

CPC**COOPERATIVE PATENT CLASSIFICATION****F05B****INDEXING SCHEME RELATING TO MACHINES OR ENGINES
OTHER THAN NON-POSITIVE-DISPLACEMENT MACHINES
OR ENGINES, TO WIND MOTORS, TO NON-POSITIVE
DISPLACEMENT PUMPS, AND TO GENERATING COMBUSTION
PRODUCTS OF HIGH PRESSURE OR HIGH VELOCITY****NOTE**

This subclass constitutes an internal scheme for indexing only.

F05B 2200/00**Mathematical features**

- F05B 2200/10 . Basic functions
- F05B 2200/11 . . Sum
- F05B 2200/12 . . Subtraction
- F05B 2200/13 . . Product
- F05B 2200/14 . . Division
- F05B 2200/15 . . Inverse
- F05B 2200/20 . Special functions
- F05B 2200/21 . . Root
- F05B 2200/211 . . . Square root
- F05B 2200/212 . . . Cubic root
- F05B 2200/22 . . Power
- F05B 2200/221 . . . Square power
- F05B 2200/222 . . . Cubic power
- F05B 2200/23 . . Logarithm
- F05B 2200/24 . . exponential
- F05B 2200/25 . . Hyperbolic trigonometric, e.g. sinh, cosh, tanh
- F05B 2200/26 . . trigonometric
- F05B 2200/261 . . . Sine
- F05B 2200/262 . . . Cosine
- F05B 2200/263 . . . Tangent
- F05B 2200/264 . . . Cotangent
- F05B 2200/30 . miscellaneous
- F05B 2200/31 . . odd
- F05B 2200/32 . . even
- F05B 2200/33 . . bigger/smaller
- F05B 2200/34 . . biggest/smallest
- F05B 2200/35 . . first
- F05B 2200/36 . . last

F05B 2210/00**Working fluid****NOTE**

Indexing codes of group [F05B 2210/00](#) can be followed by a name for a specific working fluid preceded by the "+" sign, e.g. [F05B 2210/11](#) +water.

- F05B 2210/10 . Kind or type
- F05B 2210/11 . . liquid, i.e. incompressible
- F05B 2210/12 . . gaseous, i.e. compressible
- F05B 2210/13 . . mixed, e.g. two-phase fluid
- F05B 2210/132 . . . Pumps with means for separating and evacuating the gaseous phase
- F05B 2210/14 . . Refrigerants with particular properties, e.g. HFC-134a
- F05B 2210/16 . Air or water being indistinctly used as working fluid, i.e. the machine can work equally with air or water without any modification
- F05B 2210/18 . Air and water being simultaneously used as working fluid
- F05B 2210/20 . Properties
- F05B 2210/30 . Flow characteristics
- F05B 2210/301 . . with Mach-number kept constant along the flow
- F05B 2210/302 . . Pressure kept constant along the flow
- F05B 2210/40 . Flow geometry or direction
- F05B 2210/401 . . upwards due to the buoyancy of compressed air
- F05B 2210/402 . . Axial inlet and radial outlet
- F05B 2210/403 . . Radial inlet and axial outlet
- F05B 2210/404 . . bidirectional, i.e. in opposite, alternating directions

F05B 2220/00**Application**

- F05B 2220/10 . in ram-jet engines or ram-jet driven vehicles
- F05B 2220/20 . within closed fluid conduits, e.g. pipes
- F05B 2220/25 . as advertisement
- F05B 2220/30 . in turbines
- F05B 2220/301 . . in steam turbines
- F05B 2220/302 . . in gas turbines
- F05B 2220/3021 . . . for a special turbine stage
- F05B 2220/3022 the first stage of a turbine
- F05B 2220/3023 an intermediate stage of the turbine
- F05B 2220/3025 the last stage of the turbine
- F05B 2220/303 . . . for aircraft propulsion, e.g. jet engines
- F05B 2220/304 . . . to drive unshrouded, low solidity propeller
- F05B 2220/305 . . . to drive unshrouded, high solidity propeller
- F05B 2220/306 . . . to drive shrouded, low solidity propeller
- F05B 2220/307 . . . to drive shrouded, high solidity propeller

