### Y02T CLIMATE CHANGE MITIGATION TECHNOLOGIES RELATED TO TRANSPORTATION

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<th>10/00</th>
<th>Road transport of goods or passengers</th>
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<td>10/121</td>
<td>. . . Adding non fuel substances or small quantities of secondary fuel to fuel, air or fuel/air mixture</td>
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<td>. . . Combustion chambers and charge mixing enhancing inside the combustion chamber</td>
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<td>. . . Acting upon fuel or oxidizing compound, e.g. pre-treatment by catalysts, ultrasound or electricity</td>
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<td>. . . Methods of operating, e.g. homogeneous charge compression ignition (HCCI), premixed charge compression ignition (PCCI)</td>
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<td>. . . Technologies for the improvement of mechanical efficiency of a conventional ICE</td>
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<td>10/142</td>
<td>. . . Methods of operating, e.g. Atkinson cycle, Ericsson</td>
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<td>. . . Non naturally aspirated engines, e.g. turbocharging, supercharging</td>
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<td>10/146</td>
<td>. . . Charge mixing enhancing outside the combustion chamber</td>
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<td>10/148</td>
<td>. . . Downsizing or downspeeding</td>
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<td>10/16</td>
<td>. . . Energy recuperation from low temperature heat sources of the ICE to produce additional power</td>
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<td>10/17</td>
<td>. . . Non-reciprocating piston engines, e.g. rotating motors</td>
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<td>. . . Varying inlet or exhaust valve operating characteristics</td>
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<td>. . . Exhaust after-treatment</td>
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<td>. . . Three way catalyst technology, i.e. oxidation or reduction at stoichiometric equivalence ratio</td>
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<td>. . . Selective Catalytic Reactors for reduction in oxygen rich atmosphere</td>
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<td>. . . Thermal conditioning of exhaust after-treatment</td>
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<td>. . . Gaseous fuels</td>
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<td>10/34</td>
<td>. . . Non-gaseous fuels</td>
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<td>10/36</td>
<td>. . . Multiple fuels, e.g. multi fuel engines</td>
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| 10/40 | . . . Engine management systems |
| 10/42 | . . . controlling air supply |
| 10/44 | . . . controlling fuel supply |
| 10/46 | . . . controlling ignition |
| 10/47 | . . . Exhaust feedback |
| 10/48 | . . . Switching off the internal combustion engine, e.g. stop and go |
| 10/50 | . . . Intelligent control systems, e.g. conjoint control |
| 10/52 | . . . relating to internal combustion engine fuel consumption |
| 10/54 | . . . relating to internal combustion engine emissions |
| 10/56 | . . . Optimising drivetrain operating point |
| 10/60 | . . . Other road transportation technologies with climate change mitigation effect |
| 10/62 | . . . Hybrid vehicles |
| 10/6204 | . . . using ICE and mechanical energy storage, e.g. flywheel (mechanical storage units for electromobility in general Y02T 10/7027) |
| 10/6208 | . . . using ICE and fluidic energy storage, e.g. pressure accumulator |
| 10/6213 | . . . using ICE and electric energy storage, i.e. battery, capacitor (battery for energy storage for electromobility in general Y02T 10/7005; capacitor technology for energy storage for electromobility in general Y02T 10/7022) |
| 10/6217 | . . . of the series type or range extenders |
| 10/6221 | . . . of the parallel type |
| 10/6226 | . . . Motor-assist type |
| 10/623 | . . . of the series-parallel type |
| 10/6234 | . . . Series-parallel switching type |
| 10/6239 | . . . Differential gearing distribution type |
| 10/6243 | . . . Electrical distribution type |
| 10/6247 | . . . with motor integrated into gearbox |
| 10/6252 | . . . connected or connectable to input shaft of gearing |
| 10/6256 | . . . connected or connectable to intermediate shaft of gearing |
| 10/626 | . . . Motor between output shaft of gearing and driven wheels |
| 10/6265 | . . . Driving a plurality of axles |
| 10/6269 | . . . provided with means for plug-in |
| 10/6273 | . . . Combining different types of energy storage |
Technologies aiming to reduce greenhouse gases 

