

# CPC COOPERATIVE PATENT CLASSIFICATION

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

### LIGHTING; HEATING

## F24 HEATING; RANGES; VENTILATING (NOTE omitted)

## F24D DOMESTIC- OR SPACE-HEATING SYSTEMS, e.g. CENTRAL HEATING SYSTEMS; DOMESTIC HOT-WATER SUPPLY SYSTEMS; ELEMENTS OR COMPONENTS THEREFOR (using steam or condensate extracted or exhausted from steam engine plants for heating purposes [F01K 17/02](#))

### NOTE

In this subclass, the following expression is used with the meaning indicated:

- "Central heating system" means a system in which heat is generated or stored at central sources and is distributed by means of a transfer fluid to the spaces or areas to be heated.

### 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.}

### Central Heating Systems

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|-------------|---|--------|---|
| <b>1/00</b> | <b>Steam central heating systems</b> (district heating systems <a href="#">F24D 10/00</a> ; central heating systems using heat accumulated in storage masses <a href="#">F24D 11/00</a> )     | 3/1016 | . . . {Tanks having a bladder}  |
| 1/005       | . {in combination with systems for domestic water supply}   | 3/1025 | . . . {Compressor controlled pressure heads}  |
| 1/02        | . operating with live steam { <a href="#">F24D 1/005</a> takes precedence}  | 3/1033 | . . . {with compressed gas cylinder}  |
| 1/04        | . operating with exhaust steam { <a href="#">F24D 1/005</a> takes precedence}   | 3/1041 | . . . {Flow-through}  |
| 1/06        | . operating with superheated steam { <a href="#">F24D 1/005</a> takes precedence}   | 3/105  | . . {pumps combined with multiple way valves}   |
| 1/08        | . Feed-line arrangements, e.g. providing for heat-accumulator tanks, expansion tanks  | 3/1058 | . . {disposition of pipes and pipe connections}   |
| <b>3/00</b> | <b>Hot-water central heating systems</b> (district heating systems <a href="#">F24D 10/00</a> ; central heating systems using heat accumulated in storage masses <a href="#">F24D 11/00</a> ) | 3/1066 | . . . {Distributors for heating liquids}  |
| 3/005       | . {combined with solar energy (solar heat collectors <a href="#">per se F24S</a> )}   | 3/1075 | . . . . {Built up from modules}   |
| 3/02        | . with forced circulation, e.g. by pumps  | 3/1083 | . . {Filling valves or arrangements for filling}  |
| 3/04        | . with the water under high pressure  | 3/1091 | . . {Mixing cylinders}  |
| 3/06        | . . Arrangements or devices for maintaining high pressure   | 3/12   | . Tube and panel arrangements for ceiling, wall, or underfloor heating ( <a href="#">electric underfloor heating F24D 13/02</a> ) |
| 3/08        | . in combination with systems for domestic hot-water supply   | 3/122  | . . {Details}   |
| 3/082       | . . {Hot water storage tanks specially adapted therefor}  | 3/125  | . . . {Hydraulic pipe connections}  |
| 3/085       | . . . {Double-walled tanks}   | 3/127  | . . . {Mechanical connections between panels}   |
| 3/087       | . . {Tap water heat exchangers specially adapted therefore}   | 3/14   | . . incorporated in a ceiling, wall or floor  |
| 3/10        | . Feed-line arrangements, e.g. providing for heat-accumulator tanks, expansion tanks {; Hydraulic components of a central heating system}   | 3/141  | . . . {Tube mountings specially adapted therefor}   |
| 3/1008      | . . {expansion tanks}   | 3/142  | . . . . {integrated in prefab construction elements}  |
|             |   | 3/143  | . . . . {Tube clips with barbed anchors}  |
|             |   | 3/144  | . . . . {Clips for fastening heating tubes on a reinforcement net or mesh, e.g. mesh for concrete reinforcement}                  |
|             |   | 3/145  | . . . {Convecting elements concealed in wall or floor}  |
|             |   | 3/146  | . . . {Tubes specially adapted for underfloor heating}  |
|             |   | 3/147  | . . . {arranged in facades}   |
|             |   | 3/148  | . . . {with heat spreading plates}  |
|             |   | 3/149  | . . . {Tube-laying devices}   |
|             |   | 3/16   | . . mounted on, or adjacent to, a ceiling, wall or floor  |
|             |   | 3/165  | . . . {Suspended radiant heating ceiling}   |
|             |   | 3/18   | . using heat pumps  |

