



**ES ENGINEERED
SYSTEMS**

Mechanical Products Sourcebook

.....

Helping you find the right HVACR
equipment or service for your commercial
or industrial facility.

The Who's Who of Manufacturing

Consider this resource the encyclopedia of HVACR engineering equipment.

Unlike Forrest Gump's infamous view on life, the HVACR industry is not like a box of chocolates. Each piece of equipment is meticulously manufactured to serve a specific purpose: deliver comfort. And, through the hundreds of reputable manufacturers listed in *Engineered Systems'* Mechanical Products Sourcebook, you always know what you're going to get — top-notch, time-tested, trustworthy performance.

Willis Carrier designed the first modern air conditioning system in 1902, and, since then, dedicated manufacturers have strived to create innovations designed to fundamentally improve the way we live, work, and play. From large fans with coils to central air conditioners with condensers, climate control has come a long way.

Engineered Systems highlights these innovations in this resource, covering nearly every facet of the industry, including air conditioners, compressors, drives, humidifiers, motors, refrigeration, valves, and much more.

This sourcebook includes the information of hundreds of manufacturers, offering a cumulative list from AAF Flanders to Zonex Systems and everyone in between, providing engineers a one-stop shop for all aspects of nearly every piece of HVACR equipment imaginable. We hope you enjoy this HVACR directory and find it a valuable resource for your company in 2021 and beyond.



By Herb Woerpel
Editor-in-Chief

Air Conditioners, Dehumidifiers, & Humidifiers

INABA DENKO™

Air Handling, Fans, & Variable Air Volume (VAV)

Boilers, Burners, Heat Recovery Units, & Heaters

INDECK®

Building Automation Systems, Energy Management Systems

Chillers, Cooling Towers, & Package Equipment

Compressors, Drives, Motors, & Valves

YASKAWA

Ductwork & Related, Filtration, Indoor Air Quality (IAQ), & Ventilation/Ventilators

 **GREENHECK**
Building Value in Air.

AIR CONDITIONERS, DEHUMIDIFIERS, & HUMIDIFIERS

Air conditioners are utilized to cool down the temperature inside a space by removing the existing heat and moisture from a room.

Air conditioning can induce, introduce, or convey an airflow or draft to evacuate heat from an enclosed space. At its most basic function, this often occurs using a thermodynamic cycle called the refrigeration cycle, which is achieved by changing the pressure and state of the refrigerant to absorb or release heat. The refrigerant absorbs heat from inside of a building and then pumps it outside.

Air conditioning can be used in applications where an enclosed space needs to be maintained within a controlled temperature range. It can also be used as a means of heat rejection in equipment such as air-cooled chillers and condensers.

Often, excess (or not enough) moisture is needed to achieve optimal comfort. That is achieved through dehumidification (or



humidification) by removing or adding moisture into a facility. Whole-building or large-scale humidifiers add a controlled amount of filtered water into a facility, increasing comfort and decreasing the potential of damage caused by dry air. In other climates and seasons, too much moisture can be a problem. Subcooling of air to condense out moisture using chilled water or refrigerant is the most common method for dehumidifying an entire facility.

INABA DENKO™

Inaba Denko America supplies HVAC accessories engineered by Inaba Denko of Japan and provides support for distributors and contractors throughout North America.

For over 40 years we've been manufacturing and providing the best quality products worldwide. Our products consist of insulated linesets, lineset covers, drain hoses, tapes and more.

Engineered for mini-split air conditioners, our modular Slimduct SD Lineset Cover for residential properties is your ideal choice to conceal, protect, and beautify exposed linesets. Easy to install Slimduct SD is available in five colors and three sizes.

Paircoil is a pre-insulated, paired lineset for mini-split installation. It features length marking for fast, accurate measuring and cutting, and is easy to decouple by hand.

Inaba Denko's products are available to distributors via RectorSeal.

Contact us: info@inabadenko-america.com



SLIMDUCT™ SD



PAIRCOIL™



Accessories



INABA DENKO™

INABA DENKO™

Inaba Denko America supplies commercial lineset covers engineered by Inaba Denko of Japan.

Slimduct RD encloses the multiple lines used by variable refrigerant flow/volume (VRF/VRV) multi-split systems. It features a proprietary anti-corrosive, scratch-resistant, hot-dipped and chromium-free coating made of zinc, aluminum and magnesium, guaranteeing a more durable and lighter-weight alternative to galvanized steel.

