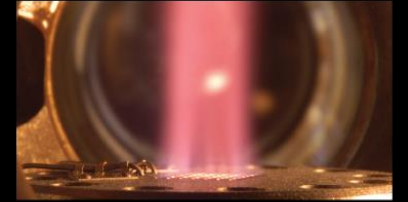
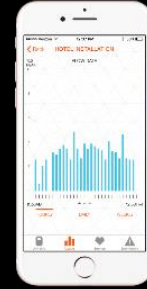


About Intellihot

Presented to Illinois EE Stakeholder Advisory Group
September 17, 2019



2005
Intellihot is born of a broken water heater & a soaked basement.

2009
Intellihot is founded.

2011
Intellihot sets up a state of the art manufacturing facility in the small town of Galesburg, Illinois.

2013
Intellihot's first floor models are launched.

2016
Intellihot's telliCare App is launched.

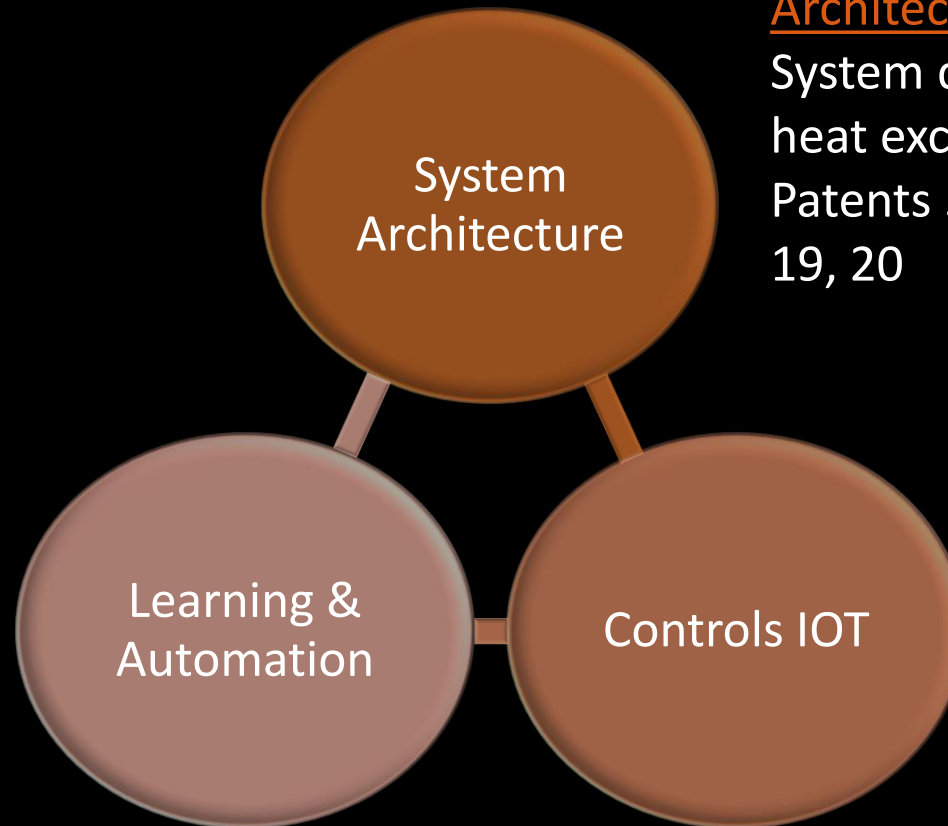
2017
Intellihot's telliBots & App are launched.

2018
Intellihot is awarded a commercial license by NASA to redesign and incorporate NASA's Fully Premixed Low Emission, High Pressure Multi-fuel Burner into its entire product line of compact tankless water heaters.

Models iQ3001 & iQ2001 are launched.

INNOVATIVE— 65 PATENTS

Intellihot has an extensive IP portfolio



Learning & Automation

User sensing, adaptive, internet of things, automation. Patents 1, 12, 13, 15, 18, 20, 21

Architecture

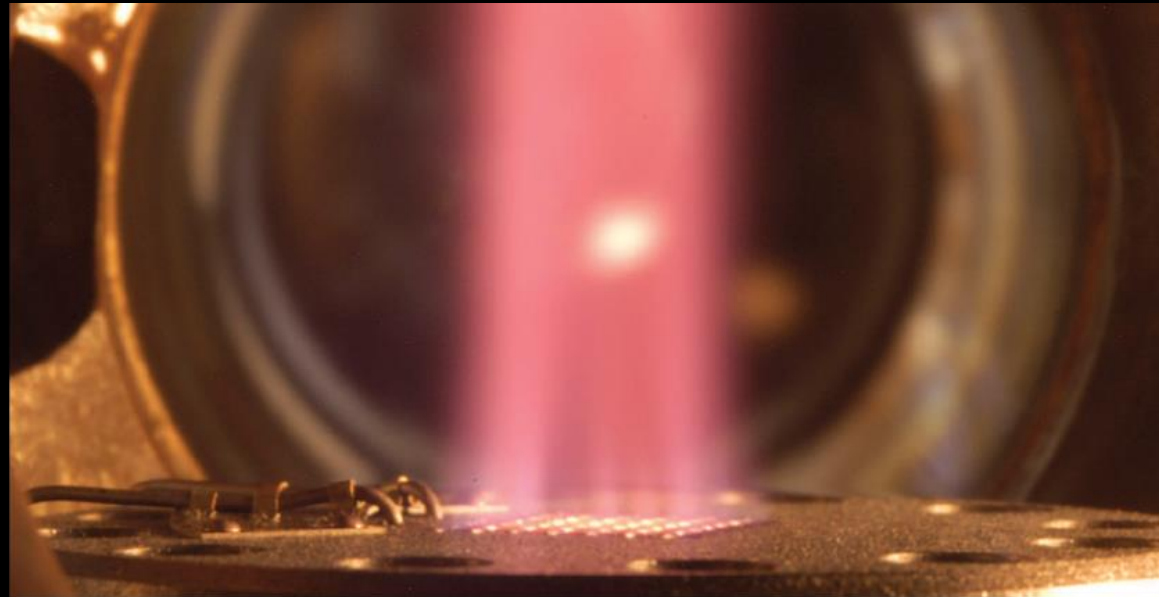
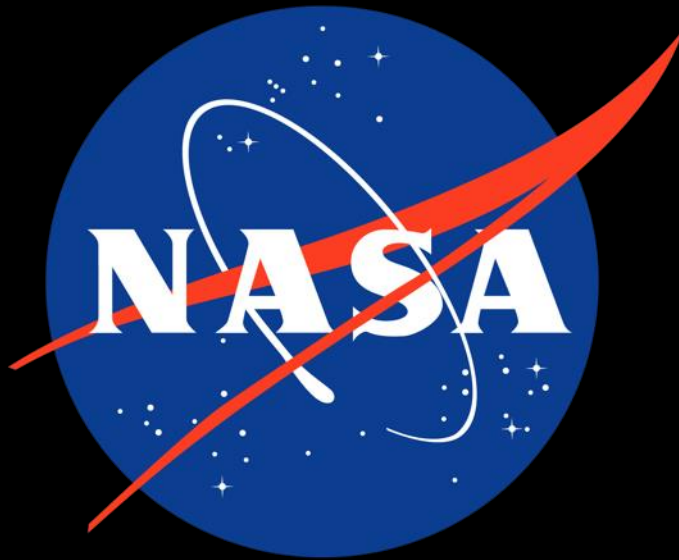
System design, engineering, heat exchanger, convergence. Patents 5, 7, 8, 9, 10, 11, 16, 17, 19, 20

Controls

Machine controls and logic. Patents 2, 3, 4, 6, 14

INTELLIHOT - NASA

Exclusive licensing arrangement



In 2018, NASA awarded an exclusive commercial patent license to incorporate its advanced burner technology in all Intellihot products



Hot water is a basic need

Yet the systems we use are outdated, unreliable, grow legionella

How do we heat water?

