The customers demand for an always higher efficiency requires to use not only the best tooling but in addition control instruments and design methods always more sophisticated, like for example new software for obtaining the velocity distribution of a fluid flowing through a conduit.

These software programs require that the geometry of the inner conduit to be geometrically defined, and in addition the process conditions (pressure, temperature, fluid capacity) and the fluid properties (specific weight, viscosity) to be introduced.

Based on the above data it is possible to obtain a very precise distribution for the velocity value in each single point of the conduit, both under numeric form and flow diagrams.

These information make it possible, as an example, to minimize the flow turbulence and consequently to increase the nozzle efficiency through an increase in the fluid exit velocity.

This is of basic importance for some kind of nozzles, for example those nozzles required to supply an high impact jet when performing descaling processes in a rolling mill.

By trial and error it is also possible to eliminate problems like jet Instability or cavitation.

The overall process efficiency in the flow path before the nozzle can also be considered, which often results into the design of geometry modification or the introduction of special flow improving profiles along the conduit.