

# CPC COOPERATIVE PATENT CLASSIFICATION

## Y GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS

(NOTES omitted)

### Y04 INFORMATION OR COMMUNICATION TECHNOLOGIES HAVING AN IMPACT ON OTHER TECHNOLOGY AREAS

### Y04S SYSTEMS INTEGRATING TECHNOLOGIES RELATED TO POWER NETWORK OPERATION, COMMUNICATION OR INFORMATION TECHNOLOGIES FOR IMPROVING THE ELECTRICAL POWER GENERATION, TRANSMISSION, DISTRIBUTION, MANAGEMENT OR USAGE, i.e. SMART GRIDS

#### Systems supporting electrical power generation, transmission or distribution

- 10/00** Systems supporting electrical power generation, transmission or distribution
- 10/12 . Monitoring or controlling equipment for energy generation units, e.g. distributed energy generation [DER] or load-side generation
- 10/123 . . the energy generation units being or involving renewable energy sources
- 10/126 . . the energy generation units being or involving electric vehicles [EV] or hybrid vehicles [HEV], i.e. power aggregation of EV or HEV, vehicle to grid arrangements [V2G]
- 10/14 . Energy storage units
- 10/16 . Electric power substations
- 10/18 . using switches, relays or circuit breakers, e.g. intelligent electronic devices [IED]
- 10/20 . using protection elements, arrangements or systems
- 10/22 . Flexible AC transmission systems [FACTS] or power factor or reactive power compensating or correcting units
- 10/30 . State monitoring, e.g. fault, temperature monitoring, insulator monitoring, corona discharge
- 10/40 . Display of information, e.g. of data or controls
- 10/50 . Systems or methods supporting the power network operation or management, involving a certain degree of interaction with the load-side end user applications
- 10/52 . . Outage or fault management, e.g. fault detection or location

#### Systems supporting the management or operation of end-user stationary applications, including also the last stages of power distribution and the control, monitoring or operating management systems at local level

- 20/00** Management or operation of end-user stationary applications or the last stages of power distribution; Controlling, monitoring or operating thereof
- 20/12 . Energy storage units, uninterruptible power supply [UPS] systems or standby or emergency generators, e.g. in the last power distribution stages

- 20/14 . Protecting elements, switches, relays or circuit breakers
- 20/20 . End-user application control systems
- 20/221 . . General power management systems
- 20/222 . . Demand response systems, e.g. load shedding, peak shaving
- 20/242 . . Home appliances
- 20/244 . . . the home appliances being or involving heating ventilating and air conditioning [HVAC] units
- 20/246 . . . the system involving the remote operation of lamps or lighting equipment
- 20/248 . . UPS systems or standby or emergency generators
- 20/30 . Smart metering, e.g. specially adapted for remote reading

#### Systems supporting specific end-user applications in the sector of transportation

- 30/00** Systems supporting specific end-user applications in the sector of transportation
- 30/10 . Systems supporting the interoperability of electric or hybrid vehicles
- 30/12 . . Remote or cooperative charging
- 30/14 . . Details associated with the interoperability, e.g. vehicle recognition, authentication, identification or billing

#### Communication or information technology specific aspects supporting electrical power generation, transmission, distribution or end-user application management

- 40/00** Systems for electrical power generation, transmission, distribution or end-user application management characterised by the use of communication or information technologies, or communication or information technology specific aspects supporting them
- 40/12 . characterised by data transport means between the monitoring, controlling or managing units and monitored, controlled or operated electrical equipment
- 40/121 . . using the power network as support for the transmission

- 40/124 . . using wired telecommunication networks or data transmission busses
- 40/126 . . using wireless data transmission
- 40/128 . . involving the use of Internet protocol
- 40/18 . Network protocols supporting networked applications, e.g. including control of end-device applications over a network
- 40/20 . Information technology specific aspects, e.g. CAD, simulation, modelling, system security

**Market activities related to the operation of systems integrating technologies related to power network operation and communication or information technologies**

- 50/00      Market activities related to the operation of systems integrating technologies related to power network operation or related to communication or information technologies**
- 50/10 . Energy trading, including energy flowing from end-user application to grid
- 50/12 . Billing, invoicing, buying or selling transactions or other related activities, e.g. cost or usage evaluation
- 50/14 . Marketing, i.e. market research and analysis, surveying, promotions, advertising, buyer profiling, customer management or rewards
- 50/16 . Energy services, e.g. dispersed generation or demand or load or energy savings aggregation