

## Fiche de référence

- Conception
- Calculs
- Expertises

## INGÉNIERIE

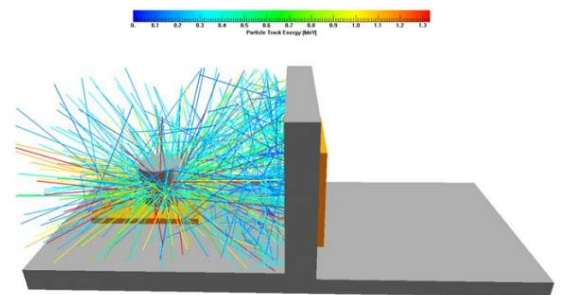
**Forte capacité d'ingénierie et d'expertises associées à des moyens de calculs dans tous les domaines de la mécanique, de la manutention, des outillages d'intervention, de la machine spéciale pour les installations de process clés en mains.**

### Nous proposons :

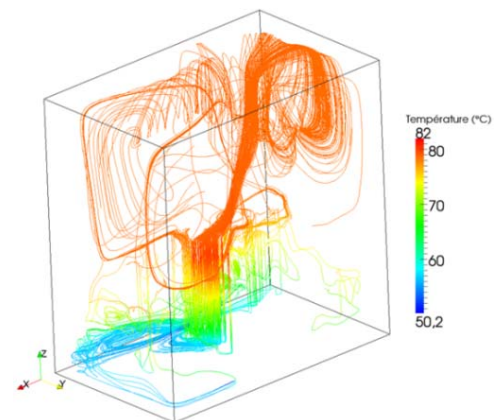
- Etudes de Faisabilité / Conception
- Etudes Avant Projet Simplifié / Avant Projet Détaillé
- Etudes d'ensemblier
- Etudes de réalisation
- Calculs :
  - résistances sismiques
  - mécaniques
  - thermiques
  - de déformations
  - électromagnétiques
  - de radioprotectons, sureté, criticité, radiolyse thermolyse

### Outils :

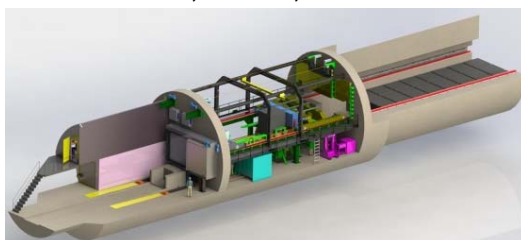
- CAO : ProEngineer, Catia, Autocad, SolidWorks
- CAO / DAO électrique : SEE Electrical Expert, Autocad
- MATLAB/SIMULINK; MATHCAD
- ANSYS, LS-DYNA
- Calculs électriques : CANECO
- Plateforme de développement : Schneider Unity (Automates Premium), Panorama
- Codes et Réglementations : ASME, RCC-M, RCC-MR, RCC-MX, CODAP, SNCT, CODETI, RTMDR, FEM, EUROCODE, CM66, ...



ICEDA - Dimensionnement d'une porte radiologique (Source C1PG 400 TBq en  $^{60}\text{Co}$ )



Etude thermohydraulique de la piscine BK



ANDRA Cigéo : études du procédé de manutention des colis de déchets



Dimensionnement de la chambre d'expérience du Laser MegaJoules (CEA)

## Fiche de référence

### From concept to design :

- Dedicated tools : CAD Systems, Finite elements calculations
- Dedicated softwares (electricity, mechanical, thermal)

## ENGINEERING EXPERTISE

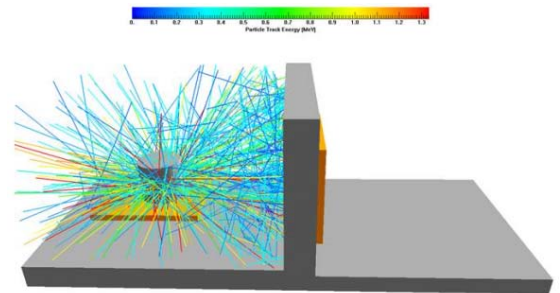
**High level of expertise with powerful calculation tools in mechanical, thermal, electromagnetics and nuclear engineering.**

### We propose:

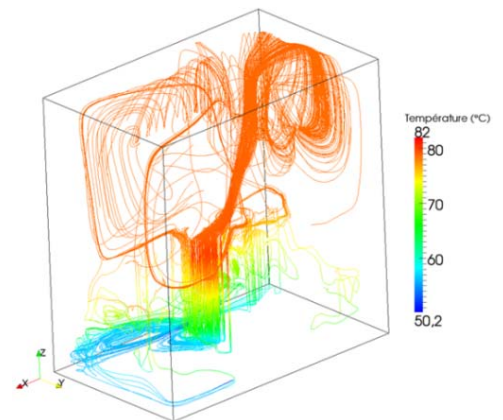
- Feasibility study / Basic Design / Detailed Design,
- Functional analysis / Multicriteria analysis,
- Customers needs, Functional Specifications,
- Value analysis / Design to Cost,
- Design definition files and solution justification files,
- Mechanical calculations: static, dynamic, linear and non linear, and failure modes,
- Thermal calculations: conduction, convection and radiation calculation in continuous or transient regime,
- Electromagnetic calculations,
- Nuclear engineering: neutronics, criticality safety, shielding and nuclear measurements, radiolysis and thermolysis.

### Tools:

- PLM: Product Lifecycle Management,
- CAD: ProEngineer, Catia, Autocad, SolidWorks,
- CAD system / DAO electricity: SEE Electrical Expert, Autocad,
- ANSYS, LS DYNA,
- Modelization and dynamic simulation of mechanical/fluid and control (MATLAB/SIMULINK),
- Electrical calculation: CANECO,
- Development Plateform: Schneider Unity (Automates Premium), Panorama (supervision).
- Nuclear Codes and Regulations : ASME, RCC M, ...



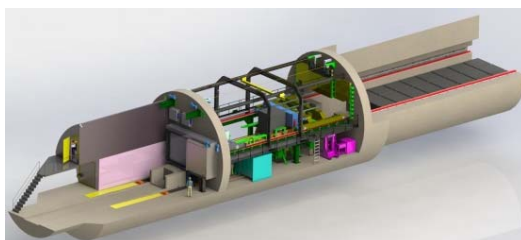
*ICEDA: Interim storage for ML and LL wastes  
Neutronic calculation for shielded doors*



*Fuel building pools: thermal hydraulic calculation*



*Design and calculation of the vacuum chamber for a fusion Laser MegaJoules experiment (CEA)*



*ANDRA Cigeo: process design for nuclear wastes handling*