

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

ENGINES OR PUMPS

F03 MACHINES OR ENGINES FOR LIQUIDS; WIND, SPRING, OR WEIGHT MOTORS; PRODUCING MECHANICAL POWER OR A REACTIVE PROPULSIVE THRUST, NOT OTHERWISE PROVIDED FOR

F03D WIND MOTORS

NOTES

1. This subclass covers wind motors, i.e. mechanisms for converting the energy of wind into useful mechanical power, and the transmission of such power to its point of use.
2. This subclass does not cover electrical power generation or distribution aspects of wind-power plants, which are covered by section H, e.g. H02J or H02P.
3. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "rotor" means the wind-engaging parts of the wind motor and the rotary member carrying them;
 - "rotation axis" means the axis of rotation of the rotor.

1/00 Wind motors with rotation axis substantially parallel to the air flow entering the rotor (controlling thereof F03D 7/02)

- 1/02 . having a plurality of rotors
- 1/025 . . {coaxially arranged}
- 1/04 . having stationary wind-guiding means, e.g. with shrouds or channels (F03D 9/35 takes precedence)
- 1/06 . Rotors
- 1/0608 . . {characterised by their form}
- 1/0616 . . . {using the Magnus effect}
- 1/0625 . . . {of the whole rotor, i.e. form features of the rotor unit}
- 1/0633 . . . {of the blades}
- 1/0641 {of the section profile of the blades}
- 1/065 . . {characterised by their construction, i.e. structural design details (F03D 13/10 takes precedence)}
- 1/0658 . . . {Fixing wind-engaging parts to rotor}
- 1/0666 . . . {of the whole rotor}
- 1/0675 . . . {of the blades}
- 1/0683 {of the section profile of the blades}
- 1/0691 . . . {of the hub}

3/00 Wind motors with rotation axis substantially perpendicular to the air flow entering the rotor (controlling thereof F03D 7/06)

- 3/002 . {axis horizontal}
- 3/005 . {axis vertical}
- 3/007 . . {using the Magnus effect}
- 3/02 . having a plurality of rotors
- 3/04 . having stationary wind-guiding means, e.g. with shrouds or channels (F03D 9/35 takes precedence)
- 3/0409 . . {having stationary guiding vanes surrounding the rotor (F03D 3/0427 takes precedence)}
- 3/0418 . . . {the vanes being adjustable}
- 3/0427 . . {with augmenting action, i.e. the guiding means intercepting an area greater than the effective rotor area (F03D 3/0463, F03D 3/049 take precedence)}

3/0436 . . {having shield means on one side of the rotor}

3/0445 . . . {fixed with respect to rotor, orientable together}

3/0454 {and only with concentrating action, i.e. only increasing the airflow speed into the rotor (F03D 3/0463 takes precedence)}

3/0463 {with augmenting action, i.e. the shield means intercepting an area greater than the effective rotor area}

3/0472 . . . {orientable with respect to the rotor}

3/0481 {and only with concentrating action, i.e. only increasing the airflow speed into the rotor (F03D 3/049 takes precedence)}

3/049 {with augmenting action, i.e. the shield means intercepting an area greater than the effective rotor area}

3/06 . Rotors

3/061 . . {Form}

3/062 . . {Construction}

3/064 . . . {Fixing wind engaging parts to rest of rotor}

3/065 . . . {the wind engaging parts having no movement relative to the rotor during its rotation}

3/067 . . . {the wind engaging parts having a cyclic movement relative to the rotor during its rotation}

3/068 {the cyclic relative movement being coupled to the movement of rotation; Controlling same, e.g. according to wind direction or force}

5/00 Other wind motors (controlling thereof F03D 7/00)

5/005 . {Wind motors having a single vane which axis generate a conus or like surface}

5/02 . the wind-engaging parts being attached to endless chains or the like

5/04 . the wind-engaging parts being attached to carriages running on tracks or the like