- F05B 2220/308 . . . providing direct vertical lift
- F05B 2220/309 . . . in a helicopter
- F05B 2220/31 . . in ram-air turbines ("RATS")
- F05B 2220/32 . . in water turbines
- F05B 2220/33 . . specially adapted for the fan of turbofan engines
- F05B 2220/40 . in turbochargers
- F05B 2220/50 . for auxiliary power units (APU's)
- F05B 2220/60 . making use of surplus or waste energy
- F05B 2220/602 . . with energy recovery turbines
- F05B 2220/604 . . for domestic central heating or production of electricity
- F05B 2220/61 . for hydrogen and/or oxygen production
- F05B 2220/62 . for desalination
- F05B 2220/64 . for aeration
- F05B 2220/70 . in combination with
- F05B 2220/702 . . a steam turbine
- F05B 2220/704 . . a gas turbine
- F05B 2220/706 . . an electrical generator
- F05B 2220/7062 . . . of the direct current (D.C.) type
- F05B 2220/7064 . . . of the alternating current (A.C.) type
- F05B 2220/70642 of the synchronous type
- F05B 2220/70644 of the asynchronous type, i.e. induction type
- F05B 2220/70646 Double fed induction generators (DFIGs)
- F05B 2220/7066 . . . via a direct connection, i.e. a gearless transmission
- F05B 2220/7068 . . . equipped with permanent magnets
- F05B 2220/707 . . . of the linear type
- F05B 2220/708 . . Photoelectric means, i.e. photovoltaic or solar cells
- F05B 2220/709 . . Piezoelectric means
- F05B 2220/80 . in supersonic vehicles excluding hypersonic vehicles or ram, scram or rocket propulsion
- F05B 2220/90 . in vehicles adapted for vertical or short take off and landing (v/stol vehicles), ([gas turbines providing direct vertical lift F05B 2220/308](#))

F05B 2230/00**Manufacture****NOTE**

Manufacture comprises also treatment, assembly or disassembly methods, repairing, handling or the like.

- F05B 2230/10 . by removing material
- F05B 2230/101 . . by electrochemical methods
- F05B 2230/102 . . by spark erosion methods
- F05B 2230/103 . . using lasers

F05B 2230/104	. Micromachining
F05B 2230/20	. essentially without removing material
F05B 2230/21	. . by casting
F05B 2230/211	. . . by precision casting, e.g. microfusing or investment casting
F05B 2230/22	. . by sintering
F05B 2230/23	. . by permanently joining parts together
F05B 2230/232	. . . by welding
F05B 2230/233	. . . . Electron beam welding
F05B 2230/234	. . . . Laser welding
F05B 2230/235	. . . . Tig/Mig welding
F05B 2230/236	. . . . Diffusion bonding
F05B 2230/237	. . . . Brazing
F05B 2230/238	. . . . Soldering
F05B 2230/239	. . . . Inertia or friction welding
F05B 2230/24	. . by extrusion
F05B 2230/25	. . by forging
F05B 2230/26	. . by rolling
F05B 2230/30	. with deposition of material
F05B 2230/31	. . Layer deposition
F05B 2230/311	. . . by torch or flame spray
F05B 2230/312	. . . by plasma spray
F05B 2230/313	. . . by physical vapour deposition
F05B 2230/314	. . . by chemical vapour deposition
F05B 2230/40	. Heat treatment
F05B 2230/41	. . Hardening; Annealing
F05B 2230/50	. Building or constructing in particular ways
F05B 2230/502	. . using existing or "off the shelf" parts, e.g. using standardised turbocharger elements
F05B 2230/60	. Assembly methods
F05B 2230/601	. . using limited numbers of standard modules which can be adapted by machining
F05B 2230/604	. . using positioning or alignment devices for aligning or centering, e.g. pins
F05B 2230/606	. . . using maintaining alignment while permitting differential dilatation
F05B 2230/608	. . . for adjusting the position or the alignment, e.g. wedges or excenters
F05B 2230/61	. . using auxiliary equipment for lifting or holding (hoisting on to a stationary structure with provisions on the structure itself F05B 2240/916)
F05B 2230/6102	. . . carried on a floating platform
F05B 2230/70	. Disassembly methods
F05B 2230/80	. Repairing, retrofitting or upgrading methods
F05B 2230/90	. Coating; Surface treatment (manufacture with deposition of material F05B 2220/30)

F05B 2240/00**Components****NOTE**

Components are the basic elements of construction.

