



UNIVERSITÀ DI PISA



BEYOND THE RESEARCH

Administrator:

*Ph.D. Ing. Davide Mazzini*

Operative Headquarters:

*C/O Laboratorio Scalbatraio dell'Università di Pisa  
Via di Torretta - 56122 Tirrenia - Pisa*



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*For further information, please, visit our WEBSITE*

# THE COMPANY

**ACTA Srl** aims to support Industry and Public Entities with advanced knowledge and technologies deriving from:

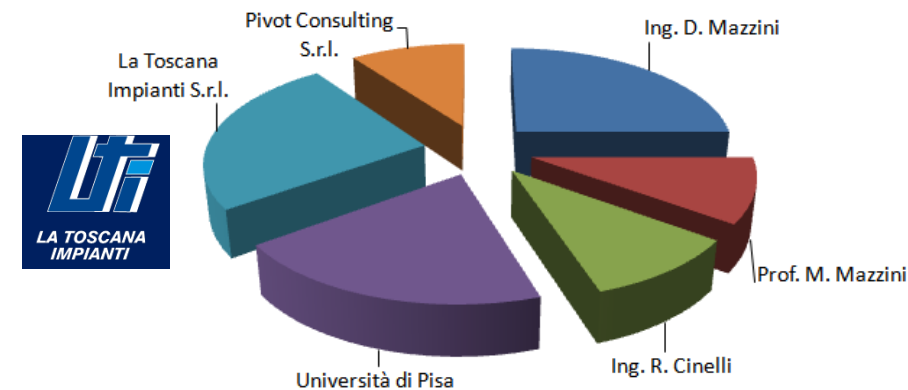
- **Multidisciplinary research activities**
- **Assessed industrial practices**

Its fields of activities are:

- ☐ **Mechanical and structural design**
- ☐ **Thermal-hydraulic and computational fluid-dynamic**
- ☐ **Industrial and nuclear safety**
- ☐ **Maintenance engineering, support for plant in-service inspections / commissioning**



## Company composition



UNIVERSITÀ DI PISA

**ACTA Srl proposes itself as a partner having an wide technical  
“know-how”**

# CUSTOMERS & CERTIFICATIONS

ACTA Srl works for both **SME** and **Big Companies**

*Our Customers*



ACTA Srl is certified ISO  
9001:2008



ACTA Srl is registered in  
the Research List of MIUR



*We are also working for ....*



*..... and in future for....*



# COMPANY SKILLS

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## Advanced use of commercial and research software tools:

- ☐ ANSYS Products (MECHANICAL APDL, FLUENT, WORKBENCH)
- ☐ GT STRUDL
- ☐ CATIA
- ☐ AUTODESK products (INVENTOR, AUTOCAD, MAIA)
- ☐ PIPESTRESS
- ☐ DUAL-P
- ☐ TEKLA Structures
- ☐ FDS+EVAC (Fire Dynamic Simulator and Evacuation Simulator)
- ☐ RISK-SPECTRUM
- ☐ MELCOR
- ☐ RELAP-SCDAPSIM
- ☐ ASTEC

