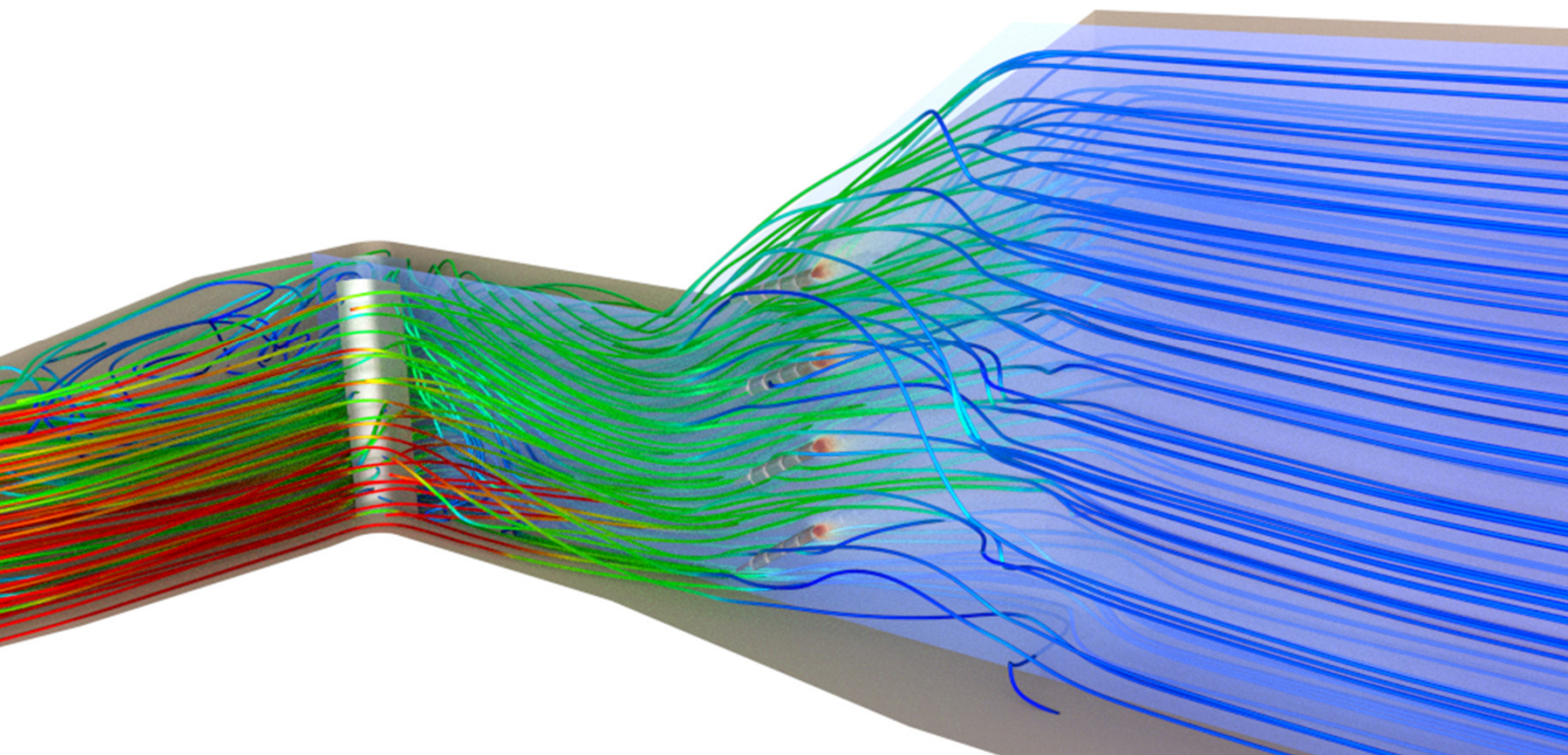


# PoliEngineering

CFD modelling experts



## PoliEngineering

*We are a consulting company offering thermal and fluid dynamics (CFD) modelling services. Our formation is based on years of collaborations within the computational fluid dynamics group of the Politecnico di Milano and on numerous consulting activities performed for leading companies in various industrial sectors.*

***Our skills:***

- *turbulence*
- *heat transfer*
- *combustion*
- *multiphase*
- *particles*

*We acquired excellent knowledge in using diverse codes, both open-source and commercial.*

### Sectors of Interest

Food industry

Pharmaceutic

Oil&Gas

Power-Gen

Renewables

Civil

Engineering

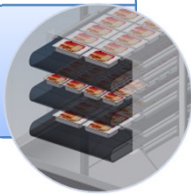
Industrial

Components

### Our experiences

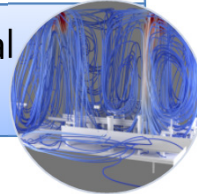
- Cleanrooms
- Heating processes
- Cooling processes
- Cold storages
- Pasteurizers
- HVAC

Food Industry



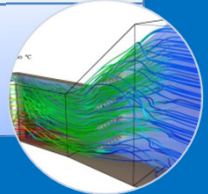
- Insulators
- Cleanrooms
- Dust collectors
- Air showers

Pharmaceutical Industry



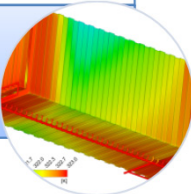
- HRSG
- Incinerators
- Biomass steam generators
- SCR systems
- Flue gas treatment systems
- Combustion systems
- Heat exchangers

Power Generation



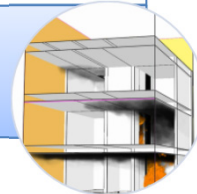
- Autoclaves
- Burners
- Domestic ovens
- Bag filters
- Cyclones
- Fluidized beds
- Regenerators

Industrial Components



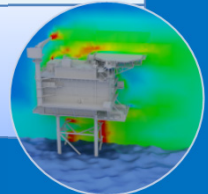
- External aerodynamics
- HVAC
- Fire dynamics in confined environments
- Contaminants dispersion

