

Guide to Effective Greenhouse Heating

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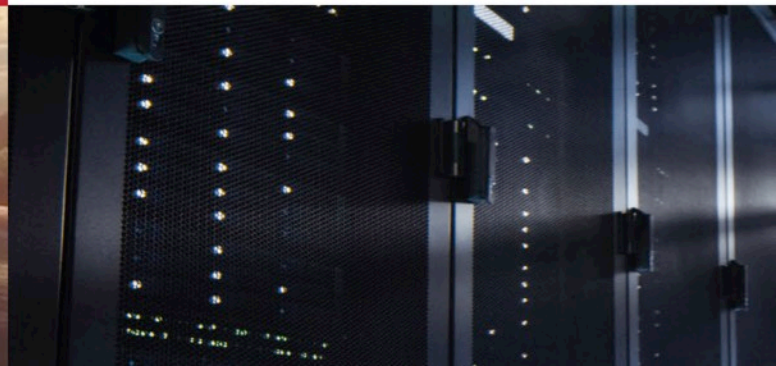
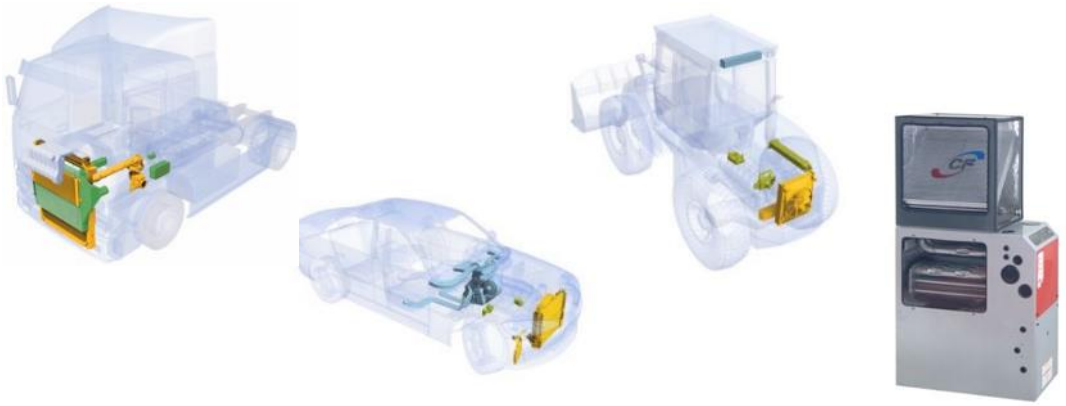
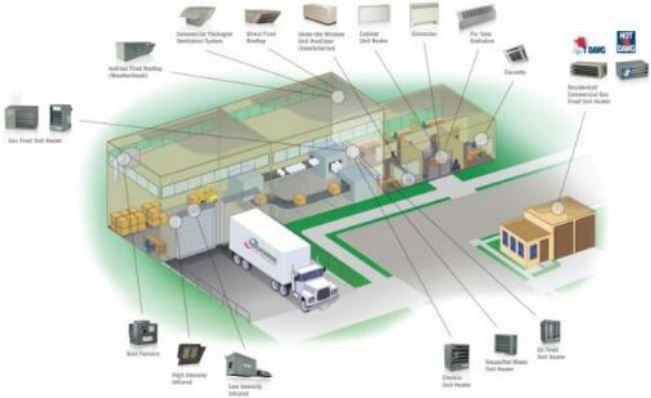


MODINE OVERVIEW

MODINE
Always Innovating. Always Improving.

- Racine, WI Headquarters
- $2.0 Billion Sales
- 11,000 Employees
- Manufacturing Plants Worldwide
- 2,200 Engineering Patents
- Applied Thermal Innovation
- Recently Acquired Luvata Heat Transfer Solutions (Heatcraft Coils)





BUILDING HVAC SEGMENTS

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Commercial Ventilation

WEATHERHAWK

ATHERION™

Cooling Products

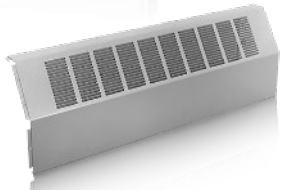
Unit Heaters

Effinity

HOT DAWG

Infrared Radiant

Commercial Hydronics



GUIDE TO EFFECTIVE GREENHOUSE HEATING

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What We Will Cover Today:

- Maintenance Tips
- Heating Options
- Modine Advantages
- Heater Size and Location
- Energy Savings
- PTC – 93% High Efficiency Unit Heater
- Payback Calculator




Maintenance Tips

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GREENHOUSE MAINTENANCE TIPS
PREVENTATIVE MAINTENANCE

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General Pre-season Maintenance

- Check equipment for any physical damage that may have occurred in the off-season. This should include damage to sheet metal, fans and air movers, wiring, gas piping, and vent system.
- Check for cleanliness of heat exchangers, burners, and burner orifices.
- For unit heaters with condensate lines, check for any damage or blockages in lines.
- Check to make certain vent system is clear. Sometimes birds like to take up residence in unused vent pipes.
- Check to make sure no obstructions block air inlet or air discharge of equipment.

GREENHOUSE MAINTENANCE TIPS
PREVENTATIVE MAINTENANCE

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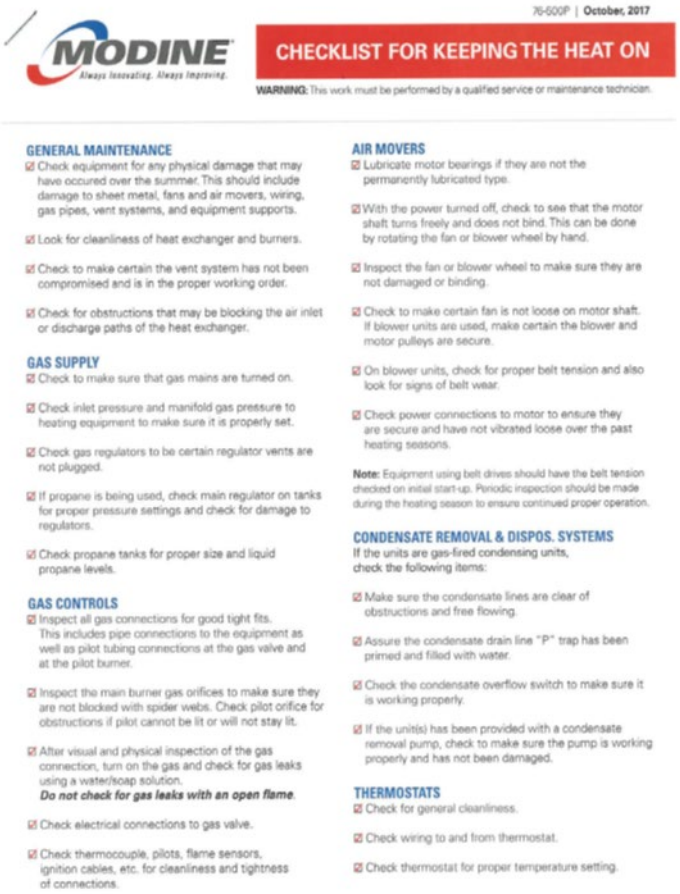
General Pre-season Maintenance

