

CPC COOPERATIVE PATENT CLASSIFICATION

Y02B INDEXING SCHEME RELATING TO CLIMATE CHANGE MITIGATION TECHNOLOGIES RELATED TO BUILDINGS, e.g. INCLUDING HOUSING AND APPLIANCES OR RELATED END-USER APPLICATIONS

WARNING

Subclass [Y02B](#) and its groups are not complete

10/00	Integration of renewable energy sources in buildings	20/341	. . . Specially adapted circuits
10/10	. Photovoltaic [PV]	20/342	. . . . for driving the LEDs directly from an AC voltage source, e.g. with only passive components
10/12	. . Roof systems for PV cells		
10/14	. . PV hubs	20/343	. . . . Linear regulators
10/20	. Solar thermal	20/345	. . . . . configured as a current source
10/22	. . Evacuated solar collectors	20/346	. . . . Switching regulators
10/24	. . Air conditioning or refrigeration systems	20/347	. . . . . configured as a current source
10/30	. Wind power	20/348	. . . . Resonant bridges
10/40	. Geothermal heat-pumps	20/36	. . Organic LEDs, i.e. OLEDs for general illumination
10/50	. Hydropower in dwellings		
10/60	. Use of biomass for heating	20/38	. . Constructional details
10/70	. Hybrid systems	20/383	. . . Adaptation to Edison sockets
10/72	. . Uninterruptible or back-up power supplies integrating renewable energies	20/386	. . . Retrofitting in tubes
		20/40	. Control techniques providing energy savings
		20/42	. . based on timing means or schedule
		20/44	. . based on detection of the user
20/00	Energy efficient lighting technologies	20/445	. . . Controlling the access to premises
20/10	. Energy saving technologies for incandescent lamps	20/46	. . based on detection of the illumination level
20/12	. . Halogen lamps	20/48	. . Smart controllers
20/125	. . . High voltage halogen lamps	20/70	. Used in particular applications
20/14	. . Specially adapted circuits	20/72	. . in street lighting
20/142	. . . for resonant dimming, e.g. by means of high frequency resonant bridges		
20/144	. . . for pulse modulation dimming	30/00	Energy efficient heating, ventilation or air conditioning [HVAC]
20/146	. . . for phase control dimming	30/08	. relating to domestic heating, space heating or domestic hot water heating or supply systems [DHW]
20/148	. . . . for reverse phase control dimming		
20/16	. Gas discharge lamps, e.g. fluorescent lamps, high intensity discharge lamps [HID] or molecular radiators	30/10	. . using boilers (not used, see subgroups)
20/18	. . Low pressure and fluorescent lamps	30/102	. . . Condensing boilers
20/181	. . . Fluorescent powders	30/104	. . . . Moistening the combustion air with condensate from the combustion gases
20/183	. . . Specially adapted circuits	30/106	. . . . Removing condensate from the heater
20/185	. . . . Self-resonant bridges	30/108	. . . Modular boilers, i.e. connecting different sections within a boiler or cascading multiple boilers
20/186	. . . . Controlled bridges		
20/188	. . . . . with dedicated cathode heating circuitry	30/12	. . Hot water central heating systems using heat pumps
20/19	. . Mechanical details of compact fluorescent lamps	30/123	. . . Self contained heating units using heat pumps
20/20	. . High pressure [UHP] or high intensity discharge lamps [HID]	30/126	. . . . combined with the use of heat accumulated in storage masses
20/202	. . . Specially adapted circuits		
20/204	. . . . Details of the starting circuit	30/14	. . Central heating systems having more than one heat source
20/206	. . . . . for hot restarting	30/16	. . Central heating systems using steam or condensate extracted or exhausted from steam engine plants
20/208	. . . . providing detection and prevention of anomalous lamp operating conditions	30/18	. . Domestic hot-water supply systems using recuperated or waste heat
20/22	. . Other discharge lamps	30/20	. . Heat consumers, i.e. devices to provide the end user with heat
20/30	. Semiconductor lamps, e.g. solid state lamps [SSL] light emitting diodes [LED] or organic LED [OLED]		
20/32	. . Electroluminescent panels (not used, see subgroups)		
20/325	. . . Specially adapted circuits		
20/34	. . inorganic LEDs (not used, see subgroups)		