50/00 Aeronautics or air transport

10/6278 Battery and capacitor
10/6282 Battery and mechanical or fluidic energy storage
10/6286 Control systems for power distribution between ICE and other motor or motors
10/6291 Predicting future driving conditions
10/6295 Other types of combustion engine
10/64 Electric machine technologies for applications in electromobility
10/641 characterised by aspects of the electric machine
10/642 Control strategies of electric machines for automotive applications
10/643 Vector control
10/644 Control strategies for ac machines other than vector control
10/645 Control strategies for dc machines
10/646 With two or more electric drive machines
10/70 Energy storage for electromobility (hydrogen internal combustion engines Y02T 90/42; fuel cell powered electric vehicles Y02T 90/34)
10/7005 Batteries
10/7011 Lithium ion battery
10/7016 Lead acid battery
10/7022 Capacitors, supercapacitors or ultracapacitors
10/7027 Mechanical energy storage devices
10/7033 Fly wheels
10/7038 Energy storage management
10/7044 Controlling the battery or capacitor state of charge
10/705 Controlling vehicles with one battery or one capacitor only
10/7055 Controlling vehicles with more than one battery or more than one capacitor
10/7061 the batteries or capacitors being of the same voltage
10/7066 the batteries or capacitors being of a different voltage
10/7072 Electromobility specific charging systems or methods for batteries, ultracapacitors, supercapacitors or double-layer capacitors (efficient charging systems for batteries, ultracapacitors, supercapacitors or double-layer capacitors in road transportation in general Y02T 10/92)
10/7077 on board the vehicle
10/7083 with the energy being of renewable origin
10/7088 Charging stations
10/7094 with the energy being of renewable origin
10/72 Electric energy management in electromobility
10/7208 Electric power conversion within the vehicle
10/7216 DC to DC power conversion
10/7225 Using step - up or boost converters
10/7233 Using step - down or buck converters
10/7241 DC to AC or AC to DC power conversion
10/725 AC to AC power conversion
10/7258 Optimisation of vehicle performance
10/7275 Desired performance achievement
10/7283 Optimisation of energy management
10/7291 by route optimisation processing
10/76 Transmission of mechanical power
10/80 Technologies aiming to reduce greenhouse gases emissions common to all road transportation technologies
10/82 Elements for improving aerodynamics
10/84 Data processing systems or methods, management, administration
10/86 Optimisation of rolling resistance, e.g. weight reduction
10/862 Tyres, e.g. materials
10/865 Bearings
10/88 Optimized components or subsystems, e.g. lighting, actively controlled glasses
10/90 Energy harvesting concepts as power supply for auxiliaries' energy consumption, e.g. photovoltaic sun-roof
10/92 Energy efficient charging or discharging systems for batteries, ultracapacitors, supercapacitors or double-layer capacitors specially adapted for vehicles

30/00 Transportation of goods or passengers via railways
30/10 Energy recovery technologies concerning the propulsion system in locomotives or motor railcars
30/12 In electric locomotives or motor railcars with electric accumulators, e.g. involving regenerative braking
30/14 In locomotives or motor railcars with pneumatic accumulators
30/16 In locomotives or motor railcars with two or different kinds or types of engine
30/18 Specific power storing devices
30/30 Other technological aspects of railway vehicles
30/32 Reducing air resistance by modifying contour
30/34 Composite; Lightweight materials
30/36 Device for using the energy of the movements of the vehicle
30/38 Bogie frames comprising parts made from fiber-reinforced matrix material
30/40 Applications of solar cells or heat pipes, e.g. on ski-lift cabins or carriages for passengers or goods
30/42 concerning heating, ventilating or air conditioning

50/10 Drag reduction
50/12 Overall configuration, shape or profile of fuselage or wings
50/14 Adaptive structures, e.g. morphing wings
50/16 by influencing airflow
50/162 by generating or controlling vortexes
50/164 at the wing tip, e.g. winglets
50/166 by influencing the boundary layer
50/30 Wing lift efficiency
50/32 Optimised high lift wing systems
50/34 Helicopter rotor blades lift efficiency
50/40 Weight reduction
50/42 Airframe
50/43 Composites
50/44 Design measures
50/46 Interior
50/50 On board measures aiming to increase energy efficiency
50/52 concerning the electrical systems
50/53 Energy recovery, conversion or storage systems
50/54 All-electric or substantially electric architectures
50/55 Solar cells as on-board power source
70/00 Maritime or waterways transport

