# Glossary

## 1. ***System and unit type:***

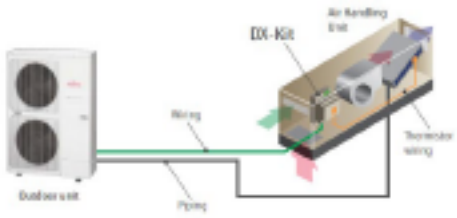
**Package units:** Packaged units have the main heating and cooling components in a single-boxed cabinet that sits outside the home. It's a package! Packaged units come in multiple forms: Packaged Air Conditioners: The compressor, coils, air handler are all housed in a single-boxed cabinet.

Unit type

1 *Basic*: It's a simple unit with nothing else added

2 *W/ Economizer*: An economizer is a part of a building's cooling system that uses cool outdoor air to cool the building instead of operating the air conditioning compressor. An economizer is an add-on feature to an HVAC air handler that draws in outdoor air and mixes it with return air from indoors.

*3 W/ Heat recovery*: The system works by extracting stale air from bathrooms, kitchens, and other humid areas and passing it through a heat exchanger to recover the heat before expelling it outside. At the same time, fresh outdoor air is drawn in and passed through the heat exchanger, where it is preheated before being distributed to living areas.




- **Split system DX:** A split DX system is also known as a unitary split system air conditioner or split system. It consists of two factory-made assemblies: a condensing unit that uses outside air as the heat sink, and an indoor DX coil with integral supply fan.

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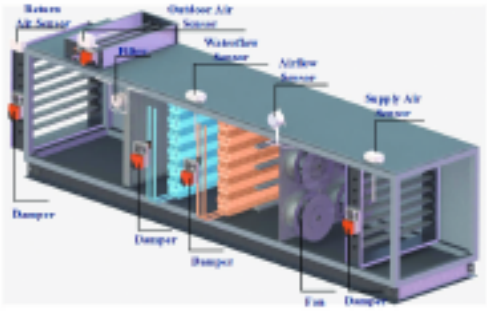
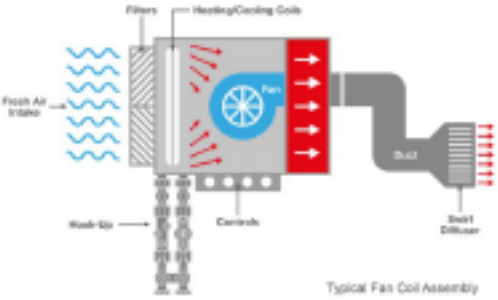
## Unit type

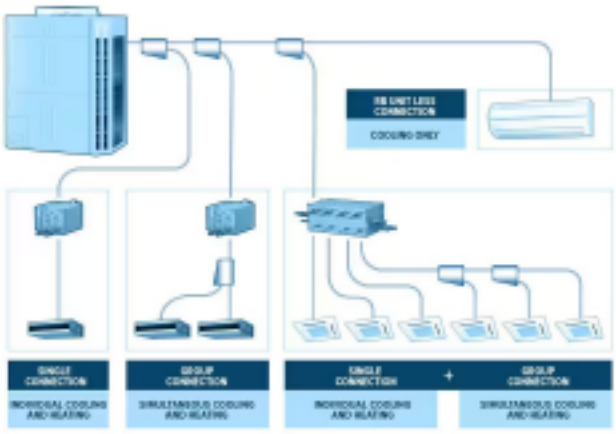


1 *AHU*: The air handling unit (AHU) is the heart of central air conditioning. It collects outside air and room air, removes dust and other particles from the collected air, adjusts the temperature and humidity and then supplies comfortable and refreshing air-conditioned air into the rooms through ducts.