Civil Engineering



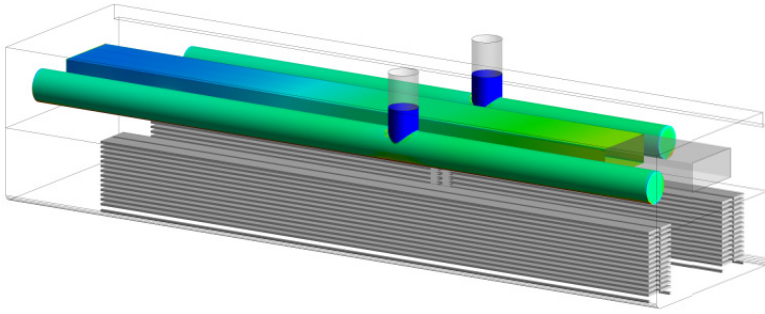
- Helideck
- Fire (risk assessment)
- Explosion (risk assessment)

Oil & Gas

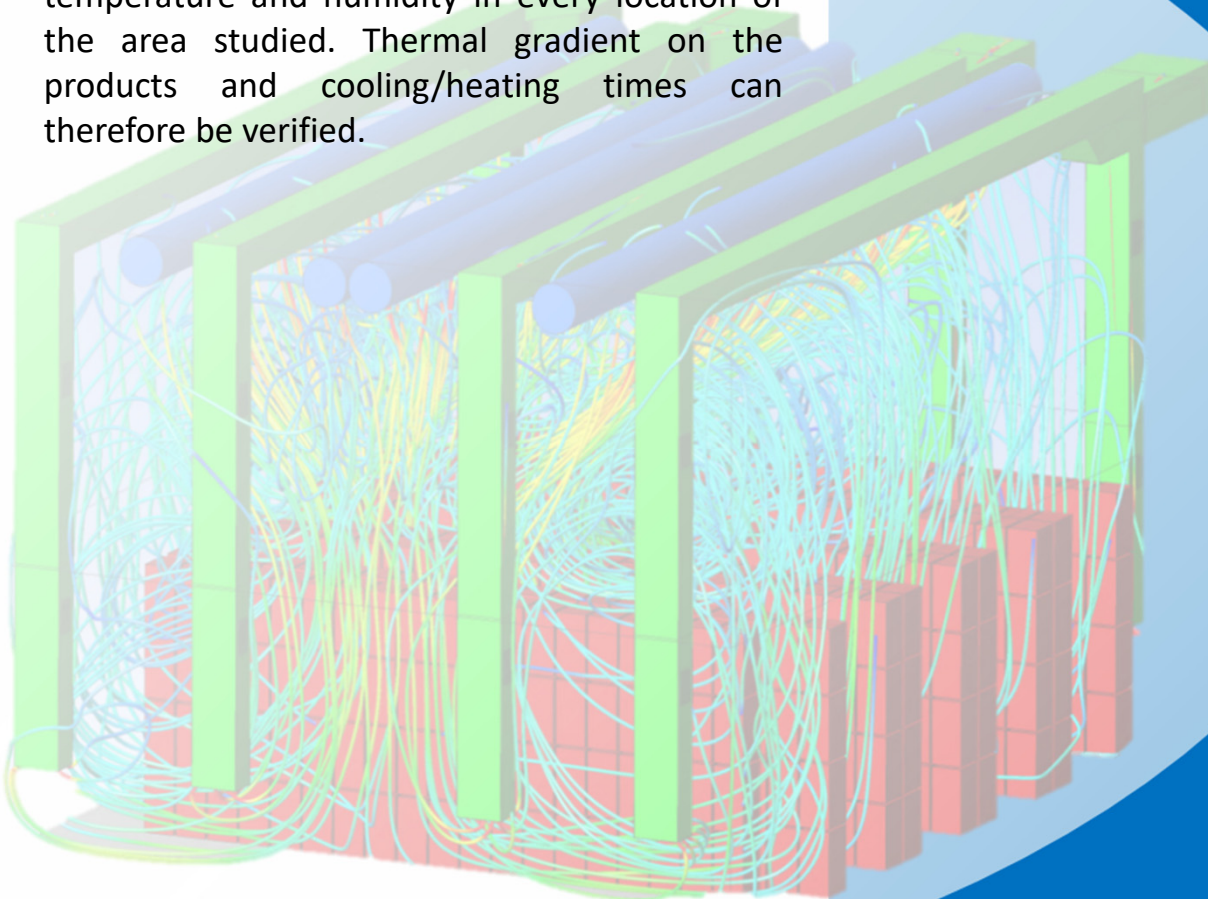


# Food Industry

Temperature controlled environments



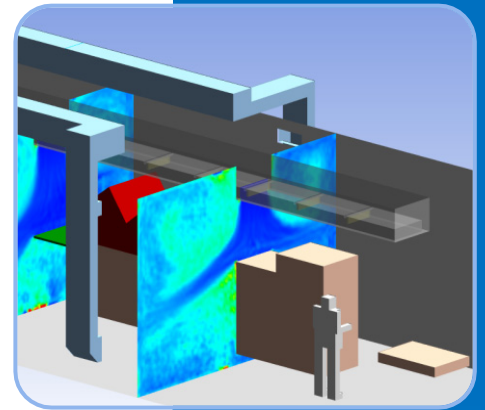
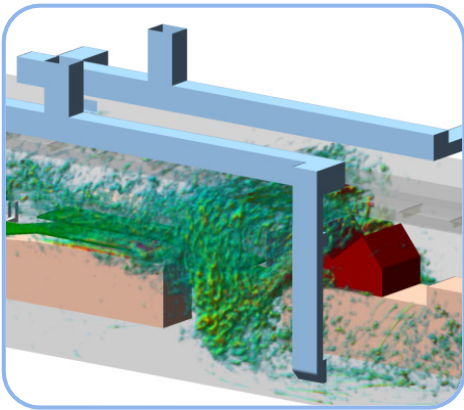
Achieving storage areas at controlled ambient conditions is crucial for the food industry. Products should remain at determined homogeneous conditions and thus, in addition to the correct energetic design, the proper air flow distribution is of fundamental importance. Through the use of CFD analysis, the flow field conditions can be predicted along with the temperature and humidity in every location of the area studied. Thermal gradient on the products and cooling/heating times can therefore be verified.