|              |   |  |  |
|--------------|---|--|--|
| <b>5/00</b>  | <b>Hot-air central heating systems</b> (district heating systems <a href="#">F24D 10/00</a> ; central heating systems using heat accumulated in storage masses <a href="#">F24D 11/00</a> ; air conditioning <a href="#">F24F</a> ); <b>Exhaust gas central heating systems</b>   | 12/02  | <ul style="list-style-type: none"> <li>having more than one heat source (using heat pumps, in water central heating systems <a href="#">F24D 3/18</a>; in air central heating systems <a href="#">F24D 5/12</a>; in systems using heat storage masses <a href="#">F24D 11/02</a>)</li> </ul> |
| 5/005        | <ul style="list-style-type: none"> <li>{combined with solar energy}</li> </ul>  | <b>Other domestic- or space-heating systems</b>  |  |
| 5/02         | <ul style="list-style-type: none"> <li>operating with discharge of hot air into the space or area to be heated</li> </ul>   | <b>13/00</b>   | <b>Electric heating systems</b>  |
| 5/04         | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with return of the air or the air-heater</li> </ul> </li> </ul>  | 13/02  | <ul style="list-style-type: none"> <li>solely using resistance heating, e.g. underfloor heating</li> </ul>   |
| 5/06         | <ul style="list-style-type: none"> <li>operating without discharge of hot air into the space or area to be heated</li> </ul>  | 13/022   | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{resistances incorporated in construction elements}</li> </ul> </li> </ul>  |
| 5/08         | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with hot air led through radiators</li> </ul> </li> </ul>  | 13/024   | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{in walls, floors, ceilings}</li> </ul> </li> </ul> </li> </ul>   |
| 5/10         | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with hot air led through heat-exchange ducts in the walls, floor or ceiling</li> </ul> </li> </ul>   | 13/026   | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{in door, windows}</li> </ul> </li> </ul> </li> </ul>   |
| 5/12         | <ul style="list-style-type: none"> <li>using heat pumps</li> </ul>  | 13/028   | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{Glass panels, e.g. mirrors, design radiators, etc.}</li> </ul> </li> </ul> </li> </ul>   |
| <b>7/00</b>  | <b>Central heating systems employing heat-transfer fluids not covered by groups <a href="#">F24D 1/00</a> - <a href="#">F24D 5/00</a>, e.g. oil, salt or gas</b> (district heating systems <a href="#">F24D 10/00</a> ; central heating systems using heat accumulated in storage masses <a href="#">F24D 11/00</a> )     | 13/04  | <ul style="list-style-type: none"> <li>using electric heating of heat-transfer fluid in separate units of the system</li> </ul>  |
| <b>9/00</b>  | <b>Central heating systems employing combinations of heat transfer fluids covered by two or more of groups <a href="#">F24D 1/00</a> - <a href="#">F24D 7/00</a></b> (district heating systems <a href="#">F24D 10/00</a> ; central heating systems using heat accumulated in storage masses <a href="#">F24D 11/00</a> ) | <b>15/00</b>   | <b>Other domestic- or space-heating systems</b>  |
| 9/02         | <ul style="list-style-type: none"> <li>Hot water and steam systems</li> </ul>   | 15/02  | <ul style="list-style-type: none"> <li>consisting of self-contained heating units, e.g. storage heaters</li> </ul>   |
| <b>10/00</b> | <b>District heating systems</b>   | 15/04  | <ul style="list-style-type: none"> <li>using heat pumps</li> </ul>   |
| 10/003       | <ul style="list-style-type: none"> <li>{Domestic delivery stations having a heat exchanger}</li> </ul>  | <b>17/00</b>   | <b>Domestic hot-water supply systems</b>   |
| 10/006       | <ul style="list-style-type: none"> <li>{Direct domestic delivery stations}</li> </ul>   | 17/0005  | <ul style="list-style-type: none"> <li>{using recuperation of waste heat (<a href="#">F24D 17/0036</a> takes precedence)}</li> </ul>   |
| <b>11/00</b> | <b>Central heating systems using heat accumulated in storage masses</b> (self-contained storage heating units <a href="#">F24D 15/02</a> )  | 17/001   | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with accumulation of heated water}</li> </ul> </li> </ul>  |
| 11/001       | <ul style="list-style-type: none"> <li>{district heating system}</li> </ul>   | 17/0015  | <ul style="list-style-type: none"> <li>{using solar energy (<a href="#">F24D 17/0036</a> takes precedence)}</li> </ul>   |
| 11/002       | <ul style="list-style-type: none"> <li>{water heating system}</li> </ul>  | 17/0021  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with accumulation of the heated water}</li> </ul> </li> </ul>  |
| 11/003       | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{combined with solar energy}</li> </ul> </li> </ul>  | 17/0026  | <ul style="list-style-type: none"> <li>{with conventional heating means (<a href="#">F24D 17/0036</a> takes precedence)}</li> </ul>  |