- Ensure unit supports are secure and unit hangs level.
- Check and adjust gas pressures.
- Inspect and clean pilot assembly/flame sensors.
- Do a complete start up to ensure the proper operation from start to finish.
- For further instruction see Modine Preseason Checklist 76-500P.



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76-600P | October, 2017

CHECKLIST FOR KEEPING THE HEAT ON

WARNING: This work must be performed by a qualified service or maintenance technician.

GENERAL MAINTENANCE

- ☑ Check equipment for any physical damage that may have occured over the summer. This should include damage to sheet metal, fans and air movers, wiring, gas pipes, vent systems, and equipment supports.
- ☑ Look for cleanliness of heat exchanger and burners.
- ☑ Check to make certain the vent system has not been compromised and is in the proper working order.
- ☑ Check for obstructions that may be blocking the air inlet or discharge paths of the heat exchanger.

GAS SUPPLY

- ☑ Check to make sure that gas mains are turned on.
- ☑ Check inlet pressure and manifold gas pressure to heating equipment to make sure it is properly set.
- ☑ Check gas regulators to be certain regulator vents are not plugged.
- ☑ If propane is being used, check main regulator on tanks for proper pressure settings and check for damage to regulators.
- ☑ Check propane tanks for proper size and liquid propane levels.

GAS CONTROLS

- ☑ Inspect all gas connections for good tight fits. This includes pipe connections to the equipment as well as pilot tubing connections at the gas valve and at the pilot burner.
- ☑ Inspect the main burner gas orifices to make sure they are not blocked with spider webs. Check pilot orifice for obstructions if pilot cannot be lit or will not stay lit.
- ☑ After visual and physical inspection of the gas connection, turn on the gas and check for gas leaks using a water/soap solution. ***Do not check for gas leaks with an open flame.***
- ☑ Check electrical connections to gas valve.
- ☑ Check thermocouple, pilots, flame sensors, ignition cables, etc. for cleanliness and tightness of connections.

AIR MOVERS

- ☑ Lubricate motor bearings if they are not the permanently lubricated type.
- ☑ With the power turned off, check to see that the motor shaft turns freely and does not bind. This can be done by rotating the fan or blower wheel by hand.
- ☑ Inspect the fan or blower wheel to make sure they are not damaged or binding.
- ☑ Check to make certain fan is not loose on motor shaft. If blower units are used, make certain the blower and motor pulleys are secure.
- ☑ On blower units, check for proper belt tension and also look for signs of belt wear.
- ☑ Check power connections to motor to ensure they are secure and have not vibrated loose over the past heating seasons.

Note: Equipment using belt drives should have the belt tension checked on initial start-up. Periodic inspection should be made during the heating season to ensure continued proper operation.

CONDENSATE REMOVAL & DISPOS. SYSTEMS

If the units are gas-fired condensing units, check the following items:

- ☑ Make sure the condensate lines are clear of obstructions and free flowing.
- ☑ Assure the condensate drain line "P" trap has been primed and filled with water.
- ☑ Check the condensate overflow switch to make sure it is working properly.
- ☑ If the unit(s) has been provided with a condensate removal pump, check to make sure the pump is working properly and has not been damaged.

THERMOSTATS

- ☑ Check for general cleanliness.
- ☑ Check wiring to and from thermostat.
- ☑ Check thermostat for proper temperature setting.

GREENHOUSE MAINTENANCE TIPS
IDENTIFYING POTENTIAL ISSUES

Recognizing Old, Worn or Damaged Units

- Rusted Heat Exchangers
- Cracked Heat Exchangers or Headers

Why is This Bad?

- Unit Heater Efficiency is Reduced
- Harmful Flue Products are Likely Spilling Into the Greenhouse
  - Carbon Monoxide (Human Health Risk)
  - Ethylene (Crop Health Risk)

GREENHOUSE MAINTENANCE TIPS
WHEN TO REPLACE A UNIT HEATER – HEAT EXCHANGER

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Heat Exchangers are the Most Expensive Component to Replace

- May be Over Half the Cost of a Complete Unit
- Similar to Replacing an Engine on an Old Car

Replacing the complete unit is significantly less expensive than replacing the heat exchanger.

Stainless steel heat exchanger warranty on a new unit is 10 yrs.

- Warranty on a replacement heat exchanger is 6 months.

After all the cost, labor & warranty risks of a heat exchanger replacement, the grower still has an old, inefficient unit heater.