Pretty much the same way in the last 150 years



TO START HEATER

- 1) - CLOSE GAS COCK "A" AND PILOT VALVE "B".
- 2) - REMOVE CAP "H" ON AUTOMATIC GAS CUT-OFF. PULL OUT PLUNGER. REPLACE CAP.
- 3) - OPEN PILOT VALVE "B" AND LIGHT PILOT. ADJUST TO SMALL FLAME.
- 4) - TURN GAS COCK "A" FULL OPEN.
- 5) - SEE INSTRUCTIONS ON PRINTED DIRECTION CARD FOR ADJUSTING GAS AND WATER FLOW.

A

BEFORE LIGHTING PILOT
CLOSE THIS VALVE

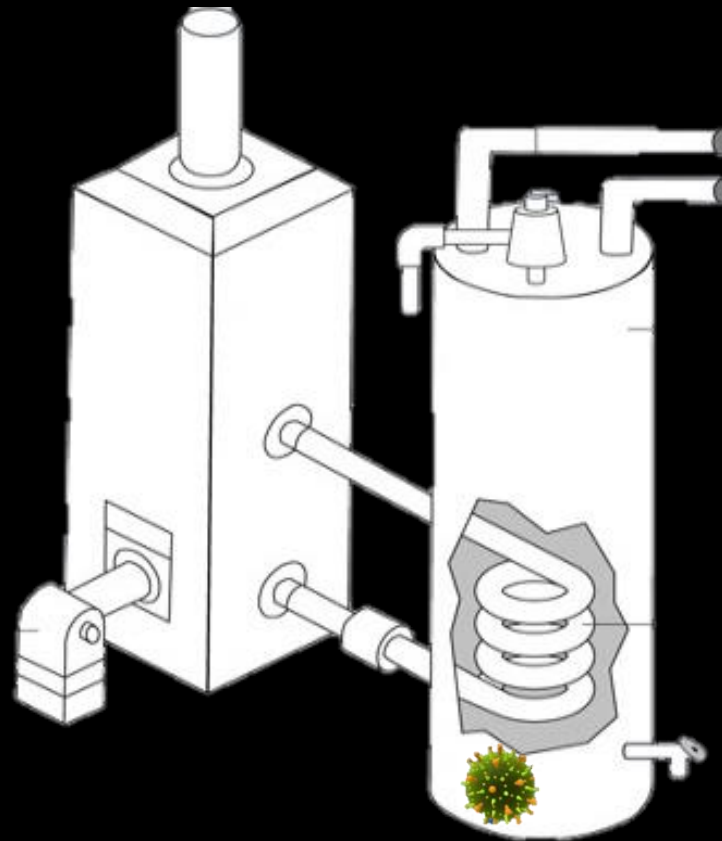
SEE DIRECTION PLATE

So...We store, store, store

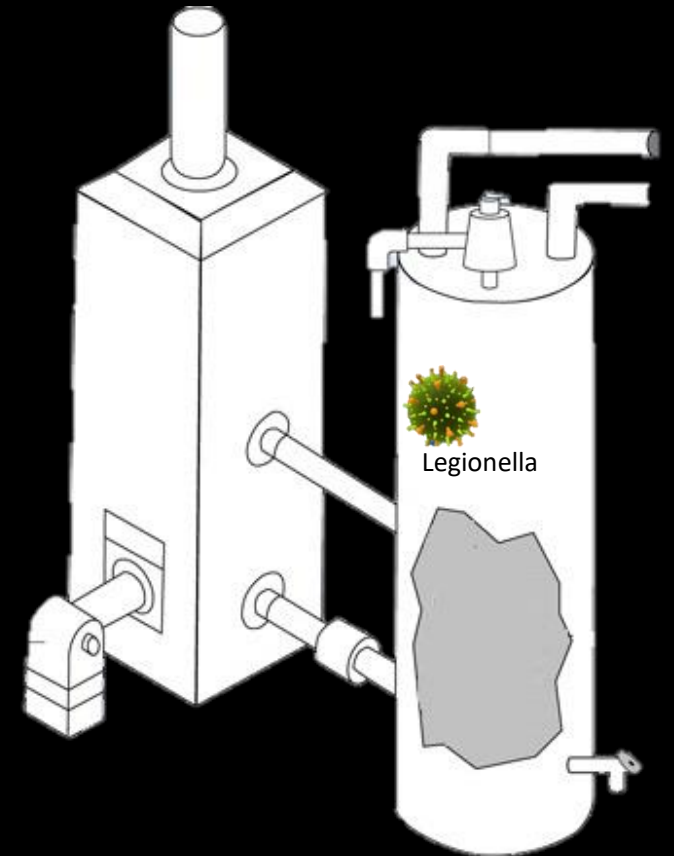
For temperature stability and for “there” when you need it



Tank heater

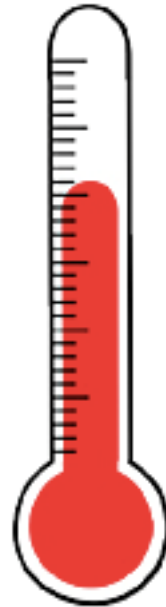
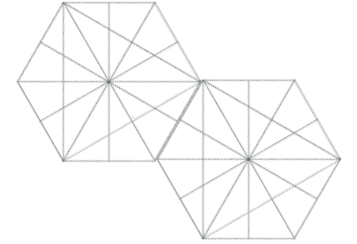


Boiler indirect tank



Boiler direct tank

Legionella growth



70°C (158°F).....	Disinfection level
66°C (151°F).....	Lp die within 2 minutes.
60°C (140°F).....	Lp die within 32 minutes.
55°C (131°F).....	Lp die within 5 to 6 hours.
50°C (122°F).....	Lp survive but do not multiply.
20°C (68°F).....	Lp survive but are dormant.

Src: PM engineer

<https://www.pmengineer.com/articles/90962-legionella-and-water-temperatures-go-hand-in-hand>

