CPC  COOPERATIVE PATENT CLASSIFICATION

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

LIGHTING; HEATING

F24  HEATING; RANGES; VENTILATING
(NOTE omitted)

F24F  AIR-CONDITIONING; AIR-HUMIDIFICATION; VENTILATION; USE OF AIR CURRENTS FOR SCREENING (removing dirt or fumes from areas where they are produced B08B 15/00; vertical ducts for carrying away waste gases from buildings E04F 17/02; tops for chimneys or ventilating shafts, terminals for flues F23L 17/02)

NOTES
1. 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.
2. In this subclass, the following terms or expressions are used with the meanings indicated:
   • “air-conditioning” means the supply of air to or the treatment of air in rooms or spaces by means of cooling or a combination of cooling and a further kind of air treatment, e.g. humidification, heating or air purification;
   • “ventilation” means the supply of air to, or its extraction from, rooms or spaces, and systems for circulating air within rooms or spaces, but does not cover the mere treatment of air being supplied to, extracted from, or circulated within, rooms or spaces.
3. In this subclass, control or safety arrangements are classified in F24F 11/00. In order to indicate the type of air-treatment system in which these arrangements are used, further classification may be made in main groups F24F 1/00 - F24F 9/00.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00 Room units for air-conditioning, e.g. separate or self-contained units or units receiving primary air from a central station

1/0003 . . . characterised by a split arrangement, wherein parts of the air-conditioning system, e.g. evaporator and condenser, are in separately located units

1/0007 . . . Indoor units, e.g. fan coil units (self-contained units F24F 1/02)

WARNING

All groups listed in this Warning should be considered in order to perform a complete search.

1/00073 . . . [comprising a compressor in the indoor unit housing]

WARNING
Group F24F 1/00073 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/00073 should be considered in order to perform a complete search.

1/00075 . . . [receiving air from a central station]

WARNING
Group F24F 1/00075 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/00075 should be considered in order to perform a complete search.
[receiving heat exchange fluid entering and leaving the unit as a liquid]

**WARNING**

Group F24F 1/00077 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/00077 should be considered in order to perform a complete search.

1/0011 . . . characterised by air outlets
1/0014 . . . having two or more outlet openings
1/0018 . . . characterised by fans (with secondary air induced by injector action of the primary air F24F 1/01)
1/0022 . . . Centrifugal or radial fans
1/0025 . . . Cross-flow or tangential fans
1/0029 . . . Axial fans
1/0033 . . . having two or more fans
1/0035 . . . characterised by introduction of outside air to the room

**WARNING**

Group F24F 1/0035 is incomplete pending reclassification of documents from group F24F 1/0007. Group F24F 1/0035 is also impacted by reclassification into group F24F 1/0038.

Groups F24F 1/0035, F24F 1/0007 and F24F 1/0038 should be considered in order to perform a complete search.

1/0038 . . . in combination with simultaneous exhaustion of inside air

**WARNING**

Group F24F 1/0038 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0035 and F24F 1/0041.

All groups listed in this Warning should be considered in order to perform a complete search.

1/0041 . . . characterised by exhaustion of inside air from the room (in combination with simultaneous introduction of outside air F24F 1/0038)

**WARNING**

Group F24F 1/0041 is incomplete pending reclassification of documents from group F24F 1/0007.

Group F24F 1/0041 is also impacted by reclassification into group F24F 1/0038.

Groups F24F 1/0041, F24F 1/0007 and F24F 1/0038 should be considered in order to perform a complete search.

1/0043 . . . characterised by mounting arrangements

**WARNING**

Group F24F 1/0043 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0043 should be considered in order to perform a complete search.

1/0047 . . . mounted in the ceiling or at the ceiling

**WARNING**

Group F24F 1/0047 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0047 should be considered in order to perform a complete search.

1/005 . . . mounted on the floor; standing on the floor

**WARNING**

Group F24F 1/005 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/005 should be considered in order to perform a complete search.

1/0053 . . . mounted at least partially below the floor; with air distribution below the floor

**WARNING**

Group F24F 1/0053 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0053 should be considered in order to perform a complete search.

1/0057 . . . mounted in or on a wall

**WARNING**

Group F24F 1/0057 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0057 should be considered in order to perform a complete search.

1/0059 . . . characterised by heat exchangers

**WARNING**

Group F24F 1/0059 is incomplete pending reclassification of documents from group F24F 1/0007.

Group F24F 1/0059 is also impacted by reclassification into groups F24F 1/0063, F24F 1/0067, F24F 1/0068, F24F 1/032, F24F 1/0323, F24F 1/0325 and F24F 1/0326.

All groups listed in this Warning should be considered in order to perform a complete search.
by the mounting or arrangement of the heat exchangers

**WARNING**

Group F24F 1/0063 is incomplete pending reclassification of documents from groups F24F 1/0007 and F24F 1/0059.