- F05B 2240/10 . Stators
- F05B 2240/11 . . Shroud seal segments
- F05B 2240/12 . . Fluid guiding means, e.g. vanes
- F05B 2240/121 . . . Baffles or ribs
- F05B 2240/122 . . . Vortex generators, turbulators, or the like, for mixing (by creating turbulence [F05B 2260/222](#))
- F05B 2240/123 . . . Nozzles
- F05B 2240/1231 Plug nozzles
- F05B 2240/124 . . . Cascades, i.e. assemblies of similar profiles acting in parallel
- F05B 2240/13 . . to collect or cause flow towards or away from turbines
- F05B 2240/131 . . . by means of vertical structures, i.e. chimneys
- F05B 2240/132 . . . creating a vortex or tornado effect
- F05B 2240/133 . . . with a convergent-divergent guiding structure, e.g. a Venturi conduit
- F05B 2240/14 . . Casings, housings, nacelles, gondels or the like, protecting or supporting assemblies within
- F05B 2240/142 . . . in the form of a standard ISO container
- F05B 2240/20 . Rotors
- F05B 2240/201 . . using the Magnus-effect
- F05B 2240/202 . . with adjustable area of intercepted fluid
- F05B 2240/2021 . . . by means of telescoping blades
- F05B 2240/2022 . . . by means of tethering or coning blades
- F05B 2240/2023 . . . by means of radially reefing blades
- F05B 2240/21 . . for wind turbines
- F05B 2240/211 . . . with vertical axis
- F05B 2240/212 of the Darrieus type
- F05B 2240/213 of the Savonius type
- F05B 2240/214 of the Musgrove or "H"-type
- F05B 2240/215 of the panemone or "vehicle ventilator" type
- F05B 2240/216 of the anemometer type
- F05B 2240/217 of the crossflow- or "Banki"- or "double action" type
- F05B 2240/218 with horizontally hinged vanes
- F05B 2240/221 . . . with horizontal axis
- F05B 2240/2211 of the multibladed, low speed, e.g. "American farm" type
- F05B 2240/2212 perpendicular to wind direction
- F05B 2240/2213 and with the rotor downwind from the yaw pivot axis

F05B 2240/231	. . . driven by aerodynamic lift effects
F05B 2240/232	. . . . driven by drag
F05B 2240/24	. . for turbines
F05B 2240/241	. . . of impulse type
F05B 2240/2411	. . . . Pelton type
F05B 2240/242	. . . of reaction type
F05B 2240/243	. . . of the Archimedes screw type
F05B 2240/244	. . . of the cross-flow, e.g. Banki, Ossberger type
F05B 2240/30	. . Characteristics of rotor blades, i.e. of any element transforming dynamic fluid energy to or from rotational energy and being attached to a rotor
F05B 2240/301	. . . Cross-section characteristics
F05B 2240/302	. . . Segmented or sectional blades
F05B 2240/31	. . . of changeable form or shape
F05B 2240/311	. . . . flexible or elastic
F05B 2240/312	. . . . capable of being reefed
F05B 2240/3121	. . . . . around an axis orthogonal to rotor rotational axis
F05B 2240/313	. . . . with adjustable flow intercepting area (F05B 2240/312 takes precedence)
F05B 2240/32	. . . with roughened surfaces
F05B 2240/33	. . Shrouds which are part of or which are rotating with the rotor
F05B 2240/34	. . with auxiliary or secondary rotors attached to blades of main rotor
F05B 2240/35	. Combustors or associated equipment
F05B 2240/36	. . Fuel vaporizer
F05B 2240/40	. Use of a multiplicity of similar components
F05B 2240/50	. Bearings
F05B 2240/51	. . magnetic
F05B 2240/511	. . . with permanent magnets
F05B 2240/515	. . . electromagnetic
F05B 2240/52	. . Axial thrust bearings
F05B 2240/53	. . Hydrodynamic or hydrostatic bearings
F05B 2240/54	. . Radial bearings
F05B 2240/57	. Seals
F05B 2240/571	. . Brush seals
F05B 2240/572	. . Leaf seals
F05B 2240/60	. Shafts
F05B 2240/61	. . hollow
F05B 2240/62	. . flexible
F05B 2240/63	. . Glands for admission or removal of fluids from shafts
F05B 2240/70	. Slinger plates or washers
F05B 2240/80	. Platforms for stationary or moving blades
F05B 2240/801	. . cooled platforms

- F05B 2240/90 . Mounting on supporting structures or systems
- F05B 2240/91 . . on a stationary structure
- F05B 2240/911 . . . already existing for a prior purpose
- F05B 2240/9111 which is a chimney
- F05B 2240/9112 which is a building
- F05B 2240/9113 which is a roadway, rail track, or the like for recovering energy from moving vehicles
- F05B 2240/912 . . . on a tower
- F05B 2240/9121 on a lattice tower
- F05B 2240/913 . . . on a mast
- F05B 2240/914 . . . on an inflatable structure
- F05B 2240/915 . . . which is vertically adjustable
- F05B 2240/9151 telescopically
- F05B 2240/9152 by being hinged
- F05B 2240/91521 at ground level
- F05B 2240/916 . . . with provision for hoisting onto the structure
- F05B 2240/917 . . . attached to cables
- F05B 2240/92 . . on an airborne structure
- F05B 2240/921 . . . kept aloft due to aerodynamic effects
- F05B 2240/922 . . . kept aloft due to buoyancy effects
- F05B 2240/923 . . . which is a vehicle
- F05B 2240/93 . . on a structure floating on a liquid surface
- F05B 2240/931 . . . which is a vehicle
- F05B 2240/932 . . . which is a catamaran-like structure
- F05B 2240/94 . . on a movable wheeled structure
- F05B 2240/941 . . . which is a land vehicle
- F05B 2240/95 . . offshore
- F05B 2240/96 . . as part of a wind farm
- F05B 2240/97 . . on a submerged structure
- F05B 2240/98 . . which is inflatable
- F05B 2240/99 . characterised by colour or colour patterns

F05B 2250/00**Geometry****NOTE**

Geometry indicates the shape or form of a component or the configuration or arrangement of components in a machine or in a plant.

