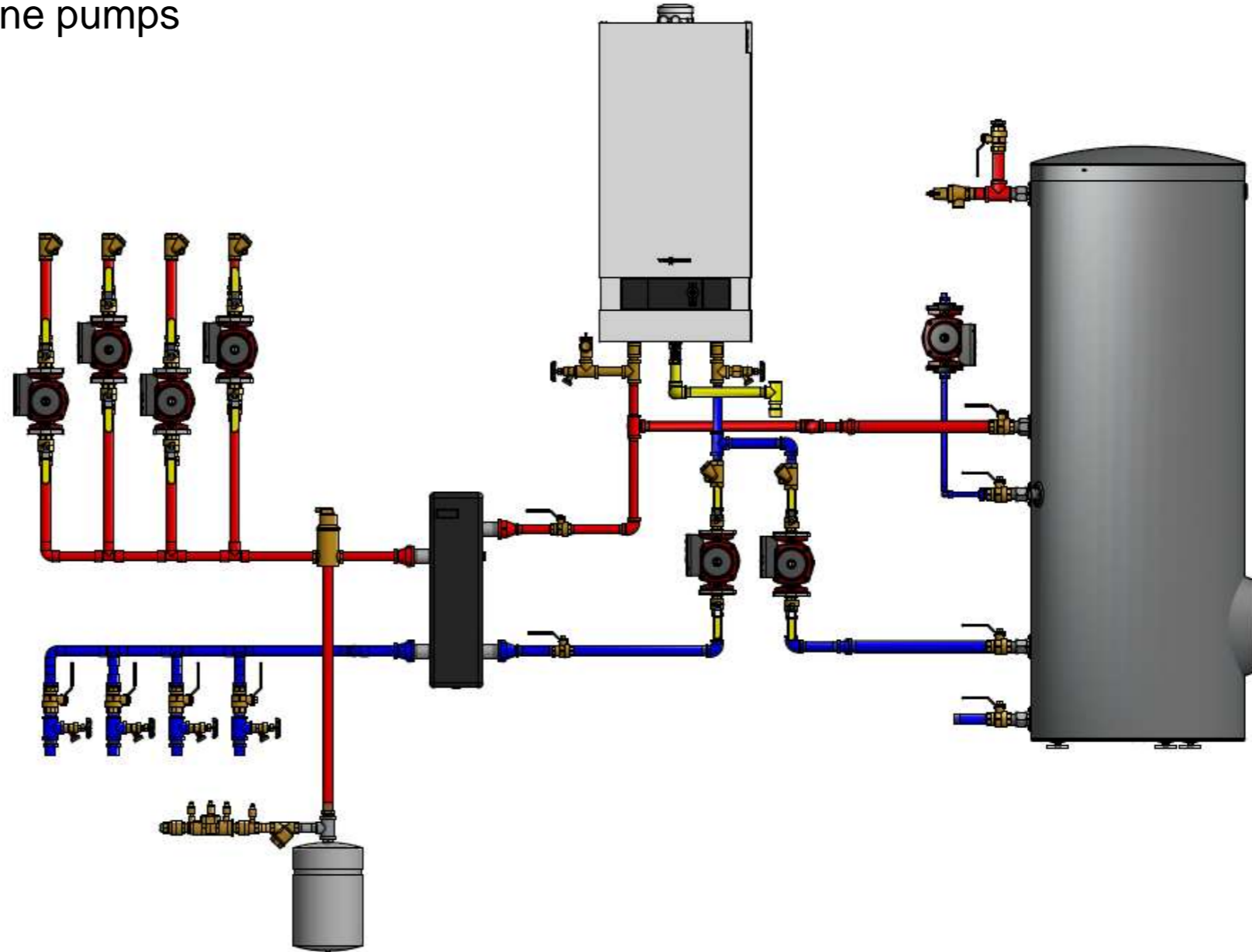
Piping Layout Options

- Low mass boiler construction requires **minimum boiler flow rate**

- **Dedicated boiler