

Heating and Ventilating Units

Models IG-HV, IGX-HV and MSX-HV

- Flexible Design • Factory-Assembled

- 800 - 15,000 cfm
- Up to 3 in. wg External Static Pressure
- Indirect Gas, Hot Water, Electric or Steam Heating
- Chilled Water, Split DX Cooling or Evaporative Cooling

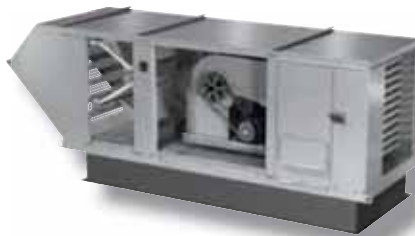


Greenheck's heating and ventilating units offer a variety of heating and cooling options, filtered mixing box section, fan section, and are ETL Listed to the UL-1995 test standard. Heating capacities range from 100,000 to 1,200,000 Btu/hr and airflow volumes are available up to 15,000 cfm.

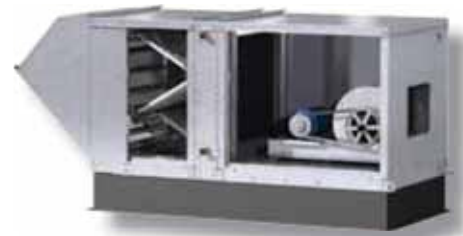
The modular design concept of models IGX-HV and MSX-HV enables the flexibility to customize each product for its application. Modules are then factory-assembled and wired to minimize field installation labor. The result is a semi-custom product at an attractive cost.



Model IG-HV



Model IGX-HV



Model MSX-HV

Indirect Gas-Fired Furnaces (IG-HV and IGX-HV only)

Greenheck's indirect gas technology uses 80% efficient tubular-style heat exchangers with capacities up to 1,200,000 BTU/hr to provide efficient heating in any climate. Single, double and triple furnace units are available with 4:1 modulating turndown per furnace. Greenheck's furnace design guarantees a long furnace life in the most compact and flexible unit configuration available.

- Power venting with post surge cycle prevents corrosive combustion gases from condensing within the heat exchanger.
- Horizontally firing, S-tube burners make stainless steel burners unnecessary and drip pans obsolete.
- Stainless steel or aluminized steel heat exchanger material yields maximum heat exchanger life with proper material selection.



Heating Options (MSX-HV only)

Hot water, steam and electric heat options are available. The heating section consists of a factory-installed heating coil in a pre-engineered housing. Water and steam coil connections are stubbed through the wall for installation convenience. The heating coil section is installed upstream of the fan section for a draw-thru arrangement and provides a streamlined transition to adjacent sections.

All heating options are available with airflow capacity up to 13,800 cfm.

For proper coil sizing, use Greenheck CAPS selection software or contact your local representative.

Hot Water and Steam: Hot water and steam coils are available in a 100% thru-coil airflow arrangement. Coils have copper tubes with permanently expanded aluminum fins and are tested and rated in accordance with AHRI 410.



Electric Heat: Electric heaters are UL Listed and feature open coil heating elements. Heater control cabinets are installed completely within the heating section, are factory-wired up to 218 kW and meet all requirements of the National Electric Code.



Evaporative Cooling - Models IG-HV and IGX-HV

The optional evaporative cooling section includes a galvanized steel housing with a louvered intake, 2-inch aluminum mesh filters and a stainless steel evaporative cooling module. CELdek® and GLASdek® evaporative cooling media are available with a depth of 12 inches for a 90% cooling effectiveness.

The entire section mounts directly to the front of the unit eliminating transition or ductwork by others. Drain and overflow are conveniently tapped through the side of the cooling section. The supply line connection is field located where convenient. Freeze protection, automatic drain and fill, and the Water Wizard™ evaporative optimizer are also available. Airflow capacity for evaporative cooling is up to 14,000 cfm. The evaporative cooling section for units above 9,000 cfm ship separately.



Recommended for exterior installation only.

