In the textile industry, air-jet nozzles known as Jetring, Nozzlering, Compact-jet and Siro-jet are used for the final spinning of the yarn. The air flow, which determines the yarn quality and other yarn properties, depends on the flow parameters such as pressure, mass flow rate, and the structural parameters of the air jet nozzle which acting on the flow parameters. In this study, SST turbulence model was selected and 225 kPa (absolute) total pressure was applied to the nozzle injectors. Approximately 2,500,000 tetrahedral elements are used for any geometry in the mesh prepared for parametric study. All parameters solved in ANSYS CFX 18.0 with used parametric study. The structural parameters were subjected to parametric CFD analysis and different flow parameters such as mass flow, swirling number, geometric swirling number, Reynolds number, vorticity, helicity real eigen, velocity, velocity w (z-axis velocity, i.e. twisting chamber axis), total pressure, flow pressure were compared.