

Single Phase Induction Motor Adjustable Speed Control

By feeding adjustable frequency AC power to the field windings, the magnetic field can be made to rotate, allowing variation in motor or generator speed. This is useful, for instance, for generators used in wind turbines. Additionally, DFIG-based wind turbines offer the ability to control active and reactive power. 920a8a6b68

DC motor The most common types rely on magnetic forces produced by currents in the coils. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current in part of the motor. circuit or field circuit allows speed control. Modern DC motors are often controlled by power electronics

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systems which adjust the voltage by "chopping" the A DC motor is an electrical motor that uses direct current (DC) to produce mechanical force

AC motor The AC motor commonly consists of two basic parts, an outside stator having coils supplied with alternating current to produce a rotating magnetic field, and an inside rotor attached to the output shaft producing a second rotating magnetic field. The induction motor (or asynchronous motor) always relies on a small difference in speed between An AC motor is an electric motor driven by an alternating current (AC). The rotor magnetic field may be produced by permanent magnets, reluctance saliency, or DC or AC electrical windings. of AC motors are induction motors and synchronous motors

Less common, AC linear motors operate on similar principles as rotating motors but have their stationary and moving parts arranged in a straight line configuration, producing linear motion instead of rotation. In repulsion motors the stator windings are connected directly to the AC power

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supply and the rotor is connected to a commutator and brush assembly, similar to that of a direct current (DC) motor. 920a8a6b68

Motor controller current instead adjust rotor circuit resistance (for wound rotor motors) or change the frequency of the AC applied to the motor for speed control using power A motor controller is a device or group of devices that can coordinate in a predetermined manner the performance of an electric motor. A motor controller might include a manual or automatic means for starting and stopping the motor, selecting forward or reverse rotation, selecting and regulating the speed, regulating or limiting the torque, and protecting against overloads and electrical faults. Motor controllers may use electromechanical switching, or may use power electronics devices to regulate the speed and direction of a motor 920a8a6b68

Induction motor traditionally used for constant-speed service, single- and three-phase induction motors are increasingly being installed in variable-speed applications using variable-frequency An induction motor or

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asynchronous motor is an AC electric motor in which the electric current in the rotor that produces torque is obtained by electromagnetic induction from the magnetic field of the stator winding. An induction motor's rotor can be either wound type or squirrel-cage type. An induction motor therefore needs no electrical connections to the rotor 920a8a6b68

DC motors were the first form of motors to be widely used, as they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor, a lightweight brushed motor used for portable power tools and appliances... 920a8a6b68

Synchronous motor Doubly fed synchronous motors use independently-excited multiphase AC electromagnets for both rotor and stator. Synchronous motors use electromagnets as the stator of the motor which create a magnetic field that rotates in time with the oscillations of the current.

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provide torque below synchronous speed. The machine thus starts as an induction motor until it approaches synchronous speed, when the rotor “pulls in” and a synchronous electric motor is an AC electric motor in which, at steady state, the rotation of the shaft is synchronized with the frequency of the supply current; the rotation period is exactly equal to an integer number of AC cycles. The rotor with permanent magnets or electromagnets turns in step with the stator field at the same rate and as a result, provides the second synchronized rotating magnet field

Repulsion motor Repulsion motors are classified as single phase motors. [citation needed] Repulsion motors are classified as single phase motors. g. In repulsion motors the stator windings are connected A repulsion motor is a type of electric motor which runs on alternating current (AC). SR Class CP and SR Class SL electric multiple units) but has been superseded by other types of motors. It was formerly used as a traction motor for electric trains (e. superseded by other types of motors

VFDs are used in applications ranging from small appliances to large

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compressors. Systems using VFDs can be more efficient than hydraulic systems, such as in systems with pumps and damper control for fans.

Three-phase squirrel-cage induction motors are widely used as industrial drives because they are self-starting, reliable, and economical. Single-phase induction motors are used extensively for smaller loads, such as garbage disposals and stationary power tools. Although traditionally used for constant-speed service, single- and three-phase induction motors are increasingly being installed in variable-speed applications using variable...

Doubly fed electric machine This Doubly fed electric machines, Doubly fed induction generator (DFIG), or slip-ring generators, are electric motors or electric generators, where both the field magnet windings and armature windings are separately connected to equipment outside the machine. feeding adjustable frequency AC power to the field windings, the magnetic field can be made to rotate, allowing variation in motor or generator speed

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Phase converter Phase converters are used where three-phase service is not available from the utility provider or is too costly to install. distribution wire required to complete a functional installation. A utility provider will generally charge a higher fee for a three-phase service because of the extra equipment, including transformers, metering, and distribution wire required to complete a functional installation. The majority of phase converters are used to produce three-phase electric power from a single-phase source, thus allowing the operation of three-phase equipment at a site that only has single-phase electrical service. Three-phase induction motors may operate adequately on an unbalanced supply if not heavily loaded A phase converter is a device that converts electric power provided as single phase to multiple phase or vice versa 920a8a6b68

Since the 1980s, power electronics technology has reduced VFD cost and size and has improved performance through advances in semiconductor switching devices, drive topologies... 920a8a6b68

Electric motor Most electric motors operate through the interaction between

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the motor's magnetic field and electric current in a wire winding to generate Laplace force in the form of torque applied on the motor's shaft.

Standardized electric motors provide power An electric motor is a machine that converts electrical energy into mechanical energy. brushless, single-phase, two-phase, or three-phase, axial or radial flux, and may be air-cooled or liquid-cooled. An electric generator is mechanically identical to an electric motor, but operates in reverse, converting mechanical energy into electrical energy 920a8a6b68

Variable-frequency drive Depending on its topology, it controls the associated voltage or current variation. A variable-frequency drive (VFD, or adjustable-frequency drive, adjustable-speed drive, variable-speed drive, AC drive, micro drive, inverter drive, variable A variable-frequency drive (VFD, or adjustable-frequency drive, adjustable-speed drive, variable-speed drive, AC drive, micro drive, inverter drive, variable voltage variable frequency drive, or drive) is a type of AC motor drive (system incorporating a motor) that controls speed and torque by varying the frequency of the input electricity 920a8a6b68

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Electric motors can be powered by direct current (DC) sources, such as from batteries or rectifiers, or by alternating current (AC) sources, such as a power grid, inverters or electrical generators. Electric motors may also be classified by considerations such as power source type, construction, application and type of motion output. They can be brushed or brushless... 920a8a6b68 Synchronous and induction motors are the most widely used AC motors. Synchronous motors rotate at a rate locked to the line... 920a8a6b68

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