

# CPC COOPERATIVE PATENT CLASSIFICATION

## F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

### LIGHTING; HEATING

**F24 HEATING; RANGES; VENTILATING** (protecting plants by heating in gardens, orchards, or forests [A01G 13/06](#); baking ovens and apparatus [A21B](#); cooking devices other than ranges [A47J](#); forging [B21J](#), [B21K](#); specially adapted for vehicles, see the relevant subclasses of [B60](#) - [B64](#); combustion apparatus in general [F23](#); drying [F26B](#); ovens in general [F27](#); electric heating elements and arrangements [H05B](#))  
(NOTE omitted)

**F24F AIR-CONDITIONING, AIR-HUMIDIFICATION, VENTILATION, USE OF AIR CURRENTS FOR SCREENING** (devices for ventilating greenhouses [A01G](#) {air-conditioning systems for greenhouses [A01G 9/246](#)}; animal husbandry [A01K](#), e.g. controlling humidity in incubators [A01K 41/04](#); disinfecting or sterilising of air [A61L](#); devices for reconditioning breathing air in sealed rooms or for ventilating gas-proof shelters [A62B](#); filtering, washing or drying of gases [B01D](#); mixing gases with vapours or liquids in general [B01F 3/00](#); spraying [B05B](#), [B05D](#); removing dirt or fumes from areas where they are produced [B08B 15/00](#); ventilation, air-conditioning or cooling, specially adapted for vehicles, see the relevant vehicle places, e.g. [B60H](#), [B61D 27/00](#), {[B64D 13/00](#)}; production of ozone [C01B 13/10](#); chimneys or flues [E04F 17/02](#), [E04H 12/28](#), [F23J 11/00](#), [F23L 17/02](#); air ducts or conduits [E04F 17/04](#), [F16L](#); ventilation in doors or windows [E06B 7/02](#); fans, blowers [F04](#); noise-absorbing in pipes or pipe systems [F16L](#); tops for chimneys and ventilating shafts [F23L](#); cooling [F25](#); details of heat-exchange or heat-transfer apparatus, of general application [F28F](#); apparatus for generating ions to be introduced into non-enclosed gases, e.g. the atmosphere [H01T 23/00](#))

#### NOTES

- In this subclass:
  - air-humidification as auxiliary treatment in air-conditioning, i.e. in units wherein the air is also either cooled or heated, is covered by groups [F24F 1/00](#) or [F24F 3/14](#)
  - air-humidification *per se*, e.g. "room humidifiers", is covered by group [F24F 6/00](#)
- In this subclass, the following terms or expressions are used with the meanings indicated:
  - "air-conditioning" means the supply of air to rooms or spaces by means which provide for the treatment of the air in at least two of the following ways: heating - cooling - any other kind of treatment, e.g. humidification.

#### Air-conditioning

**1/00 Rooms units, e.g. receiving primary air from a central station {or with supply of heating or cooling agents from a central station, such as those applied to air-treatment systems included in [F24F 3/00](#) and [F24F 5/00](#) (arrangement or assembly of components for the primary treatment of air [F24F 11/08](#); mixing chambers for air [F24F 13/04](#))}**

1/0003 . {Split units}

1/0007 . {Fan coil units, e.g. using an evaporating refrigerant}

1/0011 . . {characterised by the air outlet}

1/0014 . . . {with two or more blow out openings}

1/0018 . . {characterised by the fan}

1/0022 . . . {Centrifugal or radial fan}

1/0025 . . . {Cross flow or tangential fan}

1/0029 . . . {Axial fan}

1/0033 . . . {comprising two or more fans}

2001/0037 . . {mounted in or under the ceiling}

2001/004 . . {mounted or standing on the floor}

2001/0044 . . {mounted at least partially under the floor or the outlet air is being distributed under the floor (HVAC with raised floors [F24F 2221/40](#))}

