

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

(NOTE omitted)

### H02 GENERATION; CONVERSION OR DISTRIBUTION OF ELECTRIC POWER

### H02J ELECTRIC POWER NETWORKS; CIRCUIT ARRANGEMENTS OR SYSTEMS FOR SUPPLYING OR DISTRIBUTING ELECTRIC POWER; SYSTEMS FOR STORING ELECTRIC ENERGY

#### NOTES

1. This subclass covers:
  - AC, DC or unspecified mains or power distribution networks;
  - remote operation of AC, DC or unspecified power networks;
  - circuit arrangements for charging or discharging batteries when the load has no particular limiting effect on the circuit arrangement;
  - long-term energy storage systems not otherwise provided for, having an interaction with AC or DC power networks;
  - circuit arrangements or systems for wireless supply or distribution of electric power;
  - operational aspects of smart grids, namely the integration of power, communications and information technologies for an improved electric power infrastructure serving loads while providing for evolution of end-use applications.
2. This subclass does not cover:
  - the control of a single motor, generator or dynamo-electric converter of the types covered by subclasses [H01F](#) or [H02K](#), which is covered by subclass [H02P](#);
  - the control of a single motor or generator, of the types covered by subclass [H02N](#), which is covered by subclass [H02N](#).
3. In this subclass, it is desirable to add the indexing codes of groups [H02J 2101/00](#) - [H02J 2207/00](#).

#### 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.

<b>1/00</b>	<b>Circuit arrangements for DC mains or DC distribution networks</b>	1/109	• • {Scheduling or re-scheduling the operation of the DC sources in a particular order, e.g. connecting or disconnecting the sources in sequential, alternating or in subsets, to meet a given demand}
1/001	• {Hot plugging or unplugging of load or power modules to or from power distribution networks}		
1/002	• using intermediate DC-AC-DC conversion	1/12	• • Parallel operation of DC sources having power converters with further DC sources without power converters
1/02	• Arrangements for reducing harmonics or ripples		
1/04	• Current-controlled supply systems, e.g. constant-current supply systems	1/122	• • {Provisions for temporary connection of DC sources of essentially the same voltage, e.g. jumpstart cables}
1/06	• Two-wire DC power distribution systems		
1/08	• Three-wire DC power distribution systems; Systems having more than three wires	1/14	• Balancing load and power generation in DC networks
1/082	• • DC supplies with two or more different DC voltage levels		
1/084	• • {for selectively connecting the load or loads to one or several among a plurality of power lines or power sources}		
1/086	• • • {for providing alternative feeding paths between load or loads and source or sources when the main path fails}		
1/10	• Parallel operation of DC sources		
1/102	• • being switching converters ( <a href="#">H02J 1/108</a> , <a href="#">H02J 1/12</a> take precedence)	1/15	• • characterised by load management
1/106	• • {for load balancing, symmetrisation, or sharing}		
1/108	• • having arrangements for blocking reverse current flow, e.g. using diodes ( <a href="#">H02J 1/12</a> takes precedence)		

#### WARNING

Group [H02J 1/14](#) is impacted by reclassification into groups [H02J 1/15](#) and [H02J 1/16](#).

Groups [H02J 1/14](#), [H02J 1/15](#) and [H02J 1/16](#) should be considered in order to perform a complete search.

#### WARNING

Group [H02J 1/15](#) is incomplete pending reclassification of documents from group [H02J 1/14](#).

Groups [H02J 1/14](#) and [H02J 1/15](#) should be considered in order to perform a complete search.

- 1/16 . . using energy storage units, e.g. batteries or dynamo-electric machines coupled to flywheels

**WARNING**

Group [H02J 1/16](#) is incomplete pending reclassification of documents from group [H02J 1/14](#).

Groups [H02J 1/14](#) and [H02J 1/16](#) should be considered in order to perform a complete search.

### 3/00 **Circuit arrangements for AC mains or AC distribution networks**

**WARNING**

Group [H02J 3/00](#) is impacted by reclassification into groups [H02J 3/11](#), [H02J 13/16](#), [H02J 13/18](#), [H02J 13/181](#), [H02J 13/182](#) and [H02J 13/183](#).

