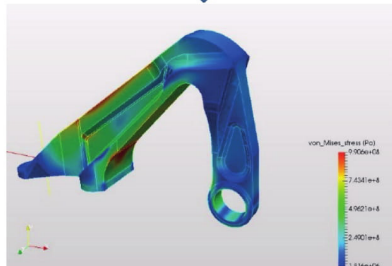# Technological Innovation

FEA Finite Element Analysis
CFD Computational Fluid Dynamics
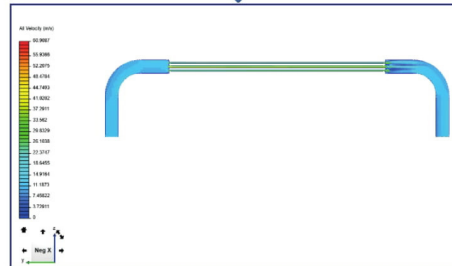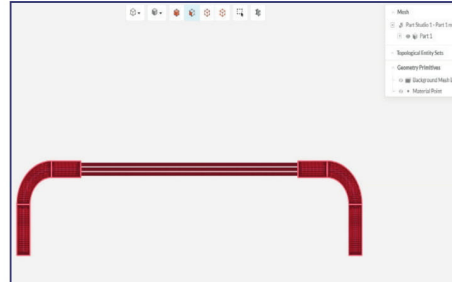## THERMAL Analysis

Technological Innovation

FEA
Is a computerized method for predicting how a product reacts to real-world forces, vibration.
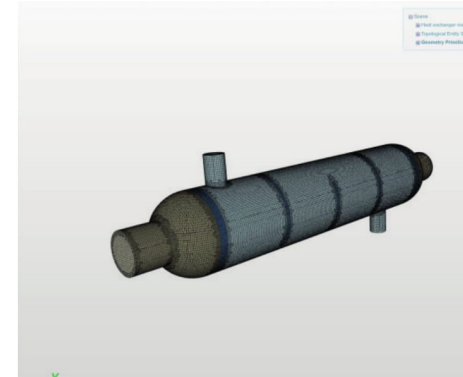
CFD
Is a branch of fluid mechanics that uses numerical analysis and data structures to analyze and solve problems that involve fluid flow.
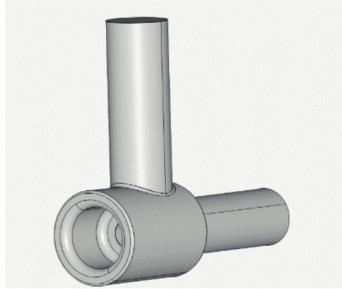
Thermal
Is a branch of materials science where the properties of materials are studied as they change with temperature.
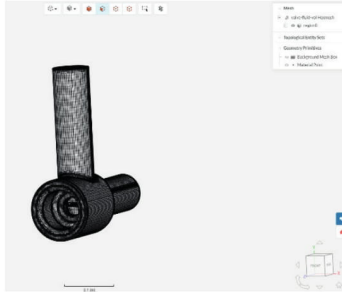

Working
Thermal and CFD analysis

Build a Smulation

CAD-OnShape
When using the computational mechanics to analyse a physics problem, one or multiple solution fileds are calculated on a given geometrical domain.

Mesh&Simulation SIMSCALE
In order to use a numerical solution method the geometry has to be discretised (FEM). Moreover can set the equation solver for the simulation, change the converge settings or choose the time integration scheme for transient dynamic simulations.
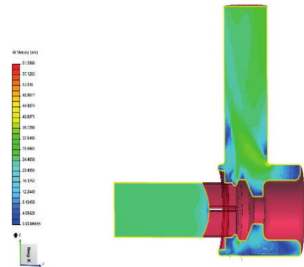
Design Condition SIMSCALE
Result Control allows to define extra simulation result outputs.

Case Study-Friction Factor

The analysis was carried out considering the fluid flowing inside the **Friction Pipe.**
Concentrated and distributed losses, carried to a drastic reduction of pressure due to the configuration of the object under examination.

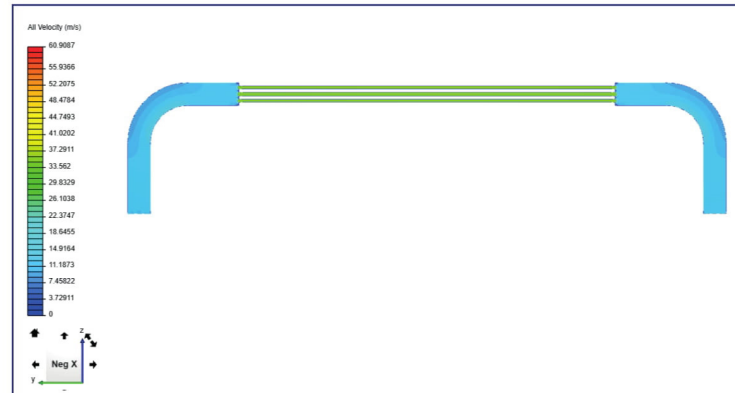| Product	UM	Value
Fluid	[Kg/m^3]	750
Flow-rate	[m^3/h]	350
Pressure Outlet	[barg]	1
N Tubes	-	7
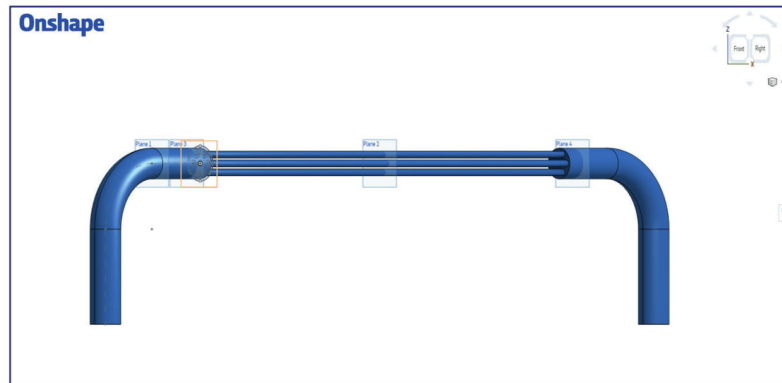
Friction Pipe 3D-model CAD-OnShape
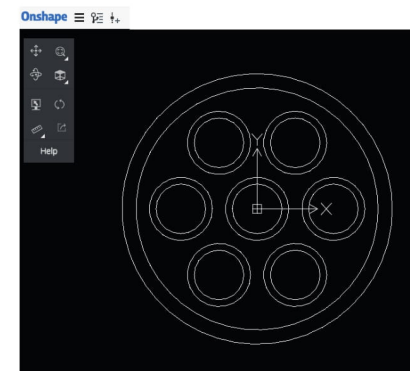
Section of 7 tubes DN 3/4"

Case Study-Friction Factor

Initial Speed:

The flowrate goes in the inlet section at a speed of 11.3m/s

Final Speed:

Development of fluid veins at the section enlargement.