2001/0048 . . {mounted in or on the wall}

2001/0051 . . {Introducing outside air to rooms}

2001/0055 . . {Exhausting internal air from rooms}

1/0059 . {characterised by the heat exchanger}

2001/0062 . {receiving air from a central station}

2001/0066 . . {with air treatment in the central station and in the room unit}

2001/007 . . {with air treatment in the room unit}

2001/0074 . {receiving heat exchange fluid}

2001/0077 . . {the fluid entering and leaving the room unit as a liquid}

2001/0081	. . {the fluid entering the room unit as a liquid and leaving it as a gas}	1/46	. . Component arrangements in separate outdoor units
2001/0085	. {using the cooling effect of evaporating fluid either evaporating directly in the room air, in the air supplied to the room or in the outside air}	1/48	. . . characterised by air airflow, e.g. inlet or outlet airflow
2001/0088	. . {evaporating directly in the room air or the air supplied to the room}	1/50	. . . . with outlet air in upward direction
2001/0092	. . {evaporating in the outside air, e.g. evaporation heat being extracted from the room air by indirect heat exchange}	1/52	. . . . with inlet and outlet arranged on the same side, e.g. for mounting in a wall opening
2001/0096	. {Units supplying highly filtered air to a room or to a limited area within a room}	1/54	. . . . Inlet and outlet arranged on opposite sides
1/01	. in which secondary air is induced by injector action of the primary air (F24F 1/02 takes precedence; {arrangement or assembly of or components for the regulation of the air supply through a heat exchanger and the associated bypass for the secondary treatment of the air F24F 11/027; nozzle for induction unit F24F 13/26})	1/56	. . Casing or covers of separate outdoor units, e.g. fan guards
1/02	. self-contained, i.e. with all apparatus for treatment installed in a common casing {(arrangement or assembly of components for the primary treatment of air in independent units F24F 11/085)}	1/58	. . . Separate protective covers for outdoor units, e.g. solar guards, snow shields or camouflage
1/022	. . {Comprising a compressor cycle}	1/60	. . Arrangement or mounting of the outdoor unit
1/025	. . . {Portable}	1/62	. . . Wall-mounted
1/027	. . . {mounted in wall openings, e.g. in windows}	1/64	. . . Ceiling-mounted, e.g. below a balcony
1/04	. . Arrangements for portability	1/66	. . . under the floor level
1/06	. Separate outdoor units, e.g. outdoor unit to be linked to a separate room comprising a compressor and a heat exchanger	1/68	. . . Arrangement of multiple separate outdoor units
<b>NOTE</b>		<b>3/00</b>	<b>Air-conditioning systems in which conditioned primary air is supplied from one or more central stations to distributing units in the rooms or spaces where it may receive secondary treatment; Apparatus specially designed for such systems (room units F24F 1/00; construction of heat-exchangers F28 {F24F 3/044 takes precedence; arrangement or assembly of components for the primary treatment of air F24F 11/08})</b>
In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.		3/001	. {in which the air treatment in the central station takes place by means of a heat-pump or by means of a reversible cycle (regulation of heat-pump circuit in air treatment systems F25B 29/00; heat pumps F25B 13/00, F25B 29/00; reversible cycle for humidifying and drying air F24F 3/147)}
1/08	. . Compressors specially adapted for separate outdoor units	2003/003	. {with primary air treatment in the central station and subsequent secondary air treatment in air treatment units located in or near the rooms}
1/10	. . . Arrangement or mounting thereof	2003/005	. . {with a single air duct for transporting treated primary air from the central station to air treatment units located in or near the rooms}
1/12	. . . Vibration or noise prevention thereof	2003/006	. . {with two air ducts for separately transporting treated hot and cold primary air from the central station to air treatment units located in or near the rooms}
1/14	. . Heat exchangers specially adapted for separate outdoor units	2003/008	. {Supplying highly filtered air to a room or to a limited area within a room}
1/16	. . . Arrangement or mounting thereof	3/02	. characterised by the pressure or velocity of the primary air (F24F 3/044 takes precedence)
1/18	. . . characterised by their shape	3/04	. . operating with high pressure or high velocity
1/20	. . Electric components for separate outdoor units	3/044	. Systems in which all treatment is given in the central station, i.e. all-air systems
1/22	. . . Arrangement or mounting thereof	3/0442	. . {with volume control at a constant temperature}
1/24	. . . Cooling of electric components	3/0444	. . . {in which two airstreams are conducted from the central station via independent conduits to the space to be treated, of which one has a constant volume and a season-adapted temperature to compensate for the fluctuating heat transfer losses of the building, while the other varies in volume and is always cold in order to compensate for the interior fluctuations and variable solar heating effects, i.e. so-called "Dual Conduit System"; this system is similar to a high-pressure air-water system}
1/26	. . Refrigerant piping	2003/0446	. . {with a single air duct for transporting treated air from the central station to the rooms}
1/28	. . . for connecting several separate outdoor units		
1/30	. . . for use inside the separate outdoor units		
1/32	. . . for connecting the separate outdoor units to indoor units		
1/34	. . . Protection means thereof, e.g. covers for refrigerant pipes		
1/36	. . Drip trays for outdoor units		
1/38	. . Fan details of outdoor units, e.g. bell-mouth shaped inlets or fan mountings		
1/40	. . Vibration or noise prevention at outdoor units (for outdoor units compressors F24F 1/12)		
1/42	. . characterised by the use of the condensate, e.g. for enhanced cooling		
1/44	. . characterised by the use of internal combustion engines		