pump** with hydraulic separation is required

- **Primary-secondary piping** with closely spaced tees, or Low loss header

Option 1: Closely spaced Tees

Option 2: Low Loss Header
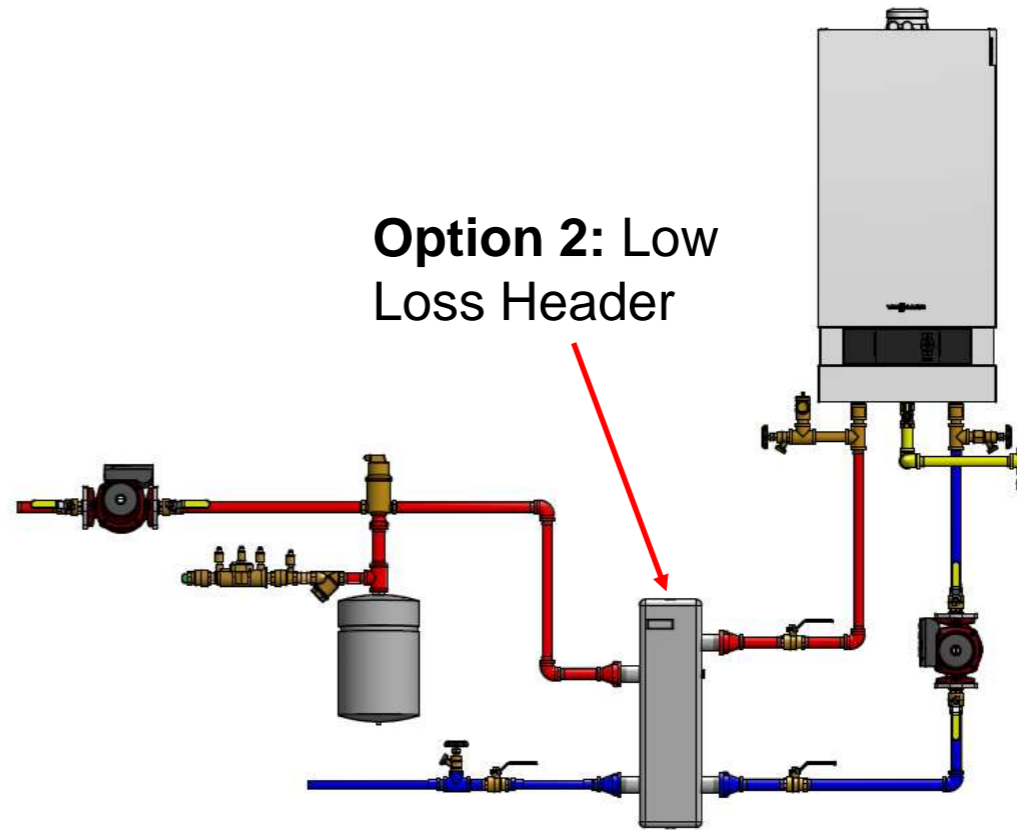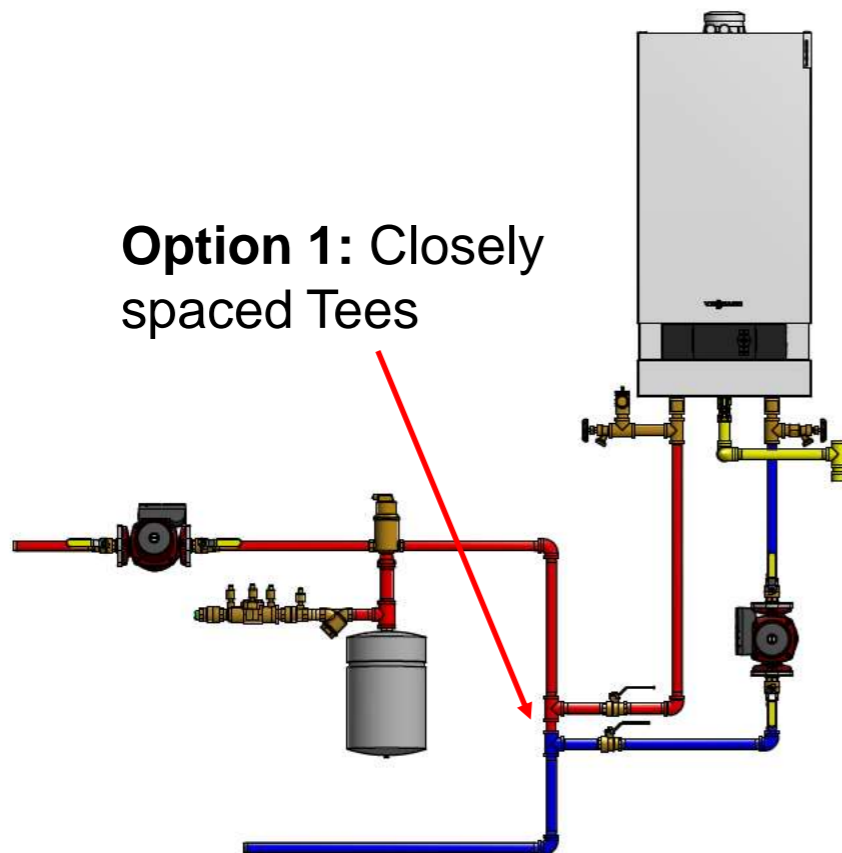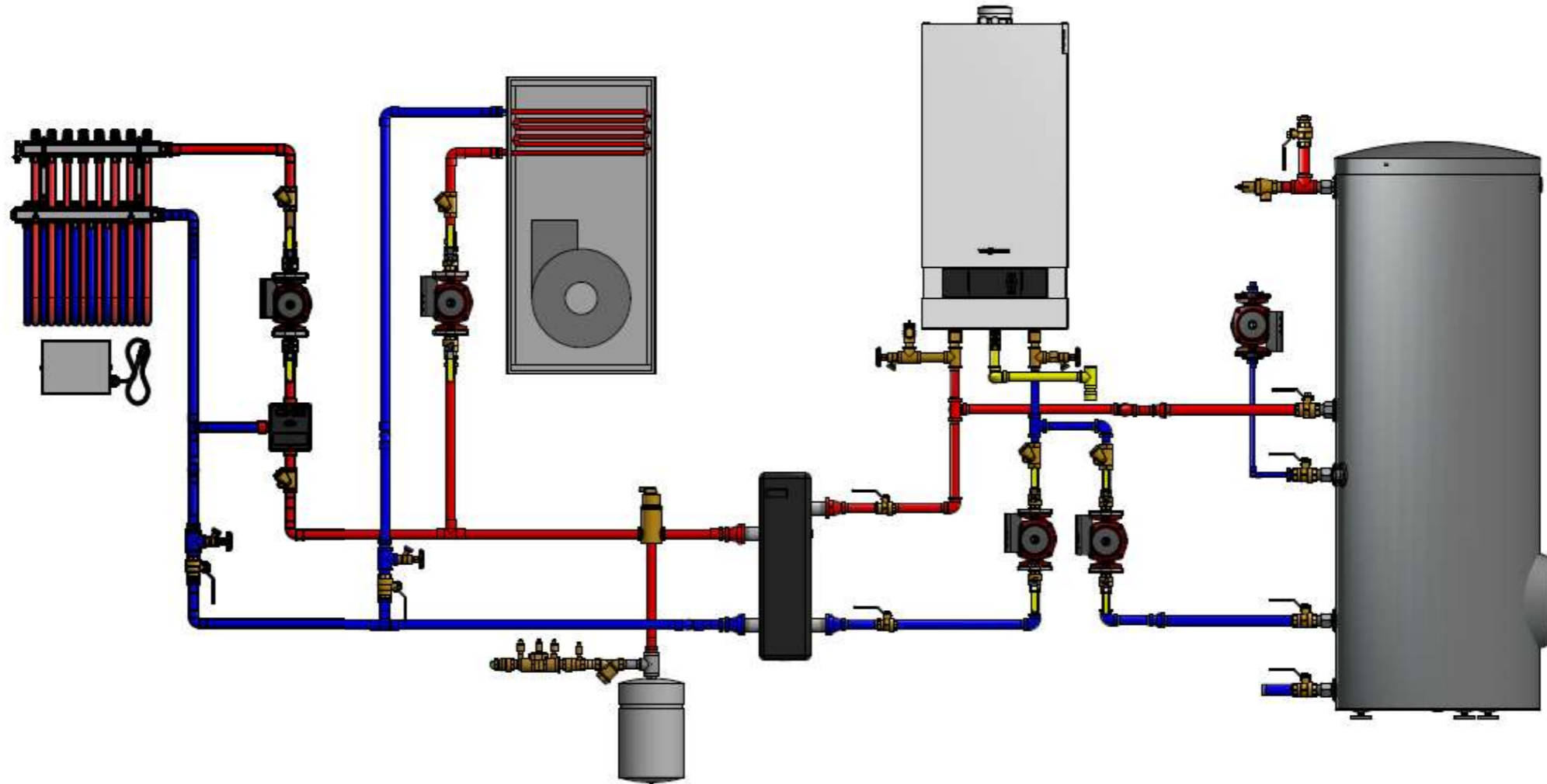
Vitodens 200, B2HA / B2HB

