# A WELL-GROUNDED SOLUTION.

RESIDENTIAL AND LIGHT COMMERCIAL GEOTHERMAL SYSTEMS





## **GEO EXCHANGE SYSTEMS**

Geothermal HVAC solutions are the most efficient, environmentally-friendly and costeffective methods of heating and cooling available today.

Modine's residential and light commercial geothermal systems harness the renewable thermal energy stored in the earth (ground loop) or from water just below the surface of the earth (ground water). This energy is then used to deliver forced-air heating and cooling, and hot and chilled water to residential and commercial spaces.

Ground source heat pumps are the most commonly applied geothermal systems today. They take the natural heating and cooling properties of the earth to create "free energy" for a given space. The beautiful thing for end users is that only a small amount of electrical energy is needed to capture, move and concentrate this energy. Making things even more attractive, federal rebates are available through the end of 2016. That means the time is now to upgrade to a Modine Geothermal System.

### STANDARD FEATURES ON RESIDENTIAL/LIGHT COMMERCIAL MODELS:

**EC Motor** – Variable-speed ECM adjusts fan speeds to deliver constant airflow, regardless of external static pressure, resulting in consistent, gentle air circulation.

**Dual Speed Scroll Compressor** – Hermetically-sealed, two-stage scroll compressors allow for operation at a lower capacity when partial conditioning is required. This saves energy and provides years of efficient, quiet and reliable performance. (Single-stage on water-to-air 018 sized units and on all water-to-water units.)

**MERV 13 Air Filter** – The high performance, durable filter offers superior air filtration and indoor air quality. (Applies to water-to-air and water-to-air/water-to-water combo units.)

**Steel Cabinet Construction** – A fully-insulated, polyester powder-coated and corrosion-resistant cabinet combines quiet operation and long-lasting good looks.

**Oversized Heat Exchangers** – Modine's geothermal systems are designed with oversized air coils and coaxial heat exchangers, producing increased efficiencies and greater cost savings.

**10-Year Limited Warranty** – Not only do end-users have a piece of world-class equipment with Modine, they also have peace-of-mind in the form of a 10-year limited warranty, which is standard on all units.

#### **OPTIONS**:

**Desuperheater** – Provides supplemental domestic hot water whenever the unit is running by preheating the potable water supply being delivered to the hot water tank. Comes with an internally-mounted circulating pump.

**Cupronickel Heat Exchanger** – Used for applications where harsh water conditions exist on the source and/or load side.

**Electric Heater** – Add-on component for auxiliary back-up electric heat.

## THE MODINE CONTROLS SYSTEM ADVANTAGE

Controls are one of the most important – and overlooked – components of specialized HVAC equipment. It doesn't matter how advanced or efficient your HVAC products are, if they aren't equipped with customized controls, you may not be getting the most out of your investment.

For more than a decade, Modine Controls Systems have given end-users peaceof-mind, knowing their systems are equipped with a reliable, proven OEM controls system.

Modine Controls Systems are designed and engineered for Modine Geothermal Systems, not only to ensure that each unit will operate safely and reliably, but also to optimize performance and to maintain maximum energy efficiency.





## **Contractor-Friendly Features of Modine Controls Systems:**

- Effortless start-up; wire and turn on
- Designed for robust conditions (crawlspaces, attics, basements, etc.)
- Programmed in-house, allowing changes or updates to be made quickly
- Compatible with major building management systems
- Designed to maximize the efficiency and operation of the unit
- Backed by more than a decade of experience

## Water-to-Water Residential & Light Commercial



These systems are a high-efficiency, eco-friendly, reversible and nonreversible geothermal option that provides superior hot and chilled water performance at a fraction of the cost of conventional systems. Available in 3 to 12 ton sizes and engineered exclusively with the green, performance enhancing refrigerant R410A. These systems integrate an advanced, user-friendly controls system – the Modine Controls System.

#### **Applications include:**

- Direct hydronic heating & cooling
- Radiant floor heating
- Domestic hot water
- Pool/spa heating
- Snow melting

## Water-to-Air Residential & Light Commercial



These water-to-air systems offer high-efficiency, eco-friendly forced-air heating and cooling solutions for the ultimate in comfort. They are available in 1.5 to 6 ton sizes in both vertical and horizontal configurations to fit virtually any residential or commercial space – such as a basement, attic or crawlspace. An advanced, user-friendly controls system – the Modine Controls System – is also standard.