<https://hcinfo.com/about/outbreaks/recent/>

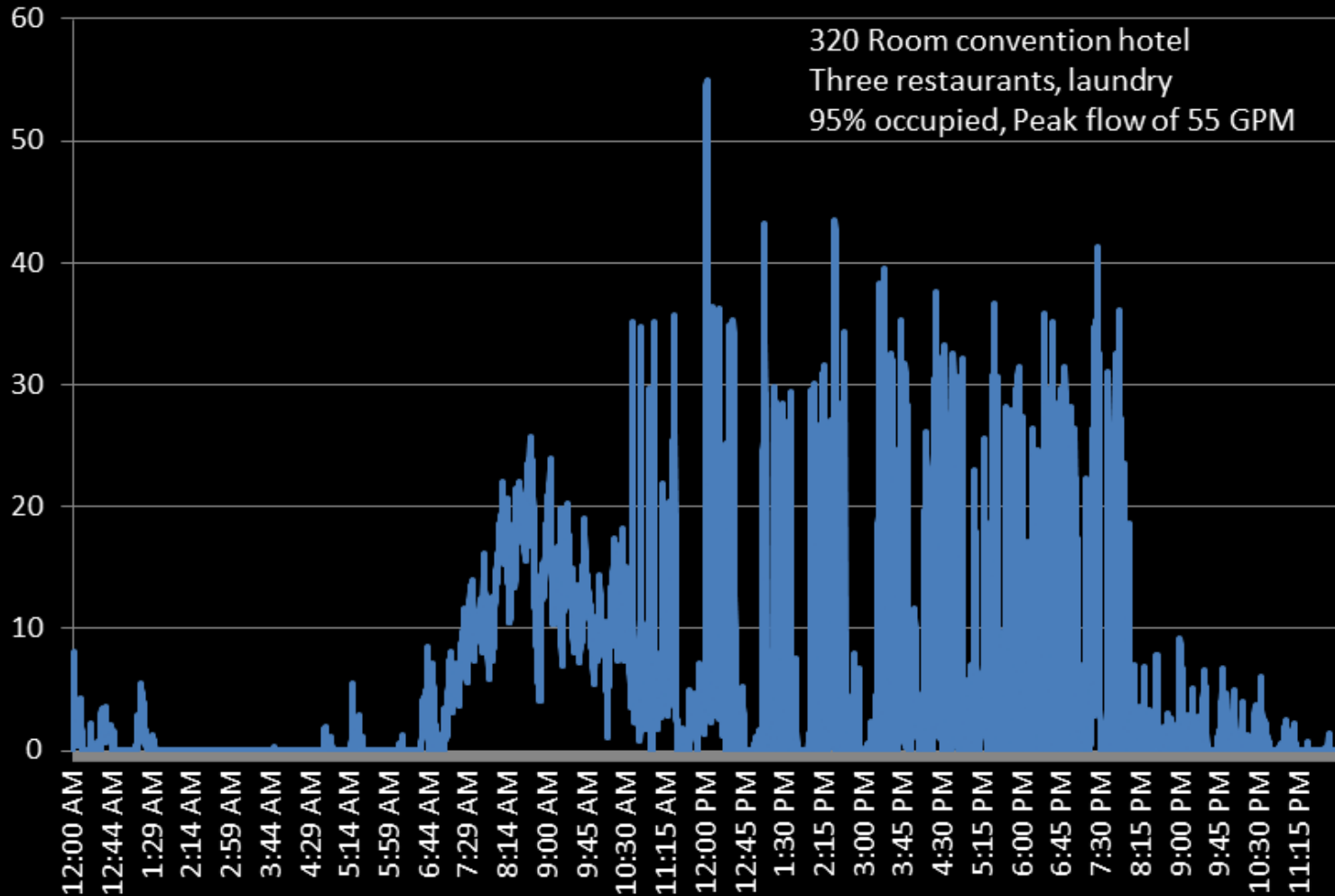
Then we install multiples

For redundancy and capacity , but risking leaks and legionella



How is water consumed?