| 11/004       | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with conventional supplementary heat source}</li> </ul> </li> </ul>   | 17/0031  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with accumulation of the heated water}</li> </ul> </li> </ul>  |
| 11/005       | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with recuperation of waste heat}</li> </ul> </li> </ul>   | 17/0036  | <ul style="list-style-type: none"> <li>{with combination of different kinds of heating means}</li> </ul>   |
| 11/006       | <ul style="list-style-type: none"> <li>{air heating system}</li> </ul>  | 17/0042  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{recuperated waste heat and solar energy}</li> </ul> </li> </ul>  |
| 11/007       | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{combined with solar energy}</li> </ul> </li> </ul>  | 17/0047  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with accumulation of the heated water}</li> </ul> </li> </ul> </li> </ul>  |
| 11/008       | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with conventional supplementary heat source}</li> </ul> </li> </ul>   | 17/0052  | <ul style="list-style-type: none"> <li>{recuperated waste heat and conventional heating means}</li> </ul>  |
| 11/009       | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with recuperation of waste heat}</li> </ul> </li> </ul>   | 17/0057  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with accumulation of the heated water}</li> </ul> </li> </ul> </li> </ul>  |
| 11/02        | <ul style="list-style-type: none"> <li>using heat pumps</li> </ul>  | 17/0063  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{solar energy and conventional heaters}</li> </ul> </li> </ul>  |
| 11/0207      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{district heating system}</li> </ul> </li> </ul>   | 17/0068  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with accumulation of the heated water}</li> </ul> </li> </ul> </li> </ul>  |
| 11/0214      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{water heating system}</li> </ul> </li> </ul>  | 17/0073  | <ul style="list-style-type: none"> <li>{Arrangements for preventing the occurrence or proliferation of microorganisms in the water}</li> </ul>   |
| 11/0221      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{combined with solar energy}</li> </ul> </li> </ul> </li> </ul>  | 17/0078  | <ul style="list-style-type: none"> <li>{Recirculation systems}</li> </ul>  |
| 11/0228      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{combined with conventional heater}</li> </ul> </li> </ul> </li> </ul>   | 17/0084  | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{Coaxial tubings}</li> </ul> </li> </ul>  |
| 11/0235      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with recuperation of waste energy}</li> </ul> </li> </ul> </li> </ul>   | 17/0089  | <ul style="list-style-type: none"> <li>{Additional heating means, e.g. electric heated buffer tanks or electric continuous flow heaters, located close to the consumer, e.g. directly before the water taps in bathrooms, in domestic hot water lines}</li> </ul>                            |
| 11/0242      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{contained in exhausted air}</li> </ul> </li> </ul> </li> </ul> </li> </ul>  | 17/0094  | <ul style="list-style-type: none"> <li>{Recovering of cold water}</li> </ul>   |
| 11/025       | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{contained in waste water}</li> </ul> </li> </ul> </li> </ul> </li> </ul>  | 17/02  | <ul style="list-style-type: none"> <li>using heat pumps</li> </ul>   |
| 11/0257      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{air heating system}</li> </ul> </li> </ul>  | <b>18/00</b>   | <b>Small-scale combined heat and power [CHP] generation systems specially adapted for domestic heating, space heating or domestic hot-water supply</b>   |
| 11/0264      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{combined with solar energy}</li> </ul> </li> </ul> </li> </ul>  | <b>NOTE</b>  |  |
| 11/0271      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{combined with conventional energy}</li> </ul> </li> </ul> </li> </ul>   | In this group, it is desirable to add the indexing codes of groups <a href="#">F24D 2101/00</a> - <a href="#">F24D 2105/00</a> . |  |
| 11/0278      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with recuperation of waste energy}</li> </ul> </li> </ul> </li> </ul>   |  |  |
| 11/0285      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{contained in exhausted air}</li> </ul> </li> </ul> </li> </ul> </li> </ul>  |  |  |
| 11/0292      | <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{contained in waste water}</li> </ul> </li> </ul> </li> </ul> </li> </ul>  |  |  |
| <b>12/00</b> | <b>Other central heating systems</b>  |  |  |