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

- 3/001 . Arrangements for handling faults or abnormalities, e.g. emergencies or contingencies

**WARNING**

Group [H02J 3/001](#) is impacted by reclassification into group [H02J 3/0014](#).

Groups [H02J 3/001](#) and [H02J 3/0014](#) should be considered in order to perform a complete search.

- 3/0012 . . characterised by the contingency detection means in AC networks, e.g. using phasor measurement units [PMU], synchrophasors or contingency analysis
- 3/00125 . . {Transmission line or load transient problems, e.g. overvoltage, resonance or self-excitation of inductive loads ([H02J 3/01](#) takes precedence)}
- 3/0014 . . for preventing or reducing power oscillations in networks

**WARNING**

Group [H02J 3/0014](#) is incomplete pending reclassification of documents from group [H02J 3/001](#).

Groups [H02J 3/001](#) and [H02J 3/0014](#) should be considered in order to perform a complete search.

- 3/00142 . . . {Oscillations concerning frequency}
- 3/00144 . . . {using phasor measuring units [PMU]}
- 3/002 . {Flicker reduction, e.g. compensation of flicker introduced by non-linear load}
- 3/003 . {Load forecast, e.g. methods or systems for forecasting future load demand}
- 3/004 . {Generation forecast, e.g. methods or systems for forecasting future energy generation}
- 3/007 . Arrangements for selectively connecting one or more loads to one or more power sources or power lines
- 3/0073 . . by providing alternative feeding paths when the main path fails
- 3/0075 . . {for providing alternative feeding paths between load and source according to economic or energy efficiency considerations, e.g. economic dispatch}

- 3/008 . Circuit arrangements for power supply or distribution technologies responsive to energy trading

- 3/01 . Arrangements for reducing harmonics or ripples

- 3/02 . using a single network for simultaneous distribution of AC power at different frequencies

**WARNING**

Group [H02J 3/02](#) is impacted by reclassification into group [H02J 4/10](#).

Groups [H02J 3/02](#) and [H02J 4/10](#) should be considered in order to perform a complete search.

- 3/04 . Arrangements for connecting networks of the same frequency but supplied from different sources

- 3/06 . . Controlling the transfer of power between connected networks; Controlling load sharing between connected networks

- 3/08 . . Synchronisation of networks

- 3/10 . Current-controlled supply systems, e.g. constant-current supply systems

- 3/11 . Arrangements for adjusting frequency in AC networks, e.g. by control of active power

**WARNING**

Group [H02J 3/11](#) is incomplete pending reclassification of documents from group [H02J 3/00](#).

Groups [H02J 3/00](#) and [H02J 3/11](#) should be considered in order to perform a complete search.

- 3/12 . Arrangements for adjusting voltage in AC networks by changing a characteristic of the network load

- 3/14 . . by switching loads on to, or off from, the networks, e.g. progressively balanced loading

- 3/16 . . by adjustment of reactive power

- 3/17 . Demand-responsive operation of AC power transmission or distribution networks

**WARNING**

Group [H02J 3/17](#) is impacted by reclassification into group [H02J 3/175](#).

Groups [H02J 3/17](#) and [H02J 3/175](#) should be considered in order to perform a complete search.

- 3/175 . . responsive to end-user or load operations ([H02J 3/14](#) takes precedence)

**WARNING**

Group [H02J 3/175](#) is incomplete pending reclassification of documents from group [H02J 3/17](#).

Groups [H02J 3/17](#) and [H02J 3/175](#) should be considered in order to perform a complete search.