## Water-to-Air/Water Combination Residential & Light Commercial



The combination series provides the same forced-air comfort of the water-to-air series, along with the ability to use hydronic heating for radiant floors, domestic hot water, pools/spas and snow melting capabilities. They are available in 3 to 6 ton sizes in vertical configurations to meet any space requirements.

#### **Applications include:**

- Forced-air heating & cooling
- Direct hydronic heating
- Radiant floor heating
- Domestic hot water
- Pool/spa heating
- Snow melting

## Split System/Air-Handling Residential & Light Commercial



Select models earned ENERGY STAR® Most Efficient in 2015 Split systems are available for those looking to add geothermal HVAC solutions into a new or retrofitted location. Both the air handler and split mechanical sections can be easily installed when paired together. Modine has five models to choose from, available in 2 to 6 ton sizes. And like all other units, these systems come with the Modine Controls System as standard equipment.

#### Applications include:

• Forced-air heating & cooling

### **MODINE - INNOVATORS FROM THE START**

In 1922, company-founder A.B. Modine entered the HVAC industry with his historic invention of the hydronic unit heater. Today, that same innovative, entrepreneurial spirit continues through our geothermal solutions.

For nearly a century, Modine has been a trusted name for commercial, industrial, and residential heating, ventilating and air-conditioning solutions. Hundreds of thousands of HVAC-related products bear the Modine badge across North America including with other popular products such as the Hot Dawg<sup>®</sup> and Effinity<sup>®</sup> unit heaters, and the Atherion<sup>®</sup> packaged ventilation system. Modine is also well-versed in the geothermal industry, building classroom geothermal systems for colleges and K-12 schools for nearly two decades.

Geothermal solutions are nothing new to Modine, as the company continues to move the technology forward, giving end users a new way to receive a well-grounded solution.



**Company founder A.B. Modine** 

Modine puts all of its HVAC products through rigorous testing. This includes residential and commercial geothermal systems or classroom geothermal solutions as shown below (top photo).



#### **WORLD-RENOWNED RESEARCH & DEVELOPMENT CAPABILITIES**

**With our Third-Party Certified Labs** – Customers can trust that our results meet today's rigorous standards.

**Geothermal Climate Chamber** – Dedicated lab for our residential, commercial and school geo solutions. Meets ANSI/AHRI/ASHRAE ISO Standard 13256-1 and 13256-2.

**Split Room Climate Chambers** – Dedicated air-to-air split rooms for testing DX products like the award-winning Airedale ClassMate<sup>®</sup>. Meets AHRI 210/240 and 390 standards.

**Refrigeration Lab** – Modine makes its own coils, including the PF<sup>™</sup> and CF<sup>™</sup> coil. These groundbreaking technologies are invented and proven here.

**Ventilation Test Cell** – Capable of temperatures from -40°F to 140°F and relative humidity of 10-90%, this cell is used for testing packaged rooftop equipment like the Atherion. Meets AHRI 340/360 and CSA C747-06 standards.

**Wind Tunnel** – Capable of duplicating almost any location on Earth: up to 520 tons of cooling capacity; replicates 96% of the sun's UV rays; and generates temperatures of -20°F to 131°F. Meets AHRI 340/360 and CSA C746-06 standards.

**Heating Lab** – Unitary heating products are validated here. Meets ANSI Z83.8/CSA 2.6, ANSI Z21.47/CSA2.3 and ANSI Z83.20/CSA 2.34 standards.

**Semi-Anechoic Sound Room** – Sound is a major issue for many end-users. We now have the capability to provide reliable data from our new, world-class laboratory.