Heating Options

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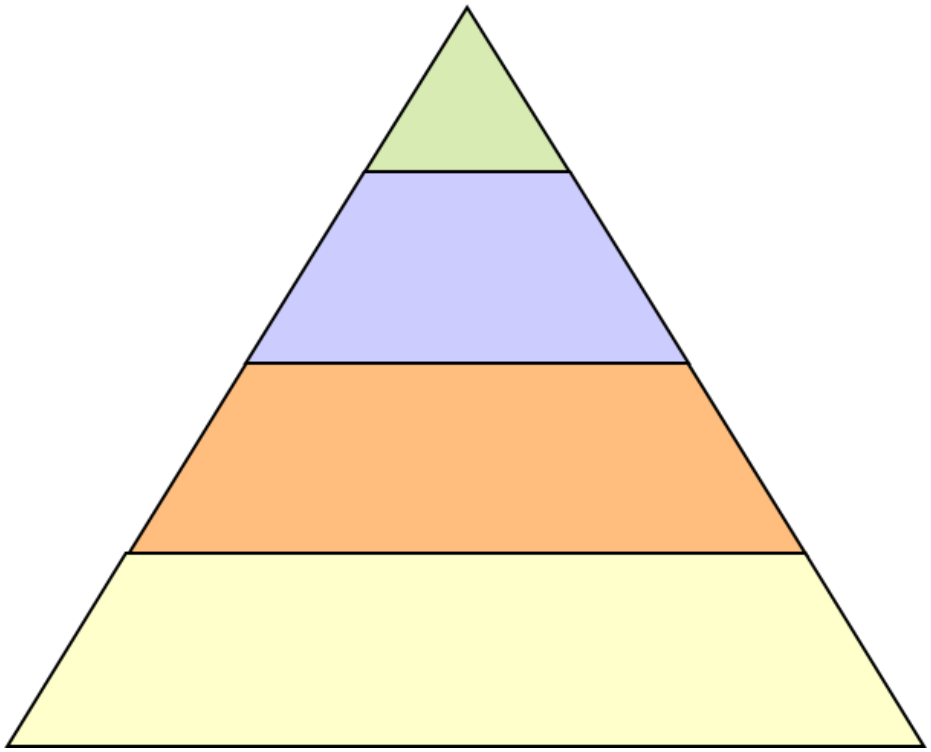
HIERARCHY OF HEATING SYSTEM DESIGN



Safety
- Don’t Risk People, Crops or Property

Reliability
- Avoid No-Heat Situations

Productivity & Comfort
- Healthy & Productive Crops
- Healthy & Productive Occupants

Efficiency
- Minimize Operating Costs

WHY USE GAS-FIRED UNIT HEATERS?

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Risk Avoidance
- Multiple units provide redundancy & avoids no-heat situations

Warm, Forced-Air Heat is Healthy For Plants
- Mitigates condensation & still-air conditions favored by microbial growth & disease
- Moving air helps plants absorb CO_2 more efficiently

Zone Control
- Units only run where heat is needed
- “Off” is the highest efficiency

Harmful Flue Products are Vented Outside
- Carbon Monoxide, Water Vapor, Ethylene, etc.

Relatively Low Up-Front & Life-Cycle Cost
- Lots of heat & fan power in a small box
- Relatively easy to install & service

GAS-FIRED UNIT HEATER TYPES

Gravity Vented Unit Heaters – Still Out There!

- 65 – 68% Thermal Efficiency
- Vertical Venting Only
- Significant Heat-Loss Through Open Draft Diverter
- Rendered Obsolete by EPA 2008

Power Vented Unit Heaters

- 82% Thermal Efficiency
- Motorized Power Exhauster Vents Flue Products Vertically or Horizontally

Separated Combustion Unit Heaters

- 82% Thermal Efficiency
- 2-Pipe Vent System Provides Clean, Dry Outside Air for Combustion
- Heat Exchanger & Burners Protected from High Humidity & Corrosive Chemical Vapors

POWER VENTED UNITS - PTP

Robust Greenhouse Design at a Value Price

18 Gauge Stainless Steel Bent Tube Heat Exchangers…*STANDARD!*

- Low-cost 10-year warranty protection in high-humidity conditions common in greenhouses

Only 6% Price Premium Over Aluminized PDP

- Lowest-Cost S.S. Heat Exchanger Unit on the Market

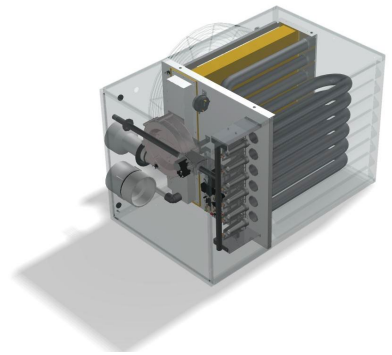
Totally Enclosed Fan Motor Standard

Controls & Wiring Inside Cabinet for Protection from Airborne Debris

Low-Profile Design from 150 to 400 MBH

- For Lower Mounting Heights Found in Greenhouses

HIGH EFFICIENCY UNIT HEATERS



93% - 97% Thermal Efficiency

- 43% Fuel Savings Over Gravity Vented
- 16% Fuel Savings Over Power Vented & Separated Combustion
- Most Natural Gas Utilities Offer Rebates for Furnaces Over 90% Efficiency

Separated Combustion Design

- Provides Clean, Dry Outside Air for Combustion
- Protects Components from Corrosive Effects of High-Humidity & Chemical Vapors Inside

Low Flue Temperatures

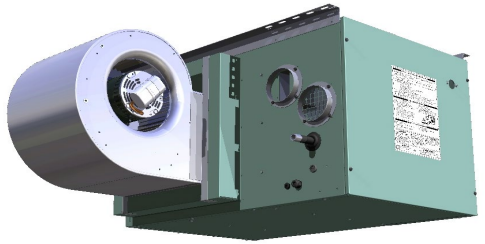
- Allows Venting with PVC Vent Pipe

BLOWER UNIT HEATERS

Up to 0.7” External Static Pressure

Ductwork & Nozzles Acceptable

- Good for Inlet Ducting Ventilation Air, or Discharge Ducting of Heated Supply Air
- Polytubes Used with Transitions
    - HAF fans now more the norm

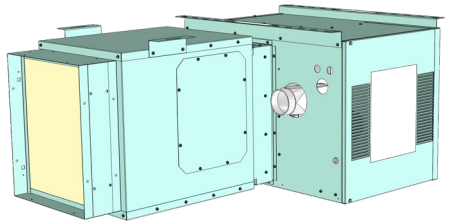


Quieter Than Propeller Units

Higher Cost Than Propeller Units

Power Vented

- HDB/BDP-Series



Separated Combustion

- HDC/BTS-Series

Separated Combustion High-Efficiency

- BTC-Series Effinity

OTHER UNIT HEATER TYPES

Hot Water Unit Heaters

- New “Lodronic” Unit
- For use with gas, oil or bio-fuel boiler systems
- Air circulation & snow-load protection along with in-floor/under-bench radiant tube heat

Electric Unit Heaters

- Highest operating cost
- Only recommended for temporary heat or freeze protection
- Limited BTU Range

Oil-Fired Unit Heaters

- No. 1 or 2 fuel oil only (no waste oil!)

WHO IS THE COMPETITION & WHY IS MODINE BETTER?