Slimduct PD is constructed from high-grade PVC to protect any surface mounted lineset installation, as well as linesets between condenser and RD Series ducting system. Round profile in 3 sizes provides maximum strength and accommodates larger linesets and complicated configurations.

MarketAir, our master distributor, holds an extensive inventory of products at their Fort Worth warehouse and offers a full-service experience.

Contact us: info@inabadenko-america.com



SLIMDUCT™ RD



SLIMDUCT™ PD



INABA DENKO™



To see a complete list of suppliers,
click one of the sections below.

[Air Conditioners](#)

[Humidifiers](#)

[Dehumidifiers](#)

AIR HANDLING, FANS, & VARIABLE AIR VOLUME (VAV)

Air movement is a key component to comfort. Free-flowing air through a building helps to regulate temperature, prevent buildup of particles and mold, and makes breathing easier for all occupants.

By definition, a fan is an apparatus with rotating blades that creates a current of air for cooling or ventilation. These come in many variations, from those that sit on desktops to high volume low speed (HVLS) models that move large amounts of air in factories or auditoriums.

Air handlers are components of HVAC units designed to regulate and circulate large volumes of air. Air handlers come in many forms and sizes but generally contain a blower, heating or cooling elements, filter racks or chambers, sound attenuators, and dampers.

Unlike constant air volume (CAV) systems, which supply a constant airflow at a variable temperature, variable air volume (VAV) systems vary the airflow at a constant temperature. VAV



systems generally offer precise temperature control, minimal compressor wear, low energy consumption, low fan noise, and passive dehumidification options.

An air door/curtain is a machine that blows a controlled stream of air across an opening to create an air seal. This seal separates different environments while allowing a smooth, uninterrupted flow of traffic and unobstructed vision through the opening.



To see a complete list of suppliers,
click one of the sections below.

[Air Handling](#)

[Fans](#)

[Variable Air Volume \(VAV\)](#)

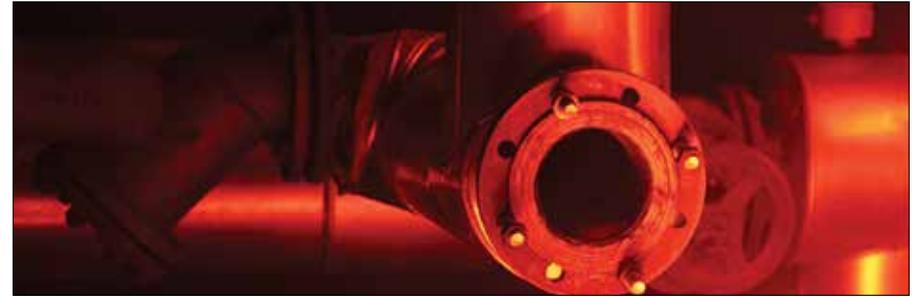
BOILERS, BURNERS HEAT RECOVERY UNITS, & HEATERS

In the fall and winter months, many Americans rely on their HVAC units to provide warmth.

Heat recovery systems work by capturing the valuable warm air or water in a property and reapplying it in a positive way. In each room, there are ventilation valves with filters that supply air in and out of each room, which all leads to the heat recovery unit. The unit works by moving the stale air through the pipes while drawing in cold air from the outside via other ducts.

A boiler is a closed metal container with a heating element. Its purpose is to produce steam or heat water by increasing the temperature inside the chamber so that it is higher than that of the environment. Boilers also increase the pressure so that it is greater within the facility than atmospheric pressure.

A heat exchanger is a system used to transfer heat between two or more fluids. Heat exchangers are used in both cooling and heating processes. The fluids may be separated by a solid wall to prevent mixing or they may be in



direct contact. They are widely used in space heating, refrigeration, air conditioning, power stations, chemical plants, petrochemical plants, petroleum refineries, natural-gas processing, and sewage treatment.

A furnace burner is a component of a furnace that mixes air with fuel and is burned in order to create heat. This heat is then distributed via pipes or ductwork. A furnace burner may also include what's known as a premixer. In a premix combustion system, the air and gas are mixed at some point upstream from the burner ports by an inspirator mixer, aspirator mixer, or mechanical mixer. The burner nozzle serves only as a flame holder, maintaining the flame in the desired location.

INDECK

Indeck is a boiler OEM with roots tracing back to 1840 when it began production of high quality boilers. Indeck has previously manufactured boilers under the names of Erie City Iron Works, Zurn Energy Division, Aalborg (land-based boilers), International Boiler Works, and Volcano.