Groups F24F 1/0007, F24F 1/0059 and F24F 1/0063 should be considered in order to perform a complete search.

by the shape of the heat exchangers or of parts thereof, e.g. of their fins

**WARNING**

Group F24F 1/0067 is incomplete pending reclassification of documents from groups F24F 1/0007 and F24F 1/0059.

Groups F24F 1/0007, F24F 1/0059 and F24F 1/0067 should be considered in order to perform a complete search.

characterised by the arrangement of refrigerant piping outside the heat exchanger within the unit casing

**WARNING**

Group F24F 1/0068 is incomplete pending reclassification of documents from groups F24F 1/0007 and F24F 1/0059.

Groups F24F 1/0007 and F24F 1/0059 and F24F 1/0068 should be considered in order to perform a complete search.

with means for purifying supplied air (perfuming or deodorising means F24F 1/008)

**WARNING**

Group F24F 1/0071 is incomplete pending reclassification of documents from group F24F 1/0007.

Group F24F 1/0071 is also impacted by reclassification into groups F24F 1/0007, F24F 1/00076, F24F 1/00328, F24F 1/0035 and F24F 1/00353.

All groups listed in this Warning should be considered in order to perform a complete search.

characterised by the mounting or arrangement of filters

**WARNING**

Group F24F 1/0073 is incomplete pending reclassification of documents from groups F24F 1/0007 and F24F 1/0071.

Groups F24F 1/0007, F24F 1/0071 and F24F 1/0073 should be considered in order to perform a complete search.

by electric means, e.g. ionisers or electrostatic separators

**WARNING**

Group F24F 1/0076 is incomplete pending reclassification of documents from groups F24F 1/0007 and F24F 1/0071.

Groups F24F 1/0007, F24F 1/0071 and F24F 1/0076 should be considered in order to perform a complete search.

with perfuming or deodorising means

**WARNING**

Group F24F 1/008 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/008 should be considered in order to perform a complete search.

with dehumidification means

**WARNING**

Group F24F 1/0083 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0083 should be considered in order to perform a complete search.

with humidification means

**WARNING**

Group F24F 1/0087 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0087 should be considered in order to perform a complete search.

characterised by heating arrangements (characterised by heat exchangers F24F 1/0059)

**WARNING**

Group F24F 1/009 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/009 should be considered in order to perform a complete search.

with additional radiant heat-discharging elements, e.g. electric heaters

**WARNING**

Group F24F 1/0093 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0093 should be considered in order to perform a complete search.
using thermoelectric or thermomagnetic means, e.g. Peltier elements

**WARNING**

Group F24F 1/0097 is incomplete pending reclassification of documents from group F24F 1/0007.

Groups F24F 1/0007 and F24F 1/0097 should be considered in order to perform a complete search.

1/01 . . . in which secondary air is induced by injector action of the primary air

**WARNING**


All groups listed in this Warning should be considered in order to perform a complete search.

1/02 . . . Self-contained room units for air-conditioning, i.e. with all apparatus for treatment installed in a common casing

**WARNING**

Group F24F 1/02 is incomplete pending reclassification of documents from group F24F 1/0097.

Groups F24F 1/0097 and F24F 1/0097 should be considered in order to perform a complete search.

1/022 . . . comprising a compressor cycle

1/027 . . . mounted in wall openings, e.g. in windows

1/028 . . . characterised by air supply means, e.g. fan casings, internal dampers or ducts (with secondary air induced by injector action of the primary air F24F 1/01)

**WARNING**

Group F24F 1/028 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/028 should be considered in order to perform a complete search.

1/0284 . . . with horizontally arranged fan axis

**WARNING**

Group F24F 1/0284 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/0284 should be considered in order to perform a complete search.

1/0287 . . . with vertically arranged fan axis

**WARNING**

Group F24F 1/0287 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/0287 should be considered in order to perform a complete search.

1/029 . . . characterised by the layout or mutual arrangement of components, e.g. of compressors or fans

**WARNING**

Group F24F 1/029 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/029 should be considered in order to perform a complete search.

1/03 . . . characterised by mounting arrangements

**WARNING**

Group F24F 1/03 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/03 should be considered in order to perform a complete search.

1/031 . . . penetrating a wall or window

**WARNING**

Group F24F 1/031 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/031 should be considered in order to perform a complete search.

1/0314 . . . mounted on a wall

**WARNING**

Group F24F 1/0314 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/0314 should be considered in order to perform a complete search.

1/0317 . . . suspended from the ceiling

**WARNING**

Group F24F 1/0317 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/0317 should be considered in order to perform a complete search.

1/032 . . . characterised by heat exchangers

**WARNING**

Group F24F 1/032 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0059 and F24F 1/02.

All groups listed in this Warning should be considered in order to perform a complete search.
1/0323 . . . by the mounting or arrangement of the heat exchangers

**WARNING**

Group F24F 1/0323 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0059 and F24F 1/02.
All groups listed in this Warning should be considered in order to perform a complete search.