Transiently, follows statistical law

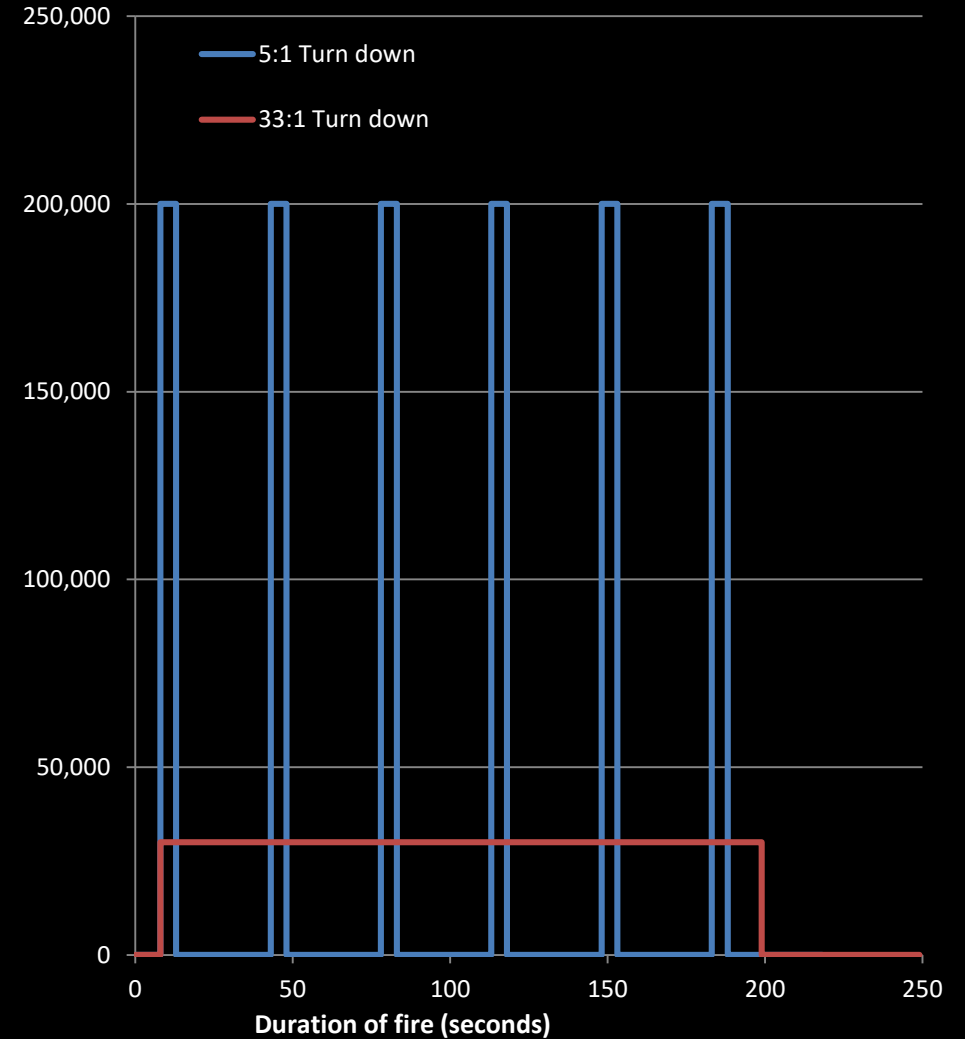


Draw profile impact on equipment

94% of operations occur at low or small flows

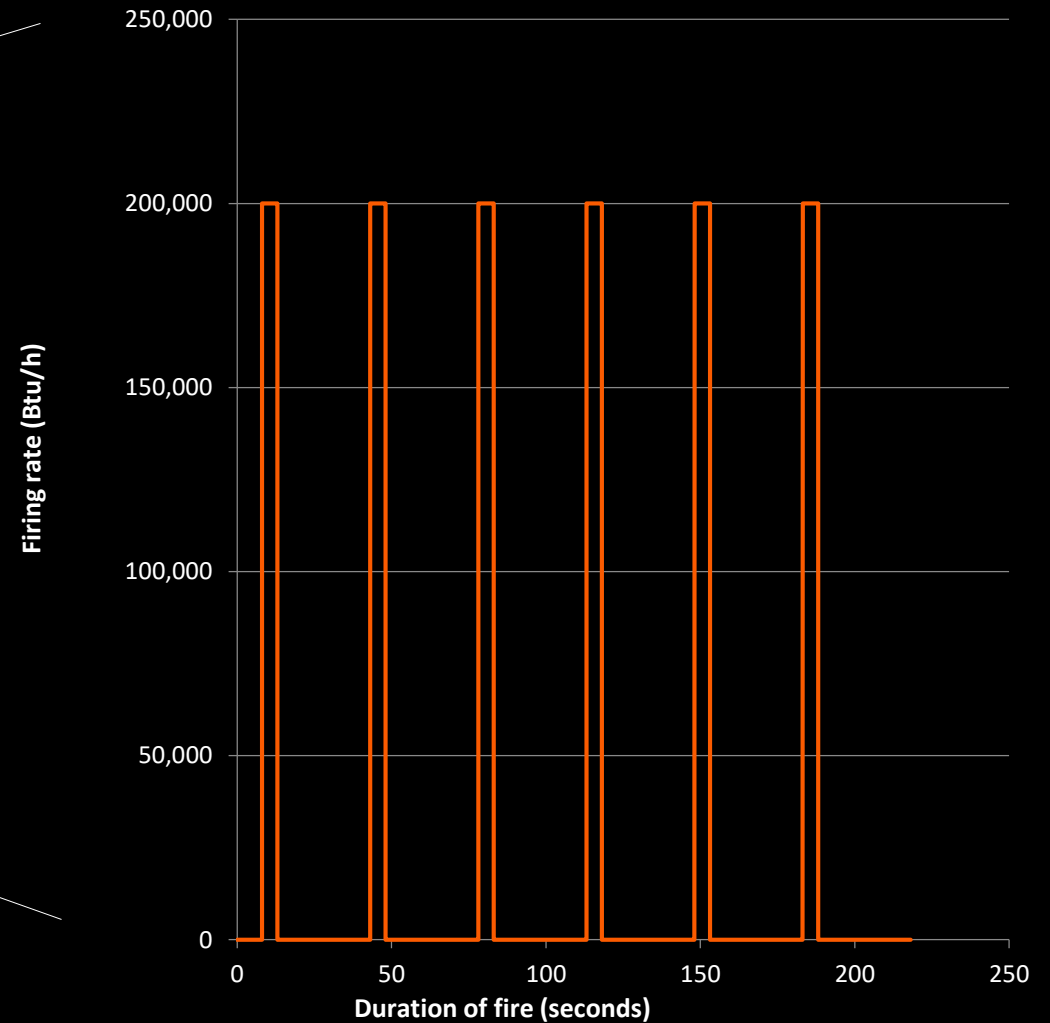
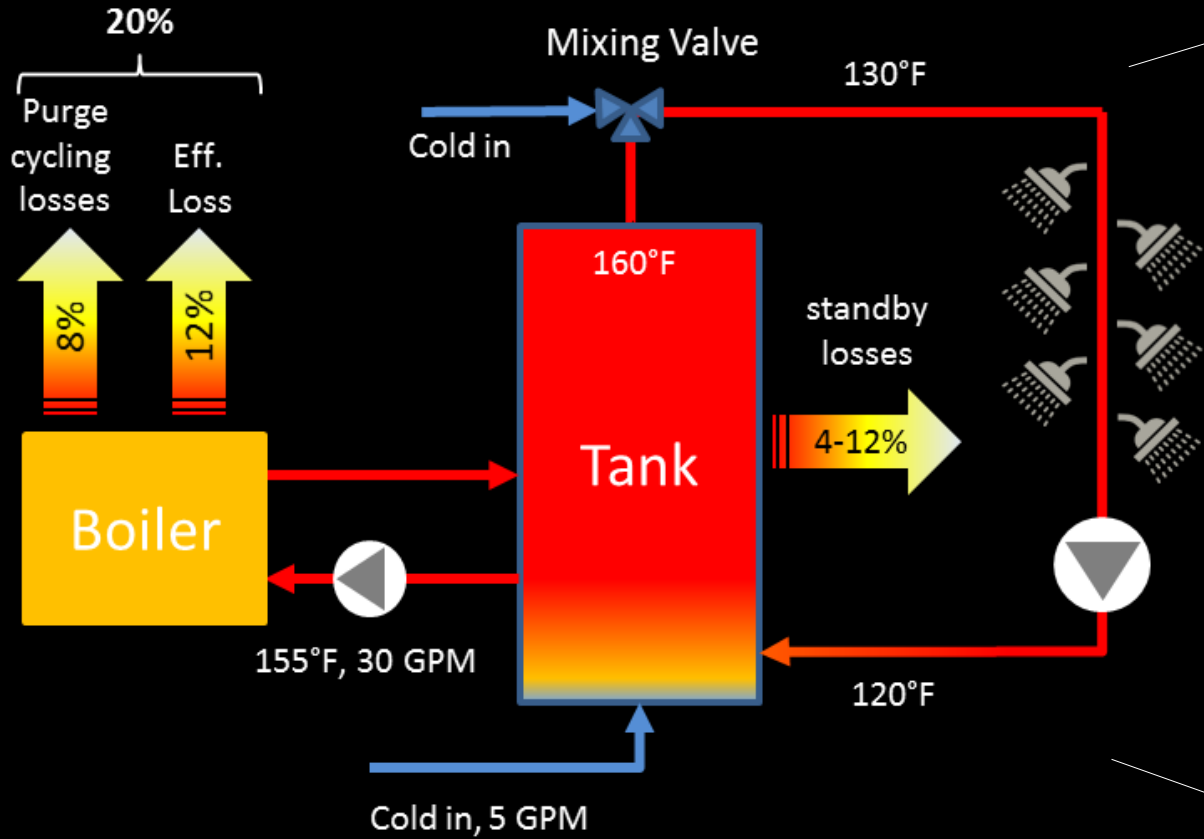
	Flow range		Duration Minutes	%	Cumulative flow Gallons
	GPM				
Low draw	0	5	1019	71%	1,321
Small draw	5	20	333	23%	3,473
Medium draw	20	35	78	5%	2,139
High draw	35	50	9	1%	359

Firing rate (Btu/h)