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| <b>19/00</b> | <b>Details (of water or air heaters <a href="#">F24H 9/00</a>; of heat-exchange or heat-transfer apparatus, of general application <a href="#">F28F</a>)</b> | 19/0226 | . . . {Additional means supporting the process of mounting}   |
| 19/0002      | . {Means for connecting central heating radiators to circulation pipes}  | 19/023  | . . . {Radiators having fixed suspension means for connecting the radiator to the support means}                      |
| 19/0004      | . . {In a one pipe system}   | 19/0233 | . . . {Templates for installing the radiator}   |
| 19/0007      | . . . {Comprising regulation means}  | 19/0236 | . . . {Water tubes or pipes forming part of the supporting means}   |
| 19/0009      | . . {In a two pipe system}   | 19/024  | . . {Functioning details of supporting means for radiators}   |
| 19/0012      | . . . {Comprising regulation means}  | 19/0243 | . . . {Means for moving the radiator horizontally to adjust the radiator position}                                    |
| 19/0014      | . . {Connection means adaptable for one and two pipe systems}  | 19/0246 | . . . {Means for moving the radiator vertically to adjust the radiator position}                                      |
| 19/0017      | . . {Connections between supply and inlet or outlet of central heating radiators}  | 19/025  | . . . {Eccentric means for moving the radiator vertically}  |
| 19/0019      | . . . {Means for adapting connections}   | 19/0253 | . . . {Adjusting a dimension, e.g. length, of the radiator support, e.g. telescopic rails}                            |
| 19/0021      | . . . {Flexible tubes or hoses}  | 19/0256 | . . . {Radiators clamped by supporting means}   |
| 19/0024      | . . . {Connections for plate radiators}  | 19/0259 | . . . . {Radiators clamped by supporting means around a column or tube}   |
| 19/0026      | . . {Places of the inlet on the radiator}  | 19/0263 | . . . . {Radiators clamped by supporting means between two columns or tubes}  |
| 19/0029      | . . . {on a top corner}  | 19/0273 | . . . {Radiators fixed in order to prevent undesired detachment}  |
| 19/0031      | . . . {on the top in the middle}   | 19/0276 | . . . . {Radiators fixed on the bottom}   |
| 19/0034      | . . . {on a bottom corner}   | 19/0279 | . . . . {Radiators fixed on the sides}  |
| 19/0036      | . . . {on the bottom in the middle}  | 19/0283 | . . . . {Radiators fixed on the top}  |
| 19/0039      | . . {Places of the outlet on the radiator}   | 19/0286 | . . . . {Radiators fixed using a spring}  |
| 19/0041      | . . . {on the top in the middle}   | 19/0289 | . . . . {Radiators fixed using a flexible clip}   |
| 19/0043      | . . . {on the opposite top corner}   | 19/0293 | . . . {Radiators rotating without being demounted}  |
| 19/0046      | . . . {on the top on the same side}  | 19/04   | . . in skirtings  |
| 19/0048      | . . . {on the bottom in the middle}  | 19/06   | . Casings, cover lids or ornamental panels, for radiators   |
| 19/0051      | . . . {on the bottom on the opposite corner}   | 19/061  | . . {Radiator shelves}  |
| 19/0053      | . . . {on the bottom on the same side}   | 19/062  | . . {Heat reflecting or insulating shields}   |
| 19/0056      | . . {Supplies from the central heating system}   | 19/064  | . . {Coverings not directly attached to a radiator, e.g. box-like coverings}  |
| 19/0058      | . . . {coming out the floor}   | 19/065  | . . {Grids attached to the radiator and covering its top}   |
| 19/006       | . . . . {Alongside the radiator}   | 19/067  | . . {Front coverings attached to the radiator}  |
| 19/0063      | . . . . {under the radiator}   | 19/068  | . . {Side coverings attached to the radiator}   |
| 19/0065      | . . . {coming out the wall}  | 19/08   | . Arrangements for drainage, venting or aerating ( <a href="#">valves for venting or aerating F16K 24/00</a> )        |
| 19/0068      | . . . . {alongside the radiator}   | 19/081  | . . {for steam heating systems}   |
| 19/007       | . . . . {under the radiator}   | 19/082  | . . {for water heating systems}   |
| 19/0073      | . . {Means for changing the flow of the fluid inside a radiator}   | 19/083  | . . . {Venting arrangements}  |
| 19/0075      | . . {Valves for isolating the radiator from the system}  | 19/085  | . . . . {Arrangement of venting valves for central heating radiators}   |
| 19/0078      | . . {Plugs}  | 19/086  | . . . . . {hand-operated}   |
| 19/008       | . {Details related to central heating radiators}   | 19/087  | . . . . . {automatic}   |
| 19/0082      | . . {Humidifiers for radiators}  | 19/088  | . . . {Draining arrangements}   |
| 19/0085      | . . {Fresh air entries for air entering the room to be heated by the radiator}   | 19/10   | . Arrangement or mounting of control or safety devices ( <a href="#">only the heater being controlled F24H 9/20</a> ) |
| 19/0087      | . . {Fan arrangements for forced convection}   | 19/1003 | . . {for steam heating systems}   |
| 19/009       | . . {Magnets, e.g. for attaching a cover}  | 19/1006 | . . {for water heating systems}   |
| 19/0092      | . {Devices for preventing or removing corrosion, slime or scale}   | 19/1009 | . . . {for central heating}   |
| 19/0095      | . {Devices for preventing damage by freezing}  | 19/1012 | . . . . {by regulating the speed of a pump}   |
| 19/0097      | . {Casings or frame structures for hydraulic components}   | 19/1015 | . . . . . {using a valve or valves}   |
| 19/02        | . Arrangement of mountings or supports for radiators   | 19/1018 | . . . . . {Radiator valves}   |
| 19/0203      | . . {Types of supporting means}  | 19/1021 | . . . . . {a by pass valve}   |
| 19/0206      | . . . {Tube shaped supports inserted into a wall}  | 19/1024 | . . . . . {a multiple way valve}  |
| 19/0209      | . . . {Supporting means having bracket}  | 19/1027 | . . . . . {hand operated}   |
| 19/0213      | . . . {Floor mounted supporting means}   |         |   |
| 19/0216      | . . . {Supporting means having a rail}   |         |   |
| 19/022       | . . {Constructional details of supporting means for radiators}   |         |   |
| 19/0223      | . . . {Distance pieces between the radiator and the wall}  |         |   |