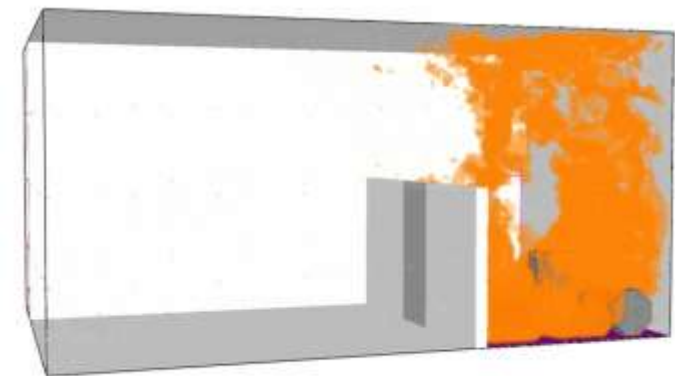
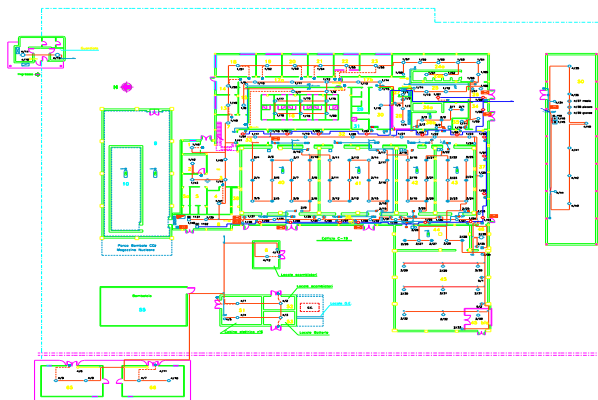
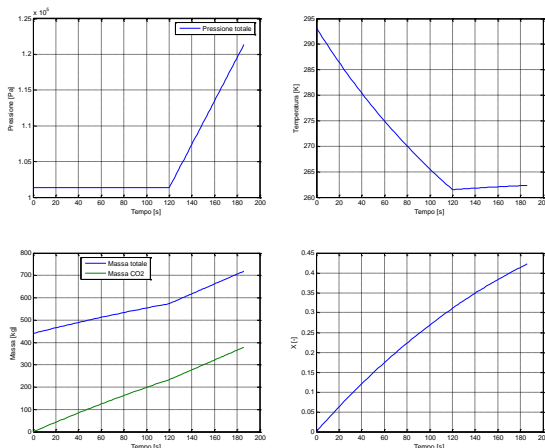
**ACTA Srl has a wide “know how”  
in different technical fields**

*In connection with the University of Pisa*

# ENGINEERING SERVICES

## Safety and emergency engineering

- **Technical Dossier and User Manual for CE marching of machine and pressure equipment**
- **Safety of working place (DLgs 81/08)**
- **Evaluation of residual operative life of lifting and pressure equipment**
- **Fire engineering and design of detection, alarm and extinguishing systems**
- **Updating the External Emergency Plan of facilities containing radioactive material**

