

# 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

- |             |   |        |   |
|-------------|---|--------|---|
| <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> )     | 3/1008 | . . {expansion tanks}   |
| 1/005       | . {in combination with systems for domestic water supply}   | 3/1016 | . . . {Tanks having a bladder}  |
| 1/02        | . operating with live steam {( <a href="#">F24D 1/005</a> takes precedence)}  | 3/1025 | . . . {Compressor controlled pressure heads}  |
| 1/04        | . operating with exhaust steam {( <a href="#">F24D 1/005</a> takes precedence)}   | 3/1033 | . . . {with compressed gas cylinder}  |
| 1/06        | . operating with superheated steam {( <a href="#">F24D 1/005</a> takes precedence)}   | 3/1041 | . . . {Flow-through}  |
| 1/08        | . Feed-line arrangements, e.g. providing for heat-accumulator tanks, expansion tanks  | 3/105  | . . {pumps combined with multiple way valves}   |
|             |   | 3/1058 | . . {disposition of pipes and pipe connections}   |
|             |   | 3/1066 | . . . {Distributors for heating liquids}  |
|             |   | 3/1075 | . . . . {Built up from modules}   |
|             |   | 3/1083 | . . {Filling valves or arrangements for filling}  |
|             |   | 3/1091 | . . {Mixing cylinders}  |
|             |   | 3/12   | . Tube and panel arrangements for ceiling, wall, or underfloor heating ( <a href="#">electric underfloor heating F24D 13/02</a> ) |
| <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> ) | 3/122  | . . {Details}   |
| 3/005       | . {combined with solar energy (solar heat collectors <a href="#">per se F24S</a> )}   | 3/125  | . . . {Hydraulic pipe connections}  |
| 3/02        | . with forced circulation, e.g. by pumps ( <a href="#">pump constructions F04</a> )   | 3/127  | . . . {Mechanical connections between panels}   |
| 3/04        | . with the water under high pressure  | 3/14   | . . incorporated in a ceiling, wall or floor  |
| 3/06        | . . Arrangements or devices for maintaining high pressure   | 3/141  | . . . {Tube mountings specially adapted therefor}   |
| 3/08        | . in combination with systems for domestic hot-water supply   | 3/142  | . . . . {integrated in prefab construction elements}  |
| 3/082       | . . {Hot water storage tanks specially adapted therefor}  | 3/143  | . . . . {Tube clips with barbed anchors}  |
| 3/085       | . . . {Double-walled tanks}   | 3/144  | . . . . {Clips for fastening heating tubes on a reinforcement net or mesh, e.g. mesh for concrete reinforcement}                  |
| 3/087       | . . {Tap water heat exchangers specially adapted therefore}   | 3/145  | . . . {Convecting elements concealed in wall or floor}  |
| 3/10        | . Feed-line arrangements, e.g. providing for heat-accumulator tanks, expansion tanks {; Hydraulic components of a central heating system}   | 3/146  | . . . {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>		

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

**WARNING**

Group [F24D 19/10](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1003 . . {for steam heating systems}

**WARNING**

Group [F24D 19/1003](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1006 . . {for water heating systems}

**WARNING**

Group [F24D 19/1006](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1009 . . . {for central heating}

**WARNING**

Group [F24D 19/1009](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1012 . . . . {by regulating the speed of a pump}

**WARNING**

Group [F24D 19/1012](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1015 . . . . {using a valve or valves}

**WARNING**

Group [F24D 19/1015](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1018 . . . . . {Radiator valves}

**WARNING**

Group [F24D 19/1018](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1021 . . . . . {a by pass valve}

**WARNING**

Group [F24D 19/1021](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1024 . . . . . {a multiple way valve}

**WARNING**

Group [F24D 19/1024](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1027 . . . . . {hand operated}

**WARNING**

Group [F24D 19/1027](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/103 . . . . . {bimetal operated}

**WARNING**

Group [F24D 19/103](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1033 . . . . . {motor operated}