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| 19/103  | . . . . . {bimetal operated}  | 2200/046 | . . Condensing boilers  |
| 19/1033 | . . . . . {motor operated}  | 2200/06  | . Solid fuel fired boiler   |
| 19/1036 | . . . . . {Having differential pressure measurement facilities}               | 2200/062 | . . Coal fired boilers  |
| 19/1039 | . . . . {the system uses a heat pump}   | 2200/065 | . . Wood fired boilers  |
| 19/1042 | . . . . {the system uses solar energy}  | 2200/067 | . . . Pellet fired boilers  |
| 19/1045 | . . . . {the system uses a heat pump and solar energy}                        | 2200/07  | . Solid fuel burners  |
| 19/1048 | . . . . {Counting of energy consumption}                                      | 2200/08  | . Electric heater   |
| 19/1051 | . . . {for domestic hot water}  | 2200/10  | . Fire place  |
| 19/1054 | . . . . {the system uses a heat pump}   | 2200/11  | . Geothermal energy   |
| 19/1057 | . . . . {the system uses solar energy}  | 2200/115 | . . Involving mains water supply  |
| 19/106  | . . . . {the system uses a heat pump and solar energy}                        | 2200/12  | . Heat pump   |
| 19/1063 | . . . . {counting of energy consumption}                                      | 2200/123 | . . Compression type heat pumps   |
| 19/1066 | . . . {for the combination of central heating and domestic hot water}         | 2200/126 | . . Absorption type heat pumps  |
| 19/1069 | . . . . {regulation in function of the temperature of the domestic hot water} | 2200/13  | . Heat from a district heating network  |
| 19/1072 | . . . . {the system uses a heat pump}   | 2200/14  | . Solar energy  |
| 19/1075 | . . . . {the system uses solar energy}  | 2200/15  | . Wind energy   |
| 19/1078 | . . . . {the system uses a heat pump and solar energy}                        | 2200/16  | . Waste heat  |
| 19/1081 | . . . . {counting of energy consumption}                                      | 2200/18  | . . Flue gas recuperation   |
| 19/1084 | . . {for air heating systems}   | 2200/19  | . . Fuel cells  |
| 19/1087 | . . . {system using a heat pump}  | 2200/20  | . . Sewage water  |
| 19/109  | . . . {system using solar energy}   | 2200/22  | . . Ventilation air   |
| 19/1093 | . . . {system using a heat pump and solar energy}                             | 2200/24  | . . Refrigeration   |
| 19/1096 | . . {for electric heating systems}  | 2200/26  | . . Internal combustion engine  |
|         |   | 2200/28  | . . Biological processes  |
|         |   | 2200/29  | . . Electrical devices, e.g. computers, servers                                 |
|         |   | 2200/30  | . . Friction  |
|         |   | 2200/31  | . . Air conditioning systems  |
|         |   | 2200/32  | . involving multiple heat sources in combination or as alternative heat sources |