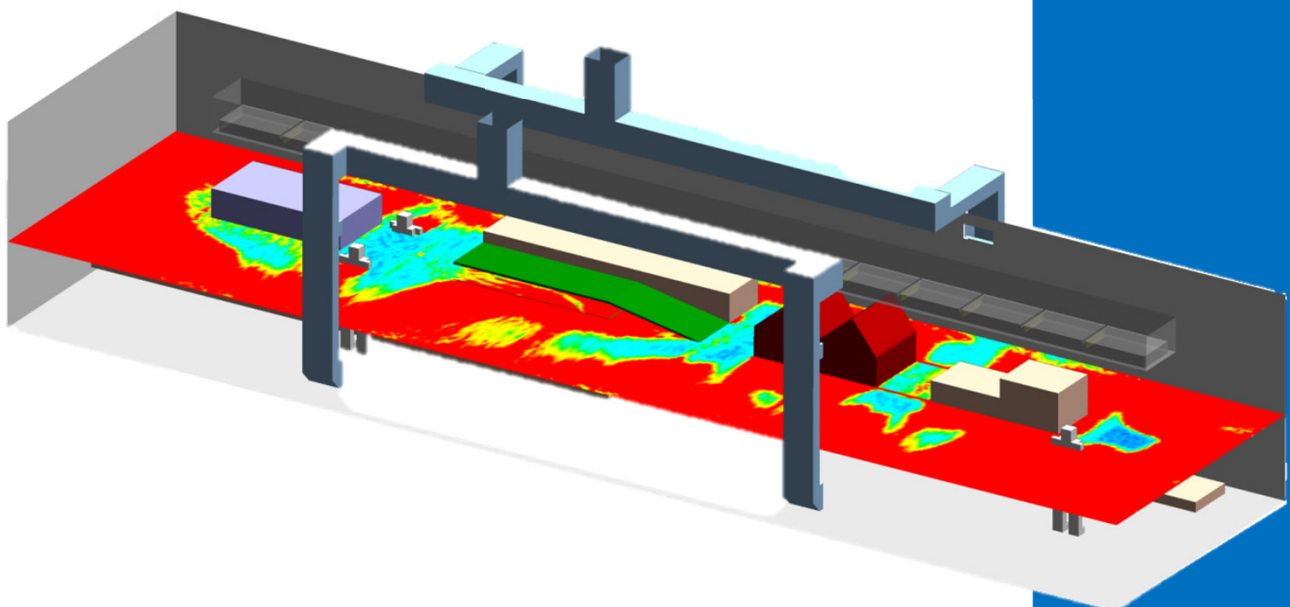
# Food Industry

## Cleanrooms

These are working areas in which the level of (microbiological) contamination is rigorously controlled to avoid recontamination of the processed products.

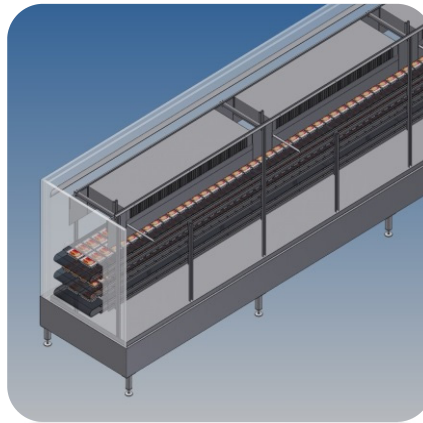
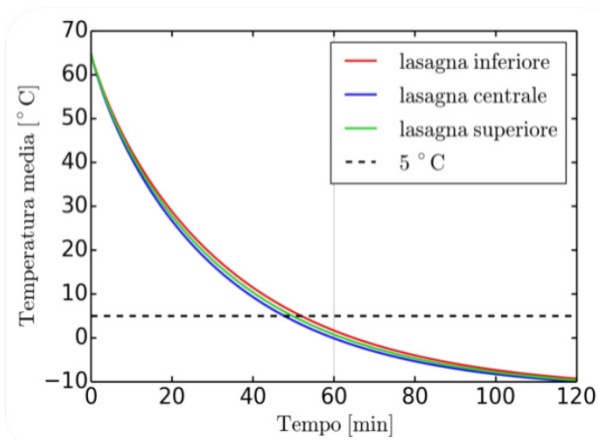


Making use of the capabilities of CFD, through the modelling and tracking of micrometric particles, the ISO class level of the cleanroom can be assessed according to diverse scenarios (AT REST and OPERATIONAL).

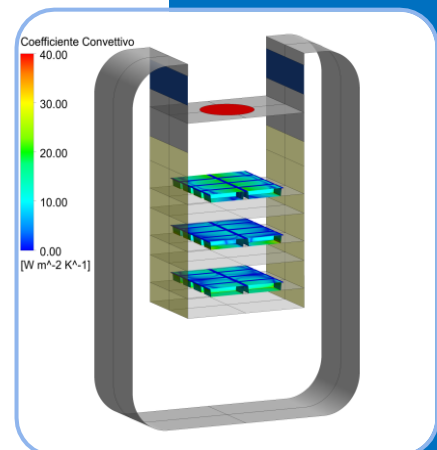
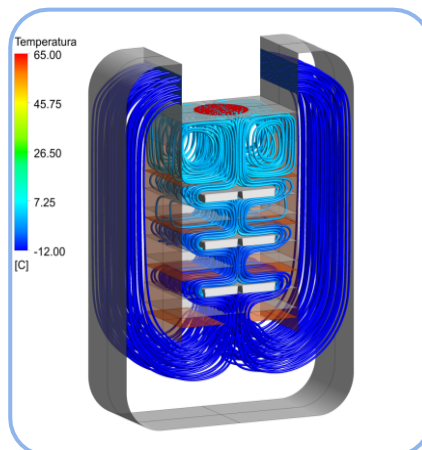
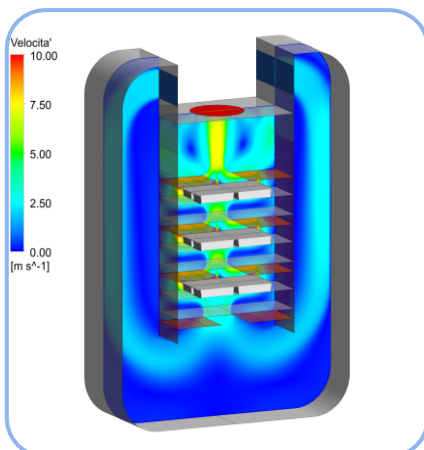