2003/0448	. . {with two air ducts for separately transporting treated hot and cold air from the central station to the rooms}	2003/1452	. . . . {heat extracted from the humid air for condensing is returned to the dried air}
3/048	. . with temperature control at constant rate of air-flow ( <a href="#">F24F 3/056</a> takes precedence)	2003/1458	. . . {using regenerators}
3/052	. . . Multiple duct systems, e.g. systems in which hot and cold air are supplied by separate circuits from the central station to mixing chambers in the spaces to be conditioned	2003/1464	. . . . {using rotating regenerators}
3/0522	. . . . {in which warm or cold air from the central station is delivered via individual pipes to mixing chambers in the space to be treated, the cold air/warm air ratio being controlled by a thermostat in the space concerned, i.e. so-called Dual-duct System}	3/147	. . . with both heat and humidity transfer between supplied and exhausted air
3/0525	. . . . {in which the air treated in the central station is reheated; this may take place near the central station upon arrival, in the space to be treated, in a branch pipe to zone in a multi-zone system or in the warm pipe in a system having separate supply conduits for warm and cold air}	3/153	. . . with subsequent heating, i.e. with the air, given the required humidity in the central station, passing a heating element to achieve the required temperature
3/0527	. . . . {in which treated air having differing temperatures is conducted through independent conduits from the central station to various spaces to be treated, i.e. so-called "multi-Zone" system; ( <a href="#">F24F 3/0525</a> takes precedence)}	3/16	. . by purification, e.g. by filtering; by sterilisation; by ozonisation {(ion sources <a href="#">H01J 27/02</a> , <a href="#">H01J 37/08</a> ; treatment rooms or enclosures for medical purposes <a href="#">A61G 10/00</a> )}
3/056	. . the air at least partially flowing over lighting fixtures, the heat of which is dissipated or used	3/1603	. . . {by filtering (arrangements or mounting of filters <a href="#">F24F 13/28</a> )}
3/06	. characterised by the arrangements for the supply of heat-exchange fluid for the subsequent treatment of primary air in the room units ( <a href="#">F24F 3/02</a> takes precedence {Arrangement or assembly of components for the regulation of the supply of heating or cooling media for the secondary treatment of air <a href="#">F24F 11/06</a> })	3/1607	. . . . {Clean air work stations, i.e. selected areas within a space to which filtered air is passed (means providing sterile air at a surgical operation table or area <a href="#">A61G 13/108</a> )}
3/065	. . {with a plurality of evaporators or condensers}	3/161	. . . . {Clean rooms, i.e. enclosed spaces in which a uniform flow of filtered air is distributed (air distribution by perforated walls <a href="#">F24F 7/10</a> ; dust-free rooms or enclosures applicable solely to laboratory purposes <a href="#">B01L 1/04</a> )}
3/08	. . with separate supply and return lines for hot and cold heat-exchange fluids {i.e. so-called "4-conduit" system}	2003/1614	. . . . {using a dry filtering element}
3/10	. . with separate supply lines and common return line for hot and cold heat-exchange fluids {i.e. so-called "3-conduit" system}	2003/1617	. . . . {using wet filtering methods}
3/12	. characterised by the treatment of the air otherwise than by heating and cooling ( <a href="#">F24F 3/02</a> , <a href="#">F24F 3/06</a> take precedence, apparatus for the individual treatment, see the appropriate subclasses for the treatments)	2003/1621	. . . . {using chemical filtering methods}
3/14	. . by humidification; by dehumidification	2003/1625	. . . . . {using active carbon}
3/1405	. . . {in which the humidity of the air is exclusively affected by contact with the evaporator of a closed-circuit cooling system or heat pump circuit}	2003/1628	. . . . . {using catalytic reaction}
3/1411	. . . {by absorbing or adsorbing water, e.g. using an hygroscopic desiccant}	2003/1632	. . . . . {using vortex}
3/1417	. . . . {with liquid hygroscopic desiccants}	2003/1635	. . . . . {using high voltage}
3/1423	. . . . {with a moving bed of solid desiccants, e.g. a rotary wheel supporting solid desiccants}	2003/1639	. . . . . {with filter cleaning}
3/1429	. . . . {alternatively operating a heat exchanger in an absorbing/adsorbing mode and a heat exchanger in a regeneration mode}	2003/1642	. . . . . {of pollen, to avoid allergies}
2003/1435	. . . {comprising semi-permeable membrane}	2003/1646	. . . . . {of tobacco smoke}
2003/144	. . . {by dehumidification only}	2003/165	. . . . . {of ozone}
2003/1446	. . . . {by condensing}	2003/1653	. . . . . {using biofilters, plants or microorganisms}
		2003/1657	. . . . . {the air pollution of a street or a city}
		3/166	. . . {using electric means, e.g. applying electrostatic field (using thermo-electric means <a href="#">F24F 5/0042</a> )}
		2003/1664	. . . {by sterilisation}
		2003/1667	. . . . {using UV light}
		2003/1671	. . . . {using ozone}
		2003/1675	. . . . {using a sterilising medium}
		2003/1678	. . . . {to avoid the Legionella bacteria}
		2003/1682	. . . {by ionisation}
		2003/1685	. . . {by ozonisation}
		2003/1689	. . . {by odourising}
		2003/1692	. . . {by adding oxygen}
		2003/1696	. . . {by removing radon}
		5/00	<b>Air-conditioning systems or apparatus not covered by <a href="#">F24F 1/00</a> or <a href="#">F24F 3/00</a> {, e.g. using solar heat; combined with household units such as an oven or water heater}</b>
		5/0003	. {Exclusively-fluid systems}
		5/0007	. {cooling apparatus specially adapted for use in air-conditioning (self-contained room units <a href="#">F24F 1/02</a> ; <a href="#">F24F 5/0046</a> takes precedence; air-humidification <a href="#">F24F 6/00</a> )}
		5/001	. . {Compression cycle type}
		5/0014	. . {using absorption or desorption}