- 30/22 . . . Low temperature radiators, i.e. convectors, radiators or a mixture of both with increased heat-exchange surface being suitable for systems working with a low temperature heat transfer medium
- 30/24 . . . ceiling, wall or underfloor heating arrangements for being used in combination with water central heating system
- 30/26 . . . Radiant panels electrically heated
- 30/28 . . . Direct fired air heaters, i.e. the air being in direct contact with the exhaust gases of the burner
- 30/50 . Systems profiting of external/internal conditions (not used, see subgroups)
- 30/52 . . Heat recovery pumps, i.e. heat pump based systems or units able to transfer the thermal energy from one area of the premises or part of the facilities to a different one, improving the overall efficiency
- 30/54 . . Free-cooling systems (not used, see subgroups)
- 30/542 . . . Air based, e.g. mixed outside air and recirculation systems
- 30/545 . . . Cooling using dew point control and direct humidifiers
- 30/547 . . . Using energy from the ground by air circulation, e.g. "Canadian well"
- 30/56 . . Heat recovery units (not used, see subgroups)
- 30/563 . . . Air to air
- 30/566 . . . Water to water
- 30/60 . Other technologies for heating or cooling (not used, see subgroups)
- 30/62 . . Absorption based systems
- 30/625 . . . integrating combined heat and power generation [CHP] systems, i.e. trigeneration
- 30/64 . . Adsorption based systems
- 30/66 . . Magnetic cooling
- 30/70 . Efficient control or regulation technologies (empty, see subgroups)
- 30/72 . . Electric or electronic refrigerant flow control
- 30/74 . . Technologies based on motor control (not used, see subgroups)
- 30/741 . . . Speed regulation of the compressor
- 30/743 . . . Condensing pressure control
- 30/745 . . . Speed regulation of pumps in flow control systems
- 30/746 . . . Speed regulation of fans in flow control systems
- 30/748 . . . Speed regulation of fans and pumps in cooling towers
- 30/76 . . Centralised control (not used, see subgroups)
- 30/762 . . . of heating or domestic hot water [DHW] systems
- 30/765 . . . of refrigeration machines, plants or systems, including combined heating and refrigeration systems or heat-pumps
- 30/767 . . . of air distribution systems
- 30/78 . . Ventilation adapted to air quality
- 30/80 . Ultrasonic humidifiers
- 30/90 . Passive houses; Double facade technology (not used, see subgroups)
- 30/92 . . with air flow into the conditioned premises or facilities
- 30/94 . . Improving the thermodynamic properties of the premises or facilities
- 40/00 Technologies aiming at improving the efficiency of home appliances**
- 40/10 . Relating to domestic cooking (not used, see subgroups)
- 40/12 . . Induction cooking in kitchen stoves (not used, see subgroups)
- 40/123 . . . Control circuit or coil power supply
- 40/126 . . . Coil arrangements
- 40/14 . . Microwave ovens (not used, see subgroups)
- 40/143 . . . Control circuit or magnetron power supply
- 40/146 . . . Load impedance matching, e.g. by acting upon phase or frequency
- 40/16 . . Improved cooking stoves (not used, see subgroups)
- 40/163 . . . Fuel efficient biomass cooking stoves
- 40/166 . . . Fuel efficient gas cooking stoves
- 40/18 . . Solar cooking stoves or furnaces
- 40/30 . Relating to refrigerators or freezers (not used see subgroups)
- 40/32 . . Motor speed control of compressors or fans
- 40/34 . . Thermal insulation
- 40/40 . Relating to dish-washers (not used, see subgroups)
- 40/42 . . Motor speed control of pumps
- 40/44 . . Heat recovery, e.g. of washing water
- 40/46 . . Optimisation of water quantity, e.g. of hot water
- 40/50 . Relating to washing machines
- 40/52 . . Motor speed control of drum or pumps
- 40/54 . . Heat recovery, e.g. of washing water
- 40/56 . . Optimisation of water quantity
- 40/58 . . Solar heating
- 40/70 . Relating to laundry dryers (not used, see subgroups)
- 40/72 . . Motor speed control of drum or fans
- 40/74 . . Solar heating
- 40/80 . Related to vacuum cleaners (not used, see subgroups)
- 40/82 . . Motor speed or motor power consumption control
- 40/84 . . Motor overheating or overloading prevention
- 40/90 . Energy efficient batteries, ultracapacitors, supercapacitors or double-layer capacitors charging or discharging systems or methods specially adapted for portable applications
- 50/00 Energy efficient technologies in elevators, escalators and moving walkways**
- 50/10 . in elevators
- 50/12 . . Energy saving technologies
- 50/122 . . . by adapted call allocation
- 50/125 . . . by adapting the motion profile
- 50/127 . . . by control of auxiliary devices
- 50/14 . . Energy recuperation technologies
- 50/142 . . . with electrical storage
- 50/144 . . . with mechanical storage
- 50/146 . . . with pressure storage
- 50/148 . . . by delivering current to the grid for hydraulic elevators
- 50/20 . in escalators and moving walkways
- 50/22 . . Energy saving technologies
- 50/225 . . . by adapting the motion profile
- 50/24 . . Energy recuperation technologies