Several Manufacturers of GFUH's

- Reznor (Made in Mexico)
- Sterling (Trane, Dayton, Beacon Morris)
- Lennox (ADP)
- Other Very Limited Mfg's.
    - Residential Sizes Only
    - Some made in China

None Support the Greenhouse Market, but is a Priority with Modine

- Modine supports every national, regional and local show & attends association meetings (NGMA)
    - Modine is available to our customers!

Full Size Range with every type of GFUH

- PTC 10 sizes, BTC 3 Sizes
- No one else has any 93% + blower units
- Low profile designs
- Both clam shell and tubular products available

Modine & It's Representatives are Experts in Greenhouse Heating

- Raley Bros., Walter's Climate, MJM, SWK, Emerson Swan & Cornerstone to name a few
- Routinely visits grower operations to lend technical/service/layout support.
- Works closely with the GH Distributors
- 14 Modine technical service people in the field to handle service issues

Modine Market Leader with Stock Position & Lead Times

- Up to 15,000 units in BV inventory to start the season
- In-stock products ship in 1-2 days
- Non-stock & "specials" normally 2-3 weeks
- 2.5 week production cycle at the plant

WHY IS MODINE BETTER THAN THE COMPETITION?

Thickest Gauge Heat Exchangers & Skin Parts in the Industry

- 18-20 Gauge, competition at 22

Electrostatically Applied Powder Based Paint

- Withstands 500 hours of salt spray testing
- Skin parts individually painted

Totally Enclosed Motors Standard

Rotatable Wheel Type Power Venters (PDP/BDP)

One Motor on Every Size Unit

- Some competitors must go to two on the larger sizes to provide adequate air flow across heat exchanger

Literature Dedicated to the Greenhosue Market

- Examples in your folders
- Payback calculation sheet
  - Supports PTC/BTC products
- On-line support information dedicated to greenhouse heating

Heater Size & Location

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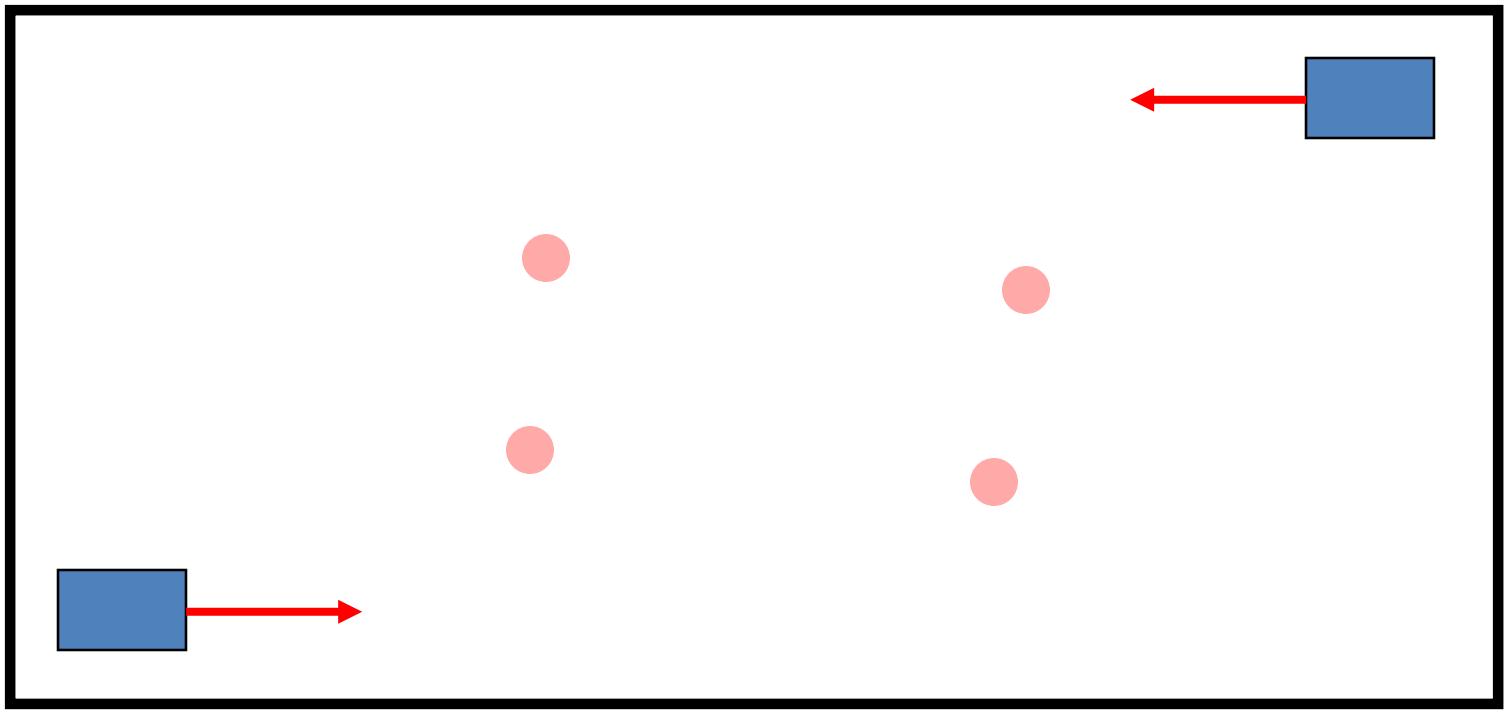
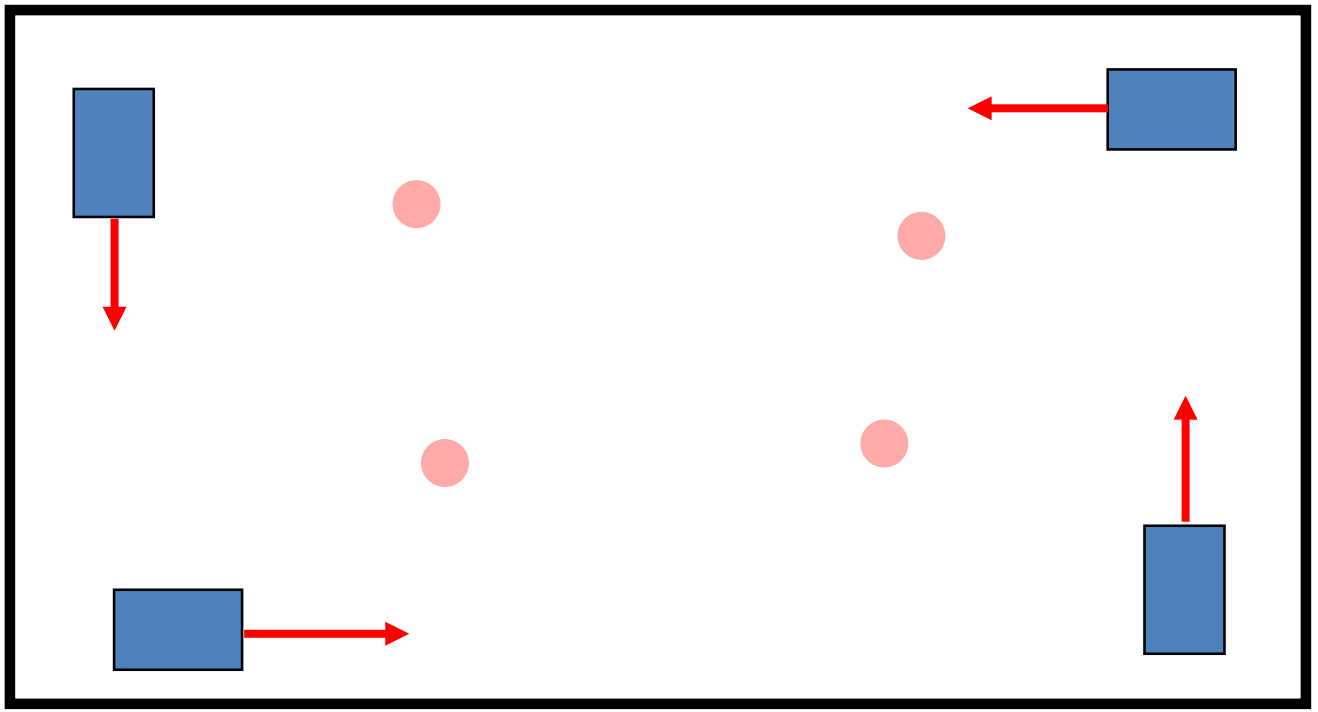
AIR DISTRIBUTION: INDIVIDUAL GREENHOUSE