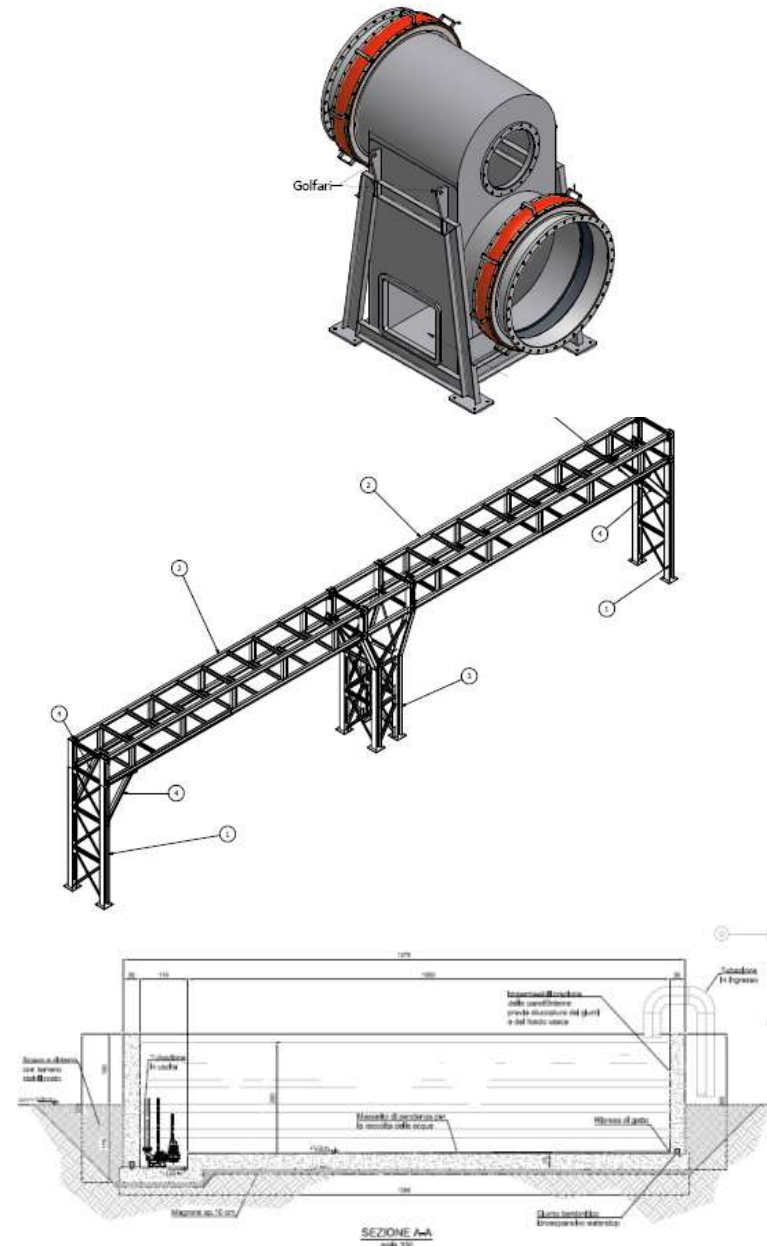
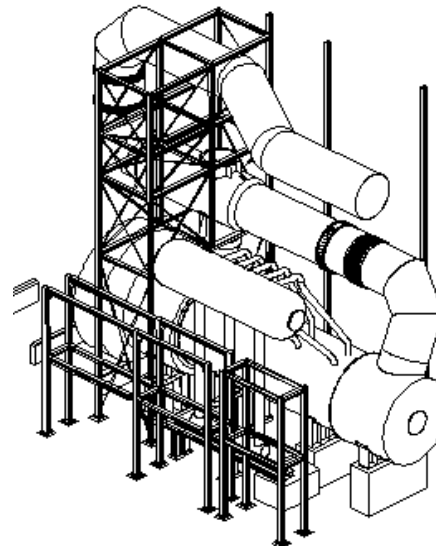
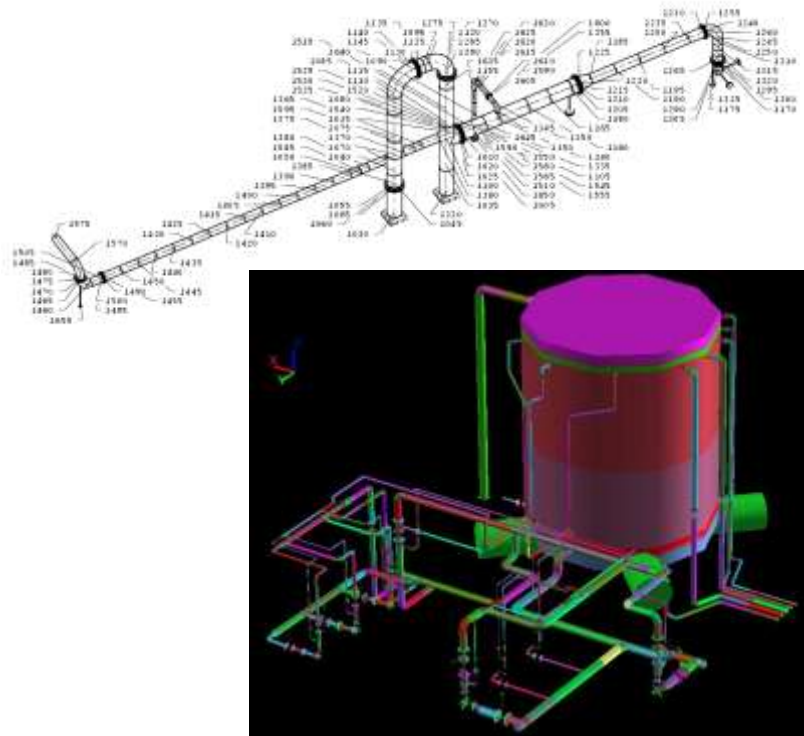