- 3/18 . Arrangements for adjusting, eliminating or compensating reactive power in networks

- 3/1807 . . using series compensators, e.g. thyristor-controlled series capacitors [TCSC]

- 3/1814 . . . having reactive elements actively controlled by bridge converters, e.g. unified power flow controllers [UPFC] or controlled series voltage compensators
- 3/1821 . . using shunt compensators
- 3/1828 . . . with stepwise control, e.g. switched capacitor banks
- 3/1835 . . . with stepless control
- 3/1842 . . . . having reactive elements actively controlled by bridge converters, e.g. active filters or static compensators [STATCOM]
- 3/185 . . . . . the reactive elements being purely inductive, e.g. superconductive magnetic energy storage [SMES] systems
- 3/1857 . . . . . the bridge converters being multilevel bridge converters or modular multilevel converters
- 3/1864 . . . . using reactive elements connected in series with semiconductor switches, e.g. static VAR compensators [SVC], thyristor-controlled reactors [TCR] or thyristor-switched capacitors [TSC]
- 3/1871 . . . {Methods for planning installation of shunt reactive power compensators}
- 3/1878 . . using tap changing or phase shifting transformers
- 3/1885 . . using rotating AC generators, e.g. synchronous generators
- 3/1892 . . the arrangements being an integral part of the loads or of their control circuits
- 3/26 . Arrangements for eliminating or reducing asymmetry in polyphase networks
- 3/28 . Arrangements for balancing of the load in networks by storage of energy
- 3/30 . . using dynamo-electric machines coupled to flywheels
- 3/32 . . using batteries or super capacitors with converting means
- 3/322 . . . {the battery being on-board an electric or hybrid vehicle, e.g. vehicle to grid arrangements [V2G], power aggregation, use of the battery for network load balancing, coordinated or cooperative battery charging}
- 3/34 . Arrangements for transfer of electric power between networks of substantially different frequency
- 3/36 . Arrangements for transfer of electric power between AC networks via high-voltage DC [HVDC] links; Arrangements for transfer of electric power between generators and networks via HVDC links
- 2003/365 . . {Reducing harmonics or oscillations in HVDC}
- 3/38 . Arrangements for feeding a single network from two or more generators or sources in parallel; Arrangements for feeding already energised networks from additional generators or sources in parallel
- WARNING**
- Group [H02J 3/38](#) is impacted by reclassification into groups [H02J 3/40](#), [H02J 3/44](#), [H02J 3/46](#), [H02J 3/466](#) and [H02J 3/50](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 3/381 . . {Dispersed generators}
- 3/388 . . Arrangements for the handling of islanding, e.g. for disconnection or for avoiding the disconnection of power
- 3/40 . . Synchronisation of generators for connection to a network or to another generator
- WARNING**
- Groups [H02J 3/40](#) and [H02J 3/44](#) are incomplete pending reclassification of documents from group [H02J 3/38](#).
- Groups [H02J 3/38](#), [H02J 3/40](#) and [H02J 3/44](#) should be considered in order to perform a complete search.
- 3/42 . . . with automatic parallel connection when synchronisation is achieved
- 3/44 . . . with means for ensuring correct phase sequence
- 3/46 . . Controlling the sharing of generated power between the generators, sources or networks
- WARNING**
- Groups [H02J 3/46](#), [H02J 3/466](#) and [H02J 3/50](#) are incomplete pending reclassification of documents from group [H02J 3/38](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 3/466 . . . Scheduling or selectively controlling the operation of the generators or sources, e.g. connecting or disconnecting generators to meet a demand
- 3/472 . . . . {for selectively connecting the AC sources in a particular order, e.g. sequential, alternating or subsets of sources}
- 3/48 . . . Controlling the sharing of active power
- 3/50 . . . Controlling the sharing of reactive power
- 4/00** **Circuit arrangements for mains or distribution networks not specified as AC or DC; Circuit arrangements for mains or distribution networks combining AC and DC sections or sub-networks (arrangements using intermediate DC-AC-DC conversion [H02J 1/002](#); arrangements using high-voltage DC [HVDC] links [H02J 3/36](#))**
- WARNING**
- Group [H02J 4/00](#) is impacted by reclassification into groups [H02J 4/10](#) and [H02J 4/20 - H02J 4/25](#).
- Groups [H02J 4/00](#), [H02J 4/10](#) and [H02J 4/20 - H02J 4/25](#) should be considered in order to perform a complete search.
- 4/10 . . using a single network for simultaneous distribution of AC and DC power
- WARNING**
- Group [H02J 4/10](#) is incomplete pending reclassification of documents from groups [H02J 3/02](#) and [H02J 4/00](#).
- Groups [H02J 3/02](#), [H02J 4/00](#) and [H02J 4/10](#) should be considered in order to perform a complete search.