Controls:

The economizer outdoor temperature reference control option is recommended for use with evaporative cooling. On a call for cooling when the outdoor air temperature is below the economizer set point, the dampers modulate to provide cool mixed temperatures down to 55°F. When the outdoor air is above the economizer set point, the evaporative cooling section is energized and the dampers travel to the 100% outdoor air position.

The mixing box options are NOT recommended in conjunction with evaporative cooling.

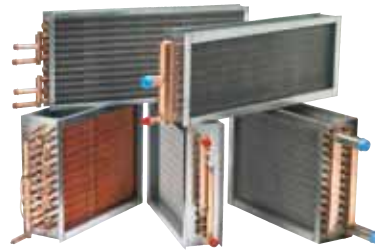
Cooling Coils - Model IGX

Both chilled water and direct expansion coils for split systems are available. The cooling section includes the cooling coil, sloped stainless steel drain pan, and insulated double-wall construction. Drain and coil connections are stubbed through the wall for convenience.



Chilled Water Coils:

Available from two to six rows and various circuiting configurations to meet various load conditions. Airflow ranges up to 11,700 cfm in both water and glycol applications.



Direct Expansion (DX) Coils:

DX coils for use in split systems are available from two to six rows. Circuiting options include single, face-split, and interlaced arrangements. Airflow ranges up to 11,700 cfm.

Mixing Box Controls: All mixing box and economizer control options are available with chilled water or DX cooling coils. For economizer climates, the outdoor temperature reference option is recommended.

Thermostats: The cooling coil and mixing box control options may use a 1-stage (chilled water or single-stage DX) or 2-stage (dual-stage DX) cooling thermostat.

The cooling coil and mixing box with economizer control options require a 2-stage cooling thermostat. Economizer represents the first stage of cooling and a single DX stage or chilled water coil represents the second stage of cooling.

Product Certifications

Greenheck takes pride in offering a high quality, reliable product. We invest our resources into designing, testing and manufacturing products to ensure customer satisfaction.



IG-HV, IGX-HV and MSX-HV models shall be ETL and cETL Listed to ANSI Z83.8 and CGA 2.6. Indirect gas-fired units are Listed to UL 1995. ETL and UL 1995 are harmonized standards between USA and Canada.



The mixing box includes outdoor air and return air low leakage control dampers in a face and bypass configuration. Either two-inch pleated or aluminum mesh filters are available within the mixing box section. Double-wall construction is optional.

A mixing box control option must be specified for every unit. Greenheck offers seven mixing box control options that accommodate a wide variety of applications. Specify only one control box option per unit.

Mixing Box Controls with Economizer Cooling

The economizer controls package enables free cooling using outdoor air. All economizer cooling options include a modulating actuator for controlling outdoor and return air dampers, and a predetermined minimum outdoor air position. During a call for heating, the economizer is locked out and the outdoor air damper holds at the minimum position.

Outdoor Temperature Reference

The economizer controller positions the mixing box dampers to achieve 55°F mixed temperature when the thermostat calls for cooling AND the outdoor air temperature is below the economizer set point. If the outdoor air temperature is between 55°F and the economizer set point, the dampers will modulate to the 100% outdoor air position. Above the set point, the outdoor air damper is held at the minimum position. The set point is field-adjustable and the outdoor air sensor is factory-mounted.

Outdoor Enthalpy Reference

Same as Outdoor Temperature Reference, except economizer set point is based on outdoor air enthalpy.

Airstream Temperature Reference

The economizer controller compares the temperatures of the outdoor air and return air when the thermostat calls for cooling. The mixing box dampers are then positioned to maximize the airflow of the cooler airstream. When the outdoor air temperature is sufficiently cool, the mixing box dampers will modulate to provide 55°F mixed air. The outdoor air sensor is factory-mounted. The return air sensors are field-installed.

Airstream Enthalpy Reference

Same as Airstream Temperature Reference, except airstream *enthalpy* values are compared.

Mixing Box Controls (No Economizer)

In addition to the Economizer Cooling options described above, Greenheck offers the following mixing box control options for applications where a factory-provided economizer package is not desired.

