Strzelecka, K., Jeżowiecka-Kabsch, K. Coriolis Coefficient in Transitional and Turbulent Pipe Flow. ***Ochrona Środowiska*** **2008, Vol. 30, No. 1, pp. 21–25.**

Abstract: The command of the direct dependence $\alpha=\alpha(\mathrm{Re})$ in transitional and turbulent flows is a requisite for hydraulic calculations of pipe flows. The Coriolis coefficient value for turbulent flows that is most frequently reported in engineering-oriented literature equals 1. This is attributable to the assumption of the uniform velocity distribution and can be burdened with error (the bigger, the lesser the turbulence in flow). As yet, the direct dependence of the Coriolis coefficient (α) and the Reynolds number (Re) that would apply to a wider range of flows (including the transition zone where the differences between uniform and real velocity distribution can be the greatest) has received no attention in the literature. The $\alpha = \alpha(\mathrm{Re})$ dependence obtained in our experimental studies of pipe flows with $\mathrm{Re}\in(2.8\cdot10^3;\ 10^5)$ – which noticeably differs from the one attained by Nikuradse – confirms the results of the majority of recent investigations into flows of $\mathrm{Re}>10^5$. Our own experimental results, as well as the experimental results recently reported by other authors, made it possible to rate the values of the Coriolis coefficient at 1.312 to 1.031 for flows with Reynolds numbers of $\mathrm{Re}\in(2.8\cdot10^3;\ 3.5\cdot10^7)$ and describe their dependence on the Reynolds number.

Keywords: Coriolis coefficient, pipe flow, viscous flow.