- 4/20 . Networks integrating separated AC and DC power sections
- WARNING**
- Groups [H02J 4/20](#) and [H02J 4/25](#) are incomplete pending reclassification of documents from group [H02J 4/00](#).
- Groups [H02J 4/00](#), [H02J 4/20](#) and [H02J 4/25](#) should be considered in order to perform a complete search.
- 4/25 . . for transfer of electric power between AC and DC networks, e.g. for supplying the DC section within a load from an AC mains system
- 7/00 Circuit arrangements for charging or discharging batteries or for supplying loads from batteries**
- 7/02 . for charging batteries from AC mains by converters
- 7/04 . . Regulation of charging current or voltage
- 7/06 . . . using discharge tubes or semiconductor devices
- 7/08 . . . . using discharge tubes only
- 7/12 . . . using magnetic devices having controllable degree of saturation, i.e. transducers
- 7/14 . for charging batteries from dynamo-electric generators driven at varying speed, e.g. on vehicle
- 7/1407 . . {on vehicles not being driven by a motor, e.g. bicycles}
- 7/1415 . . {with a generator driven by a prime mover other than the motor of a vehicle}
- 7/1423 . . {with multiple batteries}
- 7/143 . . {with multiple generators}
- 7/1438 . . {in combination with power supplies for loads other than batteries}
- 7/1446 . . {in response to parameters of a vehicle}
- 7/1469 . . {Regulation of the charging current or voltage otherwise than by variation of field}
- 7/1476 . . . {by mechanical action on the generator}
- 7/1484 . . . {by commutation of the output windings of the generator}
- 7/1492 . . . {by means of controlling devices between the generator output and the battery}
- 7/16 . . Regulation of the charging current or voltage by variation of field
- 7/163 . . . {with special means for initiating or limiting the excitation current}
- 7/18 . . . due to variation of ohmic resistance in field circuit, using resistance switching in or out of circuit step by step
- 7/20 . . . due to variation of continuously variable ohmic resistor
- 7/22 . . . due to variation of make-to-break ratio of intermittently-operating contacts, e.g. using Tirrill regulator
- 7/225 . . . . {characterised by the mechanical construction}
- 7/24 . . . using discharge tubes or semiconductor devices
- 7/243 . . . . {with on/off action}
- 7/2434 . . . . {with pulse modulation}
- 7/2437 . . . . {using thyristors or triacs as final control devices}
- 7/26 . . . using magnetic devices with controllable degree of saturation
- 7/28 . . . using magnetic devices with controllable degree of saturation in combination with controlled discharge tube or controlled semiconductor device
- 7/30 . . . using armature-reaction-excited machines
- 7/32 . for charging batteries from a charging set comprising a non-electric prime mover {rotating at constant speed}
- 7/34 . Parallel operation in networks using both storage and other DC sources, e.g. providing buffering ([H02J 7/14 takes precedence](#))
- 7/342 . . {The other DC source being a battery actively interacting with the first one, i.e. battery to battery charging (with circuits for polarity protection [H02J 7/68](#))}
- 7/345 . . {using capacitors as storage or buffering devices}
- 7/35 . . with light sensitive cells
- 7/36 . Arrangements using end-cell switching
- 7/40 . characterised by the exchange of charge or discharge related data
- WARNING**
- Group [H02J 7/40](#) is impacted by reclassification into group [H02J 7/46](#).
- Groups [H02J 7/40](#) and [H02J 7/46](#) should be considered in order to perform a complete search.
- 7/42 . . with electronic devices having internal batteries, e.g. mobile phones
- 7/44 . . between battery management systems and power sources
- WARNING**
- Group [H02J 7/44](#) is impacted by reclassification into group [H02J 7/45](#).
- Groups [H02J 7/44](#) and [H02J 7/45](#) should be considered in order to perform a complete search.
- 7/443 . . {using passive battery identification means, e.g. resistors or capacitors (identification by mechanical connections [H02J 7/751](#))}
- 7/445 . . . {in response to measured battery parameters, e.g. voltage, current or temperature profile}
- 7/448 . . . {using switches, contacts or markings, e.g. optical, magnetic or barcode}
- 7/45 . . between battery management systems and external servers (batteries used in smart grids for balancing of the load [H02J 3/32](#))
- WARNING**
- Group [H02J 7/45](#) is incomplete pending reclassification of documents from group [H02J 7/44](#).
- Groups [H02J 7/44](#) and [H02J 7/45](#) should be considered in order to perform a complete search.

