

# Make-Up Air



Greenheck offers a wide range of make-up air units for commercial, industrial, and food service applications. Heating options include direct gas-fired, indirect gas-fired, electric heat, hot water coils and steam coils. Available cooling options include direct expansion coils for split systems, packaged direct expansion systems, chilled water coils and evaporative cooling. In addition to Greenheck's Make-Up Air units, Greenheck also offers space heating systems. The GreenHeat<sup>®</sup> system uses direct gas-fired heating technology to deliver high discharge temperatures into the space. The GreenHeat<sup>®</sup> system provides efficient and economical heating for warehouses and other industrial or process applications.

## Hot Water, Steam and Electric

The MSX model offers multiple tempering options when natural or LP gas is neither available nor desired for heating. The MSX is designed to provide tempered make-up air to food service, commercial and industrial facilities.

### Model MSX

The MSX model is ideally suited for make-up air applications where electric heat, hot water or steam is desired. The MSX is assembled using a modular configuration which offers a configurable design. The MSX model is available in multiple airflow arrangements: recirculation, constant volume, and variable air volume with the use of a VFD. Capacities range from 800 to 48,000 cfm (1,359 to 81,552 m<sup>3</sup>/hr) and 4 in. wg (996 Pa). ETL Listed.

- Heating options:** Non-tempered up to 48,000 cfm (81,553 m<sup>3</sup>/hr)  
 Hot water up to 40,000 cfm (67,960 m<sup>3</sup>/hr)  
 Steam up to 40,000 cfm (67,960 m<sup>3</sup>/hr)  
 Electric heat up to 25,000 cfm (42,475 m<sup>3</sup>/hr)
- Cooling options:** Evaporative cooling up to 45,000 cfm (76,455 m<sup>3</sup>/hr)  
 Chilled water or split DX cooling up to 11,700 cfm (19,878 m<sup>3</sup>/hr)  
 Packaged DX cooling up to 7,500 cfm (12,742 m<sup>3</sup>/hr)

*Catalog: Modular Make-Up Air Unit — MSX*



### Model MSX-HV

Model MSX-HV is constructed with a modular design that offers broad configuration flexibility. A filtered mixing box with an economizer controller offering is standard. Capacities range from 800 to 16,000 cfm (1,359 to 27,184 m<sup>3</sup>/hr) and 3 in. wg (747 Pa). Supply air configuration can be ordered as full recirculation or up to 80% outside air. ETL Listed.

- Heating options:** Non-tempered up to 48,000 cfm (81,553 m<sup>3</sup>/hr)
- Cooling options:** Evaporative cooling up to 45,000 cfm (76,455 m<sup>3</sup>/hr)  
 Chilled water or split DX cooling up to 11,700 cfm (19,878 m<sup>3</sup>/hr)

*Catalog: Heating and Ventilating Units — IG-HV, IGX-HV and MSX-HV*



## Non-Tempered

Models KSF, KFSB, and KSFD are designed to provide non-tempered make-up air to food service, commercial and industrial facilities. **Note:** The MSX model is also available in a untempered arrangement.

### Model KSF

Model KSF is intended to supply untempered make-up air. This is most commonly seen in kitchen make-up air applications. Installation may be stand-alone or on a combination curb with an exhaust fan. An extended weatherhood option is available, providing the necessary 10 foot horizontal separation between intake and exhaust fan discharge to comply with NFPA 96. Capacities range from 400 to 12,000 cfm (679 to 20,388 m<sup>3</sup>/hr) and 3 in. wg (747 Pa). ETL Listed.



*Catalog: Untempered Make-Up Air for Kitchen Systems — KFSB and KSFD*

### Models KFSB and KSFD

Models KFSB and KSFD offer compact designs, providing untempered make-up air for commercial and institutional kitchen applications. An extended weatherhood option is also available providing the necessary 10 foot horizontal separation between intake and exhaust fan discharge to comply with NFPA 96. The KFSB offers a belt driven arrangement intended for constant volume. The KSFD offers a constant volume direct drive supply fan arrangement and can be ordered with a speed controller to provide an economical means of system balancing. Capacities range from 300 to 10,500 cfm (509 to 17,840 m<sup>3</sup>/hr) and 3 in. wg (747 Pa). ETL Listed.



*Catalog: Untempered Make-Up Air for Kitchen Systems — KFSB and KSFD*

## Industrial Space Heat

Space heating systems are designed to heat large spaces as comfortably and economically as possible. Space heating models use high-efficiency direct gas-fired heating and include the same commitment to quality you would expect from a worldwide leader in air movement and control products.

### Industrial Space Heat

The space heating line includes the GreenHeat® system 100% outdoor air, GreenHeat® system 50/50 recirculation, and the 80/20 recirculation systems. ETL Listed.

**100% Outdoor Air:** 800 to 2,800 MBH, Capacities range from 5,000 to 19,000 cfm (8,495 to 32,281 m<sup>3</sup>/hr) and 1.3 in. wg (322 Pa)

**50/50 Recirculation:** 800 to 2,800 MBH, Capacities range from 6,000 to 22,000 cfm (10,194 to 37,378 m<sup>3</sup>/hr) and 1.2 in. wg (298 Pa)

**80/20 Recirculation:** 400 to 4,800 MBH, Capacities range from 2,600 to 48,000 cfm (4,417 to 81,553 m<sup>3</sup>/hr) and 4 in. wg (996 Pa)

*Catalog: Industrial Space Heating — Direct Gas-Fired Heating*



## Direct Gas-Fired

Models DGK, DG, DGX, TSU and VSU are designed to deliver fresh, direct gas-fired make-up air to food service, commercial and industrial facilities. Model DGK and DG are most commonly used to provide make-up air to kitchen facilities. Models DGX, TSU and VSU are commonly used in commercial and industrial applications and can be used in conjunction with any GreenHeat® System.