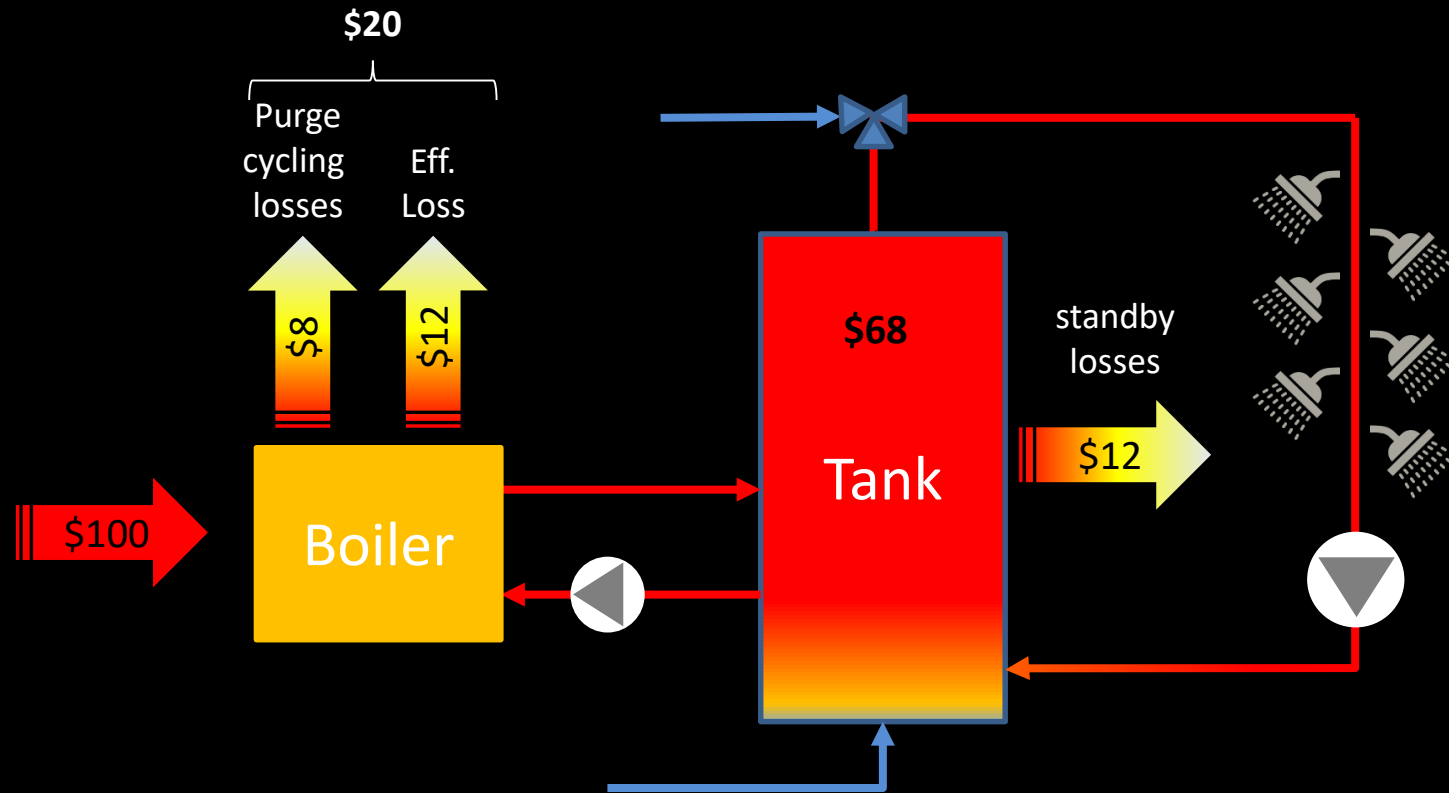
100 years of total mismatch

Traditional boiler or tank heaters are load matched ~9 minutes every 24 hours



Net effect

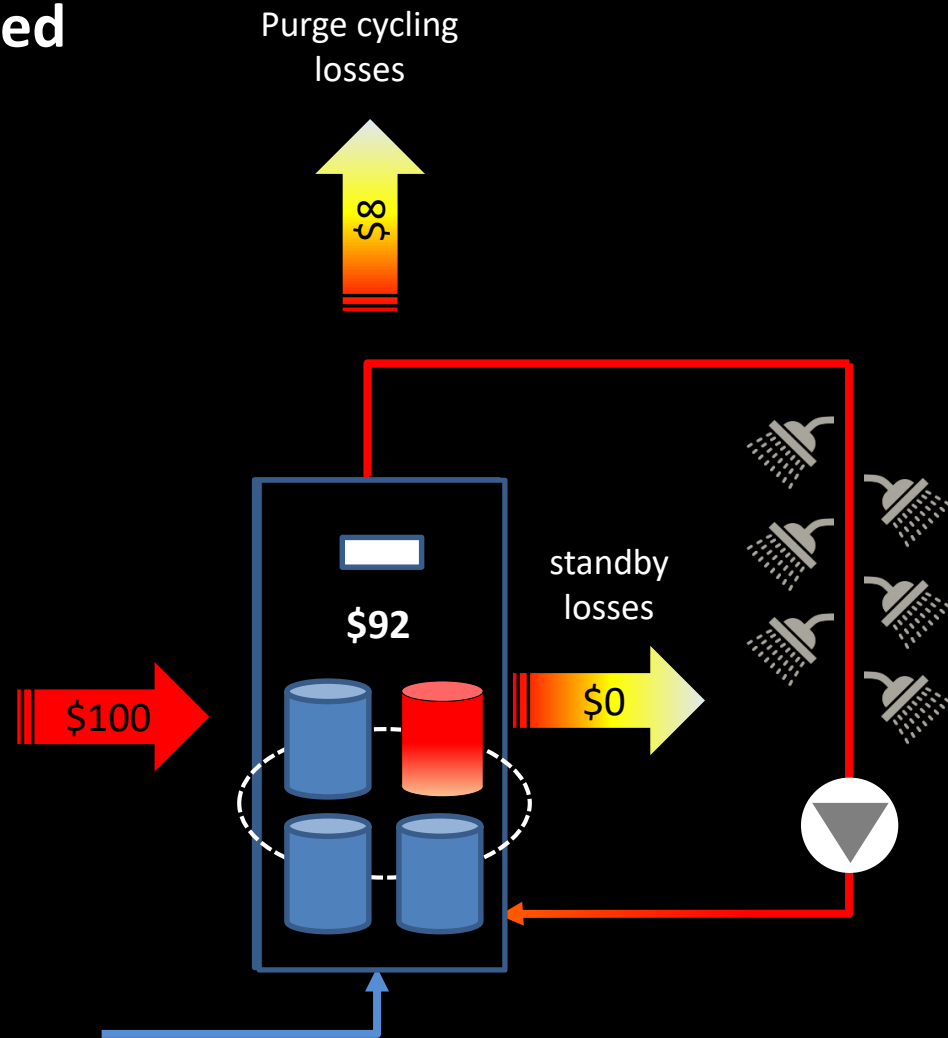
For every \$100 spent, only \$68 is used



Based on a 96% thermal efficiency condensing boiler with a 500 gallon tank

With Intellihot

For every \$100 spent, \$93 is used



Our Patented Heat Exchanger

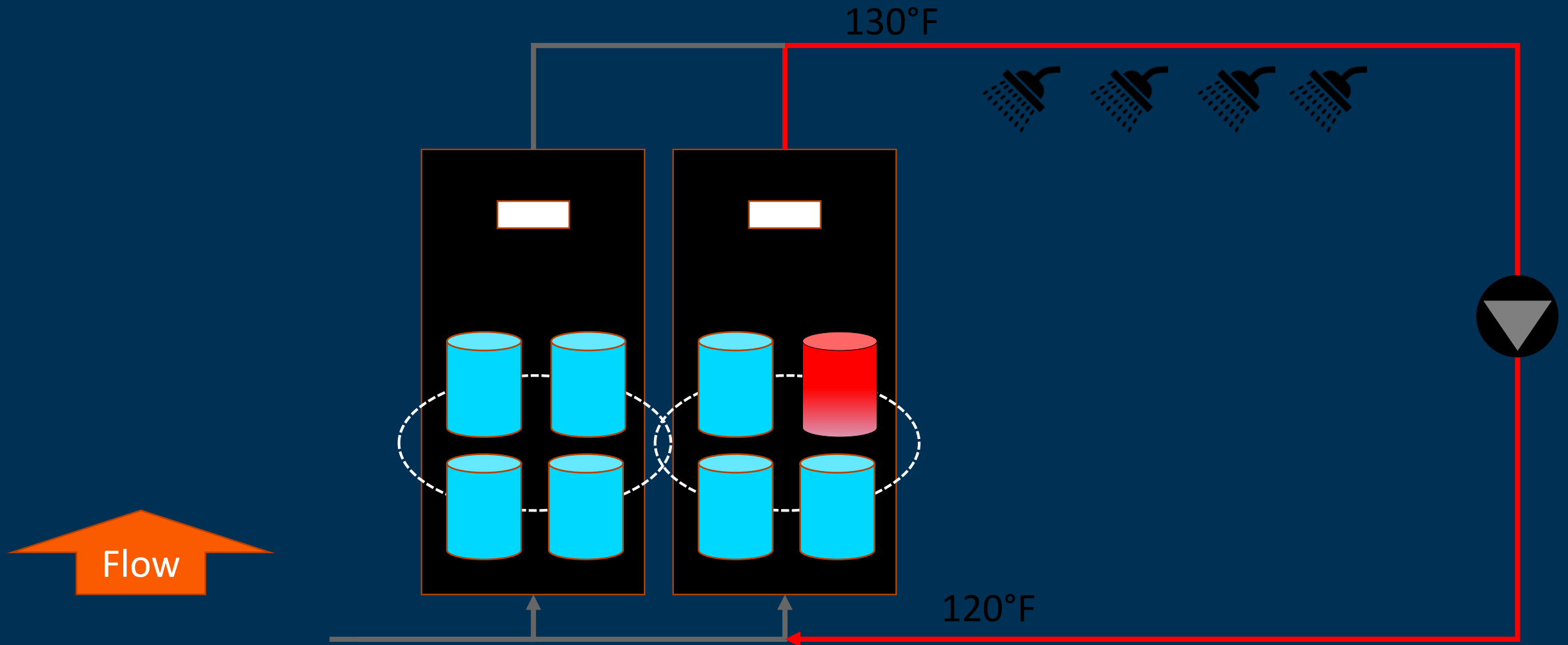
*“The Engine That Drives All
Our Units”*

- Built-in redundancy
- Precise temperature control
- Resistant to scaling
- Mitigate legionella risk
- No storage tanks needed



