MOTOR

The present invention relates to a motor, and to a vacuum pump comprising a motor having a motor rotor exposed to a sub-atmospheric pressure during use of the pump.

Vacuum processing is commonly used in the manufacture of semiconductor devices and flat panel displays to deposit thin films on to substrates, and in metallurgical processes. Pumping systems used to evacuate relatively large process chambers to the desired pressure generally comprise at least one booster pump connected in series with at least one backing pump.

Vacuum pumps typically have oil-free pumping mechanisms, as any lubricants present in the pumping mechanism could cause contamination of the clean environment in which the vacuum processing is performed. Such "dry" vacuum pumps are commonly single or multi-stage positive displacement pumps employing inter-meshing rotors in the pumping mechanism. The rotors may have the same type of profile in each stage or the profile may change from stage to stage. The backing pumps may have either a similar pumping mechanism to the booster pumps, or a different pumping mechanism.

An asynchronous AC motor typically drives the pumping mechanism of a booster pump. Such motors must have a rating such that the pump is able to supply adequate compression of the pumped gas between the pump inlet and outlet, and such that the pumping speed resulting is sufficient for the duty required.

Early designs of dry vacuum pumps used essentially standard motors with greased bearings, and with shaft seals between the motor and the pumping mechanism of the vacuum pump. These motors operated at relatively low speeds (less than 60 Hz), and at atmospheric pressure. The greased bearings and shaft seals have been found to be sources of unreliability of the vacuum pumps, and so the trend in pump design has been to eliminate both of these items and to run at

MOTOR WITH IMPROVED COOLING

The present invention relates to a motor, and to a vacuum pump comprising a motor having a motor rotor exposed to a sub-atmospheric pressure during use of the pump.

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