5/0017	. . {using cold storage bodies, e.g. ice}	6/16	. . using rotating elements
5/0021	. . . {using phase change material [PCM] for storage}	6/18	. by injection of steam into the air
2005/0025	. . . {using heat exchange fluid storage tanks}	<b>7/00</b>	<b>Ventilation{, e.g. by means of wall-ducts; systems using window or roof apertures}</b>
2005/0028	. . . {using hydridable metals as energy storage media}	2007/001	. {with exhausting air ducts}
2005/0032	. . . {Systems storing energy during the night}	2007/002	. . {Junction box, e.g. for ducts from kitchen, toilet or bathroom}
5/0035	. . {using evaporation}	2007/003	. {using vent ports in a wall}
2005/0039	. . {using a cryogen, e.g. CO <sub>2</sub> liquid or N <sub>2</sub> liquid}	2007/004	. {Natural ventilation using convection}
5/0042	. {characterised by the application of thermo-electric units or the Peltier effect (refrigerators and cooling systems using magnetic or electrical effects in general <a href="#">F25B 21/02</a> ; for semi-conductors <a href="#">H01L 23/38</a> ; thermobatteries or thermogenerators <a href="#">H01L 35/00</a> )}	2007/005	. {Cyclic ventilation, e.g. alternating air supply volume or reversing flow direction ( <a href="#">F24F 2012/008</a> takes precedence when there is heat exchange between exhaust and supply air)}
5/0046	. {using natural energy, e.g. solar energy, energy from the ground}	7/007	. with forced flow (using ducting systems <a href="#">F24F 7/06</a> )
5/005	. . {using energy from the ground by air circulation, e.g. "Canadian well"}	7/013	. . using wall or window fans, displacing air through the wall or window {possibly through a grill or through a shutter or flap (with heating elements <a href="#">F24F 3/00</a> - <a href="#">F24F 3/14</a> ; ventilators with provision for recirculating air or piping it away <a href="#">F24F 7/06</a> ; room ventilators, portable ventilators <a href="#">F04D 25/08</a> )}
2005/0053	. . {receiving heat-exchange fluid from a well}	7/02	. Roof ventilation ( <a href="#">F24F 7/007</a> takes precedence; ventilation of roof coverings <a href="#">E04D</a> )
2005/0057	. . {receiving heat-exchange fluid from a closed circuit in the ground}	7/025	. . {with forced air circulation by means of a built-in ventilator}
2005/006	. . {receiving heat-exchange fluid from the drinking or sanitary water supply circuit}	7/04	. with ducting systems {also by double walls; with natural circulation ( <a href="#">F24F 7/02</a> takes precedence)}
2005/0064	. . {using solar energy}	7/06	. . with forced air circulation, e.g. by fan {positioning of a ventilator in or against a conduit (ventilators <a href="#">per se</a> <a href="#">F04D 25/08</a> )}
2005/0067	. . . {with photovoltaic panels}	7/065	. . . {fan combined with single duct; mounting arrangements of a fan in a duct (construction of fans <a href="#">F04D</a> )}
5/0071	. {adapted for use in covered swimming pools}	7/08	. . . with separate ducts for supplied and exhausted air {with provisions for reversal of the input and output systems}