Indeck was the first company to offer skid mounted and trailer mounted mobile rental boilers and has grown to have the world's largest boiler inventory. Indeck offers a variety of purchasing options: rent, lease-to-own, or purchase.

Indeck supports the following industries: petrochemicals, refineries, combined heat and power, cogeneration, pulp and paper, universities, airports, and food processing as a single source supplier offering the following:

- Rental boilers and auxiliary equipment
- Stock boilers for immediate shipment
- Build to order boilers (A, O, D, and modular D)
- HRSG (heat recover steam generators) and waste heat boilers
- FCC (fluid catalytic cracking) waste heat boilers
- International Lamont High Temperature Hot Water Generators



- Combustion controls, burner management systems, and fuel trains
- Solid fuel boilers and Travagrate stokers (wood, coal, municipal solid waste, and tires)
- Aftermarket services (re-tubes, burner retrofits, upgrades, parts, engineering studies)
- Field services: Installation, operator training, startup, testing

INDECK®

THE POWER BEHIND PROGRESS

Supreme

WHERE YOU FIND INDECK, YOU FIND EXCELLENCE

Indeck incorporates over 175 years of industry knowledge, technology advancements and product quality into every piece of steam power equipment delivered. Furthermore, Indeck's knowledgeable engineering team can design steam and hot water equipment uniquely tailored to the needs of your facility or plant.

Selection

THE WORLD'S LARGEST FLEET OF STOCK BOILERS

Indeck's vast inventory of stock equipment comes in a variety of steam capacities and temperature outputs. Indeck stock equipment is available for temporary or permanent use. Additionally, Indeck is the official OEM and aftermarket supplier for IBC, Keystone Energy, IBW, Erie City Iron Works, Volcano, Travagrate, Starfire, Aalborg (Erie Land Based Boilers), Zurn Energy Division and more.

Savings

SAVE SOME GREEN WHILE GOING GREEN

Indeck's steam power solutions provide the ability to reduce your eco-footprint while reducing your operational costs and energy bill. Indeck provides efficiency-increasing economizers, Heat Recovery Steam Generators (HRSG) and Selective Catalytic Reduction (SCR) options.



800.446.3325

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To see a complete list of suppliers,
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[Boilers](#)

[Burners](#)

[Heat Recovery Units](#)

[Heaters](#)

BUILDING AUTOMATION SYSTEMS, ENERGY MANAGEMENT SYSTEMS

A building automation system (BAS) uses interlinked networks of software and hardware to provide automated control or monitoring of a building's mechanical and electrical systems, including the HVAC, lighting, security, and fire systems. BASs are designed to improve occupant comfort and the efficiency of building systems as well as reduce energy consumption and operating costs.

BASs help operations teams efficiently and effectively run buildings through centralized control systems that can be monitored and adjusted from a number of stations. Energy usage, comfort levels, and occupancy can be recorded to proactively track, control, and schedule system and equipment energy usage.

A multitude of systems can be connected to BASs, including heat, lights, ventilation, air conditioning, building access, security, fire and smoke alarms, internal communications, and more.



Today, distributed digital controllers (DDCs) tied together through electronic networks run complex computer codes to ensure systems are running efficiently while keeping the environment safe and comfortable. Building automation has become such a complex and focused part of HVAC work that it is starting to become a separate specialty within the controls field.



To see a complete list of suppliers,
click one of the sections below.

[Building Automation Systems](#)

[Energy Management Systems](#)

CHILLERS, COOLING TOWERS, & PACKAGE EQUIPMENT

Package equipment, chillers, and cooling towers are designed to extract heat to reduce the temperature from a commercial building. At its core function, a chiller removes heat from a load and transfers it to either the environment as waste heat or to a heat transfer fluid or refrigerant via a closed condenser loop.

Chillers range in size from compact, portable, wheeled units that can be positioned immediately adjacent to the process to large, skid-mounted permanent chiller systems. Some chiller systems are split, where certain components, such as air-cooled condensers, are remotely located, often outside, to minimize floor space.

Common types include air- or water-cooled condensers. Both contain compressors, condensers, evaporators, and expansion valves. With an air-cooled unit, the heat that is extracted is rejected to the surrounding air utilizing a fan to blow over a condenser coil. A water-cooled chiller uses either recirculating water or water



from an external source, such as a cooling tower, to remove heat by circulating the cool water through the lines of a condenser.