- F05B 2250/02 . variable
- F05B 2250/10 . two-dimensional
- F05B 2250/11 . . triangular

F05B 2250/12	. . rectangular
F05B 2250/121	. . . square
F05B 2250/13	. . trapezial
F05B 2250/131	. . . polygonal
F05B 2250/132	. . . hexagonal
F05B 2250/14	. . elliptical
F05B 2250/141	. . . circular
F05B 2250/15	. . spiral
F05B 2250/16	. . parabolic
F05B 2250/17	. . hyperbolic
F05B 2250/18	. . patterned
F05B 2250/181	. . . ridged
F05B 2250/182	. . . crenellated, notched
F05B 2250/183	. . . zigzag
F05B 2250/184	. . . sinusoidal
F05B 2250/19	. . machined; miscellaneous
F05B 2250/191	. . . perforated
F05B 2250/192	. . . beveled
F05B 2250/193	. . . milled
F05B 2250/20	. three-dimensional
F05B 2250/21	. . pyramidal
F05B 2250/22	. . parallelepipedic
F05B 2250/221	. . . cubic
F05B 2250/23	. . prismatic
F05B 2250/231	. . . cylindrical
F05B 2250/232	. . . conical
F05B 2250/24	. . ellipsoidal
F05B 2250/241	. . . spherical
F05B 2250/25	. . helical
F05B 2250/26	. . paraboloidal
F05B 2250/27	. . hyperboloidal
F05B 2250/28	. . patterned
F05B 2250/281	. . . threaded
F05B 2250/282	. . . Cubic pattern
F05B 2250/283	. . . Honeycomb
F05B 2250/29	. . machined; miscellaneous
F05B 2250/291	. . . hollowed
F05B 2250/292	. . . tapered
F05B 2250/293	. . . lathed, e.g. rotation symmetrical
F05B 2250/30	. Arrangement of components

F05B 2250/31	. . according to the direction of their main axis or their axis of rotation
F05B 2250/311	. . . the axes being in line
F05B 2250/312	. . . the axes being parallel to each other
F05B 2250/313	. . . the axes being perpendicular to each other
F05B 2250/314	. . . the axes being inclined in relation to each other
F05B 2250/315	. . . the main axis being substantially vertical
F05B 2250/32	. . according to their shape
F05B 2250/321	. . . asymptotic
F05B 2250/322	. . . tangential
F05B 2250/323	. . . convergent
F05B 2250/324	. . . divergent
F05B 2250/33	. . symmetrical
F05B 2250/34	. . translated
F05B 2250/35	. . rotated
F05B 2250/36	. . in inner-outer relationship, e.g. shaft-bearing arrangements
F05B 2250/40	. Movement of component
F05B 2250/41	. . with one degree of freedom
F05B 2250/411	. . . in rotation
F05B 2250/42	. . with two degrees of freedom
F05B 2250/43	. . with three degrees of freedom
F05B 2250/50	. Inlet or outlet
F05B 2250/501	. . Inlet
F05B 2250/5011	. . . augmenting, i.e. with intercepting fluid flow cross sectional area greater than the rest of the machine behind the inlet
F05B 2250/5012	. . . concentrating only, i.e. with intercepting fluid flow cross sectional area not greater than the rest of the machine behind the inlet
F05B 2250/502	. . Outlet
F05B 2250/503	. . of regenerative pumps
F05B 2250/60	. Structure; Surface texture
F05B 2250/61	. . corrugated
F05B 2250/611	. . . undulated
F05B 2250/62	. . smooth
F05B 2250/621	. . . polished
F05B 2250/70	. Shape
F05B 2250/71	. . curved
F05B 2250/711	. . . convex
F05B 2250/712	. . . concave
F05B 2250/713	. . . inflexed
F05B 2250/72	. . symmetric
F05B 2250/73	. . asymmetric