## Food Industry Processes

Cooling  
Heating  
Evaporation



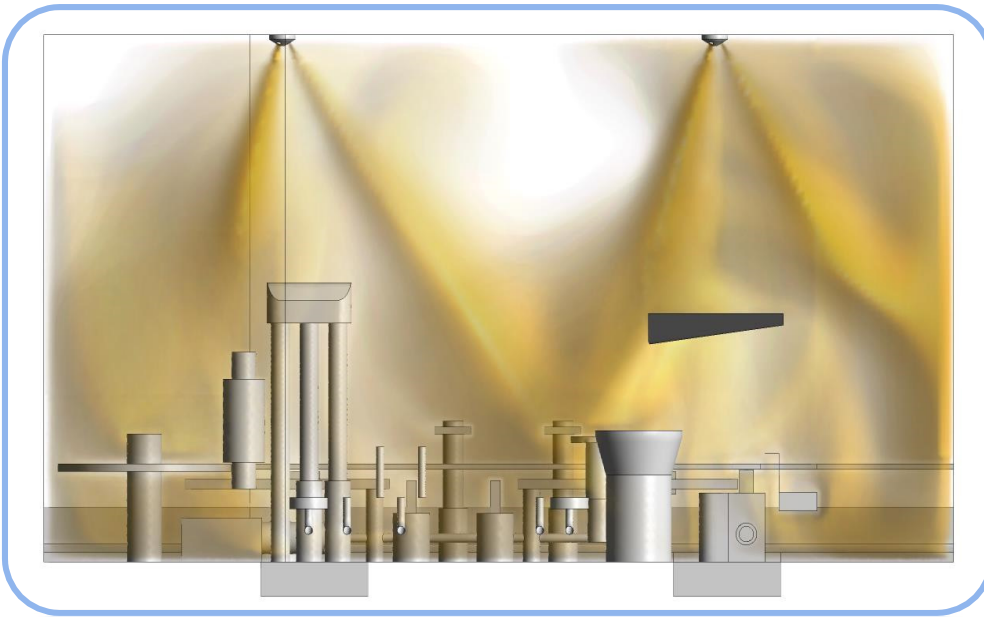
Through dedicated CFD analysis it is possible to predict the internal temperature evolution of products and therefore the systems can be optimized for the cooking, cooling and pasteurizing processes. PoliEngineering offers ad-hoc consulting services for the companies operating in the food industry.



# Industria Farmaceutica

Ambienti Asettici

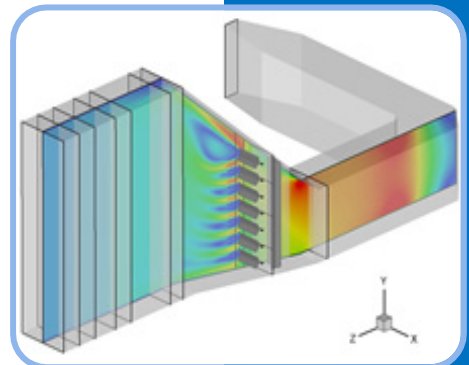
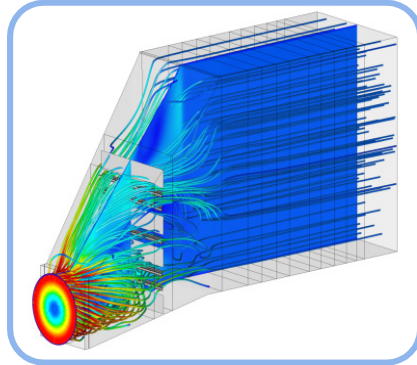
Insulators  
Cleanrooms  
Dust collectors  
Air showers



