

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

- 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.
- 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](#).
- 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.

1/00	Circuit arrangements for DC mains or DC distribution networks	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	1/15	. . characterised by load management
1/102	. . being switching converters (H02J 1/108 , H02J 1/12 take precedence)		
1/106	. . {for load balancing, symmetrisation, or sharing}		
1/108	. . having arrangements for blocking reverse current flow, e.g. using diodes (H02J 1/12 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 [TSCS]

- 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