Minimum Outdoor Air Positioner

This option includes a modulating actuator and potentiometer that control the outdoor air and return air damper positions. When the unit is energized, the dampers will travel to the position corresponding to the potentiometer setting, providing the desired amount of outdoor air. When the unit is powered off, the outdoor air damper closes to prevent backdrafting. To adjust the damper settings, simply dial the potentiometer to desired operating position of the outdoor air damper.



2-10 Volt External Signal

This option includes a modulating actuator that is controlled by an external 2-10 volt signal. This option is appropriate for applications that call for a building automation system that will control the mixing box dampers.

4-20 mA External Signal

This option includes a modulating actuator that is controlled by an external 4-20 mA signal. This option is appropriate for applications that call for a building automation system that will control the mixing box dampers.

Mixing Box Selection Guide	Economizer Cooling Options				Mixing Box Options		
	Outdoor Temp. Ref.	Outdoor Enthalpy Ref.	Airstream Temp. Ref.	Airstream Enthalpy Ref.	Minimum OA Positioner	2-10 volt External Signal	4-20 mA External Signal
No Cooling	Yes*	Yes	Yes	Yes	Yes	Yes	Yes
Evaporative Cooling	Yes*	Yes	NR	NR	No	No	No
Chilled Water or DX Cooling	Yes*	Yes*	Yes*	Yes*	Yes	Yes	Yes

*Two-stage cooling thermostat required.
 Boldface type indicates factory recommended options.
 NR = Not Recommended

Thermostat Options

Basic bimetal thermostats with mercury switches or fully programmable electronic thermostats are available. Match your heating, cooling, staging, and operational requirements to the appropriate thermostat.

1-Stage Heating / Cooling

A coiled bimetal thermostat used for single-stage heating, cooling or heating-cooling systems.

2-Stage Heating / 2-Stage Cooling

A coiled bimetal thermostat used for 2-stage heating, cooling, or heating-cooling systems. It includes an adjustable heat anticipator, stops, and a locking cover.

Deluxe Programmable

Full seven-day program capability. The thermostat can be set for two occupied and two unoccupied times with adjustable temperature settings for each day of the week. It can control up to three stages of heating and two stages of cooling. The Intelligent Fan™ feature energizes the fan continuously during occupied mode and intermittently with a call for heating or cooling in unoccupied mode.

Unit Controls

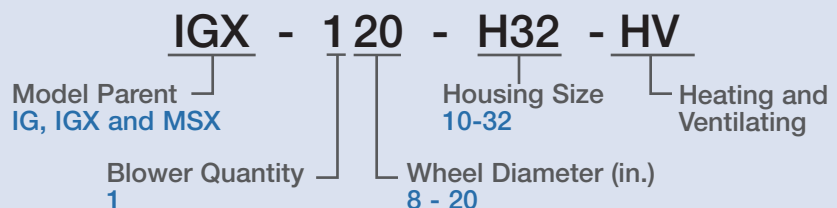


Network Interface - An optimum solution for connecting a make-up air unit to a BMS. The network interface offers an easy-to-use, remote-mounted display. It easily integrates to BACnet® IP, BACnet® MSTP, LonWorks® or Modbus®.

Monitor only: Allows the BMS to monitor the status and functions of the unit through a factory-installed controller. Control commands will be provided by terminal style signals from a remote panel or external to the unit.

Model Number Code

The model number code is designed to completely identify the unit. The correct code letters must be specified to designate the configurations and size.



Model IG-HV

The model IG-HV sets the standard for an efficient approach to heating and ventilating applications. Several intake and filtering configurations and optional evaporative cooling are available.

Performance Range - 800 to 7,000 cfm

Maximum Static Pressure - 2 in. wg

Heating Capacity - Up to 400,000 BTU/hr

Cooling Capacity - Evaporative cooling up to 7,000 cfm



Models IGX-HV

The model IGX-HV is a highly configurable indirect gas-fired heating system that incorporates a modular design for maximum flexibility. The unit also has expanded heating, cooling, and airflow capacities to provide ventilation air across a broad range of heating and ventilating applications. Use the IGX-HV in applications ranging from gymnasiums to light industrial facilities.