### Model DGK

Model DGK is designed to be a simple and compact solution for direct gas-fired kitchen make-up air applications. Capacities range from 1,000 to 8,500 cfm (1,699 to 14,442 m<sup>3</sup>/hr) and 2 in. wg (496 Pa) with heating capacities up to 800,000 BTU/hr. ETL Listed.

Catalog: *Direct Gas-Fired Make-Up Air - DGK, DG and DGX*



### Model DG

Model DG is designed to be an economical approach to direct gas-fired make-up air applications. Capacities range from 800 to 15,000 cfm (1,359 to 25,485 m<sup>3</sup>/hr) and 2 in. wg (496 Pa) with heating capacities up to 1,600,000 BTU/hr. ETL Listed.

**Cooling option:** Evaporative cooling up to 12,000 cfm (20,388 m<sup>3</sup>/hr)

Catalog: *Direct Gas-Fired Make-Up Air — DGK, DG and DGX*



### Model DGX

Model DGX has a modular design for more configuration flexibility and offers the following arrangements: constant volume, filtered recirculation or variable volume. Capacities range from 800 to 48,000 cfm (1,359 to 81,553 m<sup>3</sup>/hr) and 4 in. wg (996 Pa) with heating capacities up to 4,800,000 BTU/hr. ETL Listed.

**Cooling options:** Evaporative cooling up to 48,000 cfm (81,553 m<sup>3</sup>/hr)  
Chilled water or split DX cooling up to 11,700 cfm (19,878 m<sup>3</sup>/hr)  
Packaged DX cooling up to 7,500 cfm (12,742 m<sup>3</sup>/hr)

Catalog: *Direct Gas-Fired Make-Up Air — DGK, DG and DGX*



### Model TSU

Model TSU offers direct gas-fired make-up air in the following arrangements: constant volume, recirculation or variable volume. Capacities range from 33,000 to 64,000 cfm (56,067 to 108,737 m<sup>3</sup>/hr) and 3 in. wg (747 Pa) with heating capacities up to 7,000,000 BTU/hr. ETL Listed.

**Cooling option:** Evaporative cooling up to 60,000 cfm (101,941 m<sup>3</sup>/hr)

Catalog: *Direct Gas-Fired Make-Up Air — TSU*



### Model VSU

Model VSU is a vertical unit and offers direct gas-fired make-up air in the following arrangements: constant volume, recirculation or variable volume. Capacities range from 800 to 64,000 cfm (1,359 to 108,737 m<sup>3</sup>/hr) and 3 in. wg (747 Pa) with heating capacities up to 7,000,000 BTU/hr. ETL Listed.

Catalog: *Vertical Direct Gas-Fired Make-Up Air — VSU*



## Indirect Gas-Fired

Models IGK, IG and IGX are designed to provide fresh, indirect gas-fired make-up air to food service, commercial and industrial facilities. Model IGX-HV is specifically designed to provide space heating and cooling, while ensuring proper ventilation needs are maintained.

### Model IGK

Model IGK features a power vented, 80% efficient, indirect gas-fired furnace. Capacities range from 800 to 5,000 cfm (1,359 to 8,495 m<sup>3</sup>/hr) and 2 in. wg (496 Pa) with heating capacities up to 400,000 BTU/hr (input). ETL Listed.

Catalog: *Indirect Gas-Fired Make-Up Air — IGK, IG and IGX*



### Model IG

Model IG is ideally suited for gas-fired make-up air applications where a direct gas-fired system is not appropriate. The IG is a single-piece housing, offering simplicity in an economical design for indoor or outdoor applications. An optional mixing box with controls is available. Capacities range from 800 to 7,000 cfm (1,359 to 11,893 m<sup>3</sup>/hr) and 2 in. wg (496 Pa) with heating capacities up to 400,000 BTU/hr (input). ETL Listed.

**Cooling option:** Evaporative cooling up to 7,000 cfm (11,893 m<sup>3</sup>/hr)

Catalog: *Indirect Gas-Fired Make-Up Air — IGK, IG and IGX*



### Model IGX

Model IGX expands on the IG model with a modular design that offers broad configuration flexibility. In addition to basic make-up air operation, recirculation and variable volume airflow options are available. Capacities range from 800 to 15,000 cfm (1,359 to 25,485 m<sup>3</sup>/hr) and 3 in. wg (747 Pa) with heating capacities up to 1,200,000 BTU/hr (input). ETL Listed.

**Cooling options:** Evaporative cooling up to 12,000 cfm (20,388 m<sup>3</sup>/hr)  
Chilled water or split DX cooling up to 11,700 cfm (19,878 m<sup>3</sup>/hr)  
Packaged DX cooling up to 7,500 cfm (12,742 m<sup>3</sup>/hr)

Catalog: *Indirect Gas-Fired Make-Up Air — IGK, IG and IGX*



### Model IGX-HV

Model IGX-HV is designed to provide space heating and cooling while ensuring ventilation needs are met for the facility. Model IGX-HV is constructed with a modular design that offers broad configuration flexibility. A filtered mixing box with an economizer controller offering is standard. Capacities range from 800 to 15,000 cfm (1,359 to 25,485 m<sup>3</sup>/hr) and 3 in. wg (747 Pa) with heating capacities up to 1,200,000 BTU/hr (input). ETL Listed.

**Cooling options:** Evaporative cooling up to 12,000 cfm (20,388 m<sup>3</sup>/hr)  
Chilled water or DX cooling up to 11,700 cfm (19,829 m<sup>3</sup>/hr)

Catalog: *Heating and Ventilating Units — IGX-HV and MSX-HV*

