

# Experimental Study of the Ventilation Arrangement's Effect on Particle Concentration in a Surgery Room

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**Abstract** - Hospital ventilation is defined as the providing of fresh and clean air stream in hospital wards or patients' room to provide and establish a healthy environment for personnel's and patient's breath, reducing concentration of produced contaminations in hospital and removing them from clean spaces. Thus, it can prevent spread of airborne infections among patients, people who works around and more importantly, outside the hospital. Hospital infections have a huge influence on mortality of the patients in which respiratory tract infections and surgical wound infections plays a major role. Depending on the quality and the mass flow rate of the exploited air, cleanness of a surgery room can be achieved by supplying an adequate amount of air. In this regard, arrangement of inlet and outlet gates have the most considerable impact among geometrical parameters. However, it should be mentioned that positioning of the outlet gates has negligible influence on the distribution of stream properties like velocity, temperature and concentration of the contaminations relative to inlet gates. In this study, the concentration of aerosols for different dimensions and for different modes of inlet gates in a completely equipped surgery room is investigated and the average particle concentration of them is compared. It can be illustrated that obtained results changes with variation of particles' dimensions.

**Keywords:** Particle Concentration, Surgery Room, Ventilation Arrangement, Aerosols.