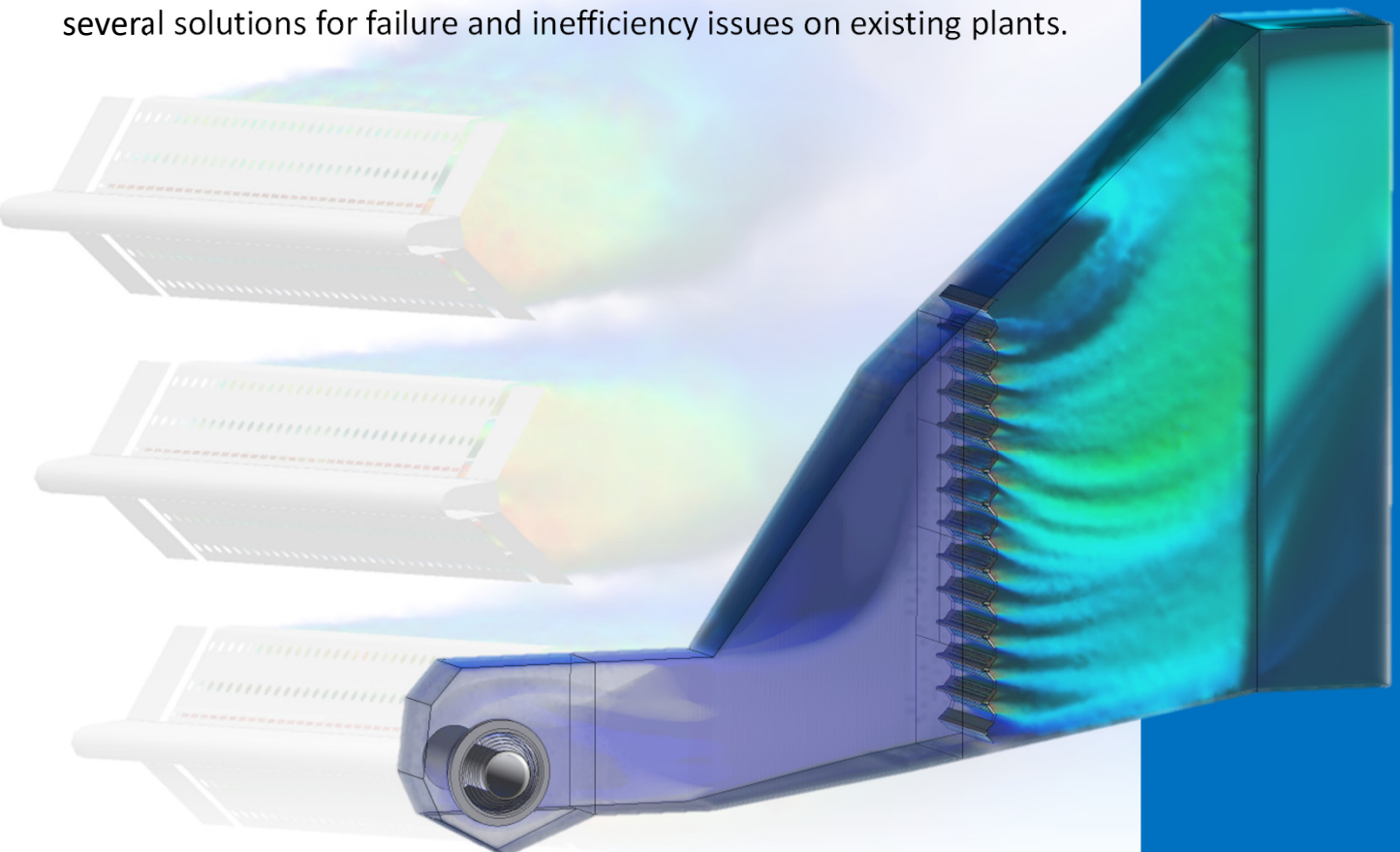
CFD is a valuable tool to analyse and verify the multiple processes used in the pharmaceutical industry. Fluid usage being ubiquitous (liquid or gaseous), from moderate efficiency gains derive significant improvements of the process, both from the technical and economical point of views.



# Power Generation

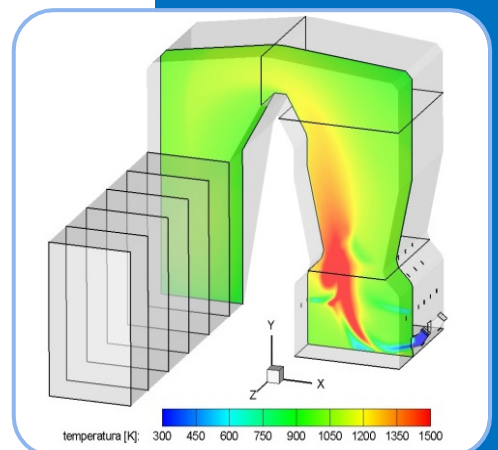
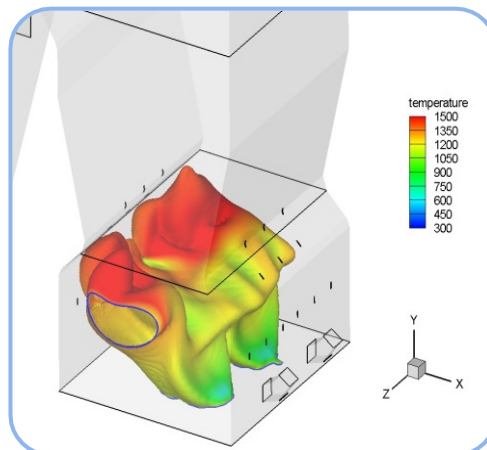
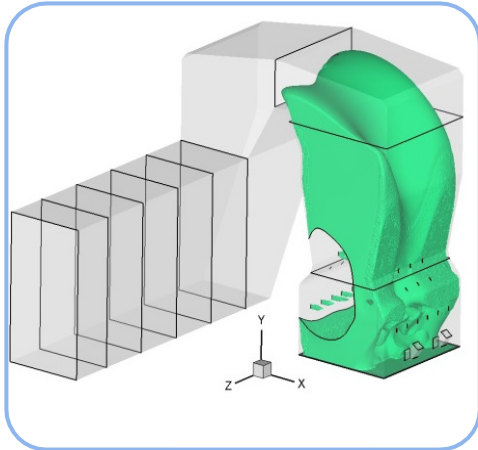


We have performed numerous studies on various types of HRSGs: with post-combustion, with fresh-air, with SCR systems, etc. Through CFD modelling we can predict precisely the temperature profile upstream heat exchangers, the distribution of flue gases upstream the duct burners with eventual optimization of flow correction devices (e.g., flaps, distribution grids, etc.). In addition, temperature distribution of the liners can be verified. Our studies have also led to several solutions for failure and inefficiency issues on existing plants.

