

CPC**COOPERATIVE PATENT CLASSIFICATION****F03D****WIND MOTORS****NOTE**

In this subclass, the following words are used with the meanings indicated:

- "Wind motor" means a mechanism for converting the energy of natural wind into useful mechanical power, and the transmission of such power to its point of use;
- "Rotor" means the wind-engaging parts of the wind motor and the rotary member carrying them;
- "Rotations axis" means the axis of rotation of the rotor.

F03D 1/00

Wind motors with rotation axis substantially in wind direction ([controlling F03D 7/00](#))

- F03D 1/001 . { Assembly thereof ([fixing wind engaging part to rotor F03D 1/0658](#)) ; Erecting methods; Equipments therefor ([foundations F03D 11/045](#)) }
- F03D 1/003 . { Maintenance or repair; Equipment therefor }
- F03D 1/005 . { Transport; Equipments therefor }
- F03D 1/006 . { Commissioning }
- F03D 1/008 .. { Balancing static or dynamic imbalances }
- F03D 1/02 . having a plurality of rotors
- F03D 1/025 .. { coaxially arranged }
- F03D 1/04 . having stationary wind-guiding means, e.g. with shrouds or channels ([F03D 1/02 takes precedence](#))
- F03D 1/06 . Rotors
- F03D 1/0608 .. { characterised by their form }
- F03D 1/0616 ... { using the Magnus effect }
- F03D 1/0625 ... { of the whole rotor, i.e. form features of the rotor unit }
- F03D 1/0633 ... { of the blades }
- F03D 1/0641 { of the section profile of the blades }
- F03D 1/065 .. { characterised by their construction, i.e. structural design details ([F03D 1/001 takes preference](#)) }
- F03D 1/0658 ... { Fixing wind-engaging parts to rotor }
- F03D 1/0666 ... { of the whole rotor }
- F03D 1/0675 ... { of the blades }
- F03D 1/0683 { of the section profile of the blades }
- F03D 1/0691 ... { of the hub }

F03D 3/00

Wind motors with rotation axis substantially at right-angles to wind direction ([controlling F03D 7/00](#))

- F03D 3/002 . {axis horizontal }
- F03D 3/005 . {axis vertical }
- F03D 3/007 . . {using the Magnus effect }
- F03D 3/02 . having a plurality of rotors
- F03D 3/04 . having stationary wind-guiding means {or means stationary only with respect to the current wind direction }, e.g. with shrouds or channels ([F03D 3/02 takes precedence](#))
- F03D 3/0409 . . {having stationary guiding vanes surrounding the rotor ([F03D 3/0427 takes precedence](#)) }
- F03D 3/0418 . . . {the vanes being adjustable }
- F03D 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](#)) }
- F03D 3/0436 . . {having shield means on one side of the rotor }
- F03D 3/0445 . . . {fixed with respect to rotor, orientable together }
- F03D 3/0454 {and only with concentrating action, i.e. only increasing the airflow speed into the rotor ([F03D 3/0463 takes precedence](#)) }
- F03D 3/0463 {with augmenting action, i.e. the shield means intercepting an area greater than the effective rotor area }
- F03D 3/0472 . . . {orientable with respect to the rotor }
- F03D 3/0481 {and only with concentrating action, i.e. only increasing the airflow speed into the rotor ([F03D 3/049 takes precedence](#)) }
- F03D 3/049 {with augmenting action, i.e. the shield means intercepting an area greater than the effective rotor area }
- F03D 3/06 . Rotor
- F03D 3/061 . . {Form }
- F03D 3/062 . . {Construction }
- F03D 3/064 . . . {Fixing wind engaging parts to rest of rotor }
- F03D 3/065 . . . {the wind engaging parts having no movement relative to the rotor during its rotation }
- F03D 3/067 . . . {the wind engaging parts having a cyclic movement relative to the rotor during its rotation }
- F03D 3/068 {the cyclic relative movement being coupled to the movement of rotation; Controlling same, e.g. according to wind direction or force }
- F03D 5/00** **Other wind motors** ([controlling F03D 7/00](#))
- F03D 5/005 . {Wind motors having a single vane which axis generate a conus or like surface }
- F03D 5/02 . the wind-engaging parts being attached to endless chains or the like
- F03D 5/04 . the wind-engaging parts being attached to carriages running on tracks or the like
- F03D 5/06 . the wind-engaging parts swinging to-and-fro and not rotating
- F03D 7/00** **Controlling wind motors**