# ENGINEERING SERVICES

## Structural engineering

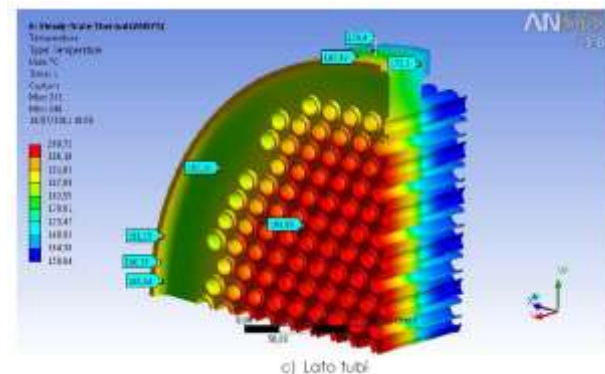
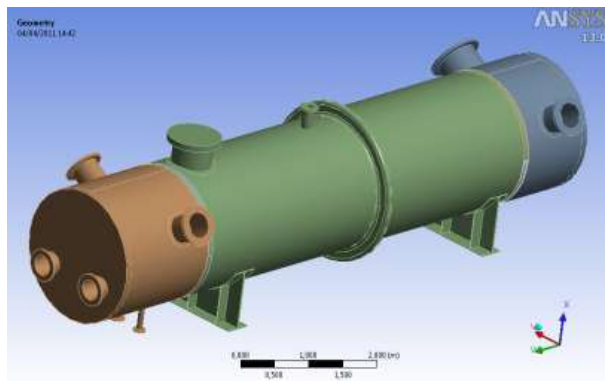
- ❑ **Piping and Supports design:** isometric drawing, structural assessment, executive drawing
- ❑ **Steel Structures:** 3D CAD modelling, structural assessment, executive drawing
- ❑ **Concrete building:** 3D CAD modelling, structural assessment, executive drawing



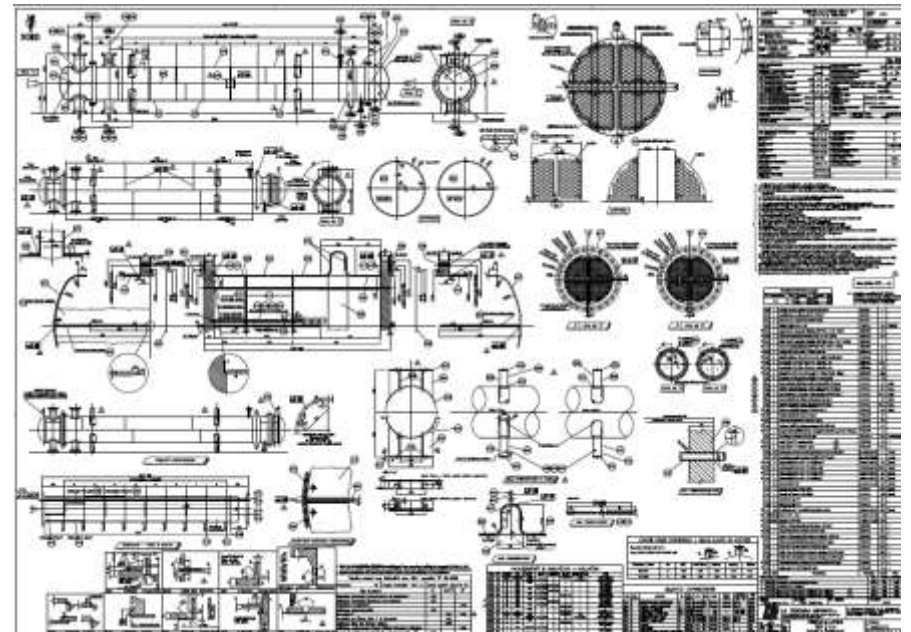
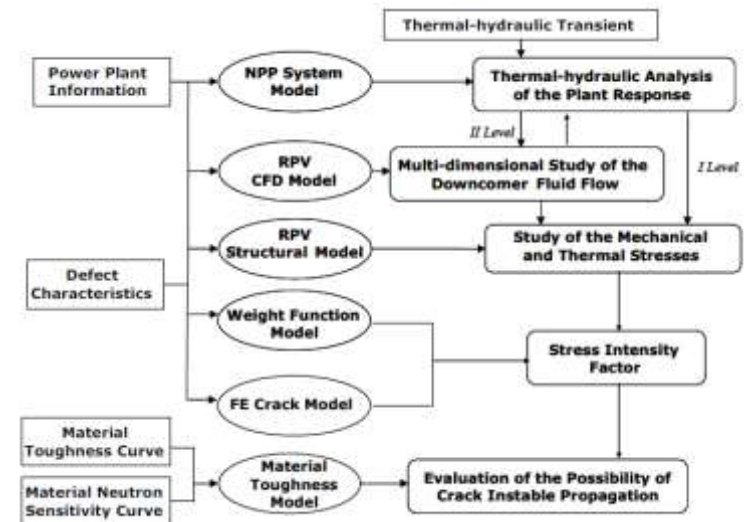
# ENGINEERING SERVICES