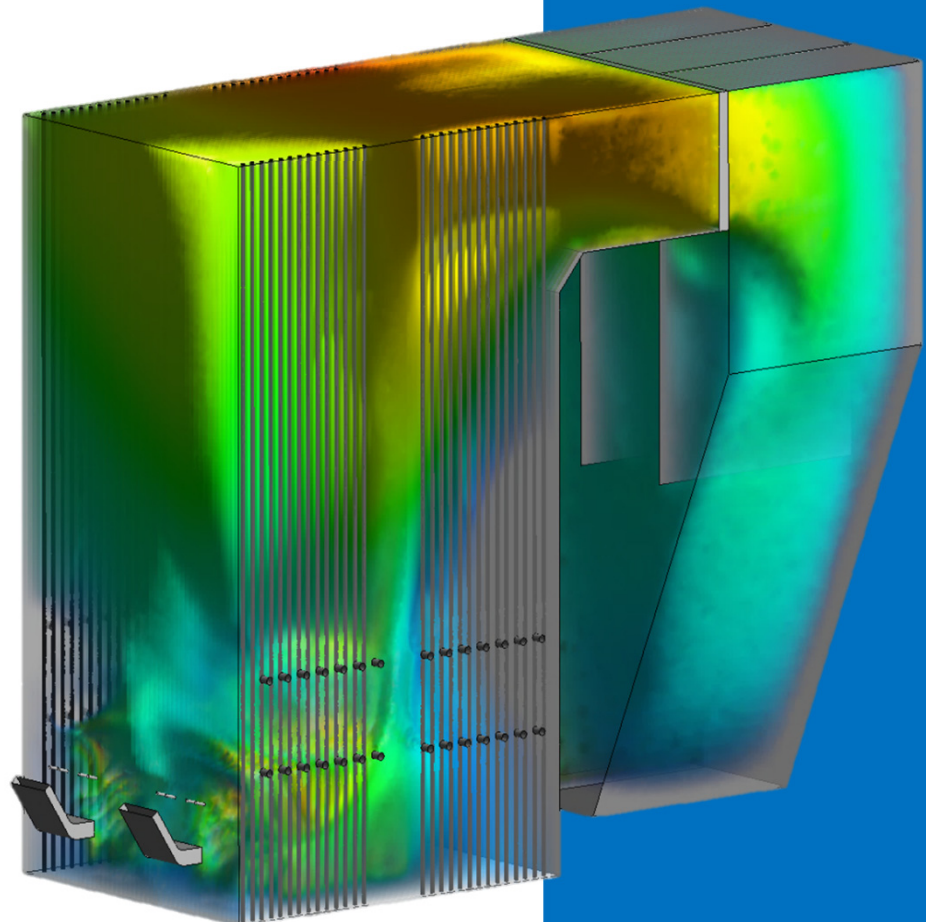




# Power Generation Incinerators

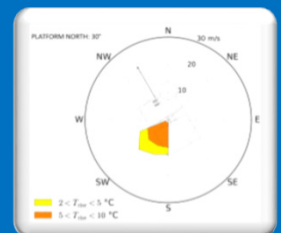
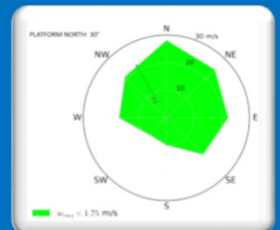
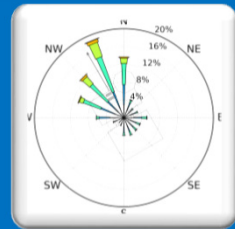
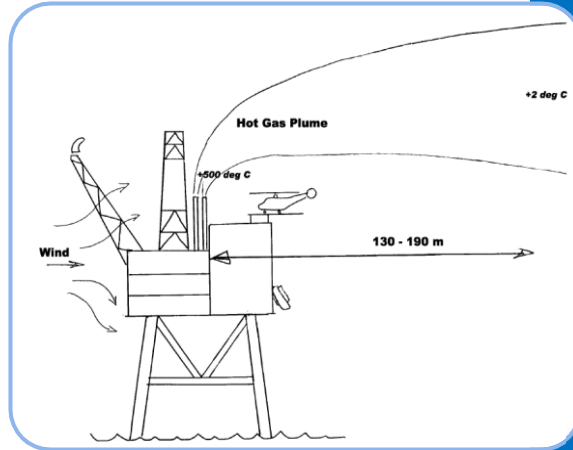


PoliEngineering has experiences in the modelling of incinerators with the scope to verify the *D.Lgs 133/05 Art.8-comma 6* that consists in evaluating the residence time of flue gases and the concentration of CO in the combustion chamber.