In general, have each fan or unit support the horizontal air stream of the others to produce a “flywheel” effect of circulatory air movement around the perimeter.



Air Distribution: Gutter Connected Houses

In general, have each unit heater support the horizontal air stream of the others to produce a “flywheel” effect of circulatory air movement around the perimeter.






Energy Saving Tips

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EFFICIENCY INCENTIVE PROGRAMS

Efficiency Incentive Program Searches by State, Technology, etc.

Pass Along to Target Customers

- Programs may help offset costs to upgrade to high efficiency equipment
- May find incentives for other energy efficiency upgrades
- Constantly changing programs & legislation will continue to provide opportunities
- PTC/BTC Payback Calculator

www.dsireusa.org

DSIRE
Database of State Incentives for Renewables & Efficiency

OTHER TIPS FOR ENERGY SAVINGS

Growers With Both Full & Part-Year Greenhouses

- Replace gravity vented units in part-year houses with power vented units from full-year houses.
    - 20% Fuel Savings Over Gravity Vented

- Replace the power vented units from the full-year houses with Effinity units.
    - 19% Fuel Savings Over Power Vented

In this scenario, for each Effinity purchased, the grower achieves significant fuel savings in 2 different greenhouses.

OTHER TIPS FOR ENERGY SAVINGS

Staging Temperature Settings

- Many growers replace individual units as-needed rather than all of them at once.
- This results in a mix of old & new units with different efficiencies in the same space.
- Assuming the grower wants to maintain temperatures between 65° & 70° F
    - Set the old less-efficient units @ 65° F
    - Set the new more-efficient units @ 70° F

In this scenario, the more-efficient units have increased burner hours, and the less-efficient unit heaters have decreased burner hours.




Additional Resources

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GREENHOUSE HEATING TIPS

Don’t Go it Alone, Utilize the Best Brains of…

- Trade Organizations (NGMA, OFA, ASHRAE, etc.)
- Manufacturers, Reps & Distributors

Know Your Operation

- Plant Types, Occupants, Seasonality & Cost Priorities

GREENHOUSE HEATING TIPS

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Use Only Agency-Certified Equipment
- CSA, ETL, UL, etc. to ANSI Codes

Use Only Qualified Installers & Service Technicians
- State Licensed and/or Otherwise Experienced
- Pay Them Now or Pay Them Later
- Greenhouse service issues large percentage of our tech calls
- Routinely work directly with growers on service problems

Read & Follow Manufacturers' Instructions
- Installation, Operation & Maintenance Instructions

GREENHOUSE HEATING TIPS

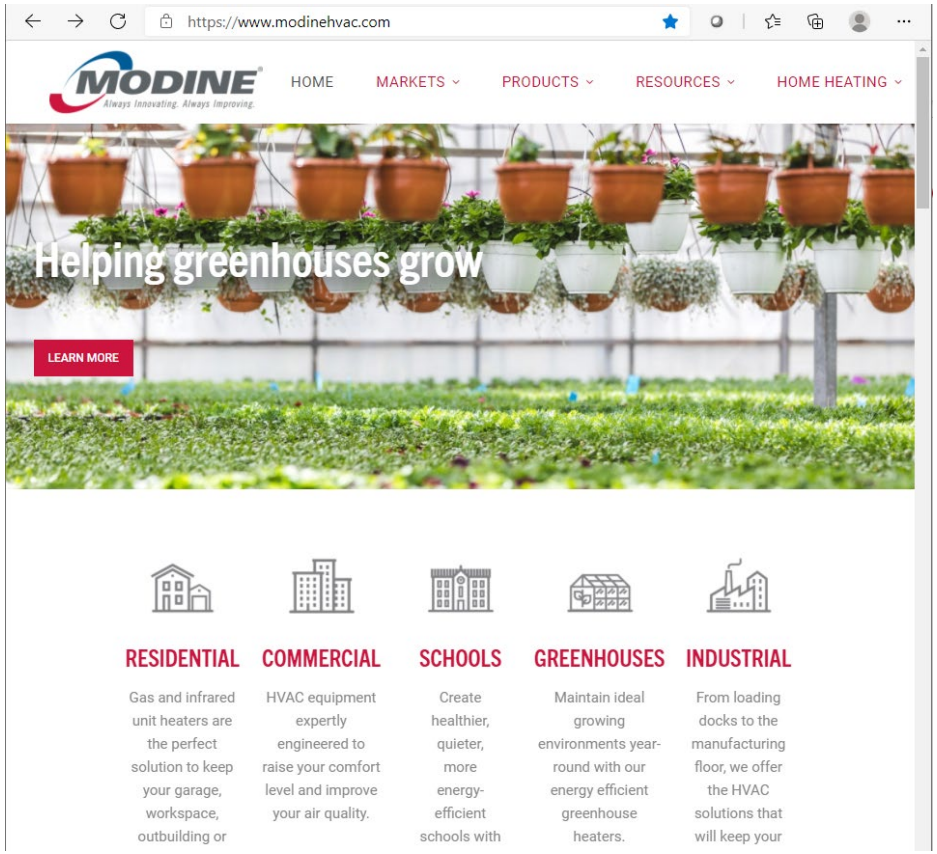
Adhere to Codes
- Building, Safety, Fire & Environmental
- National (IBC, ANSI, OSHA, EPA), State, Local & Insurance