## Pressure equipment

- **Pressure equipment and device:** requirement specification, thermal-calculation, structural assessment, P&ID and executive drawing
- **FE element calculation:** thermal analysis, structural calculations, thermal creep, PTS event analysis



c) Lato tubi

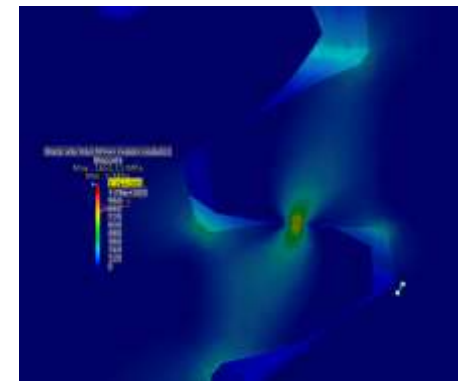
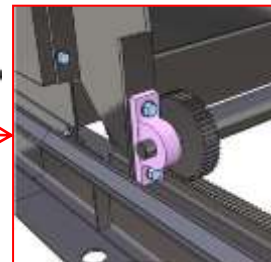
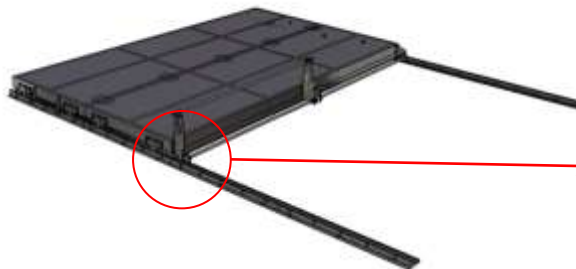
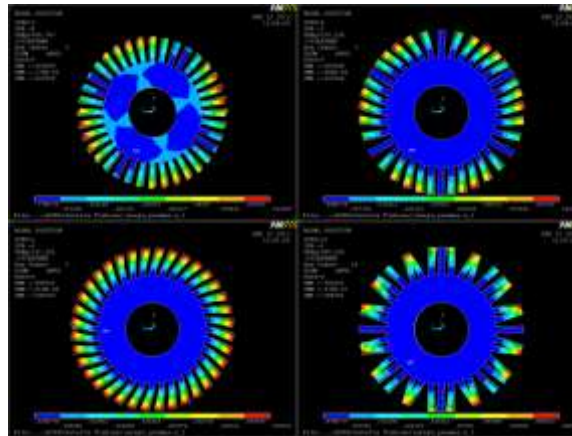
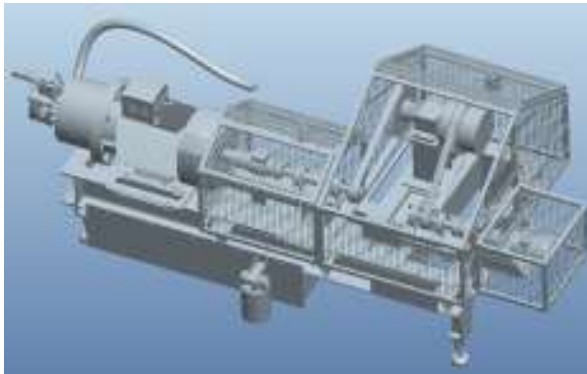
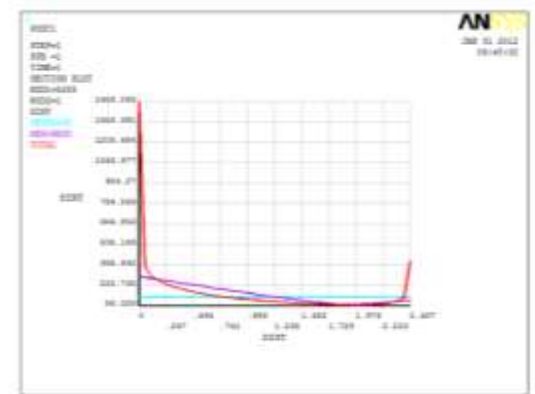
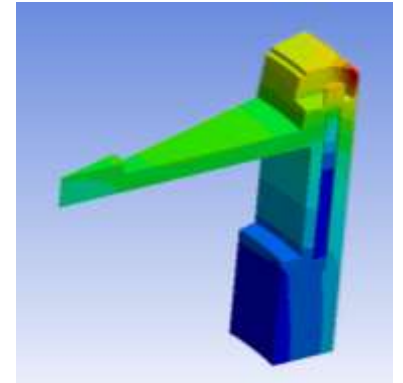