1/0325 . . . by the shape of the heat exchangers or of parts thereof, e.g. of their fins

**WARNING**

Group F24F 1/0325 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0059 and F24F 1/02.
All groups listed in this Warning should be considered in order to perform a complete search.

1/0326 . . . characterised by the arrangement of refrigerant piping outside the heat exchanger within the unit casing

**WARNING**

Group F24F 1/0326 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0059 and F24F 1/02.
All groups listed in this Warning should be considered in order to perform a complete search.

1/0328 . . . with means for purifying supplied air (perfuming or deodorising means F24F 1/0355)

**WARNING**

Group F24F 1/0328 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0059 and F24F 1/02.
All groups listed in this Warning should be considered in order to perform a complete search.

1/035 . . . characterised by the mounting or arrangement of filters

**WARNING**

Group F24F 1/035 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0071 and F24F 1/02.
All groups listed in this Warning should be considered in order to perform a complete search.

1/0353 . . . by electric means, e.g. ionisers or electrostatic separators

**WARNING**

Group F24F 1/0353 is incomplete pending reclassification of documents from groups F24F 1/0007, F24F 1/0071 and F24F 1/02.
All groups listed in this Warning should be considered in order to perform a complete search.

1/0355 . . . with perfuming or deodorising means

**WARNING**

Group F24F 1/0355 is incomplete pending reclassification of documents from group F24F 1/02.
Groups F24F 1/02 and F24F 1/0355 should be considered in order to perform a complete search.

1/0358 . . . with dehumidification means

**WARNING**

Group F24F 1/0358 is incomplete pending reclassification of documents from group F24F 1/02.
Groups F24F 1/02 and F24F 1/0358 should be considered in order to perform a complete search.

1/037 . . . with humidification means

**WARNING**

Group F24F 1/037 is incomplete pending reclassification of documents from group F24F 1/02.
Groups F24F 1/02 and F24F 1/037 should be considered in order to perform a complete search.

1/0373 . . . characterised by heating arrangements (characterised by heat exchangers F24F 1/032)

**WARNING**

Group F24F 1/0373 is incomplete pending reclassification of documents from group F24F 1/02.
Groups F24F 1/02 and F24F 1/0373 should be considered in order to perform a complete search.

1/0375 . . . with additional radiant heat-discharging elements, e.g. electric heaters

**WARNING**

Group F24F 1/0375 is incomplete pending reclassification of documents from group F24F 1/02.
Groups F24F 1/02 and F24F 1/0375 should be considered in order to perform a complete search.

1/0378 . . . using thermoelectric or thermomagnetic means, e.g. Peltier elements

**WARNING**

Group F24F 1/0378 is incomplete pending reclassification of documents from group F24F 1/02.
Groups F24F 1/02 and F24F 1/0378 should be considered in order to perform a complete search.
1/039 . . using water to enhance cooling, e.g. spraying onto condensers

**WARNING**

Group F24F 1/039 is incomplete pending reclassification of documents from group F24F 1/02.

Groups F24F 1/02 and F24F 1/039 should be considered in order to perform a complete search.

1/04 . . Arrangements for portability

1/06 . . Separate outdoor units, e.g. outdoor unit to be linked to a separate room comprising a compressor and a heat exchanger

**NOTE**

In this group, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

1/08 . . Compressors specially adapted for separate outdoor units

1/10 . . . Arrangement or mounting thereof

1/12 . . . Vibration or noise prevention thereof

1/14 . . . Heat exchangers specially adapted for separate outdoor units

1/16 . . . Arrangement or mounting thereof

1/18 . . . characterised by their shape

1/20 . . . Electric components for separate outdoor units

1/22 . . . Arrangement or mounting thereof

1/24 . . . Cooling of electric components

1/26 . . . Refrigerant piping

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

1/46 . . . Component arrangements in separate outdoor units

1/48 . . . characterised by air airflow, e.g. inlet or outlet airflow

1/50 . . . . with outlet air in upward direction

1/52 . . . . with inlet and outlet arranged on the same side, e.g. for mounting in a wall opening

1/54 . . . . Inlet and outlet arranged on opposite sides

1/56 . . . . Casing or covers of separate outdoor units, e.g. fan guards

1/58 . . . . Separate protective covers for outdoor units, e.g. solar guards, snow shields or camouflage

1/60 . . . Arrangement or mounting of the outdoor unit

1/62 . . . Wall-mounted

1/64 . . . Ceiling-mounted, e.g. below a balcony

1/66 . . . under the floor level

1/68 . . . Arrangement of multiple separate outdoor units

3/00 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)

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))

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]

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]

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]

2003/008 . . [Supplying highly filtered air to a room or to a limited area within a room]

3/02 . . characterised by the pressure or velocity of the primary air

**WARNING**


Group F24F 3/02 is also impacted by reclassification into groups F24F 3/06 - F24F 3/10 and F24F 3/12 - F24F 2003/1696.