5/0075	. {Systems using thermal walls, e.g. double window (double windows <a href="#">per se</a> <a href="#">E06B</a> )}	7/10	. . . with air supply, or exhaust, through perforated wall, floor or ceiling, (outlet members for directing or distributing air {into rooms or spaces, e.g. ceiling air-diffusers} <a href="#">F24F 13/06</a> )
2005/0078	. . {Double windows}	<b>9/00</b>	<b>Use of air currents for screening, e.g. air curtain (air curtains for vehicles <a href="#">B60J 9/04</a>)</b>
2005/0082	. . {Facades}	2009/002	. {Room dividers}
5/0085	. {Systems using a compressed air circuit ( <a href="#">B64D 13/00</a> , <a href="#">B60H</a> take precedence)}	2009/005	. {combined with a door}
5/0089	. {Systems using radiation from walls or panels}	2009/007	. {using more than one jet or band in the air curtain}
5/0092	. . {ceilings, e.g. cool ceilings}	<b>Common features or details</b>	
5/0096	. {combined with domestic apparatus}	<b>11/00</b>	<b>Control or safety systems or apparatus ((extinguishing or preventing fire <a href="#">A62C 3/14</a>); control valves <a href="#">per se</a> <a href="#">F16K</a>; humidity control <a href="#">G05D 22/00</a>)</b>
<b>6/00</b>	<b>Air-humidification, e.g. for increasing comfort in living spaces by "room humidifiers" {cooling by humidification}</b>	11/0001	. {for ventilation ( <a href="#">F24F 11/0009</a> takes precedence)}
2006/001	. {using a water curtain}	2011/0002	. . {for admittance of outside air}
2006/003	. {using a decorative fountain}	2011/0004	. . . {to create overpressure in a room}
2006/005	. {using plants}	2011/0005	. . . {to create underpressure in a room, keeping contamination inside}
2006/006	. {with water treatment}	2011/0006	. . {using low temperature external supply air to assist cooling}
2006/008	. {Air-humidifier with water reservoir}	11/0008	. {for air-humidification ( <a href="#">F24F 11/0009</a> takes precedence)}
6/02	. by evaporation of water in the air {(humidifiers specially adapted for radiators <a href="#">see</a> <a href="#">F24D 19/008</a> )}	11/0009	. {Electrical control or safety systems or apparatus}
6/025	. . {using electrical heating means ( <a href="#">F24F 6/105</a> takes precedence)}	11/001	. . {Control systems or circuits characterised by their inputs, e.g. using sensors}
6/04	. . using stationary unheated wet elements		
6/043	. . . {with self-sucking action, e.g. wicks (humidifiers for radiators <a href="#">F24D 19/008</a> )}		
2006/046	. . . {with a water pump}		
6/06	. . using moving unheated wet elements		
2006/065	. . . {using slowly rotating discs for evaporation}		
6/08	. . using heated wet elements		
6/10	. . . heated electrically		
6/105	. . . . {using the heat of lamps}		
6/12	. by forming water dispersions in the air		
6/14	. . using nozzles (nozzles <a href="#">per se</a> , spraying in general <a href="#">B05B</a> )		
2006/143	. . . {using pressurised air for spraying}		
2006/146	. . . {using pressurised water for spraying}		



