EXPERIMENTAL DESIGN OF A HIGH VACUUM SYSTEM FOR PUPR PLASMA MACHINE

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Abstract:

In vacuum technology, it is customary to divide into single, smaller regions the large pressure region which today covers more than 16 orders of magnitude. These divisions are naturally somewhat arbitrary. Thus, the chemist frequently refers to the region between 100 and 1 mbar, in which he is chiefly interested, as an intermediate vacuum, and many technician refers to the total pressure (below atmospheric). The pressure regions presented are clearly distinguished from the point of view of the relationship in the kinetic theory of gases and according to the kind of gas flow. Moreover the practical technology in the different regions is distinguishable. A positive displacement pumps is understood to be a mechanical vacuum pump which transports the gas with the aid of pistons, rotors, vanes, valves and other devices, compresses it and expels it. While the mechanical pumps had done the job for the pre-vacuum, as is called, the compressor and the cooling system for the diffusion pumps should be on and then start the oil diffusion pumps. In the choice of a suitable gauge for pressure measurement it is not only the required pressure region that is decisive; the operating conditions under which the apparatus works also play a significant role. In the PUPR Plasma Machine the vacuum system were not working as it is supposed to work. After performing a series of tests in the Plasma laboratory, results show that ideal vacuum conditions were not achieved, and because of this results, certain changes were made in order to obtain high-vacuum pressure. Now the Plasma Laboratory chamber counts with $10^{-8}$ Torr pressure, so that’s why high vacuum system for PUPR Plasma Machine is achieved.