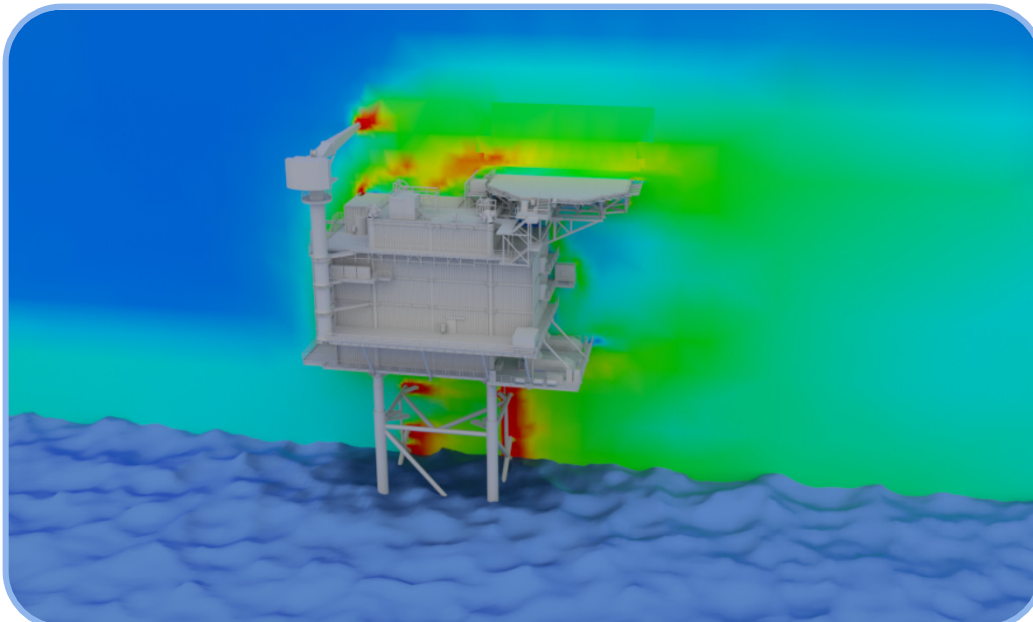


## Oil & Gas Risk assessment

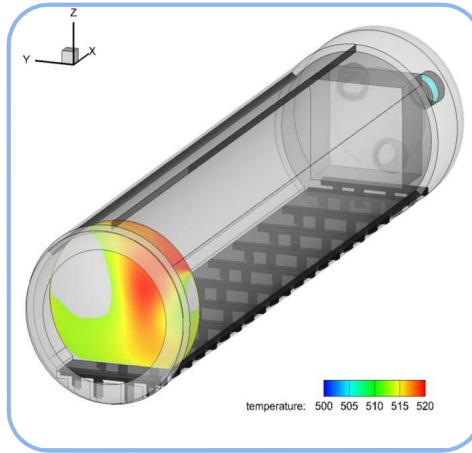
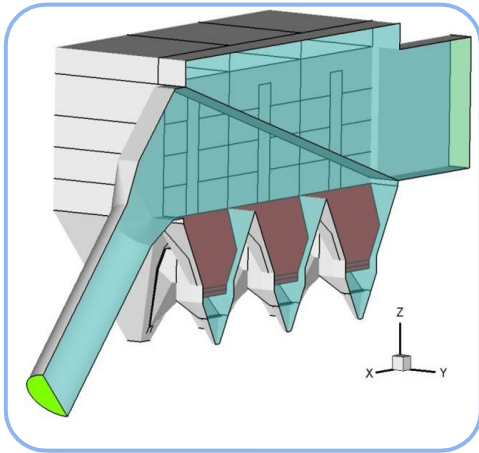
### Helideck Fire Explosion



In accordance with *CAA Paper 2008/03* of the UK Civil Aviation Authority, CFD is identified as an efficient tool for the analysis of possible risks for landing and take-off of helicopters in critical climatic conditions. Through proper computing codes, PoliEngineering is also able to evaluate the incidental scenarios of fire and explosion.

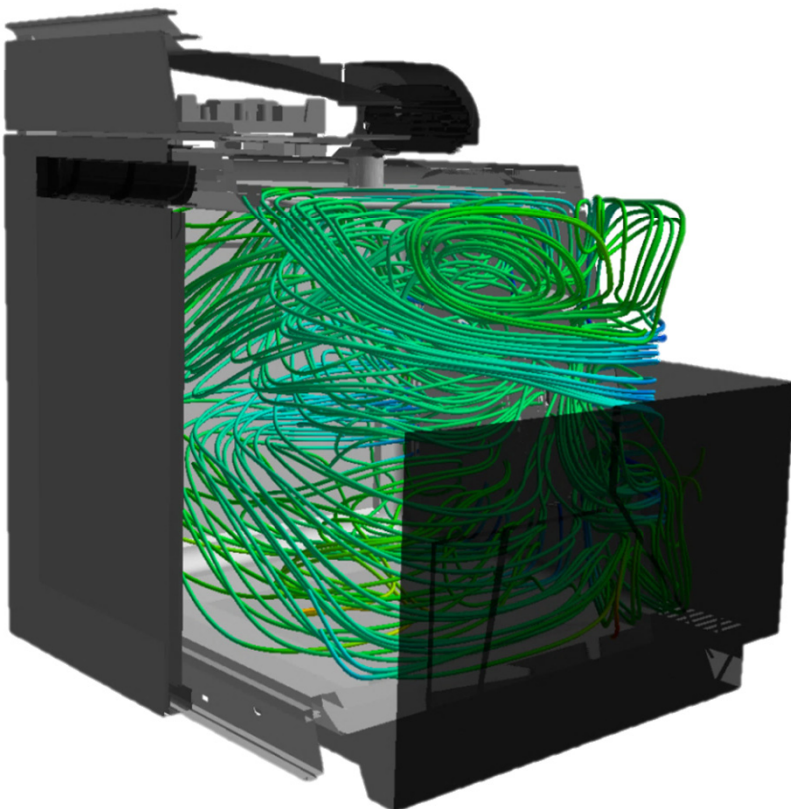


# Industrial Components



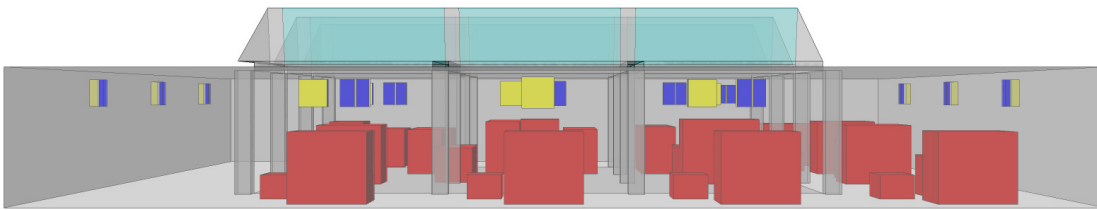
Cyclones  
Ovens  
Autoclaves  
Bag filters  
Regenerators  
Pumps  
Burners

Using CFD modelling, it is possible to predict the pressure losses, emissions, residence times or heating curves of several industrial components. In addition, through a synergic collaboration with the client, it is possible to optimize the component under study in terms of geometry and process conditions.