11/0012	. . . {Air temperature}	2011/0087	. . . {for defrosting}
2011/0013	. . . . {of the outside air}	2011/0089	. . . . {an outdoor unit}
11/0015	. . . {Air humidity}	2011/009	. . . . {an indoor unit}
2011/0016	. . . . {of the outside air}	2011/0091	. . . {Display or monitoring devices}
11/0017	. . . {Air quality properties}	2011/0093	. . . . {Devices monitoring filter performance}
2011/0019	. . . . {of the outside air}	2011/0094	. . . . {for computing energy costs}
2011/002	. . . . {Odor concentration}	2011/0095	. . . {Devices triggered by fire, excessive heat or smoke}
2011/0021	. . . . {Ozone concentration}	2011/0097	. . . . {opening air passage in case of fire, excessive heat or smoke}
2011/0023	. . . . {Concentration of air-borne particles}	2011/0098	. . . . {closing air passage in case of fire, excessive heat or smoke}
2011/0024	. . . . . {Tobacco smoke}	11/02	. Arrangements or mounting of control or safety devices
2011/0026	. . . . {Carbon dioxide concentration}	11/022	. . {for the control of flow conditions, e.g. pressure, velocity}
2011/0027	. . . . {Carbon monoxide concentration}	11/025	. . . {characterised by velocity control}
2011/0028	. . . . {Oxygen concentration}	11/027	. . {exclusively for controlling the air supply to a heat-exchanger or the ancillary bypass (F24F 11/08 takes precedence)}
2011/003	. . . . {Radon concentration}	11/04	. . solely for controlling the rate of air-flow (F24F 11/08 takes precedence)
2011/0031	. . . . {Electric charge}	11/043	. . . {dependent on air-current or wind pressure (F24F 11/04 takes precedence)}
2011/0032	. . . . {Volatile organic compound [VOC]}	11/047	. . . to constant value
11/0034	. . . {Occupancy}	11/053	. . . by means responsive to temperature
2011/0035	. . . . {Position of occupants}	11/06	. . solely for controlling the supply of heating or cooling fluids for secondary treatment (F24F 11/08 takes precedence)
2011/0036	. . . . {Activity of occupants}	11/08	. . for controlling the primary treatment of air
2011/0038	. . . {Air velocity}	11/085	. . . {in independent units}
2011/0039	. . . . {of the outside air}	12/00	<b>Use of energy recovery systems in air conditioning, ventilation or screening (with both heat and humidity transfer between supplied and exhausted air F24F 3/147; heat-exchange in general F28)</b>
2011/0041	. . . {Pressure}	12/001	. {with heat-exchange between supplied and exhausted air}
2011/0042	. . . . {Air pressure}	12/002	. . {using an intermediate heat-transfer fluid}
2011/0043	. . . . {Heat exchange fluid pressure}	12/003	. . . {using a heat pump}
2011/0045	. . . {Heat exchange fluid temperature}	2012/005	. . . {using heat pipes}
2011/0046	. . . {Load}	12/006	. . {using an air-to-air heat exchanger (F24F 12/002 takes precedence)}
2011/0047	. . . {Energy consumption}	2012/007	. . {using a by-pass for bypassing the heat-exchanger}
2011/0049	. . . {Sunlight}	2012/008	. . {cyclic routing supply and exhaust air (F24F 2007/005 takes precedence when there is no heat exchange)}
2011/005	. . . {Artificial light}	13/00	<b>Details common to, or for air-conditioning, air-humidification, ventilation or use of air currents for screening</b>
2011/0052	. . . {Malfunction}	13/02	. Ducting arrangements
2011/0053	. . . {Sound}	13/0209	. . {characterised by their connecting means, e.g. flanges}
2011/0054	. . . {Condensate}	13/0218	. . {Flexible soft ducts, e.g. ducts made of permeable textiles}
2011/0056	. . . {Damper state, e.g. open or closed}	13/0227	. . {using parts of the building, e.g. air ducts inside the floor, walls or ceiling of a building (air ducts or channels of buildings E04F 17/04)}
2011/0057	. . . {using feedback from user}	13/0236	. . {with ducts including air distributors, e.g. air collecting boxes with at least three openings}
2011/0058	. . . {using weather information or forecast}	13/0245	. . {Manufacturing or assembly of air ducts; Methods therefor}
11/006	. . {Control systems or circuits characterised by type of control, internal processing or calculations, e.g. using fuzzy logic adaptative control or estimating values}		
2011/0061	. . . {using electronic processing}		
2011/0063	. . . . {using pre-stored data}		
2011/0064	. . . . {for selecting an operative mode}		
2011/0065	. . . . . {Sleeping mode}		
2011/0067	. . . {using one central controller connected to several sub-controllers}		
2011/0068	. . . {using remote control device}		
2011/0069	. . . . {using a telephone line}		
2011/0071	. . . . {using internet communication}		
2011/0072	. . . . {for programming}		
2011/0073	. . . {using timers}		
2011/0075	. . . {for electric energy efficiency or saving}		
11/0076	. . {Control systems or circuits characterised by their outputs, e.g. using a variable flow fan}		
11/0078	. . . {controlling the angle of the air stream}		
11/0079	. . . {controlling the speed of ventilators}		
11/008	. . . {controlling the supply of heat-exchange fluid}		
2011/0082	. . . . {using a valve}		
2011/0083	. . . . {using a variable flow pump}		
2011/0084	. . . . {monitoring refrigerant leakage}		
11/0086	. . {Control systems or circuits characterised by other control features, e.g. display or monitoring devices}		