**Indexing scheme associated with group F24D 18/00, relating to electric generators, thermal aspects and constructional aspects of small-scale combined heat and power [CHP] systems**

|                |  |
|----------------|--|
| <b>2101/00</b> | <b>Electric generators of small-scale CHP systems</b>  |
| 2101/10        | . Gas turbines; Steam engines or steam turbines; Water turbines, e.g. located in water pipes |
| 2101/20        | . Wind turbines  |
| 2101/30        | . Fuel cells   |
| 2101/40        | . Photovoltaic [PV] modules  |
| 2101/50        | . Thermophotovoltaic [TPV] modules   |
| 2101/60        | . Thermoelectric generators, e.g. Peltier or Seebeck elements                                |
| 2101/70        | . Electric generators driven by internal combustion engines [ICE]                            |
| 2101/80        | . Electric generators driven by external combustion engines, e.g. Stirling engines           |
| <b>2103/00</b> | <b>Thermal aspects of small-scale CHP systems</b>  |
| 2103/10        | . Small-scale CHP systems characterised by their heat recovery units                         |
| 2103/13        | . . characterised by their heat exchangers   |
| 2103/17        | . . Storage tanks  |
| 2103/20        | . Additional heat sources for supporting thermal peak loads                                  |
| <b>2105/00</b> | <b>Constructional aspects of small-scale CHP systems</b>                                     |
| 2105/10        | . Sound insulation   |

