

# Sistem Penghawaan Alami Pada Gor Pancasila Surabaya

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## ABSTRAK

Sistem penghawaan alami memiliki manfaat besar untuk mengatasi kondisi thermal bangunan sekaligus penghematan energi. Gor Pancasila di Surabaya memiliki permasalahan sistem penghawaan alami pada luas, letak dan jenis bukaan sehingga mempengaruhi kenyamanan dan efektivitas aktifitas olahraga dalam bangunan. Penelitian dilakukan dengan mengevaluasi kecepatan dan persebaran angin dalam bangunan. Selanjutnya diberikan rekomendasi desain berupa penambahan bukaan sesuai SNI 03-3647-1994 juga penerapan cross ventilation dan stack effect pada bangunan. Kesesuaian hasil rekomendasi dibuktikan dengan simulasi digital *computational Fluid Dynamic* dari *software Ansys Workbench*. Hasil dari simulasi yaitu adanya perubahan kecepatan angin yang sudah sesuai kebutuhan kenyamanan bangunan dan persebaran angin sesuai sistem ventilasi yang diterapkan yaitu *cross ventilation* dan *stack effect*.

Kata kunci: Sistem penghawaan alami, cross ventilation, stack effect, Gor Pancasila Surabaya

## ABSTRACT

*Natural ventilation system has great benefits to overcome the thermal conditions of the building while saving energy. GOR (sport center) Pancasila in Surabaya has natural ventilation system problems in the width, location and type of openings that affect the comfort and effectiveness of sports activities in the building. The study was conducted by evaluating the speed and spread of the wind in the building. Furthermore, design recommendations were given in the form of adding openings according to SNI 03-3647-1994 as well as the application of cross ventilation and stack effects in the buildings. The suitability of the recommendation was proven by digital simulation using computational Fluid Dynamic simulation from Ansys Workbench software. The simulation results showed changes in the speed and the distribution of wind that are in accordance with the building comfort requirements while using the recommended ventilation system, namely cross ventilation and stack effects.*

*Key words: Natural ventilation system, cross ventilation, stack effect, GOR Pancasila Surabaya*