13/0254	. . {characterised by their mounting means, e.g. supports}	2013/1493	. . . . {using an elastic membrane}
13/0263	. . {Insulation for air ducts}	13/15	. . . . with parallel simultaneously tiltable lamellae
13/0272	. . {Modules for easy installation or transport}	13/16	. . . built up of parallelly-movable plates
13/0281	. . {Multilayer duct}	13/18	. . specially adapted for insertion in flat panels, e.g. in door or window-pane
13/029	. . {Duct comprising an opening for inspection, e.g. manhole}	13/20	. Casings or covers
13/04	. . Air mixing units (F24F 13/06 takes precedence; mixing gases in general B01F 3/02 {room units for the mixing of pre-treated primary air with recirculated or room air F24F 1/00})	2013/202	. . {Mounting a compressor unit therein}
13/06	. . Outlets for directing or distributing air into rooms or spaces, e.g. ceiling air diffuser	2013/205	. . {Mounting a ventilator fan therein}
13/0604	. . . {integrated in or forming part of furniture}	2013/207	. . {with control knobs; Mounting controlling members or control units therein}
2013/0608	. . . {Perforated ducts}	13/22	. Means for preventing condensation or evacuating condensate {(for refrigerating devices in general F25D 21/14)}
2013/0612	. . . {Induction nozzles without swirl means}	2013/221	. . {to avoid the formation of condensate, e.g. dew}
2013/0616	. . . {Outlets that have intake openings}	13/222	. . {for evacuating condensate}
13/062	. . . having one or more bowls or cones diverging in the flow direction (F24F 13/072 takes precedence)	13/224	. . . {in a window-type room air conditioner}
13/065	. . . formed as cylindrical or spherical bodies which are rotatable (F24F 13/072 takes precedence)	2013/225	. . . {by evaporating the condensate in the cooling medium, e.g. in air flow from the condenser}
13/068	. . . formed as perforated walls, ceilings or floors (F24F 13/078 takes precedence)	2013/227	. . . {Condensate pipe for drainage of condensate from the evaporator}
13/072	. . . of elongated shape, e.g. between ceiling panels	2013/228	. . {Treatment of condensate, e.g. sterilising}
13/075	. . . having parallel rods or lamellae directing the outflow, e.g. the rods or lamellae being individually adjustable (F24F 13/072 takes precedence)	13/24	. Means for preventing or suppressing noise {(in perforated ceilings F24F 7/10)}
13/078	. . . combined with lighting fixtures (air-treatment systems with air-flow over lighting fixtures F24F 3/056)	2013/242	. . {Sound-absorbing material}
13/08	. Air-flow control members, e.g. louvres, grilles, flaps, guide plates (F24F 13/06 takes precedence; roof ventilators F24F 7/02)	2013/245	. . {using resonance}
13/081	. . {for guiding air around a curve}	2013/247	. . {Active noise-suppression}
13/082	. . {Grilles, registers or guards}	13/26	. Arrangements for air-circulation by means of induction, e.g. by fluid coupling or thermal effect
13/084	. . . {with mounting arrangements, e.g. snap fasteners for mounting to the wall or duct}	13/28	. Arrangement or mounting of filters
13/085	. . . {including an air filter}	13/30	. Arrangement or mounting of heat-exchangers
2013/087	. . . {using inflatable bellows}	13/32	. Supports for air-conditioning, air-humidification or ventilation units
2013/088	. . . {Air-flow straightener}		
13/10	. . movable, e.g. damper (F24F 13/18 takes precedence; valves in general F16K)		
13/105	. . . {composed of diaphragms or segments}		
13/12	. . . built up of sliding members		
13/14	. . . built up of tilting members, e.g. louvre		
13/1406	. . . . {characterised by sealing means}		
13/1413	. . . . {using more than one tilting member, e.g. with several pivoting blades (F24F 13/15 takes precedence)}		
13/142	. . . . {using pivoting blades with intersecting axles}		
13/1426	. . . . {characterised by actuating means}		
2013/1433	. . . . . {with electric motors}		
2013/144	. . . . . {with thermoactuators}		
2013/1446	. . . . . {with gearings}		
2013/1453	. . . . . {with cables, e.g. bowden cables}		
2013/146	. . . . . {with springs}		
2013/1466	. . . . . {with pneumatic means}		
2013/1473	. . . . . {with cams or levers}		
2013/148	. . . . . {with magnets}		
13/1486	. . . . {characterised by bearings, pivots or hinges}		
		<b>2203/00</b>	<b>Devices or apparatus used for air treatment</b>
		2203/02	. System or Device comprising a heat pump as a subsystem, e.g. combined with humidification/dehumidification, heating, natural energy or with hybrid system
		2203/021	. . Compression cycle
		2203/023	. . . with turbine used for expansion
		2203/025	. . . with turbine for compression
		2203/026	. . Absorption - desorption cycle
		2203/028	. . . using a solid absorbing medium
		2203/10	. Rotary wheel
		2203/1004	. . Bearings or driving means
		2203/1008	. . comprising a by-pass channel
		2203/1012	. . Details of the casing or cover
		2203/1016	. . combined with another type of cooling principle, e.g. compression cycle
		2203/102	. . combined with a heat pipe
		2203/1024	. . combined with a humidifier
		2203/1028	. . combined with a spraying device
		2203/1032	. . Desiccant wheel
		2203/1036	. . . Details
		2203/104	. . Heat exchanger wheel
		2203/1044	. . performing other movements, e.g. sliding
		2203/1048	. . Geometric details
		2203/1052	. . comprising a non-axial air flow
		2203/1056	. . comprising a reheater
		2203/106	. . . Electrical reheater
		2203/1064	. . . Gas fired reheater