Inspect & Repair Your Systems Before You Need It
- Test-Drive it Before the First Cold Front

Use Stainless Steel or Separated Combustion Furnaces
- Protects Heat Exchangers & Burners from Humidity

Turn Equipment Off While Chemicals are Being Applied

GREENHOUSE HEATING TIPS
ONLINE RESOURCES



www.modinehvac.com

THE NEXT LEAP FORWARD

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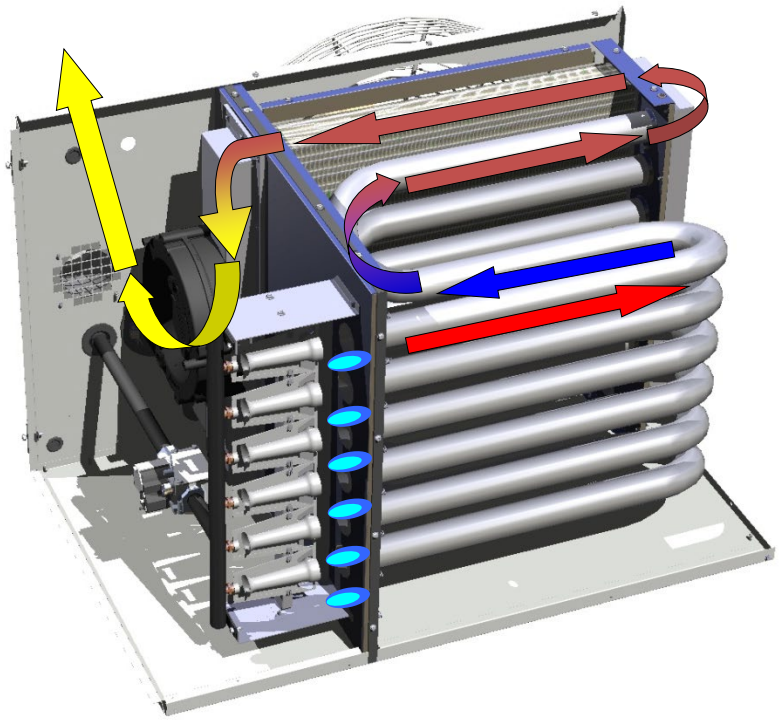
Question: What is Modine's breakthrough solution to the issues of greenhouse heating?

Answer: Modine's *NEW* Effinity with Conservicore™ Technology

PTC-Series 93% Thermal Efficient Condensing Gas-Fired Unit Heater

EFFINITY DESIGN FEATURES



The Heart and Soul…

Secondary Heat Exchanger Made With AL29-4C Stainless Steel Material

Most Robust Material Available to Withstand Slightly Acidic Condensate

In Effect a Marriage of:

Modine's PTS Separated Combustion line which has been in production for 13 years

&

Trane Company's Residential 90+

AL29-4C Stainless Secondary Heat Exchanger that Modine has been making since 1986

EFFINITY DESIGN FEATURES

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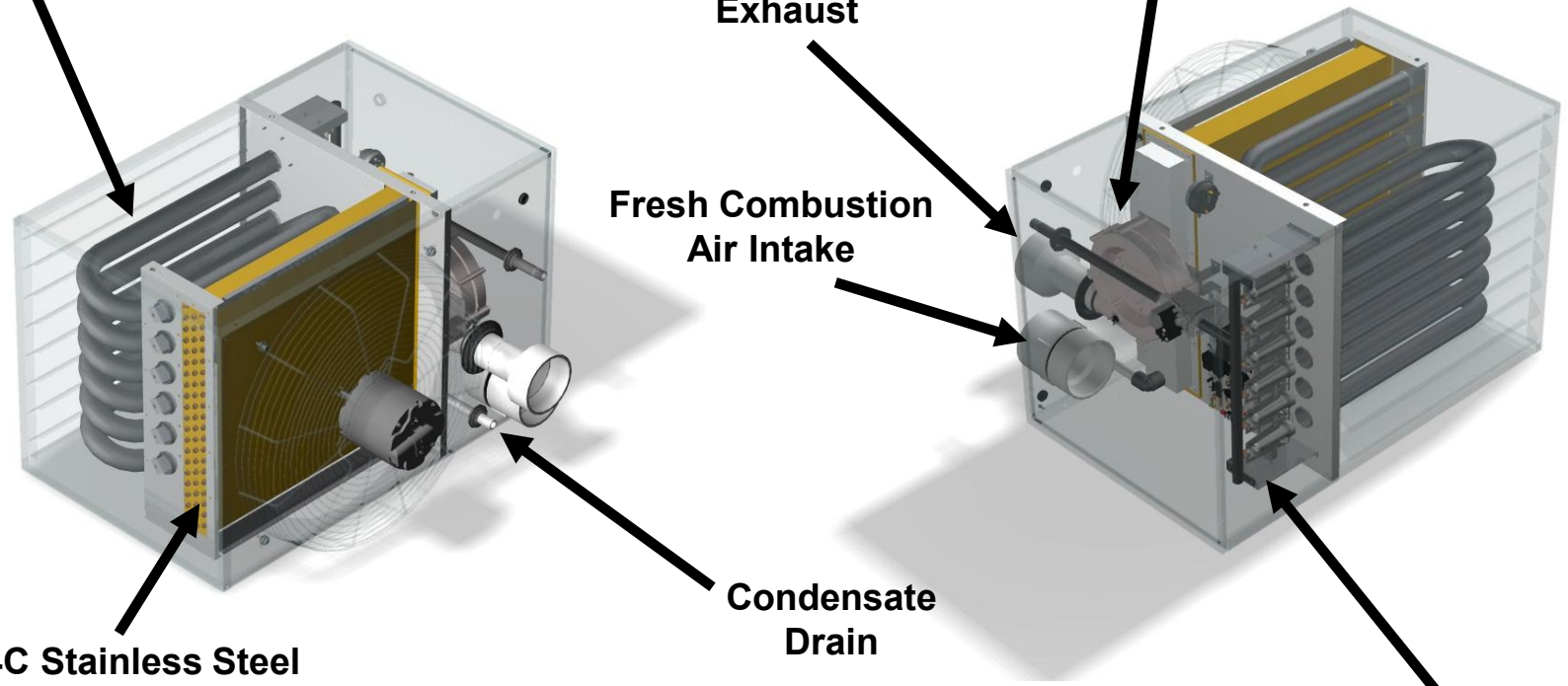
Unit Components

