

F

an Coil Units

Fan coil unit (FCU) equipment has evolved steadily over the past few decades into a highly developed and effective means of providing air conditioning for a building. Recent legislation concerning energy reduction and carbon emissions further highlights the importance of correct design, installation, commissioning and maintenance of FCUs to achieve efficient air conditioning and avoid energy waste.

An FCU is a simple device consisting of a heating or cooling coil and fan and can be found in the heating, ventilation and air conditioning (HVAC) systems of many residential, commercial, and industrial buildings. Typically a fan coil unit is not connected to ductwork, but is used to control the temperature in the space where it is installed, or to serve multiple spaces.

Due to their simplicity, fan coil units are more economic to install than ducted or central heating systems with air handling units. However, they can be noisy because the fan is within the same space. An exposed fan coil unit may be wall mounted, freestanding or ceiling mounted, and will typically include an appropriate enclosure to protect and conceal the fan coil unit itself, with return air grille and diffuser to distribute the air.

A concealed fan coil unit will typically be installed within an accessible ceiling void or services zone. The return air grille and supply air diffuser will be ducted to and from the fan coil unit which provides flexibility for locating the grilles to suit the ceiling layout and/or the partition layout within a space. It is quite common for the return air not to be ducted and to use the ceiling void as a return air plenum.

The coil receives hot or cold water from a central plant, and removes heat from or adds heat to the air through heat transfer. Fan coil units can contain their own internal thermostat, or can be wired to operate with a remote control. In modern buildings with a Building Management System (BMS) the control of the fan coil unit will be by a digital outstation networked to the BMS and therefore controllable from a central point.

Fan coil units circulate hot or cold water through a coil in order to condition a space. The unit gets its hot or cold water from a central plant containing equipment for removing heat from the central building's closed-loop. The equipment used can consist of machines used to remove heat such as a chiller or a cooling tower and equipment for adding heat to the building's water such as a boiler.

The Chartered Institute of Building Service Engineers (CIBSE) www.cibse.org publishes a Technical Memorandum on Fan Coil Units which describes all aspects of FCU technology.