60/00 Information and communication technologies [ICT] aiming at the reduction of own energy use

- 60/10 . Energy efficient computing
- 60/12 . . Reducing energy-consumption at the single machine level, e.g. processors, personal computers, peripherals, power supply
 - 60/1203 . . . involving a plurality of components
 - 60/1207 . . . acting upon the main processing unit
 - 60/121 Low-power processors
 - 60/1214 Performance modes
 - 60/1217 Frequency modification
 - 60/1221 Clock disabling
 - 60/1225 . . . Access, addressing or allocation within memory systems or architectures, e.g. to reduce power consumption or heat production, or to increase battery life
 - 60/1228 . . . Interconnection, or transfer of information or other signals between, memories, peripherals or central processing units
 - 60/1232 . . . Acting upon peripherals
 - 60/1235 the peripheral being a bus
 - 60/1239 the peripheral being a memory control unit [MCU]
 - 60/1242 the peripheral being a display
 - 60/1246 the peripheral being disc or storage devices
 - 60/125 The peripheral being a CD-ROM unit
 - 60/1253 the peripheral being a cursor control device
 - 60/1257 the peripheral being a keyboard
 - 60/126 the peripheral being a modem
 - 60/1264 the peripheral being a PCMCIA card
 - 60/1267 the peripheral being a printer
 - 60/1271 Data transfer to print units
 - 60/1275 . . . Cooling means for computing equipment provided with thermal management
 - 60/1278 . . . Power management
 - 60/1282 Selective power distribution
 - 60/1285 Controlling the supply voltage
 - 60/1289 Monitoring user presence
 - 60/1292 Battery monitoring
 - 60/1296 Power strips aiming to energy efficient operation
 - 60/14 . . Reducing energy-consumption by means of multiprocessor or multiprocessing based techniques, other than acting upon the power supply
 - 60/142 . . . Resource allocation
 - 60/144 . . . Scheduling
 - 60/146 . . . Increasing resource utilisation, e.g. virtualisation, consolidation
 - 60/148 . . . Load distribution
 - 60/16 . . Reducing energy-consumption in distributed systems
 - 60/162 . . . Delegation or migration
 - 60/165 . . . Monitoring
 - 60/167 . . . Resource sharing
 - 60/18 . . Reducing energy consumption at software or application level
 - 60/181 . . . Compilation
 - 60/183 . . . Installation
 - 60/185 . . . At application level, i.e. feedback, prediction, usage patterns

