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# **SIMULATION, DISCUSSION AND COMPARATIVE ANALYSIS OF INDOOR AIR CIRCULATION EFFICIENCY OF AIR PURIFIERS WITH DIFFERENT AIR INLET AND OUTLET TYPES**

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## **Abstract**

*In today's society, people pay more and more attention to indoor air quality. Whether it is a home, office or conference room, using air purifiers has become commonplace. When purchasing an air purifier, most people focus on factors such as performance, price, and air purification efficiency. There are many types of air purifiers on the market, but there are currently few studies on the indoor air circulation efficiency of air purifiers with different air inlet and outlet types. Therefore, this study used the*

*theoretical basis of Computational Fluid Dynamics (CFD) and Fluent software to simulate indoor space and analyze flow field characteristics. They explored the effects of different air outlet forms and placements on air circulation in the conference room. The impact will be analyzed in a systematic way, and suggestions and plans for improving indoor environmental quality and comfort will be put forward. Preliminary research results point out that when the air purifier is running at high speed, use the top air outlet, front return air, and left and right air outlet back air return configurations. The air purifier has the best average wind speed. This discovery helps people configure air purifiers more effectively to improve indoor air quality and enhance people's comfort.*