F05B 2250/80	. Size or power range of the machines
F05B 2250/82	. . Micromachines
F05B 2250/84	. . Nanomachines (Nanotechnology for interacting, sensing or actuating B82Y 15/00)
F05B 2250/86	. . Megamachines
F05B 2260/00	Function
F05B 2260/02	. Transport, e.g. specific adaptations or devices for conveyance (transport of wind turbines or equipments therefore F03D 1/005)
F05B 2260/10	. Particular cycles
F05B 2260/20	. Heat transfer, e.g. cooling
F05B 2260/201	. . by impingement of a fluid
F05B 2260/202	. . by film cooling
F05B 2260/203	. . by transpiration cooling
F05B 2260/205	. . Cooling fluid recirculation, i.e. after having cooled one or more components the cooling fluid is recovered and used elsewhere for other purposes
F05B 2260/207	. . using a phase changing mass, (e.g. heat absorbing by melting or boiling)
F05B 2260/208	. . using heat pipes
F05B 2260/209	. . using vortex tubes
F05B 2260/211	. . by intercooling, e.g. during a compression cycle
F05B 2260/212	. . . by water injection
F05B 2260/221	. . Improvement of heat transfer
F05B 2260/222	. . . by creating turbulence (vortex generators, turbulators or the like for mixing F05B 2240/122)
F05B 2260/224	. . . by increasing the heat transfer surface
F05B 2260/2241	. . . . using fins or ribs
F05B 2260/231	. . Preventing heat transfer
F05B 2260/232	. . characterised by the cooling medium
F05B 2260/233	. . . the medium being steam
F05B 2260/24	. . for draft enhancement in chimneys, using solar or other heat sources
F05B 2260/30	. Retaining components in desired mutual position
F05B 2260/301	. . Retaining bolts or nuts
F05B 2260/3011	. . . of the frangible or shear type
F05B 2260/302	. . by means of magnetic or electromagnetic forces
F05B 2260/303	. . with a bayonet coupling
F05B 2260/304	. . Balancing of radial or axial forces on regenerative rotors
F05B 2260/305	. . Reducing friction between regenerative impeller discs and casing walls
F05B 2260/40	. Transmission of power
F05B 2260/402	. . through friction drives
F05B 2260/4021	. . . through belt drives
F05B 2260/4022	. . . through endless chains
F05B 2260/4023	. . . through a friction clutch

- F05B 2260/403 . . through the shape of the drive components
- F05B 2260/4031 . . . as in toothed gearing
- F05B 2260/40311 of the epicyclic, planetary or differential type
- F05B 2260/404 . . through magnetic drive coupling
- F05B 2260/4041 . . . the driven magnets encircling the driver magnets
- F05B 2260/406 . . through hydraulic systems
- F05B 2260/407 . . through piezoelectric conversion
- F05B 2260/408 . . through magnetohydrodynamic conversion
- F05B 2260/42 . Storage of energy
- F05B 2260/421 . . in the form of rotational kinetic energy , e.g. in flywheels
- F05B 2260/50 . Kinematic linkage, i.e. transmission of position
- F05B 2260/502 . . involving springs
- F05B 2260/503 . . using gears
- F05B 2260/5032 . . . of the bevel or angled type
- F05B 2260/504 . . using flat or V-belts and pulleys
- F05B 2260/505 . . using chains and sprockets; using toothed belts
- F05B 2260/506 . . using cams or eccentrics
- F05B 2260/507 . . using servos, independent actuators, etc.
- F05B 2260/60 . Fluid transfer
- F05B 2260/601 . . using an ejector or a jet pump
- F05B 2260/602 . . Drainage
- F05B 2260/603 . . . of leakage having past a seal ([seals F05B 2240/57](#); [glands F05B 2240/63](#))
- F05B 2260/604 . . Vortex non-clogging type pumps
- F05B 2260/63 . . Preventing clogging or obstruction of flow paths by dirt, dust, or foreign particles
- F05B 2260/64 . . Aeration, ventilation, dehumidification or moisture removal of closed spaces
- F05B 2260/70 . Adjusting of angle of incidence or attack of rotating blades
- F05B 2260/71 . . as a function of flow velocity
- F05B 2260/72 . . by turning around an axis parallel to the rotor centre line
- F05B 2260/74 . . by turning around an axis perpendicular the rotor centre line
- F05B 2260/75 . . the adjusting mechanism not using auxiliary power sources ("servos")
- F05B 2260/76 . . the adjusting mechanism using auxiliary power sources
- F05B 2260/77 . . the adjusting mechanism driven or triggered by centrifugal forces
- F05B 2260/78 . . the adjusting mechanism driven or triggered by aerodynamic forces
- F05B 2260/79 . . Bearing, support or actuation arrangements therefor
- F05B 2260/80 . Diagnostics
- F05B 2260/82 . Forecasts
- F05B 2260/821 . . Parameter estimation or prediction
- F05B 2260/8211 . . . of the weather
- F05B 2260/83 . Testing, e.g. methods, components or tools therefor
- F05B 2260/84 . Modeling or simulation