70/10 Measures concerning design or construction of watercraft hulls
70/12 Improving hydrodynamics of hull
70/11 Reducing surface friction
70/12 Air lubrication, air cavity systems
70/13 Hull coatings, e.g. biomimicry
70/15 Lower wave resistance
70/16 Bow shape
70/17 improving wake pattern
70/18 reducing the interaction between hull and propeller
70/14 Construction of hull
70/13 Materials, e.g. ultra light steels, composites
70/16 Energy efficient measures related to fabrication or assembly of hull
70/30 Measures at the maintenance or repair stage specially aiming at green house gasses emissions reduction
70/32 Surface or tank cleaning and treatment operations
70/34 Improved operation of fossil fuel transfer, e.g. ship-to-ship oil or gas transfer
70/36 Handling waste
70/50 Measures to reduce greenhouse gas emissions related to the propulsion system
70/52 Propulsion power plant
70/5209 Relating to type of fuel
70/5218 Less carbon-intensive fuels, e.g. natural gas, biofuels
70/5227 Non-conventional fuels, e.g. nuclear
70/5236 Renewable or hybrid-electric solutions
70/5245 using solar generated electricity, e.g. photovoltaics
70/5254 using wind motor to generate electricity
70/5263 Other measures to increase efficiency of the power plant
70/5272 Engine monitoring and control
70/5281 Waste heat recovery
70/529 Reducing auxiliary power

70/54 Propeller
70/542 Improved propeller design
70/545 Recovery of rotational energy
70/547 Wake equalizing arrangements
70/56 Jets
70/58 Propulsion by direct use of wind
70/583 Energy efficient technologies involving sails
70/586 Kites
70/59 Other propulsion concepts for reducing greenhouse gas emissions, e.g. wave-powered
70/70 Technologies for a more efficient operation of the waterborne vessel not otherwise provided for
70/72 Related to heating, ventilation, air conditioning, or refrigeration systems
70/74 Integrating maritime voyage control
70/742 Speed reduction
70/745 Weather routing
70/747 Course optimization
70/80 Measures concerning recycling, retrofitting or dismantling of waterborne vessels
70/90 Port equipment or systems reducing GHG emissions mitigation

90/00 Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation

90/10 Technologies related to electric vehicle charging
90/12 Electric charging stations
90/120 by conductive energy transmission
90/122 by inductive energy transmission
90/124 by exchange of energy storage elements
90/125 Alignment between the vehicle and the charging station
90/127 Converters or inverters for charging
90/128 Energy exchange control or determination
90/14 Plug-in electric vehicles
90/16 Information or communication technologies improving the operation of electric vehicles
90/161 Navigation
90/162 Position determination
90/163 Information or communication technologies related to charging of electric vehicles
90/167 Systems integrating technologies related to power network operation and communication or information technologies for supporting the interoperability of electric or hybrid vehicles, i.e. smartgrids as interface for battery charging of electric vehicles [EV] or hybrid vehicles [HEV] (power aggregation of EV or HEV Y02E 60/721)

NOTE
Documents tagged under Y02T 90/176 are concurrently tagged also under Y04S 30/10

90/168 Remote or cooperative charging operation
90/169 Aspects supporting the interoperability of electric or hybrid vehicles, e.g. recognition, authentication, identification or billing
90/30 Application of fuel cell technology to transportation
90/32 Fuel cells specially adapted to transport applications, e.g. automobile, bus, ship
90/34 Fuel cell powered electric vehicles [FCEV]
90/36 Fuel cells as on-board power source in aeronautics
90/38 . Fuel cells as on-board power source in waterborne transportation
90/40 . Application of hydrogen technology to transportation
90/42 . Hydrogen as fuel for road transportation
90/44 . Hydrogen as fuel in aeronautics
90/46 . Hydrogen as fuel in waterborne transportation
90/50 . Computer aided design [CAD] for improving the mechanical performance in the sector of transportation, e.g. improvement of aerodynamics, noise or vibration reduction, tyre design