#### NHAT ARE MY GEO-FIELD OPTIONS?



Vertical Loop System

**Horizontal Loop System** 

Pond/Lake Loop System

**Open-Loop System** 

	Water-to-Air ISO 13256-1 Performance Data												
			Ground Water					Ground Loop					
			59°	F	50° F		77° F		32° F				
	Mode	el	Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP			
	018	Full	20,200	26.4	17,300	4.6	18,100	18.8	13,200	3.6			
	024	Full	25,000	20.2	23,600	4.2	24,500	16.4	19,000	3.7			
		Part	18,800	26.3	16,600	4.5	17,900	22.0	15,200	4.1			
	036	Full	39,500	20.0	35,100	4.2	36,800	16.6	27,800	3.7			
		Part	29,200	26.3	24,300	4.5	26,600	21.3	21,800	4.0			
	048	Full	49,900	21.3	47,000	4.5	47,200	16.7	36,800	3.8			
		Part	38,100	28.1	33,500	4.8	37,200	24.0	29,600	4.3			
	060	Full	62,300	21.5	59,700	4.5	59,500	16.9	43,700	3.6			
		Part	46,800	28.1	40,200	4.4	43,100	22.9	33,800	3.9			
	066	Full	70,900	19.5	69,500	4.2	65,900	15.1	55,300	3.6			
		Part	55,000	23.1	51,500	4.4	53,400	19.9	45,300	3.9			
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Reversible Water-to-Water ISO 13256-2 Performance Data											
		6	Water	Ground Loop							
		59° F		50° F		77° F		32° F			
Model		Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP		
036	Full	38,500	20.1	38,600	3.6	35,100	15.1	31,200	3.0		
048	Full	54,200	20.1	55,300	3.6	49,300	14.4	46,700	3.0		
060	Full	62,200	21.0	62,000	3.8	58,100	16.1	49,700	3.1		
066	Full	72,700	18.0	75,100	3.5	68,400	14.2	61,800	3.0		
096	Full	108,400	20.1	110,600	3.6	98,600	14.4	93,400	3.0		
120	Full	124,400	21.0	124,000	3.8	116,200	16.1	99,400	3.1		
132	Full	145,400	18.0	150,200	3.5	136,800	14.2	123,600	3.0		

Non-Reversible Water-to-Water ISO 13256-2 Performance Data										
		Ground	Water	Ground Loop						
		50°	F	32° F						
Model		Capacity	COP	Capacity	COP					
036	Full	37,900	3.7	31,100	3.1					
048	Full	53,200	3.5	43,200	2.7					
060 Full		60,200	3.7	48,300	3.1					
066	Full	71,300	3.3	58,700	2.8					
096	Full	106,400	3.5	86,400	2.7					
120 Full		120,400	3.7	96,600	3.1					
132 Full		142,600	3.3	117,400	2.8					



To learn more visit www.ModineHVAC.com or call 1.877.679.4GE0 (4436)

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See us on YouTube www.youtube.com/ModineHVAC

Split System ISO 13256-1 Performance Data										
		Ground Water				Ground Loop				
		59° F		50° F		77° F		32° F		
Model		Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP	
024	Full	25,600	20.9	23,400	3.9	22,100	15.6	18,600	3.4	
	Part	19,400	28.5	15,700	4.2	17,800	22.3	13,700	3.7	
036	Full	38,200	22.3	31,400	4.0	34,400	16.9	27,200	3.5	
	Part	28,800	28.7	21,500	4.1	27,300	23.8	18,900	3.7	
048	Full	45,500	19.9	44,800	4.1	40,700	14.5	35,300	3.6	
	Part	32,900	23.2	32,600	4.4	30,800	20.4	28,800	3.9	
060	Full	58,100	20.6	54,000	3.8	54,300	16.2	46,700	3.6	
	Part	44,400	26.3	41,800	4.6	42,800	22.6	36,600	3.8	
066	Full	63,700	17.5	62,800	3.8	61,500	14.3	50,500	3.3	
	Part	52,400	23.0	48,800	3.9	51,700	20.5	43,300	3.6	

Water-to-Air/Water Combo ISO 13256-1 Performance Data												
	Ground Water						Ground Loop					
		59° F		50° F		77° F		32° F				
Model		Capacity	EER	Capacity	COP	Capacity	EER	Capacity	COP			
036	Full	37,700	19.8	34,400	4.1	34,900	15.2	27,900	3.6			
	Part	28,000	27.2	24,700	4.8	25,700	22.4	21,700	4.2			
048	Full	44,600	18.1	44,000	4.3	44,600	16.1	33,100	3.8			
	Part	35,700	22.5	29,000	4.4	33,800	19.1	28,400	4.1			
060	Full	61,700	18.5	61,400	4.1	58,500	14.8	50,300	3.7			
	Part	44,400	23.3	45,100	4.5	42,100	19.3	40,400	4.1			
066	Full	70,300	18.5	70,300	4.2	66,500	15.0	57,200	3.8			
	Part	51,900	22.3	52,800	4.5	49,100	19.0	47,300	4.1			

#### Breeze GeoLoopField

#### What is it?

Modine's web-based geothermal heat pump design software capable of designing a ground heat exchanger to meet any heating and cooling needs.

#### How can you benefit?

- Create job-specific submittal packages to walk homeowners through their geothermal system design
- · Generate reports to show short and long term operating costs and paybacks
- Accessible from a computer, smartphone or tablet

To learn more about Breeze GeoLoopField, talk to your local rep or Regional Sales Manager or go to www.ModineHVAC.com/Geothermal



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