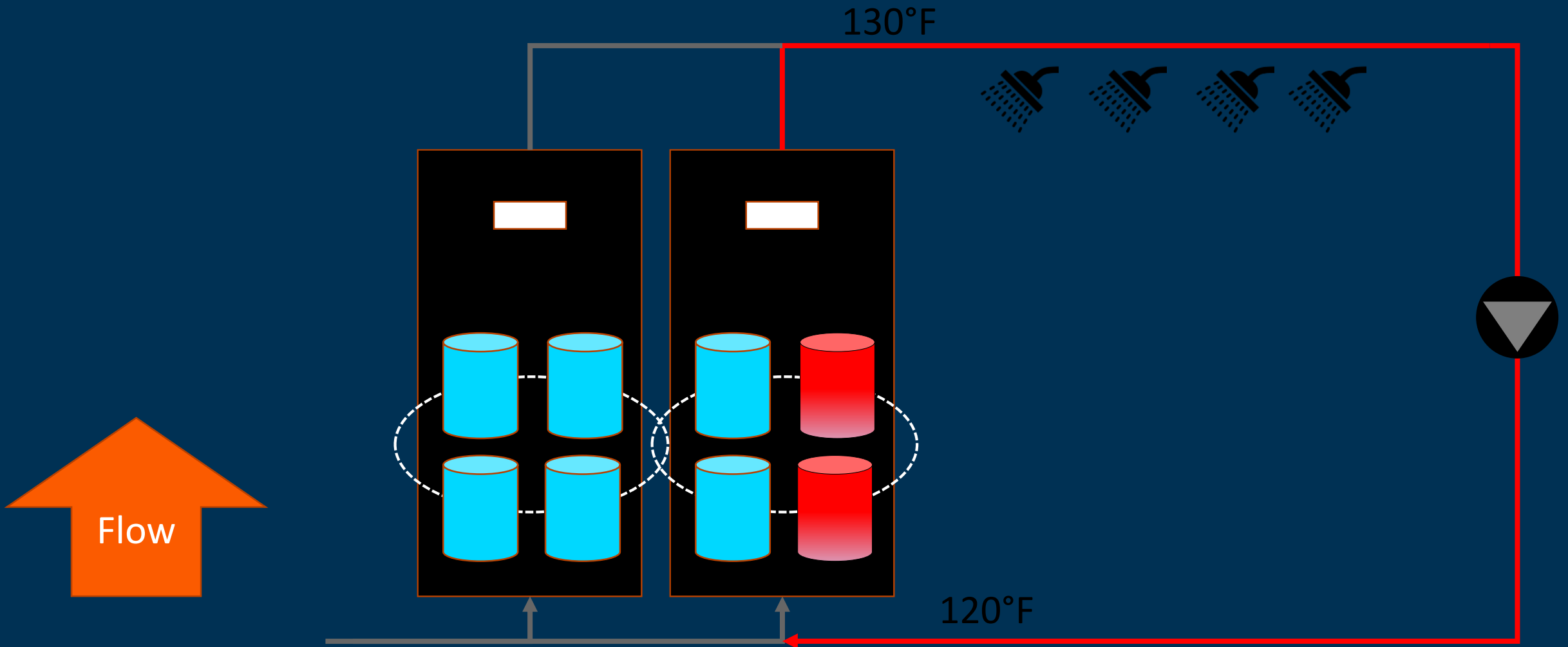
Modular tankless approach

Masterless | distributed controls



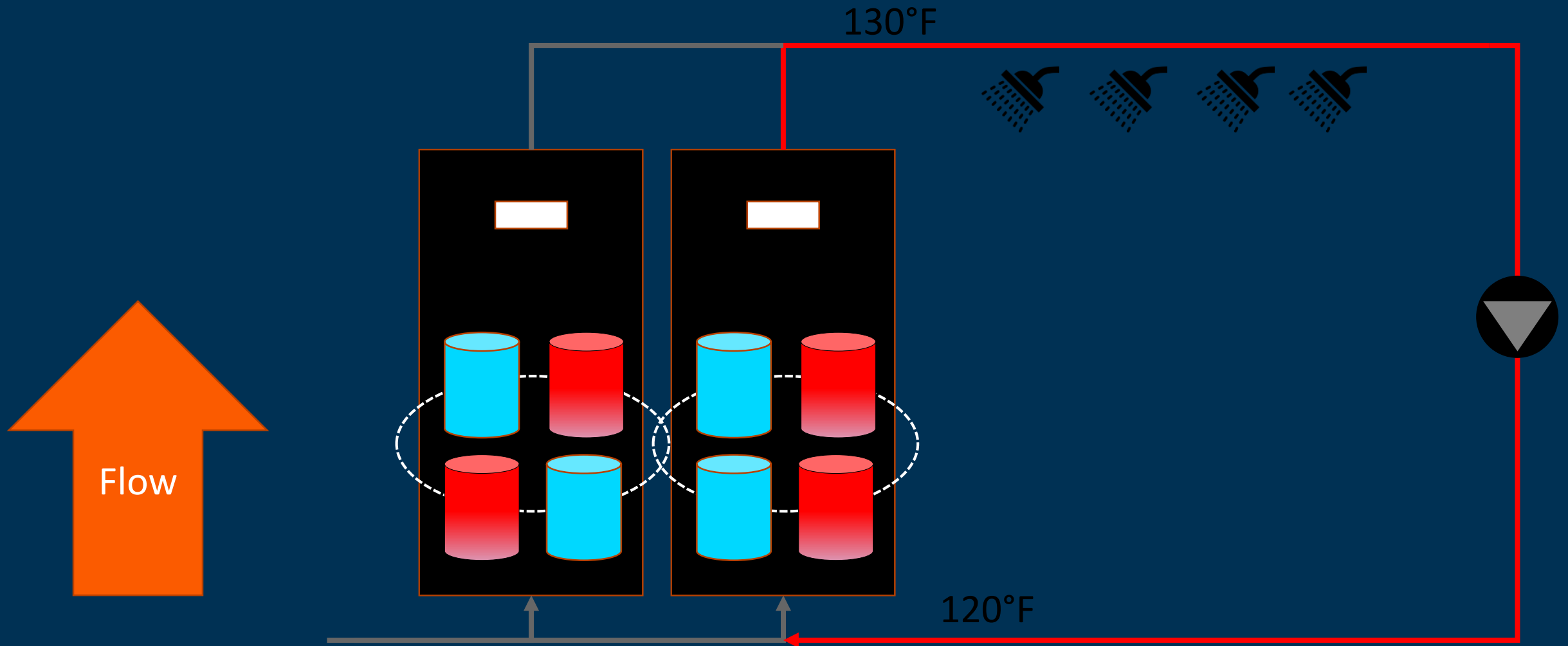
Modular tankless approach

Stepless capacity



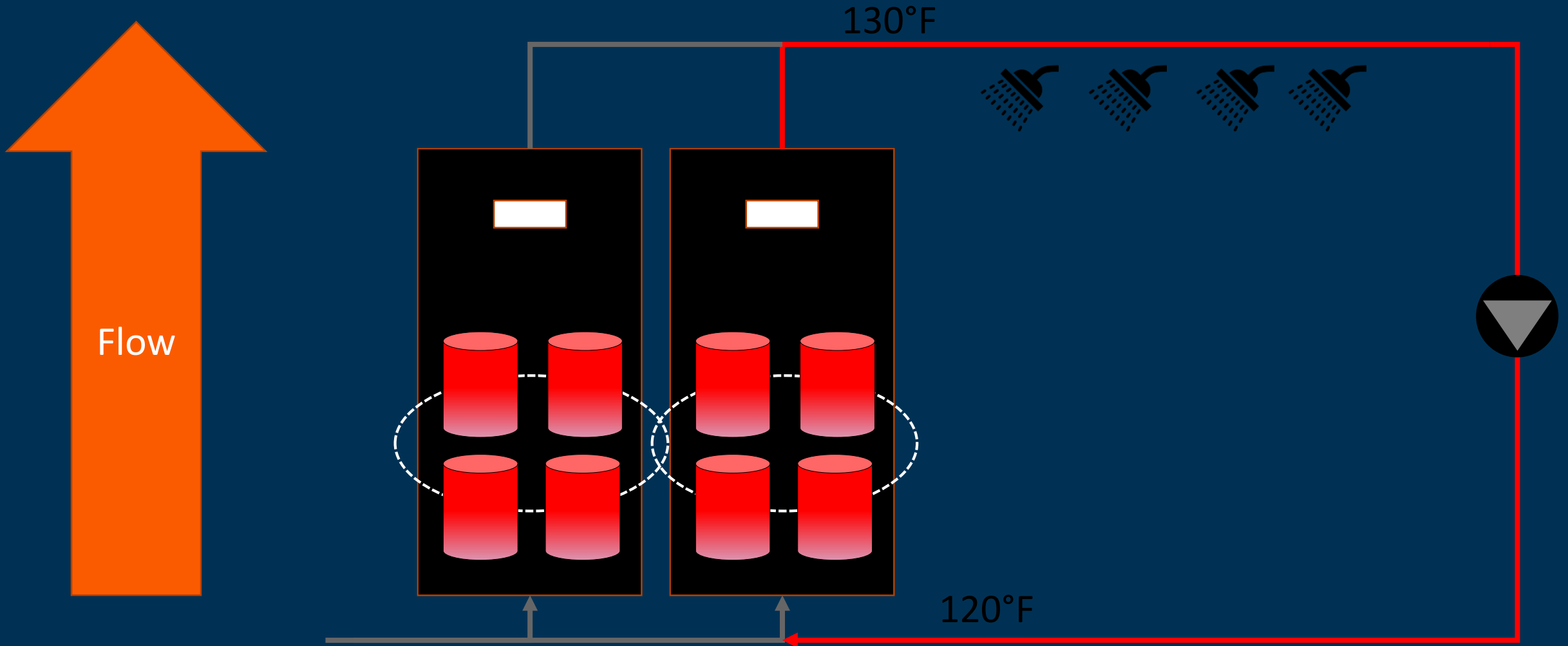
Modular tankless approach

Condensing efficiency all the time



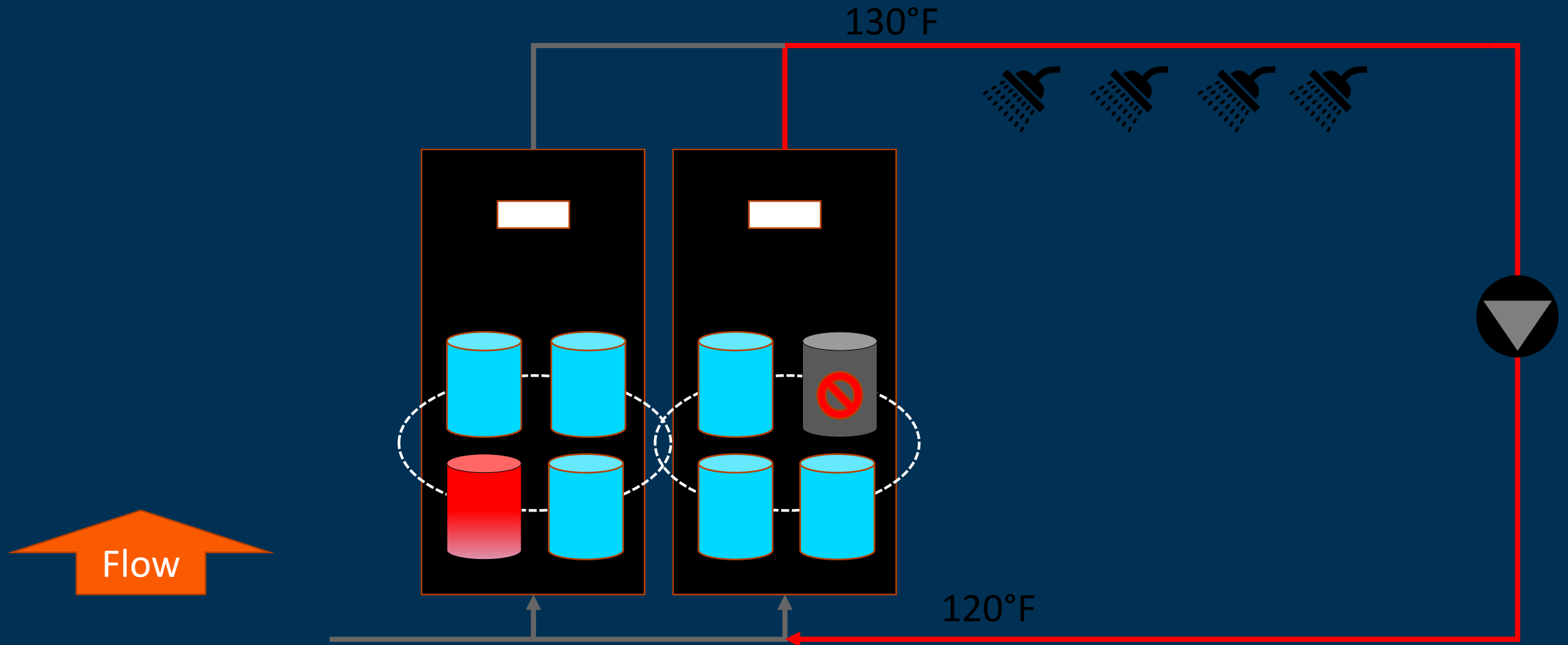
Modular tankless approach

Peak capacity, 4X reliability without 2X cost

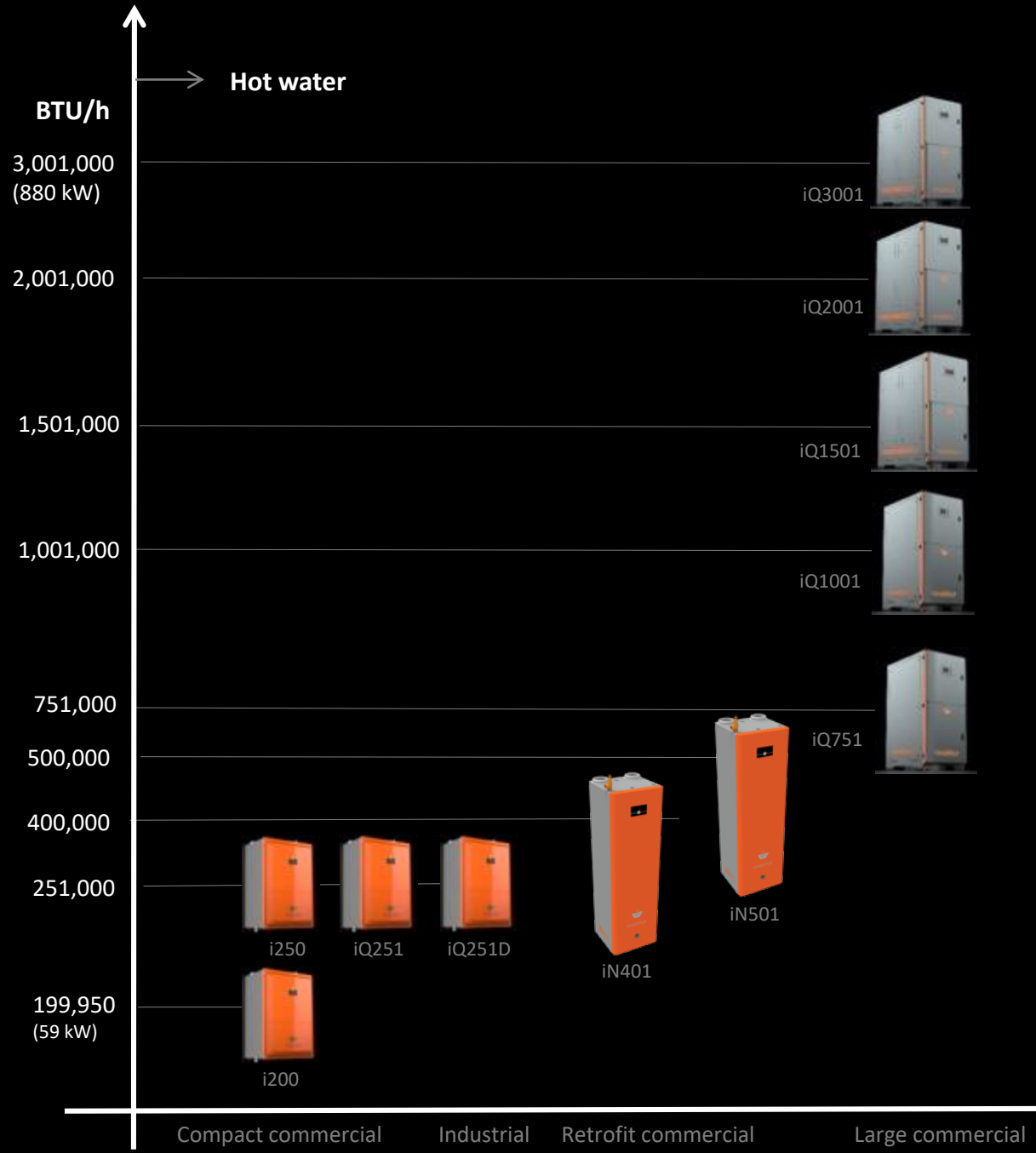


Modular tankless approach

Rotation / isolation

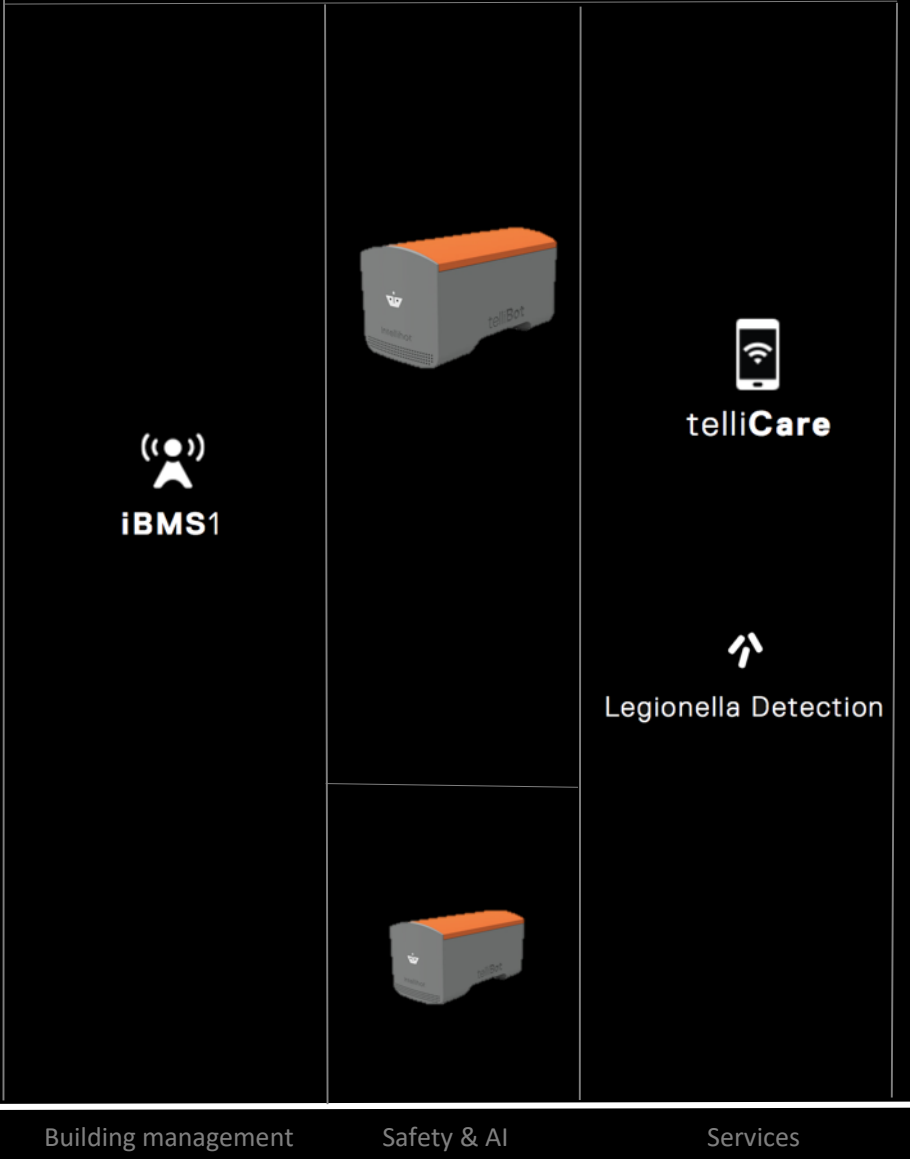


PRODUCT RANGE



Hot water

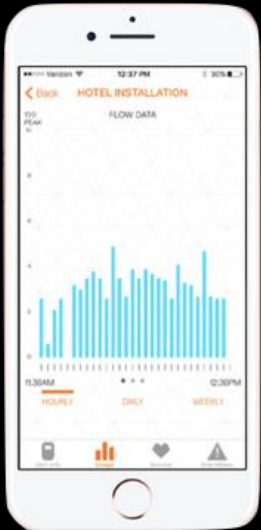
IoT and Connectivity