All groups listed in this Warning should be considered in order to perform a complete search.

3/04 . . . operating with high pressure or high velocity

**WARNING**


Group F24F 3/04 is also impacted by reclassification into groups F24F 3/06 - F24F 3/10 and F24F 3/12 - F24F 2003/1696.

All groups listed in this Warning should be considered in order to perform a complete search.

3/044 . . Systems in which all treatment is given in the central station, i.e. all-air systems

**WARNING**

Group F24F 3/044 is impacted by reclassification into groups F24F 3/02 and F24F 3/04.

Groups F24F 3/044, F24F 3/02, and F24F 3/04 should be considered in order to perform a complete search.
WARNING Group F24F 3/0442 is impacted by reclassification into groups F24F 3/02 and F24F 3/04.
Groups F24F 3/0442, F24F 3/02, and F24F 3/04 should be considered in order to perform a complete search.

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]

WARNING Group F24F 3/0444 is impacted by reclassification into groups F24F 3/02 and F24F 3/04.
Groups F24F 3/0444, F24F 3/02, and F24F 3/04 should be considered in order to perform a complete search.

2003/0446 . . . [with a single air duct for transporting treated air from the central station to the rooms]

WARNING Group F24F 2003/0446 is impacted by reclassification into groups F24F 3/02 and F24F 3/04.
Groups F24F 2003/0446, F24F 3/02, and F24F 3/04 should be considered in order to perform a complete search.

2003/0448 . . . [with two air ducts for separately transporting treated hot and cold air from the central station to the rooms]

WARNING Group F24F 2003/0448 is impacted by reclassification into groups F24F 3/02 and F24F 3/04.
Groups F24F 2003/0448, F24F 3/02, and F24F 3/04 should be considered in order to perform a complete search.

WARNING Group F24F 3/048 is incomplete pending reclassification of documents from group F24F 3/056.
Group F24F 3/048 is also impacted by reclassification into groups F24F 3/02 and F24F 3/04.
All groups listed in this Warning should be considered in order to perform a complete search.

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

WARNING Group F24F 3/052 is incomplete pending reclassification of documents from group F24F 3/056.
Group F24F 3/052 is also impacted by reclassification into groups F24F 3/02 and F24F 3/04.
All groups listed in this Warning should be considered in order to perform a complete search.

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]

WARNING Group F24F 3/0522 is incomplete pending reclassification of documents from group F24F 3/056.
Group F24F 3/0522 is also impacted by reclassification into groups F24F 3/02 and F24F 3/04.
All groups listed in this Warning should be considered in order to perform a complete search.

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]

WARNING Group F24F 3/0525 is incomplete pending reclassification of documents from group F24F 3/056.
Group F24F 3/0525 is also impacted by reclassification into groups F24F 3/02 and F24F 3/04.
All groups listed in this Warning should be considered in order to perform a complete search.

WARNING Group F24F 3/048 is incomplete pending reclassification of documents from group F24F 3/056.
Group F24F 3/048 is also impacted by reclassification into groups F24F 3/02 and F24F 3/04.
All groups listed in this Warning should be considered in order to perform a complete search.

3/048 . . . with temperature control at constant rate of airflow

WARNING Group F24F 3/048 is incomplete pending reclassification of documents from group F24F 3/056.
Group F24F 3/048 is also impacted by reclassification into groups F24F 3/02 and F24F 3/04.
All groups listed in this Warning should be considered in order to perform a complete search.
(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; (F24F 3/0525 takes precedence)

**WARNING**

Group F24F 3/0527 is incomplete pending reclassification of documents from group F24F 3/056.

Group F24F 3/0527 is also impacted by reclassification into groups F24F 3/02 and F24F 3/04.

All groups listed in this Warning should be considered in order to perform a complete search.

the air at least partially flowing over lighting fixtures, the heat of which is dissipated or used (outlets for directing or distributing air into rooms or spaces combined with lighting fixtures F24F 13/078)

**WARNING**


All groups listed in this Warning should be considered in order to perform a complete search.

characterised by the arrangements for the supply of heat-exchange fluid for the subsequent treatment of primary air in the room units

**WARNING**


Group F24F 3/06 is also impacted by reclassification into groups F24F 3/12 - F24F 2003/1696.

All groups listed in this Warning should be considered in order to perform a complete search.

{ with a plurality of evaporators or condensers

**WARNING**


Group F24F 3/065 is also impacted by reclassification into groups F24F 3/12 - F24F 2003/1696.

All groups listed in this Warning should be considered in order to perform a complete search.

with separate supply and return lines for hot and cold heat-exchange fluids {i.e. so-called “4-conduit” system}

**WARNING**


Group F24F 3/08 is also impacted by reclassification into groups F24F 3/12 - F24F 2003/1696.