- F03D 7/02 . the wind motors having rotation axis substantially in wind direction
- F03D 7/0204 .. { for orientation in relation to wind direction }
- F03D 7/0208 ... { Orientating out of wind }
- F03D 7/0212 { the rotating axis remaining horizontal }
- F03D 7/0216 { the rotating axis changing to vertical position }
- F03D 7/022 .. { Adjusting aerodynamic properties of the blades }
- F03D 7/0224 ... { Adjusting blade pitch }
- F03D 7/0228 { of the blade tips only }
- F03D 7/0232 ... { with flaps or slats (with aerodynamic drag devices on the blades for braking [F03D 7/0252](#)) }
- F03D 7/0236 ... { by changing the active surface of the wind engaging parts, e.g. reefing, telescoping, furling or coning }
- F03D 7/024 ... { of individual blades }
- F03D 7/0244 .. { for braking }
- F03D 7/0248 ... { by mechanical means acting on the power train }
- F03D 7/0252 ... { with aerodynamic drag devices on the blades }
- F03D 7/0256 .. { Stall control (adjusting the blades in stall position [F03D 7/0224](#)) }
- F03D 7/026 .. { for starting-up }
- F03D 7/0264 .. { for stopping or in emergency situation (orientating out of wind [F03D 7/0208](#)) }
- F03D 7/0268 ... { Parking or storm protection }
- F03D 7/0272 .. { by measures acting on the electrical generator (controlling electric generator per se [H02P](#)) }
- F03D 7/0276 .. { Controlling rotor speed, e.g. variable speed }
- F03D 7/028 .. { Controlling motor output power }
- F03D 7/0284 ... { in relation to the state of the electric grid (supplying or distributing electric power [H02J](#)) }
- F03D 7/0288 ... { to prevent instantaneous damage to any part of the motor }
- F03D 7/0292 ... { to increase fatigue life }
- F03D 7/0296 .. { to prevent, counteract or reduce vibration or noise }
- F03D 7/04 .. Automatic control; Regulation
- F03D 7/041 ... { by means of a mechanical governor }
- F03D 7/042 ... { by means of an electrical or electronic controller }
- F03D 7/043 { characterised by the type of control logic }
- F03D 7/044 { with PID control }
- F03D 7/045 { with model-based controls }
- F03D 7/046 { with learning or adaptive control, e.g. self-tuning, fuzzy logic or neural network }
- F03D 7/047 { characterised by the controller architecture, e.g. multiple processors or data communications }
- F03D 7/048 { Controlling wind farms }
- F03D 7/06 . the wind motors having rotation axis substantially at right angle to wind direction { [F03D 3/068](#) takes precedence }

F03D 9/00 Adaptations of wind motors for special use; Combinations of wind motors with

apparatus driven thereby (aspects predominantly concerning driven apparatus)

- F03D 9/001 . {the apparatus being a pump or compressor; Producing under- or overpressure ([F03D 9/028](#) takes precedence) }
- F03D 9/002 . { the apparatus being an electrical generator ([F03D 9/021](#) takes precedence; details of electrical generators specifically adapted to wind turbines [H02K 7/183](#)) }
- F03D 9/003 .. {connected to an electrical general supply grid; Arrangements therefor }
- F03D 9/005 ... {the wind motor being part of a wind farm }
- F03D 9/006 . {Adaptations for producing heat, e.g. in heat pump systems }
- F03D 9/007 . {the wind motor being combined with means for converting solar radiation into useful energy }
- F03D 9/008 . {the wind motor being combined with water energy converters, e.g. a water turbine }
- F03D 9/02 . the apparatus storing energy
- F03D 9/021 .. {in an electrical accumulator }
- F03D 9/023 .. {storing gravitational potential energy }
- F03D 9/025 ... {using a liquid, e.g. water }
- F03D 9/026 ... {using weights }
- F03D 9/028 .. {in a pressurised fluid accumulator }

F03D 11/00 Details, component parts, or accessories not provided for in, or of interest apart from, the preceding groups

- F03D 11/0008 . {Bearing or lubricating arrangements (lubricating of machines in general [F01M](#) ; bearings per se [F16C](#)) }
- F03D 11/0016 . { Cleaning }
- F03D 11/0025 . { Ice detection; Deicing means }
- F03D 11/0033 . { Lightning protection }
- F03D 11/0041 . { Warning systems for air traffic }
- F03D 11/005 . { Arrangement of components within nacelle or tower }
- F03D 11/0058 .. { of electrical components }
- F03D 11/0066 ... { Cabling }
- F03D 11/0075 .. { of mechanical components }
- F03D 11/0083 . { Measures to avoid shadow flicker on surroundings }
- F03D 11/0091 . { Monitoring; Diagnostics; Testing; Equipments therefor }
- F03D 11/02 . Transmission of power, e.g. using hollow exhausting blades {gearings per se [F16H](#) }

- F03D 11/022 . . {Using hollow exhausting blades }
- F03D 11/024 . . {Transmission in alternative movement }
- F03D 11/026 . . . {Changing or adjusting stroke }
- F03D 11/028 . . { without gearing, i.e. gearless drive }

- F03D 11/04 . Mounting structures
- F03D 11/045 . . { Foundations specifically suited for wind motors }