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dx|electrica
air conditioning and electrical engineers

What you should know about air conditioning

What is Air conditioning?

An indoor unit is appliance which removes heat from one area and transfers to another unit—the out-door unit. The “refrigeration circuit” consists of a freezer section which has very cold refrigerant gas passing through it, a compressor (that’s the big black metal thing near the floor at the back) which drives the refrigerant through the pipes, and a condenser (a series of tubes at the back, which are quite warm to touch.) The condenser tubes discharge unwanted heat into the surrounding air.

An air conditioning system is a larger version of the fridge/freezer, which removes heat from one area (a room inside the building) and discharges it through its condenser to outside the building. In order to make it practical to install an air conditioning system in a building, the “refrigerant circuit of an air con-ditioner is divided into two parts .

The INDOOR section, which is similar to a fan heater, but with cool tubes.
It also has switches and controls fitted (or sometimes remote)

Joined by a pair of small diameter copper pipes

The CONDENSER section, which is a box with a fan, pipes similar to the back of the freezer, and a larger compressor, and is installed outside.

INDOOR

CONTROLLER

OUT DOOR

The indoor units come in all shapes and sizes, some designed to fit on a wall, or ceiling, some hidden above a ceiling with air ducts connected, some half/in/half out of the ceiling.

The indoor unit and the outdoor unit (which includes the compressor), are powered by electricity. As a guide, air conditioning which has a cooling performance of 7KW, will consume about 2KW of electricity, when operating continuously.

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Heat Pumps and Energy Saving

A heat pump system, like an air conditioning system, has an indoor unit/interconnecting pipes/outdoor unit, but it also has a reversing valve which pumps the refrigerant the other way around the circuit. This “reverse cycle” operation makes the outdoor unit cool the surrounding air, and the indoor unit discharge its heat into the room. Whilst this may appear very elaborate, there are two very good reasons for having the heat pump option:

1. Most rooms which require cooling, also require heating.

2. A heat pump system capable of providing 7KW of heating in the room, consumes only 2KW of electricity – very cost effective on running costs. This means it is 2/7, or 28% of the running costs of an electric heater.

System Definition

Split Units Systems

A typical system consists of an indoor unit mounted at high level on a wall, connected by two small copper pipes to a weatherproof outdoor unit, which can stand on the ground, on wall brackets, or on a flat roof or balcony. Split units can also be cassette units. Cassette units sit within the ceiling space.

Multi Split System

Multi-Split system with one outdoor unit connected to 2, 3 or 4 indoor units, depending on the size. This enables several rooms to be controlled at one time, in either cooling operation or heating operation but not at the same time.

VRF System

Large modular systems for multi indoor unit application, providing individual control of cooling and/or heating, with variable capacity control for part load conditions, and energy recovery (KXR) between warm and cool areas of the building. Ideal for office buildings, hotels, large stores, etc.

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Key points to consider when installing air conditioning

- A place for the outdoor unit
- Drainage for condensate pump
- Access to the internal unit to outside unit
- Landlords approval
- An electric supply (230V, 16A minimum)
- Three internal spaces for larger installations

Post installation

On going Service and Maintenance
Air Conditioning systems are supplied with a one year warranty on parts. This warranty remains valid only in the event that the systems are included as part of a scheduled maintenance contract.
dxelectrica can provide a quotation for the maintenance of the systems upon completion of the project you are of course free to invite any Mitsubishi Accredited installer.

Maintenance is an essential way to ensure that your newly installed unit is looked after and works efficiently all year round. Both of our maintenance services also cover you for the F Gas Regulations.
You will also need to be aware of the air conditioning legislation—Please also see our fact sheets labelled air conditioning legislation (Fact Sheet 5) and F Gas regulations (Fact Sheet 1)

Our installation exclusions

- Any asbestos removal
- No builders work or drilling of holes over 50mm
- Suitable power supply

R22 Gas – The HFC gas is deemed a powerful greenhouse gas that can contribute to global warming if leaked into the atmosphere. As part of the F Gas regulations. R22 virgin gas can only be used up to Jan 2010. Reclaimed R22 gas and R22 units can be used only up to 2015 (although this may be altered to 2012 if a new directive is implemented.) Therefore if a R22 requires additional parts or gas this is subject to availability and a additional cost. More cost effective units are now available.