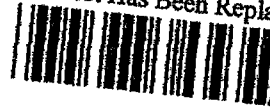


ABSTRACT:

Electrical drive arrangement.

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- An electrical drive arrangement is described, comprising
- an artificially excited electric motor comprising a stator, having windings arranged as a plurality of phase winding, and a rotor,
 - an electronic commutation circuit for energizing the phase windings of the electric motor with electric power,
 - a position sensor device for supplying a sensor signal for each phase winding of the electric motor in dependence upon an instantaneous position of the rotor relative to the stator, each of the sensor signals being in an impressible phase relationship with respect to the position of the rotor,
 - a phase control stage for subjecting the phase relationship of the sensor signals to a phase shift which depends at least on the speed of movement of the rotor and which is uniform for all the sensor signals, as a result of which resultant sensor signals are obtained,
 - a waveform generator, to which the resultant sensor signals can be applied and in which commutation signals for the associated phase winding are derived from each of the resultant sensor signals, in order to control in the commutation circuit the variation in time and the amplitude of the electric power to be applied to the electric motor, and
 - a control stage for controlling the amplitude and the phase shift of the electric power supply to the electric motor in dependence upon at least the speed of movement of the rotor,
- the phase control stage comprising:
- a control signal generation stage which, for the value of the phase shift currently impressed by the control stage, selects for each individual sensor signal from the multitude of all the sensor signals that one as a substitute sensor signal, which directly or in inverted form by means of a minimal delay can be given the phase relationship of the resultant sensor signal to be derived from said individual sensor signal, and which stage is capable of supplying control signals containing information about this selection,

- a sensor signal allocation stage, to which the sensor signals from the position sensor device can be applied and in which under control of the control signals the substitute sensor signals are derived from the sensor signals and are made available,
- 5 - a delay time determining stage for determining, from the currently impressed value for the phase relationship, the speed of movement of the rotor as well as the spacing between the phases of the sensor signals along a movement coordinate describing the position of the rotor, a time interval (delay time) corresponding to the delay between each of the substitute sensor signals and the resultant sensor signal to be derived therefrom,
- 10 - a sensor signal output stage, to which the substitute sensor signals can be applied and which, in response to a load signal, can be loaded with and can supply the resultant sensor signals, and
- a load signal generating stage, in which upon each change of the value of one of the sensor signals or the substitute sensor signals the load signal can be generated anew and can be applied to the sensor signal output stage, delayed relative to this change by the delay time determined in the delay time determining stage.
- 15

20 This drive arrangement enables the torque angle, i.e. the phase angle between the magnetic field generated in the stator and the rotor position, to be controlled in dependence upon the speed of movement of the rotor using simple position signals and simple circuitry.

Fig. 5

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