**Heat sources; Energy sources**

|                |   |
|----------------|---|
| <b>2200/00</b> | <b>Heat sources or energy sources</b>     |
| 2200/02        | . Photovoltaic energy                     |
| 2200/04        | . Gas or oil fired boiler                 |
| 2200/043       | . . More than one gas or oil fired boiler |

**Central Heating Systems**

|                |  |
|----------------|--|
| <b>2220/00</b> | <b>Components of central heating installations excluding heat sources</b>                            |
| 2220/003       | . Generic central heating systems  |
| 2220/006       | . Parts of a building integrally forming part of heating systems, e.g. a wall as a heat storing mass |
| 2220/02        | . Fluid distribution means   |
| 2220/0207      | . . Pumps  |
| 2220/0214      | . . Inlets or outlets  |
| 2220/0221      | . . Mixing cylinders   |
| 2220/0228      | . . Branched distribution conduits   |
| 2220/0235      | . . Three-way-valves   |
| 2220/0242      | . . Multiple way valves  |
| 2220/025       | . . Check valves   |
| 2220/0257      | . . Thermostatic valves  |
| 2220/0264      | . . Hydraulic balancing valves   |
| 2220/0271      | . . Valves   |
| 2220/0278      | . . Expansion vessels  |
| 2220/0285      | . . Pipe sections  |
| 2220/0292      | . . Fluid distribution networks  |
| 2220/04        | . Sensors  |
| 2220/042       | . . Temperature sensors  |
| 2220/044       | . . Flow sensors   |
| 2220/046       | . . Pressure sensors   |
| 2220/048       | . . Level sensors, e.g. water level sensors  |
| 2220/06        | . Heat exchangers  |
| 2220/07        | . Heat pipes   |
| 2220/08        | . Storage tanks  |
| 2220/10        | . Heat storage materials, e.g. phase change materials or static water enclosed in a space            |
| 2220/20        | . Heat consumers   |

- 2220/2009 . . Radiators
- 2220/2018 . . . Column radiators having vertically extending tubes
- 2220/2027 . . . Convectors (radiators wherein heat transfer mainly takes place by convection)
- 2220/2036 . . . Electric radiators
- 2220/2045 . . . Radiators having horizontally extending tubes
- 2220/2054 . . . Panel radiators with or without extended convection surfaces
- 2220/2063 . . . Central heating radiators having heat storage material incorporated
- 2220/2072 . . . Radiators being skirting boards between floor and wall or ledges between wall and ceiling
- 2220/2081 . . Floor or wall heating panels
- 2220/209 . . Sanitary water taps
- 2240/00 Characterizing positions, e.g. of sensors, inlets, outlets**
- 2240/10 . Placed within or inside of
- 2240/12 . Placed outside of
- 2240/20 . Placed at top position
- 2240/22 . Placed at bottom position
- 2240/24 . Placed at centre position
- 2240/243 . . Vertically centred
- 2240/246 . . Horizontally centred
- 2240/26 . Vertically distributed at fixed positions, e.g. multiple sensors distributed over the height of a tank, or a vertical inlet distribution pipe having a plurality of orifices
- 2240/28 . Horizontally distributed at fixed positions
- 2240/30 . At vertical variable positions, e.g. a movable inlet pipe within a tank
- 2240/32 . At horizontal variable positions