Bent Tube Primary Heat Exchanger

Power Exhauster

Flue Gas Exhaust

Fresh Combustion Air Intake

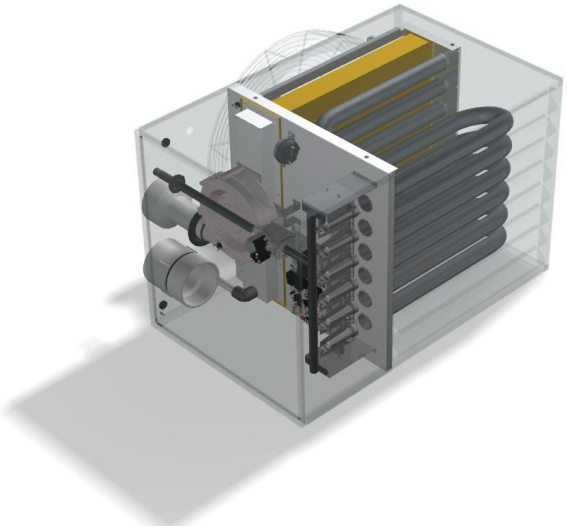


AL29-4C Stainless Steel Round Tube Plate Fin Secondary Heat Exchanger

Condensate Drain

Gas Manifold, Orifices & Burners

EFFINITY DESIGN FEATURES



Separated Combustion

- Protects Heat Exchangers & Components from High Humidity & Chemical Corrosives
- Reduces Greenhouse Heat Loss by 2%

PVC Power Exhauster Wheel & Vent Pipe

- Flue Temperatures Only 125º F

Factory Installed External Junction Box Standard

- Disconnect Switch
- Convenience Outlet
- Terminal Board
- Indicator Lights
- Factory installed BMS compatible control

PTC-SERIES CONDENSING UNIT HEATERS

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PTC Outputs Closely Match Outputs of Standard Efficiency Units for Ease of Comparison When Sizing & Selecting New Construction, Expansion or Replacement Jobs

PTC 55	82% 45MBH unit
PTC 65	82% 60MBH unit
PTC 85	82% 75MBH unit
PTC 110	82% 100MBH unit
PTC 135	82% 175MBH unit
PTC 155	82% 175MBH unit
PTC 180	82% 200MBH unit
PTC 215	82% 250MBH unit
PTC 260	82% 300MBH unit
PTC 310	82% 350MBH unit

Condensate Production

Approx. 1+ Gallons / running hour for Small Units
Approx. 2+ Gallons / running hour for Large Units

Slightly Acidic – Like Soda (Pop)
Need to Drain Both Unit & Vent System

CONDENSATE REMOVAL

Condensate Pumped Into Flex Hose Up to Ceiling & Pitched Down to Nearest Floor Drain Across Room

Condensate Drains for Cabinet & Flue Vent

Condensate Pump & Mounting Kit

Approximately ½ – 2 Gallons/Hr.
Slightly Acidic (pH ~4.5)

EFFINITY APPLICATION FLEXIBILITY

409 Stainless Steel Primary Heat Exchangers

Recommended for Greenhouse Applications Due to Humidity

- To Gain 10 year Warranty on Primary Heat Exchanger
- Secondary Heat Exchanger AL29-4C is always 10yr

Finger-Proof (OSHA) Fan Guards

- For Installations with bottom of unit at 7ft.

2-Point Suspension Kits

Concentric Vent Kits

Condensate Pumps & Neutralizer Kits

Deflector Hoods & Vertical Deflector Blades

Energy Saver Kit (Part of BMS Control)

- Ceiling T-Stat Energizes Fan Without Burner as Ceiling Temps Rises




Effinity Payback Calculator

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EFFINITY PAYBACK CALCULATOR

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72-910 - Effinity93 Payback Calculator-Greenhouse [Compatibility Mode] - Microsoft Excel

Return to Main Menu | Print Menu | Save As Menu

Effinity 93 — Energy Savings - Payback Calculator — V2.50 — MODINE

JOB INFORMATION

Project Name: Dubuque Greenhouse
Submitted By: FarmTek Date: 09/16/13
State: Iowa City: Dubuque Regional AP

OPERATING PERIOD DATA

MONTHS OF OPERATION: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec
OCCUPIED DAYS PER WEEK: 5, 6, 7
OCCUPIED HOURS OF OPERATION: 12:00am - 4:00am; 4:00am - 8:00am; 8:00am - 12:00pm; 12:00pm - 4:00pm; 4:00pm - 8:00pm; 8:00pm - 12:00am
UNOCCUPIED OPERATION: Maintain Setback Temp
INDOOR DESIGN TEMPERATURE:

	°F	°C
Occupied:	70	21.1
Unoccupied:	70	21.1

CALCULATED HEATING DEGREE DAYS, HEATING HOURS*

	Occupied	Unoccupied	Total
Heating Degree Days:	6715	0	6715
Heating Hours:	2585	0	2585

*Based on average climate data.

Heavy red areas indicate fields that are user entered data.