**WARNING**

Group [F24D 19/1033](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1036 . . . . . {Having differential pressure measurement facilities}

**WARNING**

Group [F24D 19/1036](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1039 . . . . {the system uses a heat pump}  
**WARNING**  
 Group [F24D 19/1039](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1042 . . . . {the system uses solar energy}  
**WARNING**  
 Group [F24D 19/1042](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1045 . . . . {the system uses a heat pump and solar energy}  
**WARNING**  
 Group [F24D 19/1045](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1048 . . . . {Counting of energy consumption}  
**WARNING**  
 Group [F24D 19/1048](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1051 . . . . {for domestic hot water}  
**WARNING**  
 Group [F24D 19/1051](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1054 . . . . {the system uses a heat pump}  
**WARNING**  
 Group [F24D 19/1054](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1057 . . . . {the system uses solar energy}  
**WARNING**  
 Group [F24D 19/1057](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/106 . . . . {the system uses a heat pump and solar energy}  
**WARNING**  
 Group [F24D 19/106](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1063 . . . . {counting of energy consumption}  
**WARNING**  
 Group [F24D 19/1063](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1066 . . . . {for the combination of central heating and domestic hot water}  
**WARNING**  
 Group [F24D 19/1066](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1069 . . . . {regulation in function of the temperature of the domestic hot water}  
**WARNING**  
 Group [F24D 19/1069](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.

19/1072 . . . . {the system uses a heat pump}  
**WARNING**  
 Group [F24D 19/1072](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).  
 All groups listed in this Warning should be considered in order to perform a complete search.



19/1075 . . . . {the system uses solar energy}

**WARNING**

Group [F24D 19/1075](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1078 . . . . {the system uses a heat pump and solar energy}

**WARNING**

Group [F24D 19/1078](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1081 . . . . {counting of energy consumption}

**WARNING**

Group [F24D 19/1081](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1084 . . {for air heating systems}

**WARNING**

Group [F24D 19/1084](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1087 . . . {system using a heat pump}

**WARNING**

Group [F24D 19/1087](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/109 . . . {system using solar energy}

**WARNING**

Group [F24D 19/109](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1093 . . . {system using a heat pump and solar energy}

**WARNING**

Group [F24D 19/1093](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

19/1096 . . {for electric heating systems}

**WARNING**

Group [F24D 19/1096](#) is impacted by reclassification into groups [F24H 15/00](#) - [F24H 15/493](#).

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

**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**

**2101/00 Electric generators of small-scale CHP systems**

- 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

**2103/00 Thermal aspects of small-scale CHP systems**

- 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

**2105/00 Constructional aspects of small-scale CHP systems**

- 2105/10 . Sound insulation

**2200/00 Heat sources or energy sources**

- 2200/02 . Photovoltaic energy
- 2200/04 . Gas or oil fired boiler
- 2200/043 . . More than one gas or oil fired boiler
- 2200/046 . . Condensing boilers
- 2200/06 . Solid fuel fired boiler
- 2200/062 . . Coal fired boilers
- 2200/065 . . Wood fired boilers
- 2200/067 . . . Pellet fired boilers
- 2200/07 . Solid fuel burners
- 2200/08 . Electric heater
- 2200/10 . Fire place
- 2200/11 . Geothermal energy
- 2200/115 . . Involving mains water supply

- 2200/12 . Heat pump
- 2200/123 . . Compression type heat pumps
- 2200/126 . . Absorption type heat pumps
- 2200/13 . Heat from a district heating network
- 2200/14 . Solar energy
- 2200/15 . Wind energy
- 2200/16 . Waste heat
- 2200/18 . . Flue gas recuperation
- 2200/19 . . Fuel cells
- 2200/20 . . Sewage water
- 2200/22 . . Ventilation air
- 2200/24 . . Refrigeration
- 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

### Central Heating Systems

#### 2220/00 Components of central heating installations excluding heat sources

- 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