- 7/46 . . Leader-follower arrangements
- WARNING**
- Group [H02J 7/46](#) is incomplete pending reclassification of documents from group [H02J 7/40](#).
- Groups [H02J 7/40](#) and [H02J 7/46](#) should be considered in order to perform a complete search.
- 7/47 . . Arrangements for checking compatibility or authentication between one component, e.g. a battery or a battery charger, and another component, e.g. a power source
- 7/485 . {with provisions for charging different types of batteries}
- 7/50 . acting upon multiple batteries simultaneously or sequentially
- 7/52 . . for charge balancing, e.g. equalisation of charge between batteries
- 7/54 . . . Passive balancing, e.g. using resistors or parallel MOSFETs
- 7/56 . . . Active balancing, e.g. using capacitor-based, inductor-based or DC-DC converters
- 7/575 . . {Parallel/serial switching of connection of batteries to charge or load circuit}
- 7/585 . . {Sequential battery discharge in systems with a plurality of batteries}
- 7/60 . including safety or protection arrangements
- 7/61 . . against overcharge
- 7/62 . . against overcurrent
- 7/63 . . against overdischarge
- 7/64 . . against overvoltage
- 7/65 . . against overtemperature
- 7/663 . . {using battery or load disconnect circuits ([H02J 9/002](#) takes precedence)}
- 7/667 . . . {disconnection of loads if battery is not under charge, e.g. in vehicle if engine is not running}
- 7/68 . . using circuits for correcting or protecting against reverse-polarity
- 7/685 . . {using connection detecting circuits ([H02J 7/68](#) takes precedence)}
- 7/70 . characterised by the mechanical construction
- 7/731 . . {specially adapted for holding portable devices containing batteries ([H02J 7/751](#) takes precedence)}
- 7/751 . . {concerning the insertion or the connection of the batteries}
- 7/80 . including monitoring or indicating arrangements
- 7/82 . . Control of state of charge [SOC]
- 7/825 . . . {Detection of fully charged condition}
- 7/84 . . Control of state of health [SOH]
- 7/855 . {with circuits adapted for supplying loads from the battery}
- 7/865 . {Battery or charger load switching, e.g. concurrent charging and load supply ([H02J 7/50](#) takes precedence)}
- 7/875 . {Charging or discharging for charge maintenance, battery initiation or rejuvenation}
- 7/90 . Regulation of charging or discharging current or voltage
- 7/92 . . with prioritisation of loads or sources
- 7/927 . . {with introduction of pulses during the charging process}
- 7/933 . . {the cycle being controlled or terminated in response to electric parameters}
- 7/94 . . in response to battery current
- 7/947 . . . {in response to integrated charge or discharge current}
- 7/953 . . . {in response to charge current gradient}
- 7/96 . . in response to battery voltage
- 7/963 . . . {in response to battery voltage gradient}
- 7/965 . . . {obtained with the battery disconnected from the charge or discharge circuit}
- 7/971 . . {the charge cycle being controlled or terminated in response to non-electric parameters}
- 7/973 . . . {in response to degree of gas development in the battery}
- 7/975 . . . {in response to temperature}
- 7/977 . . . . {of the battery}
- 9/00 Circuit arrangements for emergency or stand-by power supply, e.g. for emergency lighting**
- 9/002 . {in which a reserve is maintained in an energy source by disconnecting non-critical loads, e.g. maintaining a reserve of charge in a vehicle battery for starting an engine}
- 9/005 . {using a power saving mode ([for copiers G03G 15/5004](#))}
- 9/007 . . {Detection of the absence of a load}
- 9/02 . in which an auxiliary distribution system and its associated lamps are brought into service
- 9/04 . in which the distribution system is disconnected from the normal source and connected to a standby source
- 9/06 . . with automatic change-over {, e.g. UPS systems}
- 9/061 . . . {for DC powered loads}
- 9/062 . . . {for AC powered loads}
- 9/063 . . . . {Common neutral, e.g. AC input neutral line connected to AC output neutral line and DC middle point}
- 9/065 . . . . {for lighting purposes}
- 9/066 . . . {characterised by the use of dynamo-electric machines ([H02J 9/08](#) takes precedence)}
- 9/067 . . . {using multi-primary transformers, e.g. transformer having one primary for each AC energy source and a secondary for the loads}
- 9/068 . . . {Electronic means for switching from one power supply to another power supply, e.g. to avoid parallel connection}
- 9/08 . . . requiring starting of a prime-mover
- 11/00 Circuit arrangements for providing service supply to auxiliaries of stations in which electric power is generated, distributed or converted**
- 13/00 Circuit arrangements for providing remote monitoring or remote control of equipment in a power distribution network**
- WARNING**
- Group [H02J 13/00](#) is impacted by reclassification into group [H02J 13/38](#).
- Groups [H02J 13/00](#) and [H02J 13/38](#) should be considered in order to perform a complete search.
- 13/10 . characterised by displaying of information or by user interaction, e.g. supervisory control and data acquisition [SCADA] systems



