Turbulent Flow in Corrugated Pipes with Helical Grooves

Authors : P. Mendes, H. Stel, R. E. M. Morales

Abstract : This article presents a numerical and experimental study of turbulent flow in corrugated pipes with helically "d-type" grooves, for Reynolds numbers between 7500 and 100,000. The ANSYS-CFX software is used to solve the RANS equations with the BSL two equation turbulence model, through the element-based finite-volume method approach. Different groove widths and helix angles are considered. Numerical results are validated with experimental pressure drop measurements for the friction factor. A correlation for the friction factor is also proposed considering the geometric parameters and Reynolds numbers evaluated.