# ENGINEERING SERVICES

## Mechanical engineering

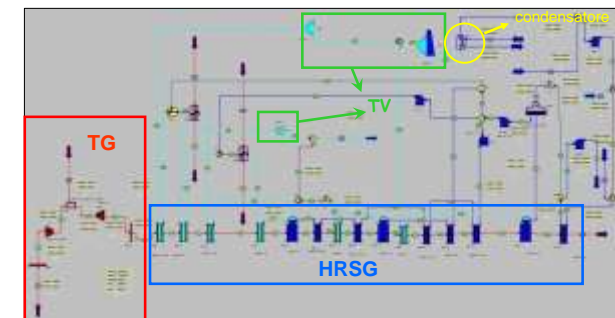
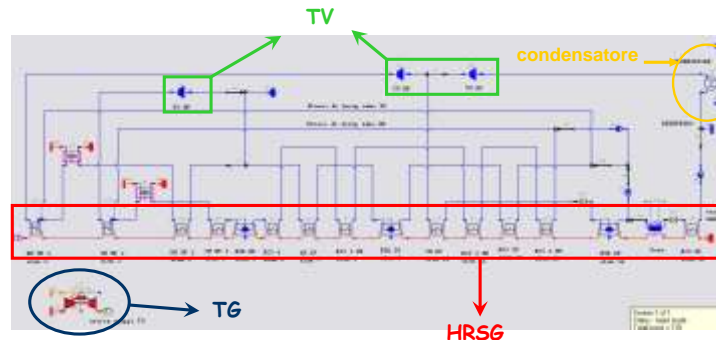
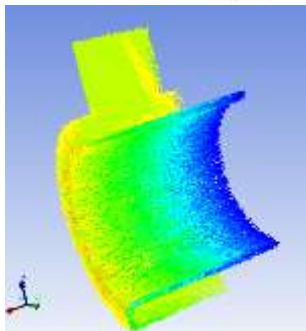
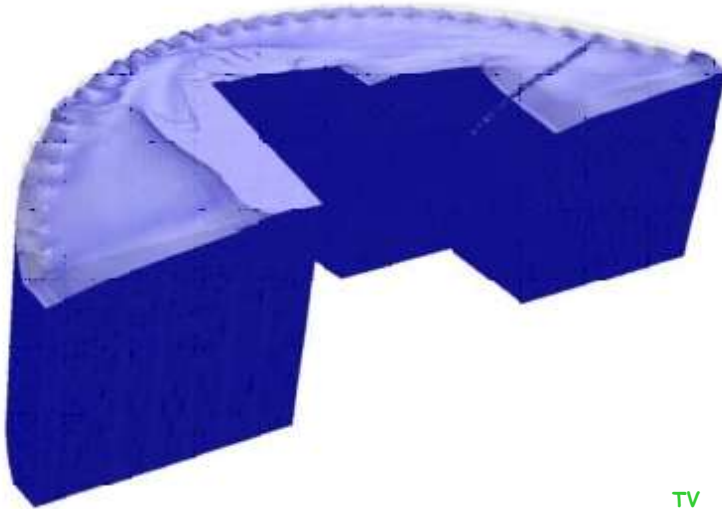
- **Equipment design and experimental testing:** requirements and test specifications, conceptual design, 3D modelling, structural verification and executive drawing, etc.
- **FE calculation:** 3D modelling and sub-modelling, linear and non-linear calculation (thermal load, elastoplastic material, thermal creep, modal and frequency analyses, fracture mechanics calculation, contact problem)