- 13/12 . Monitoring network conditions, e.g. electrical magnitudes or operational status
- 13/13 . characterised by the transmission of data to equipment in the power network
- 13/1311 . . {using the power network as support for the transmission}
- 13/1313 . . . {using pulsed signals}
- 13/1315 . . . {using modification of a parameter of the network power signal}
- 13/1317 . . {using an auxiliary transmission line}
- 13/1319 . . . {carrying signals having the network frequency or DC signals}
- 13/1321 . . {using a wired telecommunication network or a data transmission bus}
- 13/1323 . . . {using optical fibres}
- 13/1325 . . . {using phone lines}
- 13/1327 . . {using optical means}
- 13/1329 . . {using ultrasonic means}
- 13/1331 . . {using wireless data transmission}
- 13/1333 . . . {by means of mobile telephony}
- 13/1335 . . . {involving a local wireless network, e.g. Wi-Fi®, ZigBee® or Bluetooth®}
- 13/1337 . . {involving the use of Internet protocols}
- 13/14 . the power network being locally controlled, e.g. home energy management systems [HEMS]
- 13/16 . the power network being controlled at grid-level, e.g. using aggregators

**WARNING**

Group [H02J 13/16](#) is incomplete pending reclassification of documents from group [H02J 3/00](#). Group [H02J 13/16](#) is also impacted by reclassification into groups [H02J 13/18](#), [H02J 13/181](#), [H02J 13/182](#) and [H02J 13/183](#).

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

- 13/18 . characterised by the remotely-controlled equipment, e.g. converters or transformers

**WARNING**

Groups [H02J 13/18](#), [H02J 13/181](#), [H02J 13/182](#) and [H02J 13/183](#) are incomplete pending reclassification of documents from groups [H02J 3/00](#) and [H02J 13/16](#).

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

- 13/181 . . the equipment comprising generators
- 13/182 . . the equipment comprising loads connected to the power network
- 13/183 . . the equipment comprising energy storage systems
- 13/333 . . the equipment forming part of substations
- 13/34 . . the equipment being switches, relays or circuit breakers
- 13/36 . . . specially adapted for protection systems

- 13/38 . . the equipment being power outlets

**WARNING**

Group [H02J 13/38](#) is incomplete pending reclassification of documents from group [H02J 13/00](#).

Groups [H02J 13/00](#) and [H02J 13/38](#) should be considered in order to perform a complete search.

**15/00 Systems for storing electric energy specially adapted for power networks****WARNING**

Group [H02J 15/00](#) is impacted by reclassification into group [H02J 15/40](#).

Groups [H02J 15/00](#) and [H02J 15/40](#) should be considered in order to perform a complete search.

- 15/10 . using storage of hydraulic energy
- 15/20 . using storage of pneumatic energy, e.g. compressed air energy storage [CAES]
- 15/30 . using storage of inertial or mechanical energy, e.g. using flywheels
- 15/40 . using coils, e.g. superconductive magnetic energy storage [SMES] systems

**WARNING**

Group [H02J 15/40](#) is incomplete pending reclassification of documents from group [H02J 15/00](#).