*2 Fan Coil*: A fan coil unit, also known as a Vertical Fan Coil-Unit, is a device consisting of a heat exchanger and a fan. FCUs are commonly used in HVAC systems of residential, commercial, and industrial buildings that use ducted split air conditioning or with central plant cooling

- **VRF Ductless:** VRF stands for variable refrigerant flow, which goes a surprisingly long way toward describing how this system uses refrigerant for both air conditioning and heating. In a nutshell, VRF is a ductless, large-scale system for HVAC that performs at a high capacity



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Unit type

1 Wall/ ceiling/ floor: A unit installed on wall, ceiling or floor

2 Cassette: Way Cassette provides supreme comfort by delivering conditioned air flow in four directions to customize the airflow control based on user comfort preferences.

3 Fan Coil (LSP): Stands for low static pressure. The most common reason for low static pressure is that the system's filter is dirty or clogged. This will make airflow in and out slower, making it harder for air to move through the system. This means there will not be enough airflow to keep your home cool.

- **VRF Ducted:** VRF system allows for multiple air handlers within the same system. Since the VRF system doesn't use ducts, different rooms or spaces are equipped with a wall or ceiling mounted indoor unit to distribute air. This lets users make more specific heating and cooling decisions based on the room or space.

Unit type

1 AHU The air handling unit (AHU) is the heart of central air conditioning. It collects outside air and room air, removes dust and other particles from the collected air, adjusts the temperature and humidity and then supplies comfortable and refreshing air-conditioned air into the rooms through ducts.

2 Fan Coil (MSP/HSP) Mid Static Pressure y High Static Pressure

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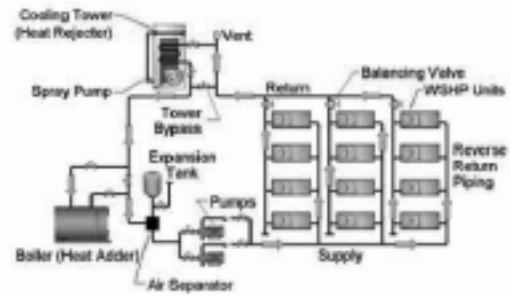
- **PTAC / DTAC:** PTAC stands for “Packaged Terminal Air Conditioner.” PTACs are commercial grade HVAC units installed through a wall, usually near floor level.

Unit type

1 Horizontal

2 Vertical

- **WSHP:** One of the most efficient and reliable HVAC systems for your building is a Water Source Heat Pump (WSHP). Simple in design, a WSHP rejects heat in the cooling cycle through a Cooling Tower




Unit type

*1 WCT Close Loop*: A closed loop WSHP system includes a small central mechanical system with a boiler (for supplemental heat), some form of heat ejection (closed circuit evaporative cooler, cooling tower heat exchanger or dry cooler) and circulating water pumps.

2 WCT Open Lop: Open loop cooling tower makes use of direct contact with the air in- order to cool down the water. It is essentially a heat exchanger. In these types of cooling towers, there is the partial heat transfer due to heat exchange between air and water.


**Ductless Mini Split:** Ductless heating (also known as mini splits, a ductless heat pump, or mini-split AC) is a type of heating and cooling system that doesn't require any ductwork. It moves heat energy around, rather than producing it. The system has an outdoor compressor unit that's connected to one or more indoor units.

Unit type

1 Wall- Ceiling- Floor

*2 Ducted Concealed:* Concealed duct units are hidden behind the scenes, with only the grille covers visible. Using their own higher-efficiency ducts, concealed units can provide even coverage in large rooms by utilizing short duct runs to disperse the air through various outlets and can even provide comfort to an adjacent, smaller room.

3 Cassette

## 2. ***Design***

- **Air Plenum Return:** A return plenum box is the portion of the plenum that is connected to the return ducts or supply outlets, which bring the air back to the HVAC unit for reconditioning. It is typically located under the floor or within a wall and is responsible for collecting air from the different rooms or spaces in the building.
- **Direct Discharge Air Supply:** Air discharge is a method for testing ESD-protection structures in which the ESD generator is discharged through an air gap between the generator and the device under test (DUT).

