BULLDOG HEAT PUMP

No other heat pump does more, with less.

Financial Benefits of the BULLDOG Heat Pump System

The benefits outlined herein are available with the BULLDOG System when compared to Reversing Water Source Heat Pumps (WSHP).

There are NO major design changes required to switch from a WSHP to a BULLDOG system. That's a fact!

Uses less electricity

A compressor that doesn't operate doesn't consume any power.

Since only the fan operates while in heating mode, the BULLDOG unit will consume a lot less electrical energy during the heating hours.

Result: $ Lower electrical costs

Has lower failure rates

A compressor that doesn't operate doesn't fail.

BULLDOG uses the same compressors as any other manufacturer. However, our compressors will last longer. By eliminating all compressor operation during the heating hours we have reduced the run time hours and the quantity of start - stop commands, thereby extending the compressor life and reducing failures.

Result: $ Lower maintenance costs

$ Less down time

Fewer moving parts

The BULLDOG provides a lifetime parts and labor warranty on reversing valves. It's easy to do when we don't even have any.

A common point of failures with reversing WSHP is the reversing valve. BULLDOG has completey eliminated this point of failure.

Result: $ Lower maintenance costs

$ Less down time

The Bulldog system would acquire the heat from the exact same source as any other water based system i.e. Electricity, Geothermal, Air Source Heat Pump, etc. However, if Natural Gas is the fuel source the Bulldog system would deliver significant heating cost savings.

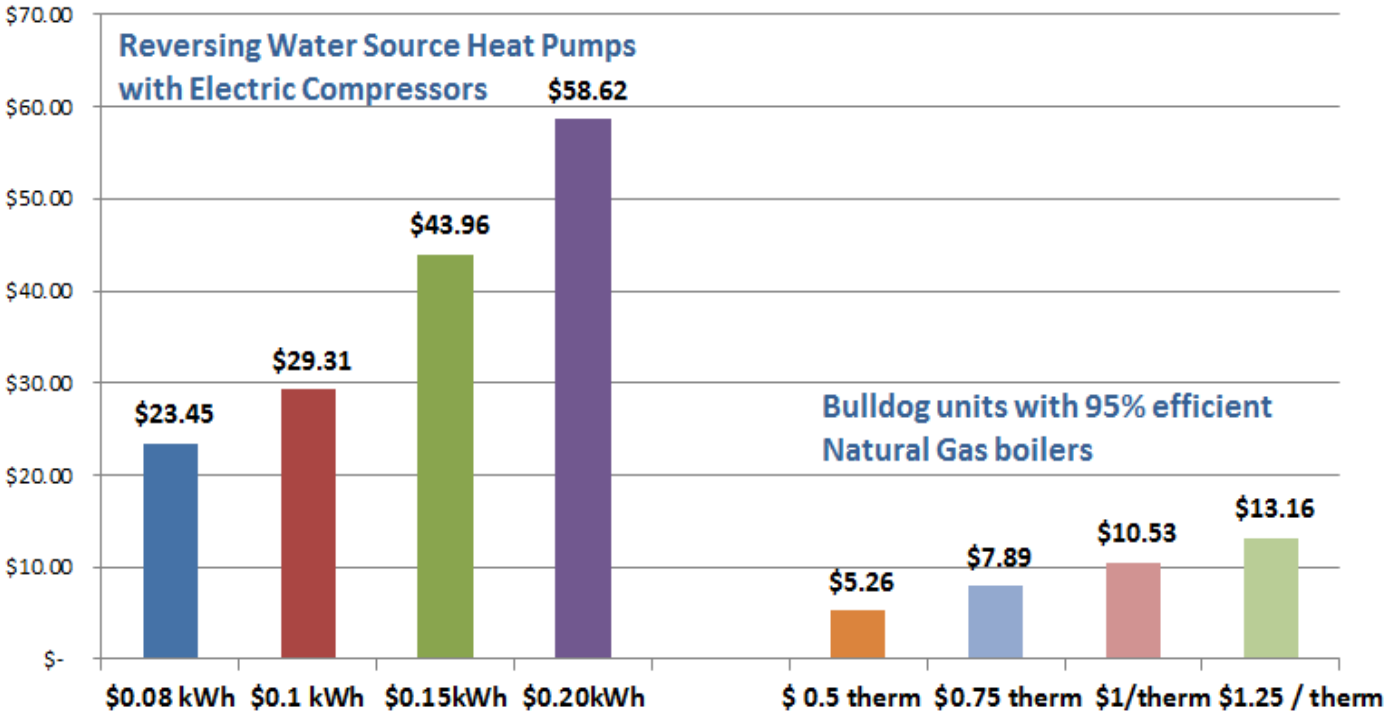
40-70% lower heating costs

Depending on the cost of utilities, the BULLDOG system will reduce the heating costs since it is significantly less expensive to heat with Natural Gas than with electricity.