To see a complete list of suppliers,
click one of the sections below.

[Chillers](#)

[Cooling Towers](#)

[Package Equipment](#)

COMPRESSORS, DRIVES, MOTORS, & VALVES

Compressors have been identified as the hearts of HVACR systems, serving as the pumping apparatus for the refrigerant cycle. The motors and drives within HVACR systems help bring these hearts to life by driving compressors to compress refrigerants and powering pumps or chilled and hot water applications. The type of motor that is used in HVAC systems depends on its application. For example, electric blowers or propeller fans usually require motors that have a low starting torque, while compressors require motors that have high starting torque.

HVACR drives operate like a throttle on a car. Drives, most commonly variable frequency drives (VFDs), adjust the speed of an HVAC fan or pump motor, saving energy and prolonging equipment life.

Connected with appropriate tubing and fittings to the discharge line or cylinder head assembly of the compressor, unloader valves are typically used to decrease the compressor's starting load.

Additionally, an unloader valve provides a means of capacity control. In HVACR



applications, where the thermal load may vary greatly due to occupancy, lighting, ambient weather conditions, product loading, and other factors, capacity modulation can ensure fewer compressor cycles, optimum system performance, increased energy efficiency, operational flexibility, and better dehumidification.

YASKAWA

HV600: Sustainable, Flexible, Easy Variable Frequency Drives for Fan and Pump Applications

The HV600 family of drives employs the latest advancements in variable speed control for HVAC applications. In addition to its wide product range, enjoy effortless setup with HV600's high contrast display and connectivity with mobile devices. Whether you need simple fan control with integrated BAS communication, advanced bypass control, or multiplex pump control, look no further than the HV600 family to meet a wide range of variable speed needs in building automation.

As Yaskawa's new variable frequency drive for building automation, the HV600 will address every application handled by the Yaskawa Z1000 drive plus more, due to greatly improved ease of use and advanced functions.

Standalone HV600 drives include the following features:

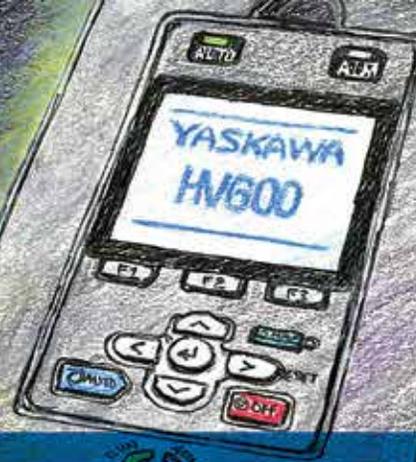
- High-resolution multi-language display with setup wizards and data logging
- DriveWizard Mobile for convenient and easy interaction with optional Bluetooth HOA keypad

- Programming without main power via embedded USB port
- Enhanced embedded BAS protocol communications
- Advanced control for induction, permanent magnet, and synchronous reluctance motors
- Integrated EMC filter for RF conformance and 5% impedance for power quality
- Available in IP20/UL Type 1, IP55/Type 12, and IP20/protected chassis standalone versions

HV600 Bypass and Configured packages are offered in Narrow UL Type 1 and Enclosed UL Type 1, 12, and 3R versions, with a wide variety of power and control options up to 100 kA SCCR.

Bypass packages include a highly integrated bypass controller with electronic motor overload, as well as single point access for all power connections, control connections, and configurations settings, ensuring complete synchronization of drive and bypass.

Standalone HV600 drives are available in 208-240 VAC (3 to 100 HP) models and 480 VAC (3 to 250 HP) models. Bypass and Configured packages are available in 208 and 240 VAC (0.5 to 100 HP) models and 480 VAC (0.75 to 250 HP) models



DRAWING ON POTENTIAL

MAXIMIZE BUILDING OPERATIONS WITH
THE HV600 VARIABLE FREQUENCY DRIVE



#HV600drives



DRAW ON THE POTENTIAL OF YOUR BUILDING OPERATIONS BY LEVERAGING THE UNIQUE BENEFITS OF THE HV600 FAMILY OF VARIABLE FREQUENCY DRIVES FROM YASKAWA.

HV600 drives and packages minimize energy costs while maximizing occupant comfort. With a high contrast display HOA keypad, a high visibility status ring, and enhanced pump control functionality, the HV600 family is perfectly suited for applications ranging from simple fan control with integrated BAS communication to advanced bypass control or multiplex pump control.