Performance Range - 800 to 15,000 cfm

Maximum Static Pressure - 3 in. wg

Heating Capacity - Up to 1,200,000 BTU/hr

Cooling Capacity

- Evaporative cooling up to 14,000 cfm
- Chilled water cooling up to 11,700 cfm
- Split DX cooling up to 11,700 cfm



Model MSX-HV

The model MSX-HV is an ideal heating and ventilating unit where gas-fired heating is not desired. Coil heating and/or cooling tempering options are available with airflow volumes up to 15,000 cfm.

Performance Range - 800 to 16,000 cfm

Maximum Static Pressure - 3 in. wg

Heating Capacity

- Electric up to 218 kW
- Steam up to 14,000 cfm
- Hot water up to 13,800 cfm

Cooling Capacity

- Evaporative cooling up to 14,000 cfm
- Chilled water cooling up to 11,700 cfm
- Split DX cooling up to 11,700 cfm



Option Comparison

	IG-HV	IGX-HV	MSX-HV
Heating Options			
Indirect Gas-Fired	Standard	Standard	—
Steam	—	—	Optional
Hot Water	—	—	Optional
Electric	—	—	Optional
Cooling Options			
Evaporative	Optional	Optional	Optional
Direct Expansion (DX)	—	Optional	Optional
Chilled Water	—	Optional	Optional
Unit Controls			
Network Interface	—	Optional	Optional
Mixing Box Controls			
Outdoor Temperature Reference	Optional	Optional	Optional
Outdoor Enthalpy Reference	Optional	Optional	Optional
Airstream Temperature Reference	Optional	Optional	Optional
Airstream Enthalpy Reference	Optional	Optional	Optional
Minimum Outdoor Air Positioner	Optional	Optional	Optional
2-10 Volt External Signal	Optional	Optional	Optional
mA External Signal	Optional	Optional	Optional
Thermostat Options			
1-Stage Heating/Cooling	Optional	Optional	Optional
2-Stage Heating/Cooling	Optional	Optional	Optional
Deluxe Programmable	Optional	Optional	Optional
By Others	Optional	Optional	Optional
Discharge Options			
Downblast	Optional	Optional	Optional
Horizontal	Optional	Optional	Optional
Upblast	—	—	Optional
Options & Accessories			
Aluminum Mesh Filtered Weatherhood	—	Optional	Optional
Louvered Weatherhood	Optional	Optional	Optional
Outlet Dampers	Optional	Optional	Optional
Duct Liner Insulation	Optional	Optional	Optional
Double-Wall Construction	Optional	Optional	Optional
Dirty Filter Sensor	Optional	Optional	Optional
Fire Stat Type III*	Optional	Optional	Optional
Smoke Detector*	Optional	Optional	Optional
Service Receptacle*	Optional	Optional	Optional
Auxiliary Contacts	Optional	Optional	Optional
Weatherization	Optional	Optional	Optional
Hinged Access	Optional	Optional	Optional
Finishes	Optional	Optional	Optional
Roof Curbs*	Optional	Optional	Optional
Neoprene Isolation	Standard	Standard	Standard
Spring Isolation	Optional	Optional	Optional
Aluminum or Stainless Steel Heat Exchanger	Optional	Optional	—
Gas Pressure Regulator*	Optional	Optional	—

*Ships loose for field installation.

Additional Make-Up Air Products



**Direct Gas - Economy
Model DGK**



**Indirect Gas - Economy
Model IGK**



**Direct Gas - Standard
Model DG**



**Indirect Gas - Standard
Model IG**



**Direct Gas - Configurable
Model DGX**



**Indirect Gas - Configurable
Model IGX**



**Direct Gas - Industrial
Model TSU**



**Direct Gas - Vertical
Model VSU**



Our Commitment

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Specific Greenheck product warranties are located on greenheck.com within the product area tabs and in the Library under Warranties.

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Green Building Efforts