ANALISIS SIFAT ALIRAN UDARA DAN MANUFAKTUR *SETTLING CHAMBER* DAN *CONTRACTION CONE* TEROWONGAN ANGIN TIPE TERBUKA KECEPATAN RENDAH

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ABSTRAK

Terowongan angin (*Wind tunnel)* adalah sebuah alat untuk membantu proses analisis pengaruh aliran udara di sekitar benda padat. Selain digunakan di dalam industri penerbangan dan otomotif, terowongan angin juga dapat digunakan sebagai alat untuk keperluan penelitian maupun praktikum bagi mahasiswa. Oleh karena itu, penulis berharap terowongan angin yang akan dibuat ini dapat memenuhi standard yang berlaku sehingga dapat digunakan untuk keperluan penelitian maupun praktikum kedepannya.

Untuk melihat perbandingan antara tiga jenis terowongan angin yaitu terowongan angin tanpa *settling chamber* dan *flow straightener*, terowongan angin dengan *settling chamber* tanpa *flow straightener* dan terowongan angin dengan *settling chamber* dan *flow straightener* digunakan analisis CFD. Dalam proses manufaktur *settling chamber* dan *contraction cone* ini menggunakan metode *sawing* dan *drilling*, serta bahan yang digunakan adalah *plywood*.

Berdasarkan dari perbandingan kontur kecepatan dan *turbulence kinetic energy* maka didapatkan hasil simulasi CFD perbandingan terbaik yaitu terowongan angin dengan *settling chamber* dan *flow straightener*. Proses manufaktur *settling chamber* dan *contraction cone* meliputi perakitan *settling chamber*, perakitan *contraction cone* dan *assembly settling chamber* dengan *contraction cone*.

Kata Kunci: Terowongan Angin, *Computational Fluid Dynamics* (CFD), *Settling Chamber*, *Contraction Cone*

ANALYSIS OF AIRFLOW PROPERTIES AND MANUFACTURING SETTLING CHAMBER AND CONTRACTION CONE OF OPEN CIRCUIT LOW SPEED WIND TUNNEL

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ABSTRACT

Wind tunnel is a tool to help analyze the effect of air flow around solid objects. Apart from being used in the aviation and automotive industries, wind tunnels can also be used as a tool for research and practical purposes for students. Therefore, the authors hope that the wind tunnel that will be made can meet the applicable standards so that it can be used for future research and practice purposes.

To see the comparison between the three types of wind tunnels, that is a wind tunnel without a settling chamber and a flow straightener, a wind tunnel with a settling chamber without a flow straightener and a wind tunnel with a settling chamber and a flow straightener, CFD analysis is used. In the manufacturing process of settling chamber and contraction cone using sawing and drilling methods, and the material used is plywood.

Based on the comparison of velocity contours and turbulence kinetic energy, the best comparison of CFD simulation results is the wind tunnel with the settling chamber and the flow straightener. The manufacturing process of settling chamber and contraction cone includes settling chamber assembly, contraction cone assembly and settling chamber assembly with contraction cone.

Keyword: *Wind Tunnel*, *Computational Fluid Dynamics* (CFD), *Settling Chamber*, *Contraction Cone*