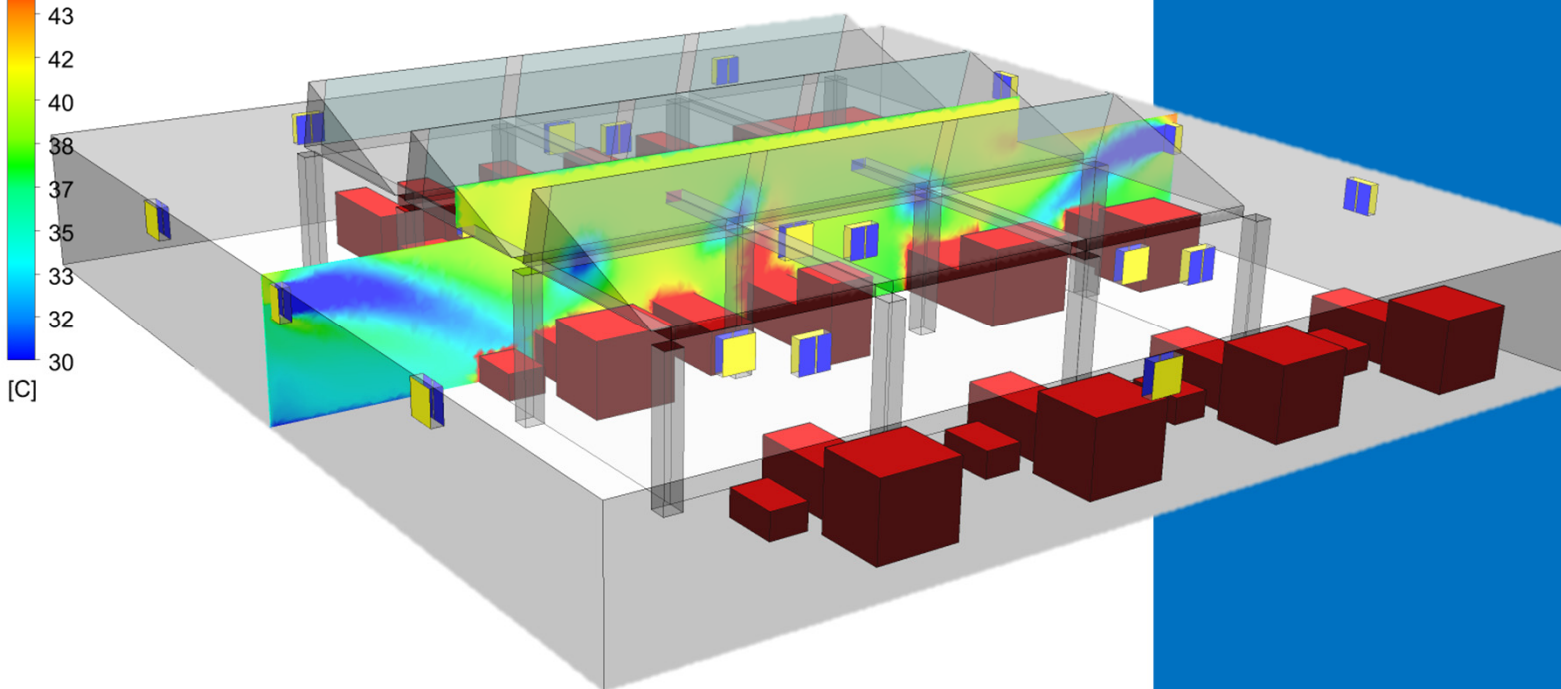
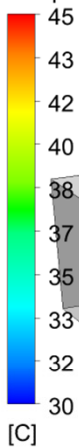
# Civil Engineering

HVAC  
Comfort  
Thermal losses  
verification



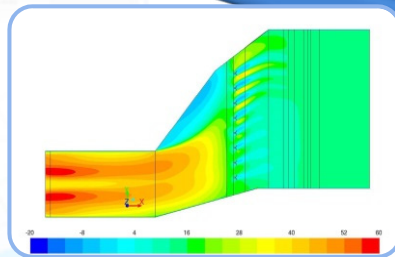
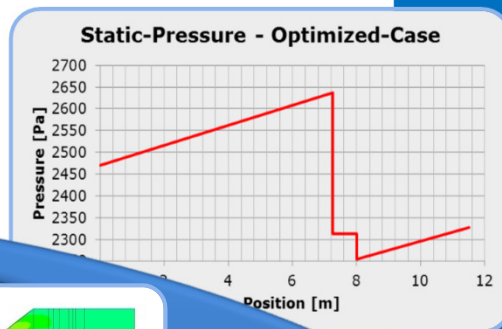
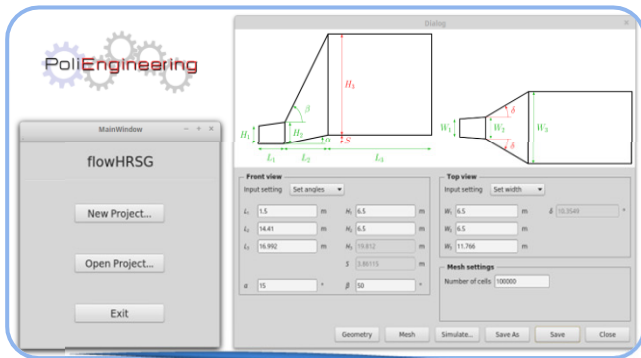
After the preliminary design phase, it is possible to verify the thermal and hygrometric comfort of the environment analysed through the assessment of the velocity, temperature and humidity fields using CFD modelling. It is then possible to support the design and placement of the ventilation system.

Temperature



## Software Development

We offer services of ad-hoc software development to tackle specific scientific calculus, implement simplified models and provide graphical user interfaces (GUIs) dedicated to the study through CFD of specific problems, with the automatic management of the entire simulation process.



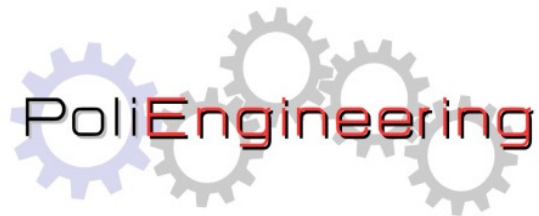
# Clients Portfolio

Some of our Partners:



Air Treatment System





**POLIENGINEERING S.R.L.**

Via Guaragna, 3 – 21047 – Saronno – ITALY

Mail: [info@poliengineering.com](mailto:info@poliengineering.com)

Phone: +39 02 967 05032

[www.poliengineering.com](http://www.poliengineering.com)

*Power Generation - Oil & Gas - Renewable Energy - Pharmaceutical Industry - Food Industry - Civil Engineering - Industrial Components - Risk Assessment - HVAC*