- 60/186 . . . Suspending or hibernating, performance or eco-modes, operating system support, e.g. advanced configuration and power interface [ACPI]
- 60/188 . . . Information retrieval in databases
- 60/30 . Techniques for reducing energy-consumption in wire-line communication networks
 - 60/31 . . using reduced link rate, e.g. adaptive link rate, not involving auto-negotiation
 - 60/32 . . using subset functionality
 - 60/33 . . by selective link activation in bundled links
 - 60/34 . . by operating in low-power or sleep mode
 - 60/35 . . . specifically suitable for Ethernet, e.g. IEEE802.3az
 - 60/36 . . . specifically suitable for DSL
- 60/40 . High level techniques for reducing energy-consumption in communication networks
 - 60/41 . . by proxying, i.e. delegating network functionalities while in low-power mode, e.g. ECMA 393 standard
 - 60/42 . . by energy-aware routing
 - 60/43 . . by signaling and coordination, e.g. signaling reduction, link layer discovery protocol [LLDP], control policies, green TCP
 - 60/44 . . . specifically suitable for Ethernet, e.g. IEEE802.3az
 - 60/45 . . . specifically suitable for DSL
 - 60/46 . . Application modification for reducing energy-consumption, e.g. green peer-to-peer,
- 60/50 . Techniques for reducing energy-consumption in wireless communication networks
- 70/00 Technologies for an efficient end-user side electric power management and consumption**
- 70/10 . Technologies improving the efficiency by using switched-mode power supplies [SMPS], i.e. efficient power electronics conversion (*not used, see subgroups*)
- 70/12 . . Power factor correction technologies for power supplies
 - 70/123 . . . Passive technologies
 - 70/126 . . . Active technologies
 - 70/14 . . Reduction of losses in power supplies (*not used, see subgroups*)
 - 70/1408 . . . Low frequency active rectification, i.e. from a low frequency AC grid or generator
 - 70/1416 . . . Converters benefiting from a resonance, e.g. resonant or quasi-resonant converters (*not used, see subgroups*)
 - 70/1425 in non-galvanically isolated DC/DC converters
 - 70/1433 in galvanically isolated DC/DC converters
 - 70/1441 in DC/AC or AC/DC converters
 - 70/145 in AC/AC converters
 - 70/1458 . . . Synchronous rectification (*not used, see subgroups*)
 - 70/1466 in non-galvanically isolated DC/DC converters
 - 70/1475 in galvanically isolated DC/DC converters
 - 70/1483 . . . by using wide band gap based power semiconductors, i.e. power converters integrating silicon carbide [SiC], gallium nitride [GaN], gallium arsenide [GaAs] or diamond power switches