# ENGINEERING SERVICES

## Process engineering

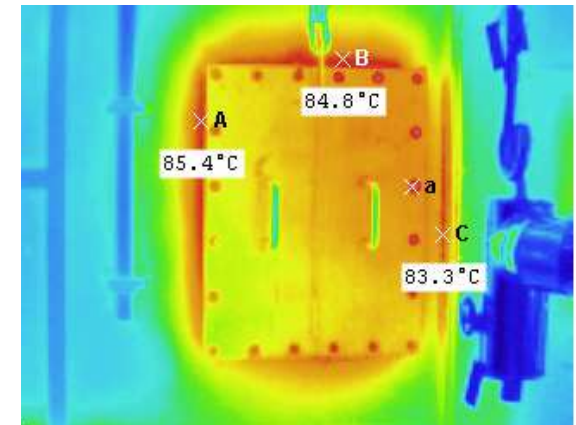
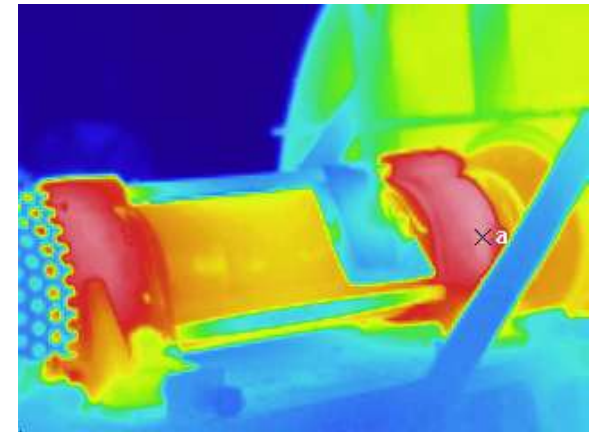
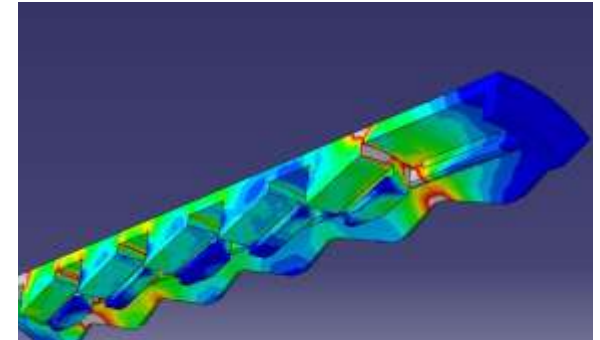
- **Plant design, safety analysis:** requirement specification, thermal-hydraulic modelling, experimental testing
- **CFD calculation:** pours media, mixing phenomena, multispecies flow, coupled calculation, free surface flow



# ENGINEERING SERVICES

## Maintenance engineering

- **Problem solving:** malfunctioning and accident analysis, improving design
- **In service inspection and commissioning:** visual inspection, thermography investigation, UT measurement, air quality analysis (mass spectrograph, particle counter)





# R&D ACTIVITIES AND STUDIES

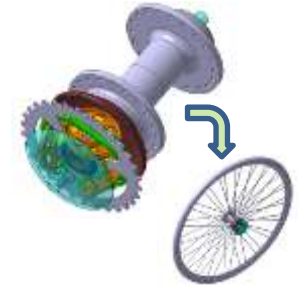


REGIONE TOSCANA  
Giunta Regionale

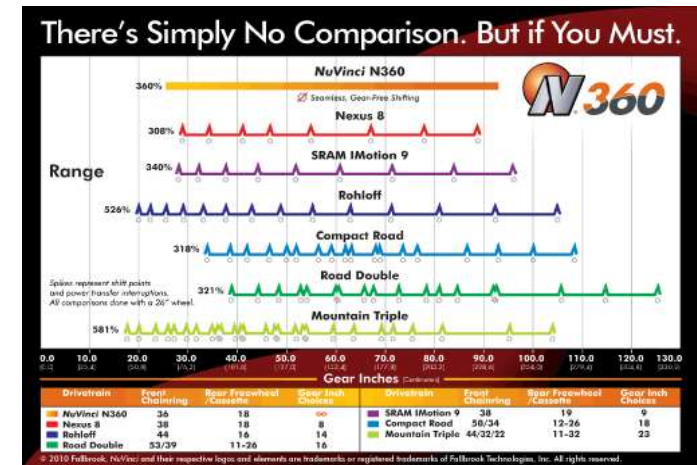


## □ Design of an continuous transmission for bicycle

- High efficiency over the entire design range
- Easy use and installation on existing vehicles
- Limited maintenance
- Increased range of power train



