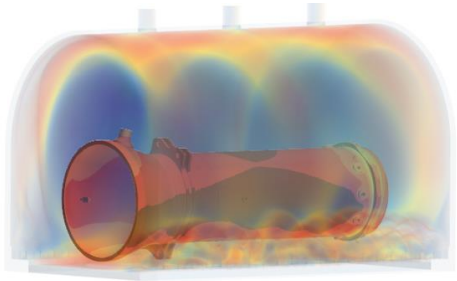
framatome

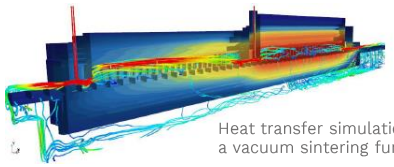
CFD Modeling of industrial furnaces

Industrial process simulation

Simulate the furnaces operations to optimize your processes and improve the quality of your product



Temperature on the heated part and in the furnace environment



Heat transfer simulation in a vacuum sintering furnace

Challenge

- You need to master heat treatment process in a furnace to reach high quality production?
- You need to optimize a furnace? Gas and electricity consumption, heating cycle...
- You need to know mechanical properties of components after a heat treatment in a furnace?
- You have difficulties to access direct temperature measurements to judge the quality and effectiveness of your process?

Solution

Our CFD furnaces modeling solution addresses these challenges by offering:

- A numerical simulation study : a powerful tool to help to understand what happens in a furnace taking into account all physical phenomena involved in the furnace (conduction, convection, radiation, gas flow...)
- Access to several output data: Global and local temperatures, heating and cooling rate, mechanical properties at the end of the process
- Possibility to develop Metamodels that deliver accurate and real-time results in seconds of your furnace on standard laptops

References

- Solution was developed in-house to support the industrial needs of Framatome's factories. The methods are now being rolled-out to external clients.

Customers benefits

- Better understanding of your furnace: Performance demonstration and justification of investments
- Optimize heat treatment operations: lower energy consumption, optimal heating/cooling rate, optimal insulation, positioning of probes...
- Improve the quality of your production and justify incident during heating operations: Help to decide to keep/reject pieces and avoid expensive sacrificial pieces

Key figures

1:1 scale industrial equipment validated methodologies

Your performance
is **our** everyday **commitment**

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