



Flexible Hydronic Control for Boiler Systems

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Flexible Hydronic Control for Boiler Systems

Coordinated System Controls



Exhaust Solutions



Condensing Boilers



Integrated Hydronic Solutions



Pumps / Valves

Non-Condensing Boilers



Hybrid Solutions



Flexible Hydronic Control for Boiler Systems

Key Ingredients for Hydronic Boiler Room Control

- **System temperature set point control**
- **PID modulation, outdoor air temperature reset, setback scheduling, demand priority**
- **Manage pumps, valves, dampers**
- **Serve multiple demands (CH, DHW, ice melt)**
- **Building system integration and communication**
- **Adaptability to system being served**
- **Intelligent boiler sequencing and modulation**



Flexible Hydronic Control for Boiler Systems

Effective, Intelligent Control

- **Understand the type of boiler(s) being controlled**
- **Non-Condensing (traditional) boilers**
 - Higher temperature operation, minimum required
 - Most efficient in 60-80% firing rate range
 - Typical lead-standby sequencing approach
 - Designed/sized for peak load conditions
- **Condensing boilers**
 - Lower temperature operation
 - Most efficient at lower firing rates, 20-50%
 - Multiple boilers firing in unison
 - Most efficient for part-load conditions



Flexible Hydronic Control for Boiler Systems

Different Boilers = Different Control Strategies

- **Maximize the advantages of each type**
- **Eliminate the disadvantages**
- **Condensing Boilers**
 - Best part-load efficiencies
 - No minimum temperature concerns
 - Ideal for secondary demands
- **Non-Condensing Boilers**
 - Sized for peak demand
 - Backup fuel oil
 - Lowest first cost



Flexible Hydronic Control for Boiler Systems

Cleaver-Brooks engineers have accepted the challenge and delivered the solution:

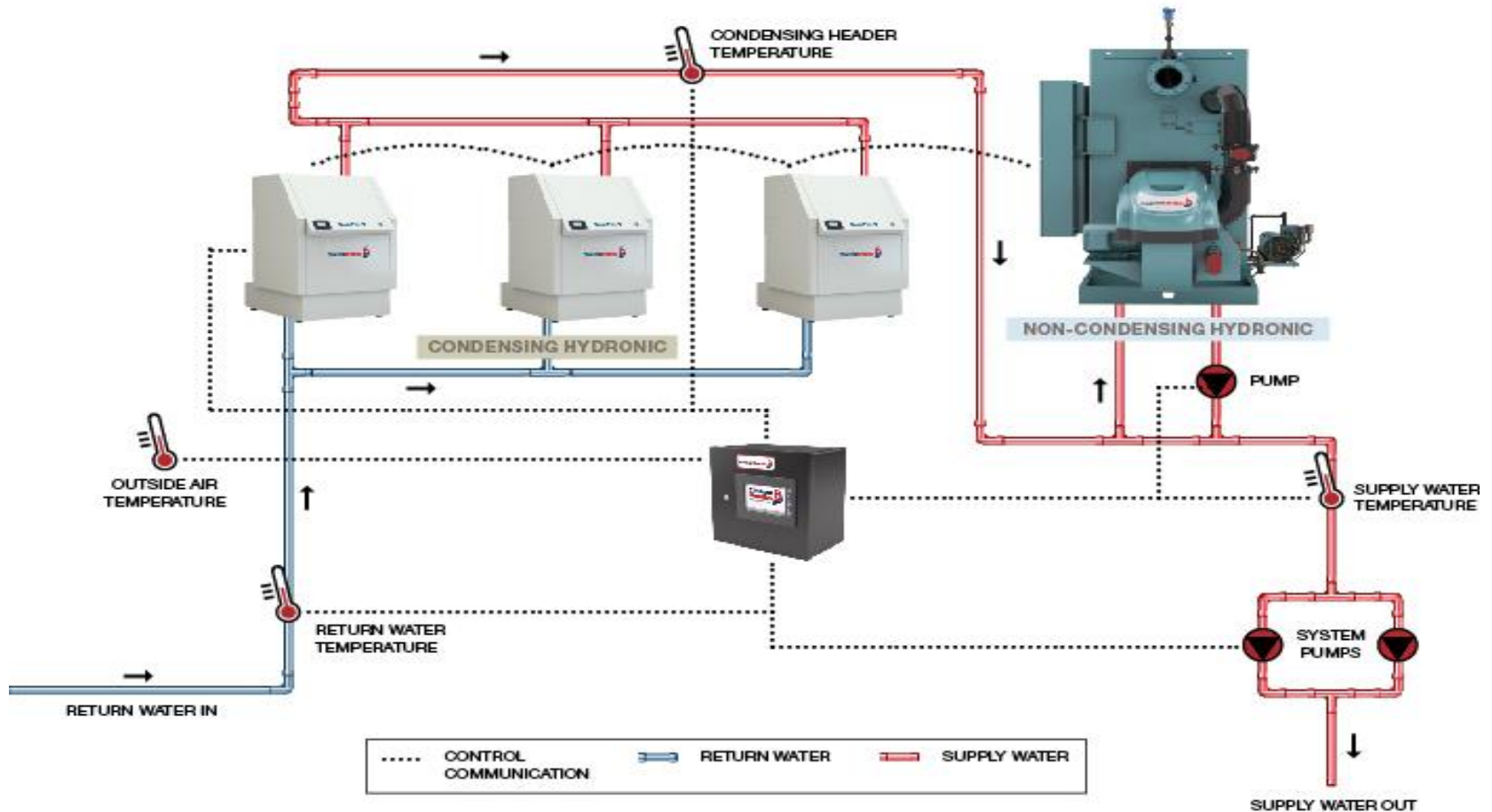
Hydronic System Control (HSC)

- **Independent firing rate control**
 - Condensing/Non-Condensing/Hybrid
- **Flexibility & configurability**
 - Compatible with any hot water boiler
 - Pumps, valves, interlocks
- **Direct boiler status and control**
- **Outdoor reset or setback**
- **DHW demand priority**
- **Variable flow pumping**
- **Building system integration**



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Hybrid Solution with HSC



Flexible Hydronic Control for Boiler Systems

HSC - Hybrid Opportunities

- **Existing boilers that cycle too frequently**
- **Oversized systems resulting from changes in building envelope, and reduced design load over time**
- **Legacy boilers requiring high maintenance or repair**
- **Rebates for efficiency improvements**
- **Fuel oil backup requirements**
- **Desire to implement outdoor temperature reset**
- **New installations that are cost effective**



Flexible Hydronic Control for Boiler Systems

Hydronic System Control

- **Maximize the Efficiency of All Hydronic Boilers**

Condensing

Non-Condensing

Hybrid System

- **Control up to 20 boilers in one hydronic system**
- **Variable speed control of boiler and system pumps**
- **Remote interlock with dampers, draft controls, etc.**
- **DHW demand priority**
- **Isolation valve and mixing valve control**
- **Building system integration and communication**



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Questions & Answers



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