ENERGY / FINANCIAL / ENVIRONMENTAL ANALYSIS

Building Design Heat Loss (Btu/hr): 160,000
Fuel Cost per Therm: $0.830
Note: If using gas pricing in $/1000 ft³, divide by 10.5 to get approx $/therm.
Click for Avg U.S. Gas Prices

	Option 1	Effinity93
Heater Model Number:	PD200	PTC180
Heater Input Rating (each):	200,000	180,000
Heater Thermal Efficiency (%):	65	93
Heater Quantity:	1	1
Annual Therms Consumed:	6,363	4,448
Annual Fuel Consumption Cost:	$5,282	$3,691

Potential Annual Savings from Effinity93: $1,590

Heater Equipment Cost (each):	$0	$3,290
Energy Efficiency Rebate (if applicable, each):		$325
Total Heater Equipment Cost:	$0	$2,965

Total Equipment Cost Premium for Effinity93: $2,965

Simple Breakeven Years on Investment: 1.86
5-Year Gain On Investment: $4,986
5-Year Return On Investment (ROI): 168.2%

The use of the Effinity93 in this analysis is the equivalent of:

CO_2 Emissions Avoided (lbs):	21,074
# of Cars Removed from the Road:	1.8
Urban Trees Planted/Grown for 10 Years:	245
# of Average Homes Gas Consumption:	3.7

Disclaimer: Actual realized savings can vary significantly based on a number of factors, including, but not limited to, changing fuel prices, changes in climate, changes in building use or construction, etc.

Need to Know:

- Location of GH
- Month's of Operation
- Occupied Hours
- Indoor Design Temp
- Heat Loss
- Fuel Cost per therm
- 65% or 80% unit to compare with

EFFINITY PAYBACK CALCULATOR

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72-910 - Effinity93 Payback Calculator-Greenhouse [Compatibility Mode] - Microsoft Excel

Return to Main Menu | Print Menu | Save As Menu

Effinity 93 with Conservice® Technology

Energy Savings - Payback Calculator V2.50

MODINE APPLIED THERMAL INNOVATION™

JOB INFORMATION

Project Name: Dubuque Greenhouse
Submitted By: FarmTek Date: 09/16/13
State: Iowa City: Dubuque Regional AP

OPERATING PERIOD DATA

MONTHS OF OPERATION:

☑ Jan	☑ May	☐ Sep
☑ Feb	☐ Jun	☐ Oct
☑ Mar	☐ Jul	☐ Nov
☑ Apr	☐ Aug	☑ Dec

OCCUPIED HOURS OF OPERATION:

- ☑ 12:00am - 4:00am
- ☑ 4:00am - 8:00am
- ☑ 8:00am - 12:00pm
- ☑ 12:00pm - 4:00pm
- ☑ 4:00pm - 8:00pm
- ☑ 8:00pm - 12:00am

OCCUPIED DAYS PER WEEK: ○ 5 ○ 6 ◉ 7

UNOCCUPIED OPERATION: Maintain Setback Temp

INDOOR DESIGN TEMPERATURE:

	°F	°C
Occupied:	70	21.1
Unoccupied:	70	21.1

CALCULATED HEATING DEGREE DAYS, HEATING HOURS*

	Occupied	Unoccupied	Total
Heating Degree Days:	6715	0	6715
Heating Hours:	2585	0	2585

*Based on average climate data.

Heavy red areas indicate fields that are user entered data.

ENERGY / FINANCIAL / ENVIRONMENTAL ANALYSIS

Building Design Heat Loss (Btu/hr): 160,000
Fuel Cost per Therm: $0.830
Note: If using gas pricing in $/1000 ft³, divide by 10.5 to get approx $/therm.

Click for Avg U.S. Gas Prices

	Option 1	Effinity93
Heater Model Number:	PD200	PTC180
Heater Input Rating (each):	200,000	180,000
Heater Thermal Efficiency (%):	65	93
Heater Quantity:	1	1
Annual Therms Consumed:	6,363	4,448
Annual Fuel Consumption Cost:	$5,282	$3,691

Potential Annual Savings from Effinity93: $1,590

Heater Equipment Cost (each):	$0	$3,290
Energy Efficiency Rebate (if applicable, each):		$325
Total Heater Equipment Cost:	$0	$2,965

Total Equipment Cost Premium for Effinity93: $2,965

Simple Breakeven Years on Investment:	1.86
5-Year Gain On Investment:	$4,986
5-Year Return On Investment (ROI):	168.2%

The use of the Effinity93 in this analysis is the equivalent of:

CO_2 Emissions Avoided (lbs):	21,074
# of Cars Removed from the Road:	1.8
Urban Trees Planted/Grown for 10 Years:	245
# of Average Homes Gas Consumption:	3.7

Disclaimer: Actual realized savings can vary significantly based on a number of factors, including, but not limited to, changing fuel prices, changes in climate, changes in building use or construction, etc.

What it will give you:

- Annual Fuel Savings per Unit
- Simple Breakeven Years on Investment
- 5 Year Gain on Investment
- 5 Year Return on Investment (ROI)

EFFINITY PAYBACK CALCULATOR

Simple Breakeven Years on Investment

- Amount of time cost difference to purchase higher efficiency will be recouped with the energy savings.

5 Year Gain on Investment

- Annual Savings (x5) minus initial investment.

5 Year ROI

- (5 yr net gain / net investment) x 100

ASHRAE – American Society of Heating, Refrigeration, and Air Conditioning Engineers

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Let's Look at Some Real World Examples

EFFINITY PAYBACK CALCULATOR

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Address	City	St	Zip	Cost/Gal	Simple Breakeven (Yrs.)	5 Yr. Gain on Investment	5 Yr. ROI
896 Bonnie Plant Rd	Union Springs	AL	36089	$1.43	2.66	$1,131	88%
10693 Hwy 76	Pala	CA	92059	$1.79	4.4	$174	14%
42678 Weld Cr 35	Pierce	CO	80650	$1.78	0.69	$8,057	627%
1276 Center Street	Waverly	FL	33877	$1.76	9.01	($512)	-45%
1700 Co Hwy 13	New Berlin	NY	13411	$1.76	0.77	$7,088	551%
21109 Cotton Slash Rd	Marysville	OH	43040	$1.34	1.18	$4,166	324%
10639 Plowden Mill Rd	Alcolu	SC	29001	$1.69	2	$1,937	151%
8903 West Side Hwy	Castle Rock	WA	98611	$1.73	1.05	$4,862	378%

Thank You!

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