- Space heating with multiple zone pumps

- DHW heating with priority

- LLH
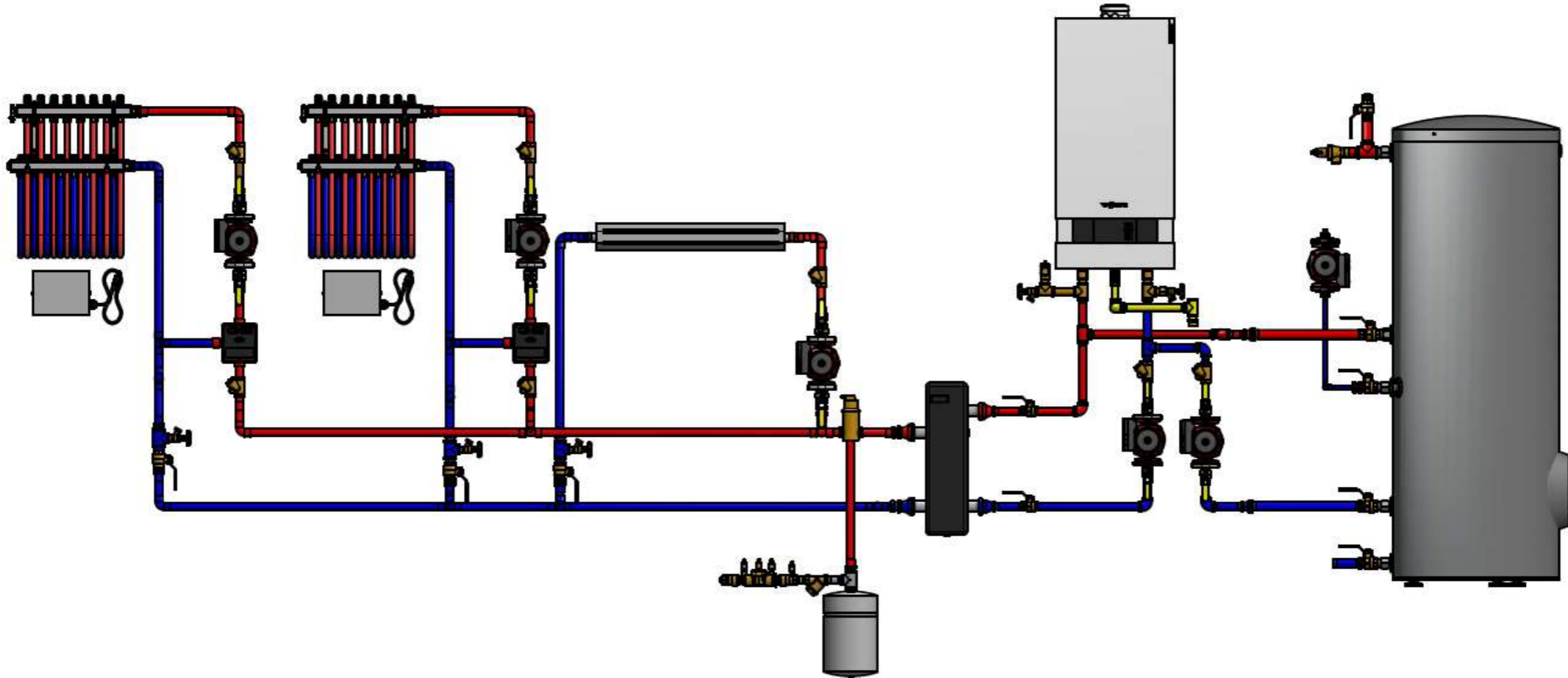
Vitodens 200, B2HA / B2HB

Piping Layout Options

- Multi-temperature (2) space heating

- DHW heating with priority

- LLH

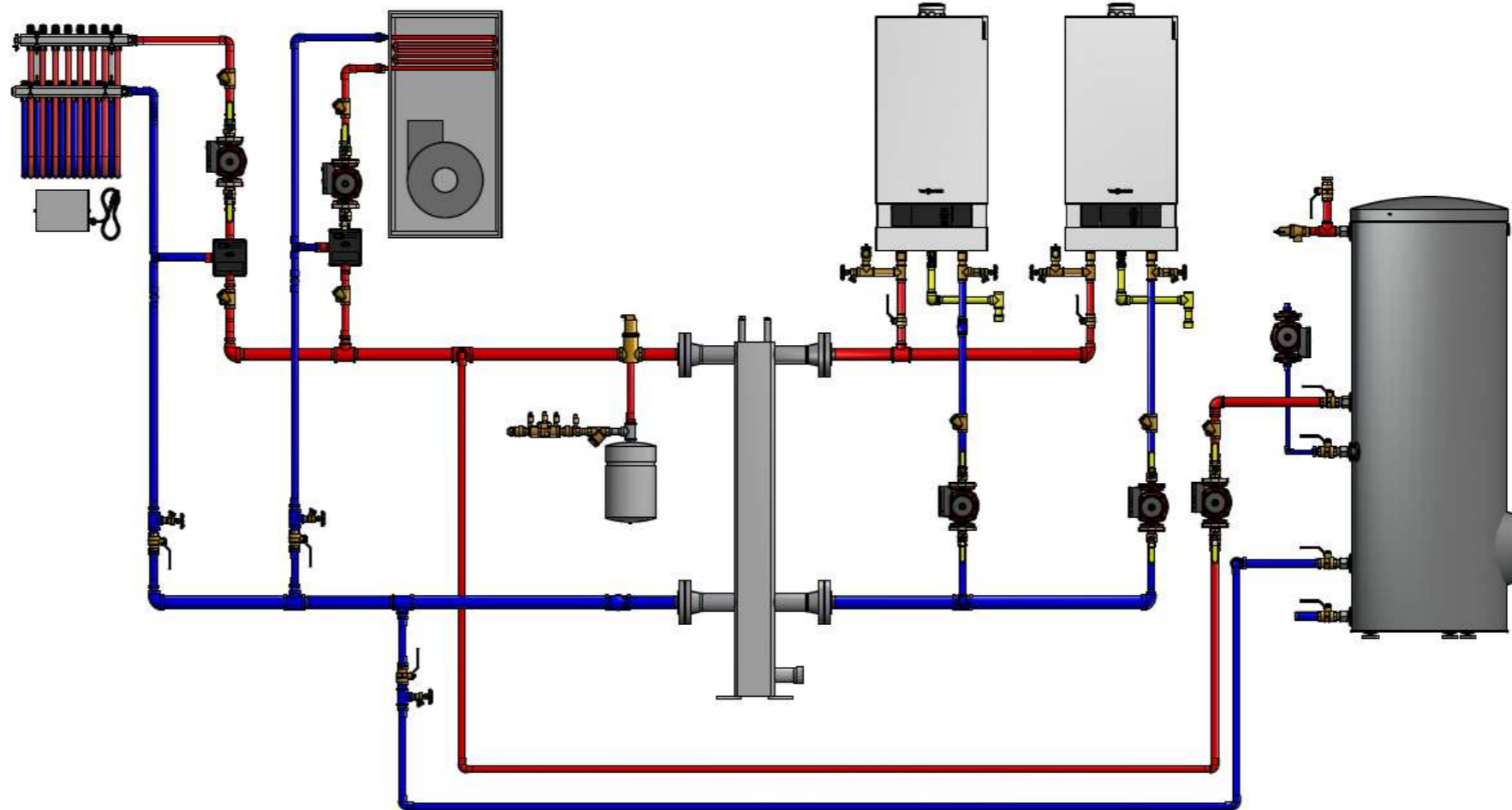# Vitodens 200, B2HA / B2HB

Piping Layout Options

- Multi-temperature (3) space heating

- Multiple motorized mixing valves

- DHW heating with priority

- LLH

Vitodens 200, B2HA / B2HB

Piping Layout Options

- Multiple boilers

- Multi-temperature (2) space heating

- DHW heating with priority

- LLH

Vitodens 200, B2HA / B2HB

Everything You Need In A Heating Boiler

- Suitable for a wide range of residential / commercial applications

- Cascade up to 8 boilers

- Highly efficient operation for dramatic fuel savings

- Powerful multi-function heating + DHW system controller

- Durable, reliable and long service life with stainless steel construction

- NG /LPG burner with Lambda Pro Technology

- Whisper quiet operation

- Flexible venting options

- Easy to service and maintain

Vitodens 200, B2HA / B2HB - Product Introduction