Groups [H02J 15/00](#) and [H02J 15/40](#) should be considered in order to perform a complete search.

- 15/50 . using stored hydrogen

**50/00 Circuit arrangements or systems for wireless supply or distribution of electric power****NOTE**

In this main group, the specific types of wireless technology used for the power transmission are covered in groups [H02J 50/05-H02J 50/30](#), while aspects relevant to the circuit arrangements or systems thereof are covered in groups [H02J 50/40-H02J 50/90](#).

- 50/001 . {Energy harvesting or scavenging}
- 50/005 . {Mechanical details of housing or structure aiming to accommodate the power transfer means, e.g. mechanical integration of coils, antennas or transducers into emitting or receiving devices}
- 50/05 . using capacitive coupling
- 50/10 . using inductive coupling
- 50/12 . . of the resonant type
- 50/15 . using ultrasonic waves
- 50/20 . using microwaves or radio frequency waves
- 50/23 . . characterised by the type of transmitting antennas, e.g. directional array antennas or Yagi antennas
- 50/27 . . characterised by the type of receiving antennas, e.g. rectennas
- 50/30 . using light, e.g. lasers
- 50/40 . using two or more transmitting or receiving devices ([H02J 50/50](#) takes precedence)

- 50/402 . . {the two or more transmitting or the two or more receiving devices being integrated in the same unit, e.g. power mats with several coils or antennas with several sub-antennas}
- 50/50 . using additional energy repeaters between transmitting devices and receiving devices
- 50/502 . . {the energy repeater being integrated together with the emitter or the receiver}
- 50/60 . responsive to the presence of foreign objects, e.g. detection of living beings
- 50/70 . involving the reduction of electric, magnetic or electromagnetic leakage fields
- 50/80 . involving the exchange of data, concerning supply or distribution of electric power, between transmitting devices and receiving devices
- 50/90 . involving detection or optimisation of position, e.g. alignment

#### **Indexing scheme relating to dispersed electric power generation**

##### **2101/00 Supply or distribution of decentralised, dispersed or local electric power generation**

- 2101/10 . Dispersed power generation using fossil fuels, e.g. diesel generators
- 2101/20 . Dispersed power generation using renewable energy sources

##### **WARNING**

Group [H02J 2101/20](#) is impacted by reclassification into group [H02J 2101/35](#).

Groups [H02J 2101/20](#) and [H02J 2101/35](#) should be considered in order to perform a complete search.

- 2101/22 . . Solar energy
- 2101/24 . . . Photovoltaics
- 2101/25 . . . . {involving maximum power point tracking control for photovoltaic sources}
- 2101/28 . . Wind energy
- 2101/30 . . Fuel cells
- 2101/35 . . Renewable hydrocarbon sources

##### **WARNING**

Group [H02J 2101/35](#) is incomplete pending reclassification of documents from group [H02J 2101/20](#).

Groups [H02J 2101/20](#) and [H02J 2101/35](#) should be considered in order to perform a complete search.

- 2101/40 . Hybrid power plants, i.e. a plurality of different generation technologies being operated at one power plant

#### **Indexing scheme relating to circuit arrangements for AC distribution networks**

##### **2103/00 Details of circuit arrangements for mains or AC distribution networks**

##### **WARNING**

Group [H02J 2103/00](#) is impacted by reclassification into groups [H02J 2103/40](#) and [H02J 2103/50](#).

Groups [H02J 2103/00](#), [H02J 2103/40](#) and [H02J 2103/50](#) should be considered in order to perform a complete search.

- 2103/30 . Simulating, planning, modelling, reliability check or computer assisted design [CAD] of electric power networks
- 2103/35 . . Grid-level management of power transmission or distribution systems, e.g. load flow analysis or active network management
- 2103/40 . Circuit arrangements adaptive to forecasted demand

##### **WARNING**

Group [H02J 2103/40](#) is incomplete pending reclassification of documents from group [H02J 2103/00](#).