All groups listed in this Warning should be considered in order to perform a complete search.

with separate supply lines and common return line for hot and cold heat-exchange fluids {i.e. so-called “3-conduit” system}

**WARNING**


Group F24F 3/10 is also impacted by reclassification into groups F24F 3/12 - F24F 2003/1696.

All groups listed in this Warning should be considered in order to perform a complete search.

characterised by the treatment of the air otherwise than by heating and cooling

**WARNING**


All groups listed in this Warning should be considered in order to perform a complete search.

by humidification; by dehumidification

**WARNING**


All groups listed in this Warning should be considered in order to perform a complete search.
[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]

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(by absorbing or adsorbing water, e.g. using an hygroscopic desiccant)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(with liquid hygroscopic desiccants)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(with a moving bed of solid desiccants, e.g. a rotary wheel supporting solid desiccants)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(alternatively operating a heat exchanger in an absorbing/adsorbing mode and a heat exchanger in a regeneration mode)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(comprising semi-permeable membrane)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(by dehumidification only)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(by condensing)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(heat extracted from the humid air for condensing is returned to the dried air)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.

(using regenerators)

**WARNING**
All groups listed in this Warning should be considered in order to perform a complete search.
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Air-conditioning systems or apparatus not covered by F24F 1/00 or F24F 3/00, e.g. using solar heat or combined with household units such as an oven or water heater

- 5/003 [Exclusively-fluid systems]
- 5/007 [cooling apparatus specially adapted for use in air-conditioning (self-contained room units F24F 1/02; F24F 5/0046 takes precedence; air-humidification F24F 6/00)]
- 5/001 [Compression cycle type]
- 5/004 [using absorption or desorption]
- 5/0017 [using cold storage bodies, e.g. ice]
- 5/0021 [using phase change material [PCM] for storage]

- 2005/0025 [using heat exchange fluid storage tanks]
- 2005/0028 [using hydridable metals as energy storage media]
- 2005/0032 [Systems storing energy during the night]
- 5/0035 [using evaporation]
- 2005/0039 [using a cryogen, e.g. CO₂ liquid or N₂ liquid]
- 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 F25B 21/02; for semi-conductors H01L 23/38; thermobatteries or thermogenerators H01L 35/00)]
- 5/0046 [using natural energy, e.g. solar energy, energy from the ground]
- 5/005 [using energy from the ground by air circulation, e.g. "Canadian well"]

- 2005/0053 [receiving heat-exchange fluid from a well]
- 2005/0057 [receiving heat-exchange fluid from a closed circuit in the ground]
- 2005/006 [receiving heat-exchange fluid from the drinking or sanitary water supply circuit]
- 2005/0064 [using solar energy]
- 2005/0067 [with photovoltaic panels]
- 5/0071 [adapted for use in covered swimming pools]
- 5/0075 [Systems using thermal walls, e.g. double window (double windows per se E06B)]
- 2005/0078 [Double windows]
- 2005/0082 [Facades]
- 5/0085 [Systems using a compressed air circuit (B64D 13/00, B60H take precedence)]
- 5/0089 [Systems using radiation from walls or panels]
- 5/0092 [ceilings, e.g. cool ceilings]
- 5/0096 [combined with domestic apparatus]

Air-humidification, e.g. cooling by humidification

- 2006/001 [using a water curtain]
- 2006/003 [using a decorative fountain]
- 2006/005 [using plants]
- 2006/006 [with water treatment]
- 2006/008 [Air-humidifier with water reservoir]

- 6/02 by evaporation of water in the air {humidifiers specially adapted for radiators see F24D 19/008}
- 6/025 [using electrical heating means (F24F 6/105 takes precedence)]
- 6/04 [using stationary unheated wet elements]
- 6/043 [with self-sucking action, e.g. wicks (humidificators for radiators F24D 19/008)]
- 2006/046 [with a water pump]
- 6/06 [using moving unheated wet elements]
7/025 . . . [with forced air circulation by means of a built-in ventilator]

WARNING

Group F24F 7/025 is incomplete pending reclassification of documents from groups F24F 7/002 and F24F 7/013.

Groups F24F 7/007, F24F 7/013, and F24F 7/025 should be considered in order to perform a complete search.

7/04 . . . with ducting systems (also by double walls; with natural circulation (F24F 7/02 takes precedence))

7/06 . . . with forced air circulation, e.g. by fan (positioning of a ventilator in or against a conduit)

7/065 . . . [fan combined with single duct; mounting arrangements of a fan in a duct]

7/08 . . . with separate ducts for supplied and exhausted air (with provisions for reversal of the input and output systems)

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] F24F 13/06)

9/00 Use of air currents for screening, e.g. air curtains

2009/002 . . . [Room dividers]
2009/005 . . . [combined with a door]
2009/007 . . . [using more than one jet or band in the air curtain]

11/00 Control or safety arrangements

NOTE

In this group, it is desirable to add the indexing codes of groups F24F 2110/00 – F24F 2140/00.