Compact commercial Industrial Retrofit commercial Large commercial Building management Safety & AI Services

telliCare Service

Service includes
24 / 7 / 365 monitoring and upkeep
Predictive analytics and parts





AI in your boiler room

World's First Boiler Room Smartifier





123 Main St, 61401
FastOut Hospital

96.1%

Outlet Temperature

Within Set Temperature

140



9.2

pH Level

Alkaline

12



12.6

Flow Rate

Average Flow/Day

14



Current Information

CO ALARM

65 °F → 126 °F



Current Temperatures

Recommendations

Currently no recommendations

telliBot Information

Date Added

April 27th, 2018

Subscription Expiration

April 27th, 2019

telliBot Serial Number

BOT10201701

Owner

Lucy Corwell
309-351-0682
lcorwell@pilotj.com



Contact

Lucy Corwell
309-351-0682
lcorwell@pilotj.com



Contact

Lucy Corwell
309-351-0682
lcorwell@pilotj.com





Welcome Back, Jon Smith!
Corporate Overview

Safety Alarms

1



Service Alarms

2



Maintenance Alerts

0



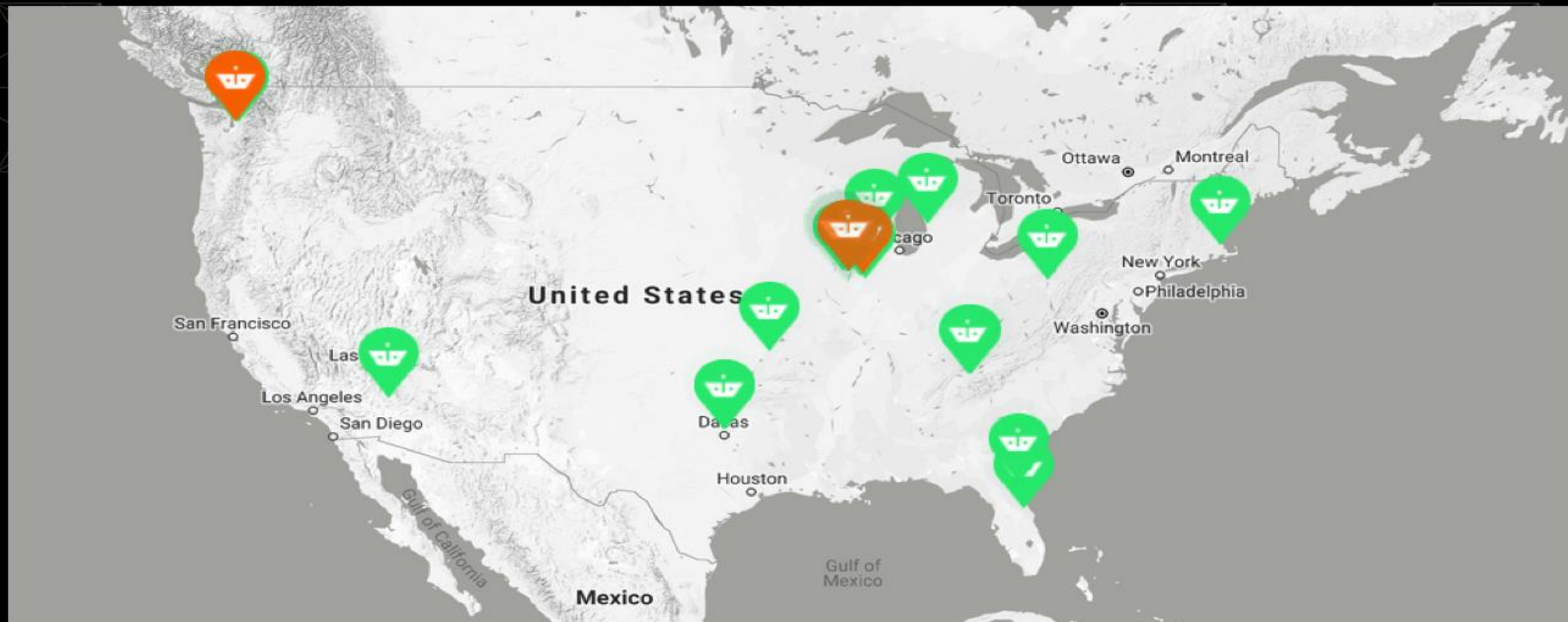
Offline Units

4



Healthy Units

11



Intellihot Value proposition

Cut CapEX 30% +

Lower Opex 25 to 70%

Cut space need by 80%



Conventional
Approach



2x capex

2x redundancy



Intellihot
Approach



1x capex

4x redundancy

Modularity

within each unit

eliminates

doubling of

equipment





Intellihot

We build intelligent energy