- **Supply and Return Air Duct:** In a supply vent, the air flows out of the ductwork. In a return vent, the air flows into the ductwork. A second difference is the size of the vents.
- **Zoned VAV System:** Variable air volume (VAV) is a type of heating, ventilating, and/or air-conditioning (HVAC) system. Unlike constant air volume (CAV) systems, which supply a constant airflow at a variable temperature, VAV systems vary the airflow at a constant or varying temperature.
- **Based ASHRAE 90.1-2022**: The 2022 edition of Standard 90.1 incorporates over 80 addenda to the 2019 edition. Major additions appearing for the first time in a minimum-efficiency U.S. model energy standard or code at the national level include: A minimum prescriptive requirement for on-site renewable energy.
- **Supply and Return Flexible Air Duct:** are manufactured to meet the highest quality standards in strength, permeability and fire resistance required in a flexible air duct. This insulated, ETL Class 1 AIR DUCT is fabricated with an acoustical liner which allows sound energy to penetrate the duct wall.
- **Ducted Air Discharge w/ MERV <7:** What MERV rating you choose between 7 and 13 depends on what level of filtration you require. If your family has allergies or asthma, a higher MERV rating will be good for you. If your family doesn't suffer from any breathing difficulties, a lower filter like a 7 will save you some money on your energy bill.
- **Ducted Air Discharge w/ MERV >7:** What MERV rating you choose between 7 and 13 depends on what level of filtration you require. If your family has allergies or asthma, a higher MERV rating will be good for you. If your family doesn't suffer from any breathing difficulties, a lower filter like a 7 will save you some money on your energy bill.
- **Without DOA unit:** The design lacks a Dedicated Outdoor Air System
- **With DOA unit:** The design includes a Dedicated Outdoor Air System
- **AC on Roof:** The location of AC unit is on the roof
- **AC on Floor:** The location of AC unit is on the floor
- **Back to Back:** Located back to back to the wall

1. **SEER**. The seasonal energy efficiency ratio (SEER) is the ratio of the total heat removed from the conditioned space during the annual cooling season divided by the total electrical energy consumed by the air conditioner during the same season.
2. **SEER 2:** Seasonal Energy Efficiency Ratio 2 (SEER2) measures an air conditioner's cooling efficiency which will replace SEER. SEER2 is calculated by dividing the cooling output (in BTUs) by the electrical energy input (in watt-hours). The higher the SEER rating, the more efficient (SEER2) the air conditioner.
3. **IEER**: Within the HVACR industry, the terms EER and IEER are both used to indicate a system's level of energy efficiency. Higher ratings equate to a more efficient unit. EER is short for Energy Efficiency Ratio, while IEER represents the Integrated Energy Efficiency Ratio.
4. **IPVL:** (Integrated Part Load Values) It is based on part load chiller efficiency values. The IPLV is calculated on the weighted percentage of assumed operational hours at each operating condition. So there are four operating points that are going to be measured.

## ***3. Finances***

**CAPEX:** (Capital expenditure) is the money an organization or corporate entity spends to buy, maintain, or improve its fixed assets, such as buildings, vehicles, equipment, or land.
**OPEX:** (Operating Expense) an operating expense is an ongoing cost for running a product, business, or system. Its counterpart, a capital expenditure, is the cost of developing or providing non-consumable parts for the product or system.
**Payback:** Payback period in capital budgeting refers to the time required to recoup the funds expended in an investment, or to reach the break-even point. For example, a $1000 investment made at the start of year 1 which returned $500 at the end of year 1 and year 2 respectively would have a two-year payback period.

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**ROI:** (Return on Investment) is a calculation of the monetary value of an investment versus its cost. The ROI formula is: (profit minus cost) / cost. If you made $10,000 from a $1,000 effort, your return on investment (ROI) would be 0.9, or 90%. This can also usually be obtained through an investment calculator.

**MARR:** A minimum acceptable rate of return (MARR) is the minimum profit an investor expects to make from an investment, taking into account the risks of the investment and the opportunity cost of undertaking it instead of other investments.

**EUI:** Energy Use Intensity (EUI) refers to the amount of energy used per square foot annually. It's calculated by dividing the total energy consumed by the building in a year by the total gross floor area.