11/0001 . . . [for ventilation (F24F 11/30 takes precedence)]

2011/0002 . . . [for admittance of outside air]

2011/0004 . . . [to create overpressure in a room]

2011/0005 . . . [to create underpressure in a room, keeping contamination inside]

2011/0006 . . . [using low temperature external supply air to assist cooling]

11/0008 . . . [for air-humidification (F24F 11/30 takes precedence)]

11/30 . . . for purposes related to the operation of the system, e.g. for safety or monitoring

WARNINGS


All groups listed in this Warning should be considered in order to perform a complete search.


Groups F24F 11/30 and F24F 11/32 – F24F 11/49 should be considered in order to perform a complete search.

11/32 . . . Responding to malfunctions or emergencies
11/33 . . . to fire, excessive heat or smoke
11/34 . . . by opening air passages

11/35 . . . by closing air passages
11/36 . . . to leakage of heat-exchange fluid
11/37 . . . Resuming operation, e.g. after power outages; Emergency starting
11/38 . . . Failure diagnosis
11/41 . . . Defrosting; Preventing freezing
11/42 . . . of outdoor units
11/43 . . . of indoor units
11/46 . . . Improving electric energy efficiency or saving
11/47 . . . Responding to energy costs
11/48 . . . prior to normal operation, e.g. pre-heating or pre-cooling
11/49 . . . ensuring correct operation, e.g. by trial operation or configuration checks
11/50 . . . characterised by user interfaces or communication

WARNING


Groups F24F 11/50 – F24F 11/61 and F24F 11/30 should be considered in order to perform a complete search.

11/52 . . . Indication arrangements, e.g. displays
11/523 . . . for displaying temperature data
11/526 . . . giving audible indications
11/54 . . . using one central controller connected to several sub-controllers
11/56 . . . Remote control
11/57 . . . using telephone networks
11/58 . . . using Internet communication
11/59 . . . for presetting
11/61 . . . using timers
11/62 . . . characterised by the type of control or by internal processing, e.g. using fuzzy logic, adaptive control or estimation of values

WARNING


Groups F24F 11/62 – F24F 11/67 and F24F 11/30 should be considered in order to perform a complete search.

11/63 . . . Electronic processing
11/64 . . . using pre-stored data
11/65 . . . for selecting an operating mode

WARNING

Group F24F 11/65 is incomplete pending reclassification of documents from group F24F 11/30.

Group F24F 11/65 is also impacted by reclassification into group F24F 11/67.

All groups listed in this Warning should be considered in order to perform a complete search.

11/66 . . . Sleep mode
Switching between heating and cooling modes

**WARNING**


Groups F24F 11/30, F24F 11/65, and F24F 11/67 should be considered in order to perform a complete search.

11/67 . . . Switching between heating and cooling modes

11/70 . . . Control systems characterised by their outputs; Constructional details thereof

**WARNING**


Group F24F 11/70 is also impacted by reclassification into groups F24F 11/80 – F24F 11/875.

All groups listed in this warning should be considered in order to perform a complete search.

11/70 . . . Control systems characterised by their outputs; Constructional details thereof

11/72 . . . for controlling the supply of treated air, e.g. its pressure

11/74 . . . for controlling air flow rate or air velocity

**WARNING**

Group F24F 11/74 is incomplete pending reclassification of documents from group F24F 11/30.

Group F24F 11/74 is also impacted by reclassification into group F24F 11/755.

All groups listed in this warning should be considered in order to perform a complete search.

11/74 . . . for controlling air flow rate or air velocity

11/745 . . . [the air flow rate increasing with an increase of air-current or wind pressure]

11/75 . . . for maintaining constant air flow rate or air velocity

11/755 . . . for cyclical variation of air flow rate or air velocity

**WARNING**


All groups listed in this warning should be considered in order to perform a complete search.

11/75 . . . for maintaining constant air flow rate or air velocity

11/76 . . . by means responsive to temperature, e.g. bimetal springs

11/77 . . . by controlling the speed of ventilators

11/79 . . . for controlling the direction of the supplied air

11/80 . . . for controlling the temperature of the supplied air

**WARNING**


All groups listed in this Warning should be considered in order to perform a complete search.

11/81 . . . by controlling the air supply to heat-exchangers or bypass channels

11/83 . . . by controlling the supply of heat-exchange fluids to heat-exchangers

**WARNING**

Group F24F 11/83 is incomplete pending reclassification of documents from groups F24F 11/30 and F24F 11/70.


All groups listed in this Warning should be considered in order to perform a complete search.

11/83 . . . by controlling the supply of heat-exchange fluids to heat-exchangers

11/84 . . . using valves

**WARNING**

Group F24F 11/84 is incomplete pending reclassification of documents from groups F24F 11/30 and F24F 11/70.


All groups listed in this Warning should be considered in order to perform a complete search.

11/84 . . . using valves

11/85 . . . using variable-flow pumps

**WARNING**


All groups listed should be considered in order to perform a complete search.