F05B 2260/845	. Redundancy
F05B 2260/85	. Starting
F05B 2260/90	. Braking
F05B 2260/901	. . using aerodynamic forces, i.e. lift or drag
F05B 2260/9011	. . . of the tips of rotor blades
F05B 2260/902	. . using frictional mechanical forces
F05B 2260/903	. . using electrical or magnetic forces
F05B 2260/904	. . using hydrodynamic forces
F05B 2260/95	. Preventing corrosion (coating or surface treatment F05B 2230/90)
F05B 2260/96	. Preventing, counteracting or reducing vibration or noise
F05B 2260/962	. . my means creating "anti-noise"
F05B 2260/964	. . by damping means
F05B 2260/966	. . by correcting static or dynamic imbalance
F05B 2260/97	. Reducing windage losses
F05B 2260/972	. . in radial flow machines
F05B 2260/98	. Lubrication
F05B 2260/99	. Radar absorption
F05B 2270/00	Control
F05B 2270/10	. Purpose of the control system
F05B 2270/101	. . to control rotational speed (n)
F05B 2270/1011	. . . to prevent overspeed
F05B 2270/1012	. . . to prevent underspeed
F05B 2270/1013	. . . of different spools or shafts
F05B 2270/1014	. . . to keep rotational speed constant
F05B 2270/1016	. . in variable speed operation
F05B 2270/102	. . to control acceleration (u)
F05B 2270/1021	. . . by keeping it below damagingly high values
F05B 2270/1022	. . . by making it as high as possible
F05B 2270/103	. . to affect the output of the engine
F05B 2270/1031	. . . Thrust
F05B 2270/1032	. . . Torque
F05B 2270/1033	. . . Power (if explicitly mentioned)
F05B 2270/104	. . to match engine to driven device
F05B 2270/1041	. . . in particular the electrical frequency of driven generator
F05B 2270/105	. . to improve fuel economy
F05B 2270/1051	. . . in particular at idling speed
F05B 2270/106	. . to produce clean exhaust gases
F05B 2270/1061	. . . with as little smoke as possible
F05B 2270/1062	. . . with as little NOx's as possible

F05B 2270/1063	. . .	by monitoring combustion conditions
F05B 2270/1064	. . . .	indirectly, at the exhaust
F05B 2270/107	. .	to cope with emergencies
F05B 2270/1071	. . .	in particular sudden load loss
F05B 2270/10711	. . . .	applying a low voltage ride through method
F05B 2270/1072	. . .	in particular blow-out and relight
F05B 2270/1073	. . .	of one engine in a multi-engine system
F05B 2270/1074	. . .	by using back-up controls
F05B 2270/1075	. . .	by temporary overriding set control limits
F05B 2270/1076	. . .	caused by water or hail ingestion
F05B 2270/108	. .	to cope with, or avoid, compressor flow instabilities
F05B 2270/1081	. . .	Compressor surge or stall
F05B 2270/10812	. . . .	caused by working fluid flow velocity profile distortion
F05B 2270/10815	. . . . .	due to high angle of attack of aircraft
F05B 2270/10817	. . . . .	due to compressor degradation
F05B 2270/109	. .	to prolong engine life
F05B 2270/1091	. . .	by limiting temperatures
F05B 2270/1095	. . .	by limiting mechanical stresses
F05B 2270/1097	. . .	by preventing reverse rotation
F05B 2270/11	. .	to maintain desired vehicle trajectory parameters
F05B 2270/1101	. . .	Altitude
F05B 2270/1102	. . .	Speed or Mach number
F05B 2270/111	. .	to control two or more engines simultaneously
F05B 2270/15	. .	to control thermoacoustic behaviour in the combustion chambers (counteracting noise or vibration F05B 2260/96)
F05B 2270/16	. .	to control water or steam injection
F05B 2270/17	. .	to avoid excessive deflection of the blades
F05B 2270/18	. .	to control buoyancy
F05B 2270/19	. .	to avoid stroboscopic flicker shadow on surroundings
F05B 2270/20	. .	to optimise the performance of a machine
F05B 2270/30	. .	Control parameters, e.g. input parameters
F05B 2270/301	. .	Pressure
F05B 2270/3011	. . .	Inlet
F05B 2270/3013	. . .	Outlet
F05B 2270/3015	. . .	differential
F05B 2270/303	. .	Temperature
F05B 2270/3032	. . .	excessive temperatures, e.g. caused by overheating
F05B 2270/304	. .	Spool rotational speed
F05B 2270/305	. .	Tolerances
F05B 2270/309	. .	Rate of change of parameters

