

GAS DYNAMIC IN THE D40 CYCLONE WITH IMPROVED EXHAUST PIPE

The study of how exhaust pipe geometry affects gas flow velocity is a critical task in aerodynamics and mechanical engineering. The shape and dimensions of the pipe can significantly influence flow characteristics, which in turn impacts the efficiency of engines and other gas exhaust systems.

Figure 1 illustrates the velocity contours of the gas flow for different geometric configurations of the exhaust pipe. The images show the velocity distribution in both cross-sectional and longitudinal sections of the pipe, allowing visualization of zones with maximum and minimum velocities, as well as areas of turbulence.

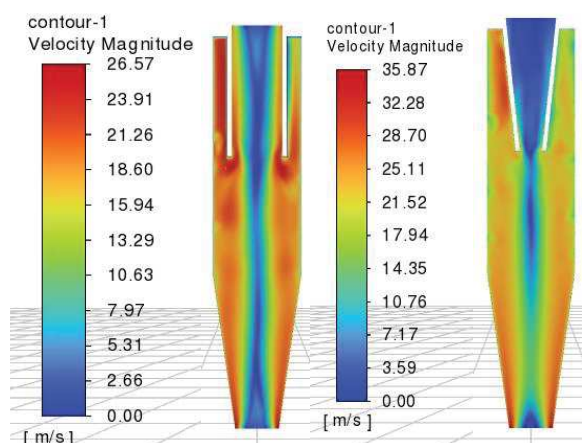


Figure 1 – Gas Flow Velocity Contours

The presented Figure 1 shows two gas flow velocity contours obtained through numerical simulation.

The pipe geometry directly affects flow velocity—narrowing or bends lead to an increase in maximum velocity (from 26.57 m/s to 35.87 m/s) and alter the flow behavior.

Energy losses – Regions with sharp velocity gradients (particularly near walls and bends) reduce system efficiency, necessitating design optimization.

ЛИТЕРАТУРА

Dziubak, T. Experimental Investigation of Possibilities to Improve Filtration Efficiency of Tangential Inlet Return Cyclones by Modification of Their Design. *Energies* 2022, 15, 3871. <https://doi.org/10.3390/en15113871>