Result: $ Lower operating costs

More contribution to LEED points

Cost to generate 1 Million Btu



A reversing WSHP delivers approximately 25% of it's heat from electricity.

There will be significant financial savings by switching from electricity to Natural Gas for this portion of the heat. The graph above compares the cost difference of using electrical compressors for this 25% of the total heat vs. using Natural Gas for the BULLDOG system.

For comparison purposes, the costs are for 1M Btu that can be obtained either from the electrical compressors (WSHP) or from the Natural Gas boilers (BULLDOG Fan Coils).

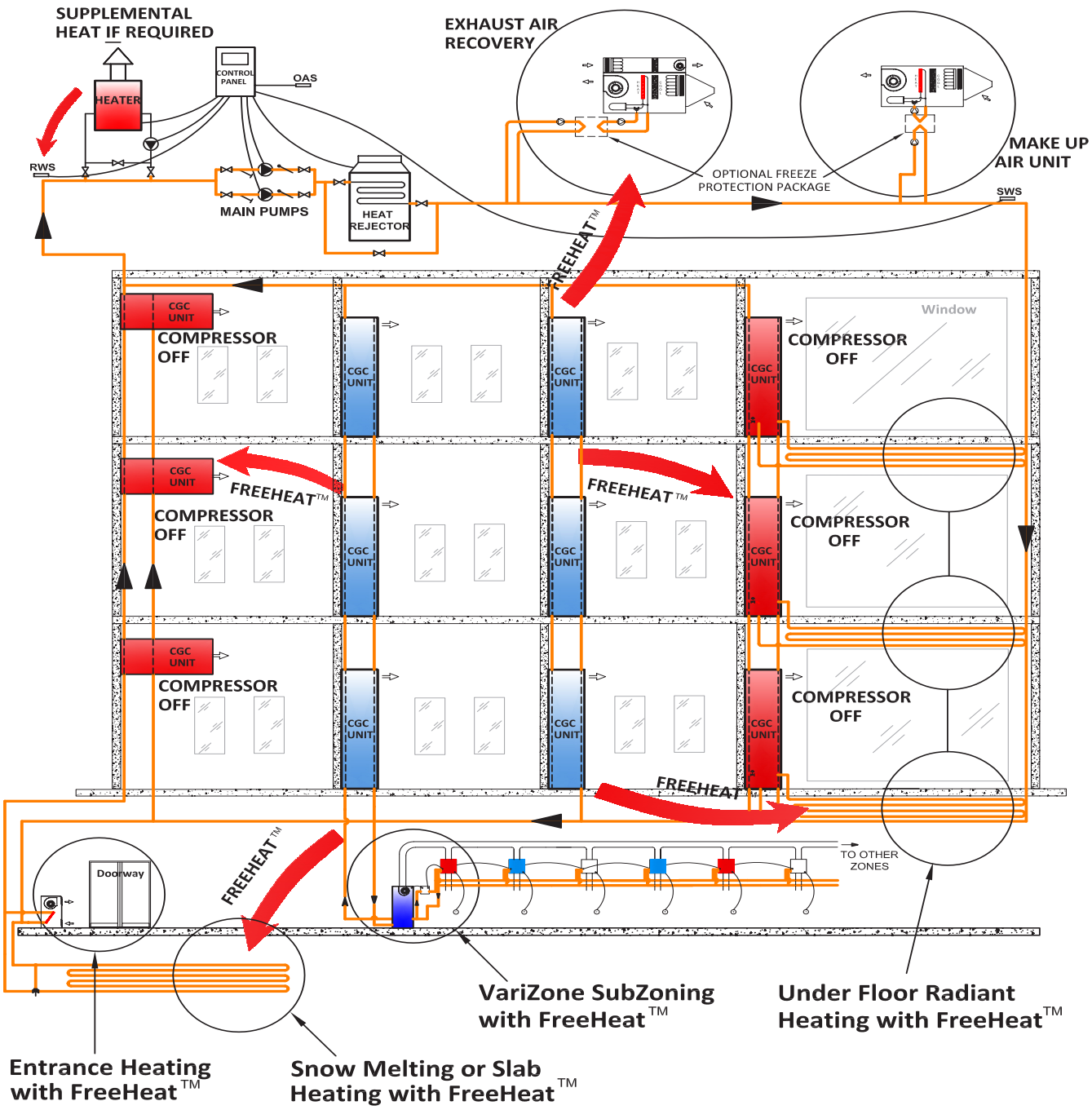
Put simply, there is more heat in one dollar's worth of Natural Gas than in one dollar's worth of electricity!