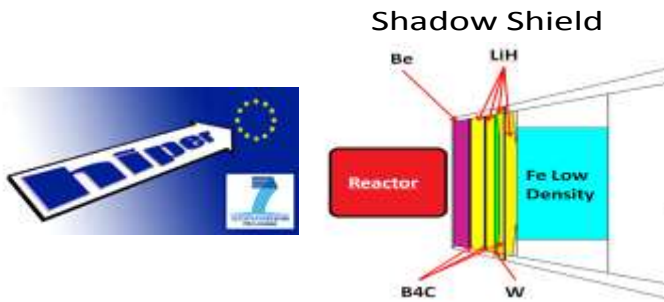
GRUPPOCMS  
**Ri.LAB**  
Research for innovation Lab



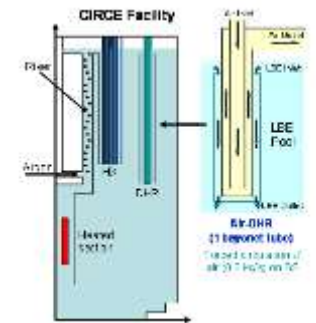
# R&D ACTIVITIES AND STUDIES

## Nuclear technology

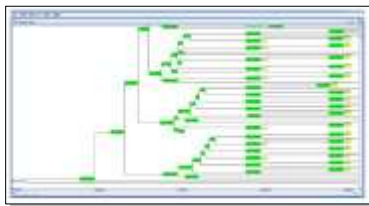
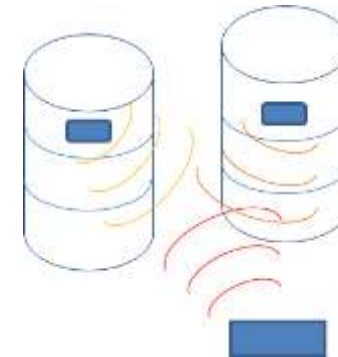
- Collaboration for **7th FP project THINS (Thermal-Hydraulic of Innovative Nuclear System)** – CFD calculation related to the decay heat removal heat exchanger



- Partner in the **7th FP HiPER project (High Power Electric Propulsion: a Roadmap for the future)** – Conceptual design of the neutron shield



- **RIFD technology applied to radioactive waste storage and disposal (RW tracking, security issues, ...)**



- **Dynamic PSA methodology:** Preliminary study by the use of a dynamic approach to the reliability analysis for the Service Water System of a Candu 6 Nuclear Power Plant



# R&D ACTIVITIES AND STUDIES

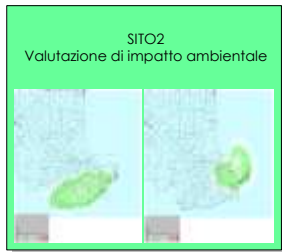
## Other fields

### ☐ **HARIA2 (Handling Algorithms for Risk evaluation in Industrial Activities)**



Developed in the framework of research activities conducted at DIMNP of University of Pisa, HARIA2 is a software tool to analyse, to plan and to manage the technological emergencies (both chemical and nuclear); It permits an integral simulation of the accidental scenario (physical system) and of the emergency measures to reduce the consequences, having models to reproduce the human behaviour (social system) and to predict the traffic (transient calculation).

### ☐ **SITO2**



SITO2 is a software tool implementing a methodology for the Environmental Impact Assessment (VIA), based on the use of matrices to define the primary and secondary impacts of pollutants. It permits the definition of indexes for environment quality with their variation in space and in time.

### ☐ **Steam condensation experimental investigation for ITER fusion reactor – Study of the steam condensation in low pressure condition**



# R&D ACTIVITIES AND STUDIES

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## ☐ Wind turbine with a mechanical passive control

- High efficiency over the design wind range
- Limited use power circuit to extend the design life
- Easy installation and maintenance

## ☐ “Cold” heating unit

- Hot water heating unit with an internal combustion engine coupled to a heat pump
- High efficiency (use of renewable energy and recovery of waste heat)
- Pollution reduction preventing efficiency losses by Power plant and distribution



# HEADQUARTERS AND CONTACTS

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**ACTA srl** has its headquarter in «Scalbatraio» Laboratory of University of Pisa  
Via di Torretta s.n.c. – 56122 – Tirrenia, Pisa (PI), Italy



## Contacts

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