- 2203/1068 . . comprising one rotor
- 2203/1072 . . comprising two rotors
- 2203/1076 . . comprising three rotors
- 2203/108 . . comprising rotor parts shaped in sector form
- 2203/1084 . . comprising two flow rotor segments
- 2203/1088 . . comprising three flow rotor segments
- 2203/1092 . . comprising four flow rotor segments
- 2203/1096 . . comprising sealing means
- 2203/12 . . Dehumidifying or humidifying belt type

#### **Air-conditioning**

- 2221/00 Details or features not otherwise provided for**
- 2221/02 . combined with lighting fixtures
- 2221/08 . Installation or apparatus for use in sport halls, e.g. swimming pools, ice rings
- 2221/10 . combined with, or integrated in, furniture
- 2221/12 . transportable
- 2221/125 . . mounted on wheels
- 2221/14 . mounted on the ceiling
- 2221/16 . mounted on the roof
- 2221/17 . mounted in a wall
- 2221/18 . combined with domestic apparatus
- 2221/183 . . combined with a hot-water boiler
- 2221/186 . . combined with a fireplace
- 2221/20 . mounted in or close to a window
- 2221/22 . Cleaning ducts or apparatus
- 2221/225 . . using a liquid
- 2221/26 . improving the aesthetic appearance
- 2221/28 . using the Coanda effect
- 2221/30 . comprising fireproof material
- 2221/32 . preventing human errors during the installation, use or maintenance, e.g. goofy proof
- 2221/34 . Heater, e.g. gas burner, electric air heater
- 2221/36 . Modules, e.g. for an easy mounting or transport
- 2221/38 . Personalised air distribution
- 2221/40 . HVAC with raised floors
- 2221/42 . Mobile autonomous air conditioner, e.g. robots
- 2221/44 . Protection from terrorism or theft
- 2221/46 . Air flow forming a vortex
- 2221/48 . HVAC for a wine cellar
- 2221/50 . HVAC for high buildings, e.g. thermal or pressure differences
- 2221/52 . Weather protecting means, e.g. against wind, rain or snow
- 2221/54 . Heating and cooling, simultaneously or alternatively
- 2221/56 . Cooling being a secondary aspect