Groups [H02J 2103/00](#) and [H02J 2103/40](#) should be considered in order to perform a complete search.

- 2103/50 . Circuit arrangements adaptive to forecasted power generation

##### **WARNING**

Group [H02J 2103/50](#) is incomplete pending reclassification of documents from group [H02J 2103/00](#).

Groups [H02J 2103/00](#) and [H02J 2103/50](#) should be considered in order to perform a complete search.

#### **Indexing scheme relating to spatial reach or load**

##### **2105/00 Networks for supplying or distributing electric power characterised by their spatial reach or by the load**

- 2105/10 . Local stationary networks having a local or delimited stationary reach
- 2105/12 . . supplying households or buildings
- 2105/16 . . being internal to power sources or power generation plants
- 2105/30 . the load networks being external to vehicles, i.e. exchanging power with vehicles
- 2105/31 . . {for ships or vessels}
- 2105/32 . . {for aircrafts}
- 2105/33 . . exchanging power with road vehicles
- 2105/37 . . . exchanging power with electric vehicles [EV] or with hybrid electric vehicles [HEV]
- 2105/40 . characterised by the loads connecting to the networks or being supplied by the networks
- 2105/42 . . Home appliances
- 2105/425 . . . {the loads being an Information and Communication Technology [ICT] facility}
- 2105/44 . . Portable electronic devices
- 2105/46 . . Medical devices, medical implants or life supporting devices

- 2105/50 . for selectively controlling the operation of the loads
- 2105/51 . . {according to a condition being electrical}
- 2105/52 . . for limitation of the power consumption in the networks or in one section of the networks, e.g. load shedding or peak shaving
- 2105/53 . . . for partial power limitation, e.g. entering degraded or current limitation modes
- 2105/54 . . according to a non-electrical condition, e.g. temperature
- 2105/55 . . . according to an economic condition, e.g. tariff-based load management
- 2105/57 . . {according to a pre-established time schedule}
- 2105/59 . . {one of the loads acting as leader and the other or others acting as followers}
- 2105/61 . {Load identification}

#### **Indexing scheme relating to circuit arrangements for communication**

- 2107/00** . **Circuit arrangements for communication specially adapted for monitoring, managing or controlling operation of power networks remotely**

##### **WARNING**

Group [H02J 2107/00](#) is impacted by reclassification into groups [H02J 2107/10](#) - [H02J 2107/105](#), [H02J 2107/20](#) and [H02J 2107/30](#).

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

- 2107/10 . using wired networks, e.g. data transmission buses or optical fibres

##### **WARNING**

Groups [H02J 2107/10](#) and [H02J 2107/105](#) are incomplete pending reclassification of documents from group [H02J 2107/00](#).

Groups [H02J 2107/00](#), [H02J 2107/10](#) and [H02J 2107/105](#) should be considered in order to perform a complete search.

- 2107/105 . . Power line communication [PLC]
- 2107/20 . using wireless networks, e.g. mobile telephones

##### **WARNING**

Group [H02J 2107/20](#) is incomplete pending reclassification of documents from group [H02J 2107/00](#).

Groups [H02J 2107/00](#) and [H02J 2107/20](#) should be considered in order to perform a complete search.

- 2107/30 . involving the use of Internet protocols

##### **WARNING**

Group [H02J 2107/30](#) is incomplete pending reclassification of documents from group [H02J 2107/00](#).

Groups [H02J 2107/00](#) and [H02J 2107/30](#) should be considered in order to perform a complete search.

- 2107/40 . {using simultaneously two or more different transmission means}

#### **Indexing scheme relating to circuit arrangements for charging or discharging batteries or supplying loads from batteries**

- 2207/00** . **Details of circuit arrangements for charging or discharging batteries or supplying loads from batteries**

- 2207/10 . Control circuit supply, e.g. means for supplying power to the control circuit
- 2207/20 . Charging or discharging characterised by the power electronics converter
- 2207/30 . Charge provided using DC bus or data bus of a computer
- 2207/40 . adapted for charging from various sources, e.g. AC, DC or multivoltage
- 2207/50 . Charging of capacitors, supercapacitors, ultra-capacitors or double layer capacitors