Fewer water loops

Since BULLDOG operates with a warm water system in the heating mode, all of the HVAC loads (ie/ BULLDOG Units, MUA, fin tube, in floor radiant heat, etc.) can be tied into one common loop, and provide more heat sharing (FreeHeat™).

Result:

- $ Lower energy costs
- $ Simpler and less costly building piping loop = capital cost savings
- $ Lower cost Make-Up Air System



Dry cooler capability

The BULLDOG design allows for warmer water loop temperature in the cooling mode.

Dry coolers may be used in lieu of evaporative type coolers due to the BULLDOG condensers. The maximum inlet water temperature to allow cooling is 125°F at only 2 gpm/ton.

Result: $ Lower capital costs

$ Lower maintenance costs

✚ No risk of Legionnaire's disease

Fresh air delivered directly to occupied space

Either with or without integral ERV's

The BULLDOG Vertical Stack design allows for direct application of fresh air, which may eliminate the need for a dedicated outdoor air system and all of the associated duct work.

Result: $ Lower capital cost

Smaller emergency generator

For Assisted Living or Long Term Care Facilities. Since the BULLDOG system doesn't require compressor power for heating, the size of the emergency generators can be significantly reduced.

Result: $ Lower capital costs

Chassis change out in minutes

The BULLDOG self contained chassis can be easily changed by a custodian in a matter of minutes rather than calling a refrigeration technician.

Result:
- $ Lower maintenance costs
- $ Space can be occupied/rented within an hour

Retrofit Friendly

The BULLDOG self contained chassis may simply slide into an existing cabinet.

Result:
- $ Lower capital costs
- $ Ideal for retrofit projects since less time is required in the suite

Smaller Geothermal Field

The BULLDOG system integrates all the HVAC loads onto one common piping loop which maximizes the amount of heat absorbed from the Geo field and minimizes the amount of heat rejected to the Geo field.

Result: $ Smaller Geo field for cooling dominant buildings

$ Possibly fewer buildings water piping loops

Quieter

A compressor that doesn't operate doesn't make any noise.

The loudest mode of operation for a standard reversing WSHP is the heating mode since it operates at higher pressures. The BULLDOG has eliminated the noisiest mode by operating as a simple Fan Coil in heating. Even with the compressor operating while in the cooling mode, the BULLDOG unit is one of the quietest on the market.

Result: Less noise complaints

Smaller footprint

2 Square feet of space in lieu of 4 square feet

The BULLDOG self contained chassis of the Vertical Stack model allows for direct application of the drywall instead of using studs.

Result: More useable space

$ Less cost from the Framing Trade

Dehumidification

The hydronic heating coil can be placed downstream of the cooling coil providing dehumidification function.

Result: Better occupant comfort

BULLDOG HEAT PUMP

www.bulldogheatpump.com

InnKeeper Vertical Stack

IKV 008-018	¾ - 1½ tons	18”W x 14”D x 84”H

Risers not included in “W”
E-Series (IEV) high efficient model also available *

HomeKeeper Vertical Stack

HKV 016-030	1¼ - 2½ tons	20½”W x 20”D x 84”H
HKV 036-048	3 - 4 tons	24⅝”W x 24”D x 84”H

Risers not included in “W”
E-Series (HEV) high efficient model also available *

Vertical Stack with Energy Recovery Ventilator (ERV)

Small SpaceKeeper Vertical

SKV008-018	¾ - 1½ tons
SKV020-036	1¾ - 3 tons
SKV042-060	3½ - 5 tons

E-Series (SEV) high efficient model also available *

Large SpaceKeeper Vertical

SKV070-100	5½ - 8½ tons
SKV120-150	10 - 12½ tons
SKV180-240	15 - 20 tons
SKV280-320	23 - 26½ tons
SKV360-480	30 - 40 tons

SideWinder

SDW008-015	¾ - 1¼ tons

Slide out chassis for quick change out and repairs *

SpaceKeeper Console

SKC008-018	¾ - 1½ tons

SpaceKeeper Horizontal

SKH008-018	¾ - 1½ tons
SKH020-036	1¾ - 3 tons
SKH042-060	3½ - 5 tons
SKH070-100	5½ - 8½ tons

E-Series (SEH) high efficient model also available *

SlimKeeper

SLK008-015	¾ - 1¼ tons

11” High, no trap required *

Varipak Make-Up Air Units

4,000 CFM	10 - 20 tons
4,000-10,000 CFM	10 - 28 tons
12,000-25,000 CFM	20 - 125 tons
+ 25,000 CFM	Contact Factory

Varipak with Heat Wheel Option available *

KlassKeeper

KKV024-048	2-4 tons

Slide out chassis for quick change out and repairs outside of the classroom *

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