11/85 . . . using variable-flow pumps

11/86 . . . by controlling compressors within refrigeration or heat pump circuits

11/87 . . . by controlling absorption or discharge of heat in outdoor units

11/871 . . . by controlling outdoor fans

11/873 . . . by controlling refrigerant heaters

11/875 . . . by controlling heat-storage apparatus

11/875 . . . by controlling heat-storage apparatus
2013/0616

13/062 . . . having one or more bowls or cones diverging in the flow direction

WARNING
Group F24F 13/062 is incomplete pending reclassification of documents from group F24F 13/065.
Groups F24F 13/062 and F24F 13/065 should be considered in order to perform a complete search.

13/065 . . . formed as cylindrical or spherical bodies which are rotatable

WARNING
Group F24F 13/065 is incomplete pending reclassification of documents from group F24F 13/072.
Groups F24F 13/072 and F24F 13/065 should be considered in order to perform a complete search.

13/068 . . . formed as perforated walls, ceilings or floors (F24F 13/078 takes precedence)

13/072 . . . of elongated shape, e.g. between ceiling panels

WARNING
Group F24F 13/072 is impacted by reclassification into groups F24F 13/062 and F24F 13/065.
Groups F24F 13/072, F24F 13/062, and F24F 13/065 should be considered in order to perform a complete search.

13/075 . . . having parallel rods or lamellae directing the outflow, e.g. the rods or lamellae being individually adjustable (F24F 13/072 takes precedence)

13/078 . . . combined with lighting fixtures

WARNING
Group F24F 13/078 is incomplete pending reclassification of documents from group F24F 3/056.
Groups F24F 3/056 and F24F 13/078 should be considered in order to perform a complete search.

13/08 . . . Air-flow control members, e.g. louvres, grilles, flaps or guide plates (F24F 7/013, F24F 13/06 take precedence)

WARNING
Group F24F 13/08 is impacted by reclassification into group F24F 7/013.
Groups F24F 13/08 and F24F 7/013 should be considered in order to perform a complete search.
Group F24F 13/10 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/10 should be considered in order to perform a complete search.

Group F24F 13/105 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/105 should be considered in order to perform a complete search.

Group F24F 13/12 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/12 should be considered in order to perform a complete search.

Group F24F 13/14 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/14 should be considered in order to perform a complete search.

Group F24F 13/1406 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/1406 should be considered in order to perform a complete search.

Group F24F 13/142 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/142 should be considered in order to perform a complete search.

Group F24F 13/1426 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/1426 should be considered in order to perform a complete search.

Group F24F 2013/1433 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/1433 should be considered in order to perform a complete search.

Group F24F 2013/144 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/144 should be considered in order to perform a complete search.

Group F24F 2013/1446 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/1446 should be considered in order to perform a complete search.

Group F24F 2013/1453 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/1453 should be considered in order to perform a complete search.
WARNING
Group F24F 2013/146 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/146 should be considered in order to perform a complete search.

WARNING
Group F24F 2013/1466 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/1466 should be considered in order to perform a complete search.

WARNING
Group F24F 2013/1473 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/1473 should be considered in order to perform a complete search.

WARNING
Group F24F 2013/148 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 2013/148 should be considered in order to perform a complete search.

WARNING
Group F24F 13/15 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/15 should be considered in order to perform a complete search.

WARNING
Group F24F 13/16 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/16 should be considered in order to perform a complete search.

WARNING
Group F24F 13/18 is impacted by reclassification into groups F24F 13/10 - F24F 13/16.
All groups listed in this Warning should be considered in order to perform a complete search.

WARNING
Group F24F 13/20 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/20 should be considered in order to perform a complete search.

WARNING
Group F24F 13/22 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/22 should be considered in order to perform a complete search.

WARNING
Group F24F 13/24 is incomplete pending reclassification of documents from group F24F 13/18.
Groups F24F 13/18 and F24F 13/24 should be considered in order to perform a complete search.

Indexing scheme associated with group F24F 11/00, relating to control inputs, e.g. measured or estimated values or parameters

Control inputs relating to air properties
- Temperature
- of the outside air
- Humidity
Indexing scheme associated with group F24F11/00, relating to control inputs, e.g. measured or estimated values or...

2110/22 . . of the outside air
2110/30 . . Velocity
2110/32 . . of the outside air
2110/40 . . Pressure, e.g. wind pressure

**WARNING**

Group F24F 2110/40 is impacted by recategorization into groups F24F 2140/10 and F24F 2140/12.

Groups F24F 2110/40, F24F 2140/10, and F24F 2140/12 should be considered in order to perform a complete search.

2110/50 . . Air quality properties

**WARNING**

Group F24F 2110/50 is impacted by recategorization into group F24F 2110/65.

Groups F24F 2110/50 and F24F 2110/65 should be considered in order to perform a complete search.