F05B 2270/31	. . Fuel schedule for stage combustors
F05B 2270/32	. . Wind speeds
F05B 2270/3201	. . . "cut-off" or "shut-down" wind speed
F05B 2270/321	. . Wind directions
F05B 2270/322	. . the detection or prediction of a wind gust
F05B 2270/323	. . Air humidity
F05B 2270/324	. . Air pressure
F05B 2270/325	. . Air temperature
F05B 2270/326	. . Rotor angle
F05B 2270/327	. . Rotor or generator speeds
F05B 2270/328	. . Blade pitch angle
F05B 2270/329	. . Azimuth or yaw angle
F05B 2270/33	. . Proximity of blade to tower
F05B 2270/331	. . Mechanical loads
F05B 2270/332	. . Maximum loads or fatigue criteria
F05B 2270/333	. . Noise or sound levels
F05B 2270/334	. . Vibration measurements
F05B 2270/335	. . Output power or torque
F05B 2270/336	. . Blade lift measurements
F05B 2270/337	. . Electrical grid status parameters, e.g. voltage, frequency or power demand
F05B 2270/40	. Type of control system
F05B 2270/402	. . passive or reactive, e.g. using large wind vanes
F05B 2270/404	. . active, predictive, or anticipative
F05B 2270/50	. Control logic embodiment by
F05B 2270/502	. . electrical means, e.g. relays or switches
F05B 2270/504	. . electronic means, e.g. electronic tubes, transistors or IC's within an electronic circuit
F05B 2270/506	. . hydraulic means, e.g. hydraulic valves within a hydraulic circuit
F05B 2270/508	. . mechanical means, e.g. levers, gears or cams
F05B 2270/60	. Control system actuates through
F05B 2270/602	. . electrical actuators
F05B 2270/604	. . hydraulic actuators
F05B 2270/605	. . Pneumatic actuators
F05B 2270/606	. . mechanical actuators (F05B 2270/602 takes precedence)
F05B 2270/70	. Type of control algorithm
F05B 2270/701	. . proportional
F05B 2270/702	. . differential
F05B 2270/703	. . integral
F05B 2270/704	. . proportional-differential
F05B 2270/705	. . proportional-integral

- F05B 2270/706 . . proportional-integral-differential
- F05B 2270/707 . . fuzzy logic
- F05B 2270/708 . . with comparison tables
- F05B 2270/709 . . with neural networks
- F05B 2270/80 . . Devices generating input signals, e.g. transducers, sensors, cameras or strain gauges
- F05B 2270/802 . . Calibration thereof
- F05B 2270/803 . . Sampling thereof
- F05B 2270/804 . . Optical devices
- F05B 2270/8041 . . . Cameras
- F05B 2270/8042 . . . Lidar systems
- F05B 2270/805 . . Radars
- F05B 2270/806 . . Sonars
- F05B 2270/807 . . Accelerometers
- F05B 2270/808 . . Strain gauges; Load cells
- F05B 2270/809 . . Encoders
- F05B 2270/81 . . Microphones
- F05B 2270/821 . . Displacement measuring means, e.g. inductive

F05B 2280/00 Materials; Properties thereof

- F05B 2280/10 . . Inorganic materials, e.g. metals
- F05B 2280/101 . . Iron
- F05B 2280/1011 . . Cast iron
- F05B 2280/102 . . Light metals
- F05B 2280/1021 . . . Aluminium
- F05B 2280/1022 . . . Beryllium
- F05B 2280/1023 . . . Boron
- F05B 2280/1024 . . . Lithium
- F05B 2280/1025 . . . Magnesium
- F05B 2280/103 . . Heavy metals
- F05B 2280/10301 . . . Refractory metals, e.g. V, W
- F05B 2280/10302 . . . Chromium
- F05B 2280/10303 . . . Molybdenum
- F05B 2280/10304 . . . Titanium
- F05B 2280/10305 . . . Zirconium
- F05B 2280/10306 . . . Hafnium
- F05B 2280/10307 . . . Manganese
- F05B 2280/10308 . . . Lead
- F05B 2280/10309 . . . Tin
- F05B 2280/1031 . . . Zinc
- F05B 2280/10311 . . . Mercury