Is your current drive performance feeling a little sketchy?
Call Yaskawa at 1-800-927-5292 today.



YASKAWA



Yaskawa America, Inc. 1-800-YASKAWA
Email: info@yaskawa.com | yaskawa.com



To see a complete list of suppliers,
click one of the sections below.

[Compressors](#)

[Drives](#)

[Motors](#)

[Valves](#)

DUCTWORK & RELATED, FILTRATION, INDOOR AIR QUALITY (IAQ), & VENTILATION/VENTILATORS

The “V” in HVACR stands for ventilation. In forced-air HVACR equipment, air needs to be moved, conditioned, regulated, filtered, balanced, and exhausted. In many facilities, ductwork exists to efficiently provide the channels responsible for distributing cooled or heated air throughout a building.

The coronavirus, and its susceptibility to spread through the air, has created an unprecedented focus on the importance of clean air. Air filtration, ultraviolet germicidal irradiation technology, ionization, and proper ventilation have become viable options to help keep air as clean as possible.

To retain the proper balance, air needs to be exhausted from buildings as well. Technologies such as energy recovery ventilators (ERVs) exchange the energy contained in the normally exhausted air of a building or conditioned space, using it to treat (precondition) the incoming outdoor ventilation air. During the warmer seasons, an ERV system pre-cools and dehumidifies, and during cooler seasons, the system humidifies and preheats. Heat recovery ventilators (HRV) are ERVs that work between two



sources at different temperatures. Heat recovery is a method that is increasingly used to reduce the heating and cooling demands of buildings. By recovering the residual heat in the exhaust gas, the fresh air introduced into the air conditioning system is preheated (precooled), and the fresh air enthalpy is increased (reduced) before the fresh air enters the room, or the air cooler of the air conditioning unit performs heat and moisture treatment.



As a ventilation manufacturer for more than 70 years, Greenheck's sole focus has always been on improving indoor air quality in commercial, institutional, and industrial buildings. A well-designed air distribution system can help improve indoor air quality and reduce energy costs in all types of buildings by efficiently adding and circulating clean air and removing air contaminants such as virus particles, fumes, or smoke.

A single source manufacturer, Greenheck provides the industry's most comprehensive line of air movement, control and conditioning equipment to improve indoor air quality efficiently and effectively. Through extensive testing conducted at our on-site laboratories, we ensure our products perform as specified, meeting or exceeding critical performance requirements issued by AMCA, AHRI, HVI, ANSI, ASHRAE, UL, EPA, DOE, and other third-party certification organizations.

From schools and hospitals to offices, restaurants and warehouses, our equipment offers top performance, energy efficiency, and simple installation. Our comprehensive product line includes:

AIR MOVEMENT products to improve indoor comfort, safety, health and productivity: roof-mounted

fans, inline fans, wall-mounted fans, jet fans, HVLS, circulators, ceiling exhaust fans, blowers, laboratory exhaust fans, fume exhaust fans, plenum fans, curbs and mounting accessories.

AIR CONTROL products include gravity ventilators and the most UL certified dampers and the largest selection of AMCA licensed dampers and louvers in the industry to meet any building application.

AIR CONDITIONING products that heat, cool, and dehumidify air for comfort and energy savings: make-up air, indoor air handling units, dedicated outdoor air systems, energy recovery ventilators, duct heaters and HVAC coils.

KITCHEN VENTILATION SYSTEMS incorporating exhaust hoods, fans, make-up air, fire suppression, pollution control units, and energy management provide a system approach to address a variety of kitchen applications.

CONTROLS to help manage airflow, maintain indoor air comfort, regulate power, reduce maintenance, and maximize energy efficiency.

Greenheck's product selection software programs, CAPS® and eCAPS®, along with the eCAPS® Bridge for Revit®, help streamline workflow and simplify product selection, system design and scheduling.

Learn more and find your rep at www.greenheck.com

DEDICATED TO ONE GOAL:

Improving Indoor Air Quality

Greenheck provides the industry's most comprehensive line of **1000+ ventilation products** to create healthy, safe and comfortable environments. From hospitals to schools, warehouses and more, our reliable, energy-efficient air movement, conditioning and control products can help you address any application, any challenge. Indoor air quality—it's what we do at Greenheck.

Watch our Indoor Air Quality video at [greenheck.com](https://www.greenheck.com)

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