2110/52 . . of the outside air
2110/60 . . Odor
2110/62 . . Tobacco smoke
2110/64 . . Airborne particle content
2110/65 . . Concentration of specific substances or contaminants

**WARNING**

Group F24F 2110/65 is incomplete pending recategorization of documents from group F24F 2110/50.

Groups F24F 2110/50 and F24F 2110/65 should be considered in order to perform a complete search.

2110/66 . . Volatile organic compounds [VOC]
2110/68 . . Radon
2110/70 . . Carbon dioxide
2110/72 . . Carbon monoxide
2110/74 . . Ozone
2110/76 . . Oxygen
2110/80 . . Electric charge

2120/00 Control inputs relating to users or occupants

**WARNING**

Group F24F 2120/00 is incomplete pending recategorization of documents from group F24F 11/30.

Groups F24F 11/30 and F24F 2120/00 should be considered in order to perform a complete search.

2120/10 . . Occupancy
2120/12 . . Position of occupants
2120/14 . . Activity of occupants
2120/20 . . Feedback from users

2130/00 Control inputs relating to environmental factors not covered by group F24F 2110/00

2130/10 . . Weather information or forecasts
2130/20 . . Sunlight
2130/30 . . Artificial light
2130/40 . . Noise

2140/00 Control inputs relating to system states

**WARNING**

Group F24F 2140/00 is incomplete pending recategorization of documents from group F24F 11/30.

Groups F24F 11/30 and F24F 2140/00 should be considered in order to perform a complete search.

2140/10 . . Pressure

**WARNING**

Groups F24F 2140/10 and F24F 2140/12 are incomplete pending recategorization of documents from group F24F 2140/00.

Groups F24F 2140/00, F24F 2140/10 and F24F 2140/12 should be considered in order to perform a complete search.

2140/12 . . Heat-exchange fluid pressure
2140/20 . . Heat-exchange fluid temperature
2140/30 . . Condensation of water from cooled air
2140/40 . . Damper positions, e.g. open or closed
2140/50 . . Load
2140/60 . . Energy consumption

2203/00 Devices or apparatus used for air treatment

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
Dehumidifying or humidifying belt type

**Air-conditioning**

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<th>Code</th>
<th>Description</th>
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<td>2203/12</td>
<td>Details or features not otherwise provided for</td>
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<tr>
<td>2221/00</td>
<td>combined with lighting fixtures</td>
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<tr>
<td>2221/08</td>
<td>Installation or apparatus for use in sport halls, e.g. swimming pools, ice rings</td>
</tr>
<tr>
<td>2221/10</td>
<td>combined with, or integrated in, furniture</td>
</tr>
<tr>
<td>2221/12</td>
<td>transportable</td>
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<tr>
<td>2221/14</td>
<td>mounted on the ceiling</td>
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<tr>
<td>2221/16</td>
<td>mounted on the roof</td>
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<tr>
<td>2221/17</td>
<td>mounted in a wall</td>
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<tr>
<td>2221/18</td>
<td>combined with domestic apparatus</td>
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<tr>
<td>2221/183</td>
<td>combined with a hot-water boiler</td>
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<tr>
<td>2221/186</td>
<td>combined with a fireplace</td>
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<tr>
<td>2221/20</td>
<td>mounted in or close to a window</td>
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<tr>
<td>2221/22</td>
<td>Cleaning ducts or apparatus</td>
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<tr>
<td>2221/225</td>
<td>using a liquid</td>
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<tr>
<td>2221/26</td>
<td>improving the aesthetic appearance</td>
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<td>using the Coanda effect</td>
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<tr>
<td>2221/30</td>
<td>comprising fireproof material</td>
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<tr>
<td>2221/32</td>
<td>preventing human errors during the installation, use or maintenance, e.g. goofy proof</td>
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<tr>
<td>2221/34</td>
<td>Heater, e.g. gas burner, electric air heater</td>
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<tr>
<td>2221/36</td>
<td>Modules, e.g. for an easy mounting or transport</td>
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<td>2221/38</td>
<td>Personalised air distribution</td>
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<tr>
<td>2221/40</td>
<td>HVAC with raised floors</td>
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<tr>
<td>2221/42</td>
<td>Mobile autonomous air conditioner, e.g. robots</td>
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<tr>
<td>2221/44</td>
<td>Protection from terrorism or theft</td>
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<td>2221/46</td>
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<td>2221/48</td>
<td>HVAC for a wine cellar</td>
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<tr>
<td>2221/50</td>
<td>HVAC for high buildings, e.g. thermal or pressure differences</td>
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<tr>
<td>2221/52</td>
<td>Weather protecting means, e.g. against wind, rain or snow</td>
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<tr>
<td>2221/54</td>
<td>Heating and cooling, simultaneously or alternatively</td>
</tr>
<tr>
<td>2221/56</td>
<td>Cooling being a secondary aspect</td>
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</tbody>
</table>