- 5/06 . . the wind-engaging parts swinging to-and-fro and not rotating

7/00 Controlling wind motors

- 7/02 . . the wind motors having rotation axis substantially parallel to the air flow entering the rotor
- 7/0204 . . {for orientation in relation to wind direction}
- 7/0208 . . . {Orientating out of wind}
- 7/0212 {the rotating axis remaining horizontal}
- 7/0216 {the rotating axis changing to vertical position}
- 7/022 . . {Adjusting aerodynamic properties of the blades}
- 7/0224 . . . {Adjusting blade pitch}
- 7/0228 {of the blade tips only}
- 7/0232 . . . {with flaps or slats (with aerodynamic drag devices on the blades for braking [F03D 7/0252](#))}
- 7/0236 . . . {by changing the active surface of the wind engaging parts, e.g. reefing, telescoping, furling or coning}
- 7/024 . . . {of individual blades}
- 7/0244 . . {for braking}
- 7/0248 . . . {by mechanical means acting on the power train}
- 7/0252 . . . {with aerodynamic drag devices on the blades}
- 7/0256 . . {Stall control (adjusting the blades in stall position [F03D 7/0224](#))}
- 7/026 . . {for starting-up}
- 7/0264 . . {for stopping or in emergency situation (orientating out of wind [F03D 7/0208](#))}
- 7/0268 . . . {Parking or storm protection}
- 7/0272 . . {by measures acting on the electrical generator (controlling electric generator *per se* [H02P](#))}
- 7/0276 . . {Controlling rotor speed, e.g. variable speed}
- 7/028 . . {Controlling motor output power}
- 7/0284 . . . {in relation to the state of the electric grid (supplying or distributing electric power [H02J](#))}
- 7/0288 . . . {to prevent instantaneous damage to any part of the motor}
- 7/0292 . . . {to increase fatigue life}
- 7/0296 . . {to prevent, counteract or reduce vibration or noise}
- 7/04 . . Automatic control; Regulation
- 7/041 . . . {by means of a mechanical governor}
- 7/042 . . . {by means of an electrical or electronic controller}
- 7/043 {characterised by the type of control logic}
- 7/044 {with PID control}
- 7/045 {with model-based controls}
- 7/046 {with learning or adaptive control, e.g. self-tuning, fuzzy logic or neural network}
- 7/047 {characterised by the controller architecture, e.g. multiple processors or data communications}
- 7/048 {Controlling wind farms}
- 7/06 . . the wind motors having rotation axis substantially perpendicular to the air flow entering the rotor

9/00

Adaptations of wind motors for special use; Combinations of wind motors with apparatus driven thereby; Wind motors specially adapted for installation in particular locations (hybrid wind-photovoltaic energy systems for the generation of electric power [H02S 10/12](#))

- 9/007 . . {the wind motor being combined with means for converting solar radiation into useful energy}
- 9/008 . . {the wind motor being combined with water energy converters, e.g. a water turbine}
- 9/10 . . Combinations of wind motors with apparatus storing energy
- 9/11 . . . storing electrical energy
- 9/12 . . . storing kinetic energy, e.g. using flywheels
- 9/13 . . . storing gravitational potential energy
- 9/14 using liquids
- 9/16 using weights
- 9/17 . . . storing energy in pressurised fluids
- 9/18 . . . storing heat
- 9/19 . . . storing chemical energy, e.g. using electrolysis
- 9/20 . . Wind motors characterised by the driven apparatus ([F03D 9/10](#) takes precedence)
- 9/22 . . . the apparatus producing heat
- 9/25 . . . the apparatus being an electrical generator ([F03D 9/22](#) takes precedence)
- 9/255 {connected to an electrical general supply grid; Arrangements therefor}
- 9/257 {the wind motor being part of a wind farm}
- 9/28 . . . the apparatus being a pump or a compressor
- 9/30 . . Wind motors specially adapted for installation in particular locations (means for mounting or supporting wind motors [F03D 13/20](#))
- 9/32 . . . on moving objects, e.g. vehicles
- 9/34 . . . on stationary objects or on stationary man-made structures
- 9/35 within towers, e.g. using chimney effects
- 9/37 with means for enhancing the air flow within the tower, e.g. by heating
- 9/39 by circulation or vortex formation
- 9/41 by using the wind outside the tower, e.g. using ejectors
- 9/43 using infrastructure primarily used for other purposes, e.g. masts for overhead railway power lines
- 9/45 Building formations
- 9/46 Tunnels or streets
- 9/48 using landscape topography, e.g. valleys

13/00 Assembly, mounting or commissioning of wind motors; Arrangements specially adapted for transporting wind motor components

- 13/10 . . Assembly of wind motors; Arrangements for erecting wind motors
- 13/20 . . Arrangements for mounting or supporting wind motors; Masts or towers for wind motors
- 13/22 . . . {Foundations specially adapted for wind motors}
- 13/25 . . . specially adapted for offshore installation
- 13/30 . . Commissioning, e.g. inspection, testing or final adjustment before releasing for production
- 13/35 . . . Balancing static or dynamic imbalances
- 13/40 . . Arrangements or methods specially adapted for transporting wind motor components

15/00

Transmission of mechanical power

F03D

- 15/05 . {using hollow exhausting blades}
- 15/10 . using gearing not limited to rotary motion, e.g. with oscillating or reciprocating members
- 15/15 . . {Changing or adjusting stroke}
- 15/20 . Gearless transmission, i.e. direct-drive

17/00 **Monitoring or testing of wind motors, e.g. diagnostics** (testing during commissioning of wind motors [F03D 13/30](#))

80/00 **Details, components or accessories not provided for in groups [F03D 1/00](#) - [F03D 17/00](#)**

- 80/10 . Arrangements for warning air traffic
- 80/20 . Arrangements for avoiding shadow flicker
- 80/30 . Lightning protection
- 80/40 . Ice detection; De-icing means
- 80/50 . Maintenance or repair
- 80/55 . . Cleaning ([F03D 80/40](#) takes precedence)
- 80/60 . Cooling or heating of wind motors
- 80/70 . Bearing or lubricating arrangements
- 80/80 . Arrangement of components within nacelles or towers
- 80/82 . . {of electrical components}
- 80/85 . . . {Cabling}
- 80/88 . . {of mechanical components}