F05B 2280/104	. .	Noble metals
F05B 2280/1041	. . .	Silver
F05B 2280/1042	. . .	Gold
F05B 2280/1043	. . .	Platinum group, e.g. Pt, Ir
F05B 2280/1044	. . .	Palladium
F05B 2280/1045	. . .	Ruthenium
F05B 2280/1046	. . .	Osmium
F05B 2280/1047	. . .	Iridium
F05B 2280/1048	. . .	Rhodium
F05B 2280/105	. .	Copper
F05B 2280/106	. .	Rare earth metals, e.g. Sc, Y
F05B 2280/107	. .	Alloys
F05B 2280/1071	. . .	Steel alloys
F05B 2280/1072	. .	Copper alloys
F05B 2280/10721	. . .	Bronze
F05B 2280/10722	. . .	Phosphor-bronze alloy
F05B 2280/10723	. . .	Nickel-Copper alloy, e.g. monel
F05B 2280/1073	. .	Aluminium alloy, e.g. AlCuMgPb
F05B 2280/1074	. .	Alloys not otherwise provided for
F05B 2280/10741	. . .	Superalloys
F05B 2280/10742	. . .	Heat stable alloys
F05B 2280/10743	. . .	Ni - Si alloys
F05B 2280/10744	. . .	Metal-aluminide intermetallic compounds
F05B 2280/20	. .	Inorganic materials, e.g. non-metallic materials
F05B 2280/2001	. .	Glass
F05B 2280/20011	. . .	MIBA
F05B 2280/20012	. . .	Quartz
F05B 2280/2002	. .	Phosphor
F05B 2280/2003	. .	Silicon
F05B 2280/2004	. .	Ceramics; Oxides
F05B 2280/20041	. . .	Aluminium oxides
F05B 2280/20042	. . .	Zinc oxides
F05B 2280/20043	. . .	Zirconium oxides
F05B 2280/2005	. .	Non-oxide ceramics
F05B 2280/2006	. .	Carbon, e.g. graphite
F05B 2280/2007	. .	Carbides
F05B 2280/20071	. . .	of silicon
F05B 2280/20072	. . .	of titanium, e.g. TiB
F05B 2280/20073	. . .	of wolfram, e.g. tungsten carbide
F05B 2280/2008	. .	Nitrides

F05B 2280/20081	. . . of aluminium
F05B 2280/20082	. . . of boron
F05B 2280/20083	. . . of silicon
F05B 2280/20084	. . . of titanium
F05B 2280/20085	. . . of zirconium
F05B 2280/2009	. . Sulfides
F05B 2280/20091	. . . of molybdenum
F05B 2280/201	. . Sapphire
F05B 2280/2011	. . Aluminium titanate
F05B 2280/2013	. . Silica
F05B 2280/2014	. . Arsenic
F05B 2280/2015	. . Antimony
F05B 2280/2016	. . Bismuth
F05B 2280/2017	. . Barium
F05B 2280/30	. Inorganic materials not otherwise provided for
F05B 2280/40	. Organic materials
F05B 2280/4001	. . Leather
F05B 2280/4002	. . Cellulosic materials, e.g. wood
F05B 2280/4003	. . Synthetic polymers, e.g. plastics; Rubber
F05B 2280/4004	. . Rubber
F05B 2280/4005	. . PTFE [PolyTetraFluorEthylene]
F05B 2280/4006	. . Polyamides, e.g. NYLON
F05B 2280/4007	. . Thermoplastics
F05B 2280/4008	. . Polyamides, e.g. Aurum
F05B 2280/4009	. . Polyetherketones, e.g. PEEK
F05B 2280/401	. . Silicon polymers
F05B 2280/4011	. . Organic materials not otherwise provided for
F05B 2280/50	. Intrinsic material properties or characteristics
F05B 2280/5001	. . Elasticity
F05B 2280/5002	. . Thermal properties
F05B 2280/5003	. . Expansivity
F05B 2280/50031	. . . similar
F05B 2280/50032	. . . dissimilar
F05B 2280/5004	. . Heat transfer
F05B 2280/5005	. . Reflective properties
F05B 2280/5006	. . Shape memory
F05B 2280/5007	. . Hardness
F05B 2280/5008	. . Magnetic properties
F05B 2280/5009	. . non-magnetic
F05B 2280/501	. . Self lubricating materials; Solid lubricants

F05B 2280/5011	. . Surface roughness
F05B 2280/60	. Properties or characteristics given to material by treatment or manufacturing
F05B 2280/6001	. . Fabrics
F05B 2280/6002	. . . Woven fabrics
F05B 2280/6003	. . Composites; e.g. fibre-reinforced
F05B 2280/6004	. . amorphous
F05B 2280/6005	. . crystalline
F05B 2280/6006	. . Directionally-solidified crystalline structures
F05B 2280/6007	. . monocrystalline
F05B 2280/6008	. . Structures
F05B 2280/6009	. . Grain size
F05B 2280/601	. . Syntactic
F05B 2280/6011	. . Coating
F05B 2280/6012	. . Foam
F05B 2280/6013	. . Fibres
F05B 2280/6014	. . Filler
F05B 2280/6015	. . Resin
F05B 2280/70	. Treatments or modification of materials
F05B 2280/701	. . Heat treatments
F05B 2280/702	. . Reinforcements