70/1491	. . . Other technologies for reduction of losses, e.g. non-dissipative snubbers, diode reverse recovery losses minimisation, zero voltage switching [ZVS], zero current switching [ZCS] or soft switching converters	80/26	. . . Other special glazing, e.g. aerogel
70/16	. . Efficient standby or energy saving modes, e.g. detecting absence of load or auto-off	80/28	. . Wooden or plastic frames with extra insulation
70/30	. Systems integrating technologies related to power network operation and communication or information technologies for improving the carbon footprint of the management of residential or tertiary loads, i.e. smart grids as climate change mitigation technology in the buildings sector, including also the last stages of power distribution and the control, monitoring or operating management systems at local level (smart grids supporting the management or operation of end-user stationary applications in general, including technologies with no associated climate change mitigation effect Y04S 20/00) (not used, see subgroups)	80/30	. Roofs
70/32	. . End-user application control systems (not used, see subgroups)	80/32	. . Roof garden systems
70/3208	. . . characterised by the aim of the control (not used, see subgroups)	80/34	. . Roof coverings with high solar reflectance
70/3216	. . . . General power management systems	80/40	. Floors specially adapted for storing heat or cold
70/3225	. . . . Demand response systems, e.g. load shedding, peak shaving	80/50	. Light dependent control systems for sun shading
70/3233	. . . . The system entering an energy saving mode, i.e. sleep, low-power or standby modes	90/00	Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation
70/3241	. . . . Domotics or building automation systems	90/10	. Applications of fuel cells in buildings
70/325	. . . . . involving home automation communication networks	90/12	. . Cogeneration of electricity with other electric generators
70/3258	. . . characterised by the end-user application (not used, see subgroups)	90/14	. . Emergency, uninterruptible or back-up power supplies integrating fuel cells
70/3266	. . . . The end-user application being or involving home appliances	90/16	. . Cogeneration or combined heat and power generation, e.g. for domestic hot water
70/3275	. . . . . The home appliances being or involving heating ventilating or air conditioning [HVAC] units	90/18	. . Fuel cells specially adapted to portable applications, e.g. mobile phone, laptop
70/3283	. . . . . The system involving the remote operation of lamps or lighting equipment	90/20	. Systems integrating technologies related to power network operation and communication or information technologies mediating in the improvement of the carbon footprint of the management of residential or tertiary loads, i.e. smart grids as enabling technology in buildings sector (not used, see subgroups) (Smart grids supporting the management or operation of end-user stationary applications in general, including technologies with no associated climate change mitigation effect Y04S 20/00)
70/3291	. . . . The end-user application involving uninterruptible power supply [UPS] systems or standby or emergency generators (for uninterruptible power supply systems or standby or emergency generators in the last power distribution stages Y04S 20/12)	90/22	. . Systems characterised by the monitored, controlled or operated end-user elements or equipments (not used, see subgroups)
70/34	. . Smart metering supporting the carbon neutral operation of end-user applications in buildings (not used, see subgroups)	90/222	. . . the elements or equipments being or involving energy storage units, uninterruptible power supply [UPS] systems or standby or emergency generators involved in the last power distribution stages (energy storage units involved in power generation, transmission or distribution Y04S 10/14; uninterruptible power supply systems or standby or emergency generators as end-user application Y04S 20/248)
70/343	. . . Systems which determine the environmental impact of user behavior	90/224	. . . the elements or equipments being or involving protection elements, switches, relays or circuit breakers
70/346	. . . Systems which monitor the performance of renewable electricity generating systems, e.g. of solar panels	90/226	. . . the elements or equipments being or involving power plugs, sockets, adapters or power strips
80/00	Architectural or constructional elements improving the thermal performance of buildings	90/228	. . . the element or elements being a direct current power network, grid or distribution line
80/10	. Insulation	90/24	. . Smart metering mediating in the carbon neutral operation of end-user applications in buildings (not used, see subgroups)
80/12	. . Slab shaped vacuum insulation	90/241	. . . Systems characterised by remote reading
80/14	. . Slab shaped aerogel insulation	90/242	. . . . from a fixed location
80/20	. Windows or doors	90/243	. . . . from a mobile location
80/22	. . Glazing	90/244	. . . . the remote reading system including mechanisms for turning on/off the supply
80/24	. . . Vacuum glazing	90/245	. . . Displaying of usage with respect to time, e.g. monitoring evolution of usage, relating usage to weather conditions
		90/246	. . . Utility meters which are networked together, e.g. within a single building
		90/247	. . . Retrofitting of installed meters

- 90/248 . . . Systems oriented to metering of generated energy or power
- 90/26 . . . Communication technology specific aspects ([not used, see subgroups](#))
- 90/2607 . . . Details of the transmission structure or support between the monitoring, controlling or managing units and monitored, controlled or operated electrical equipment ([not used, see subgroups](#))
- 90/2615 using the power network as support for the transmission
- 90/2623 using pulsed signals
- 90/263 using modification of a parameter of the network power signal
- 90/2638 using a data transmission bus
- 90/2646 using phone lines
- 90/2653 using wireless data transmission
- 90/2661 By means of mobile telephony
- 90/2669 using Internet
- 90/2676 . . . Aspects related to the treatment or conditioning of data or signals ([not used, see subgroups](#))
- 90/2684 associated with communication via dedicated transmission supports
- 90/2692 associated with communication via the power transmission network