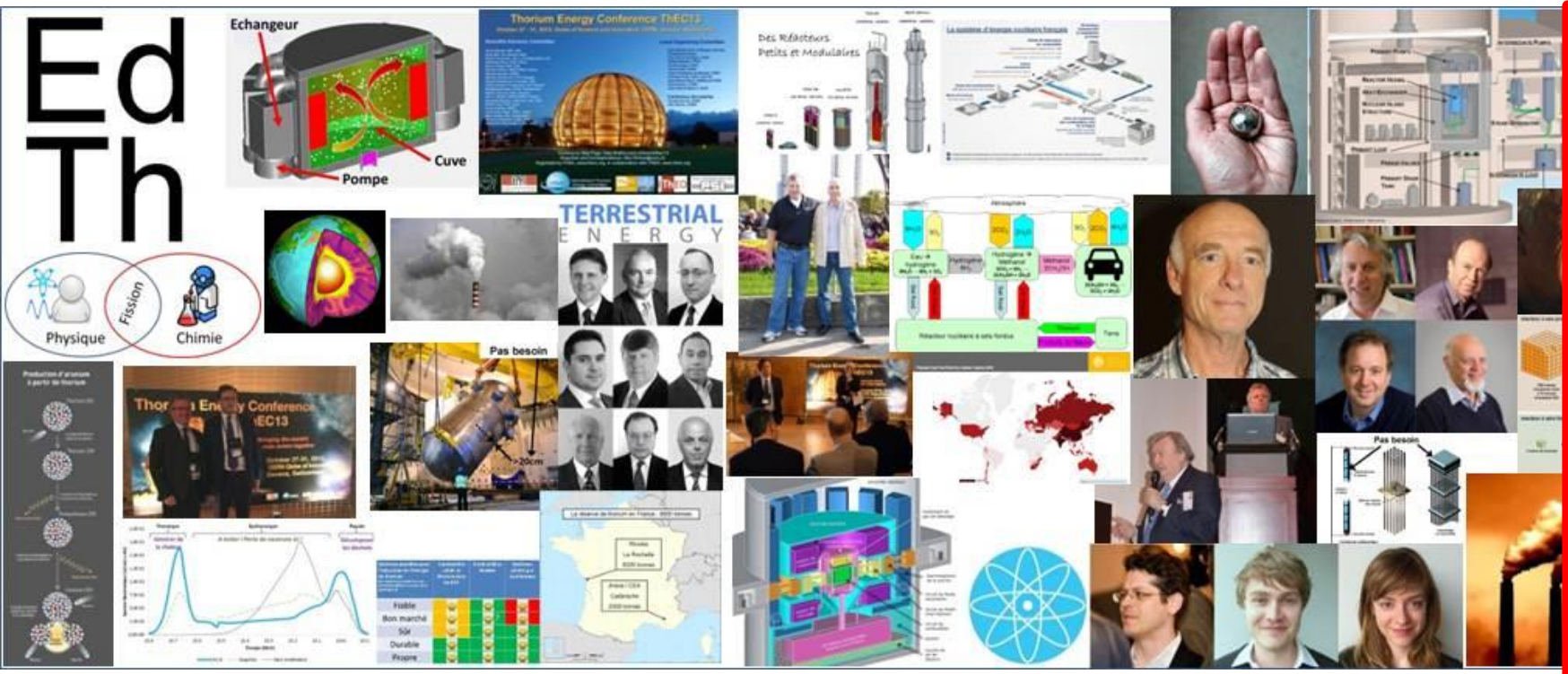
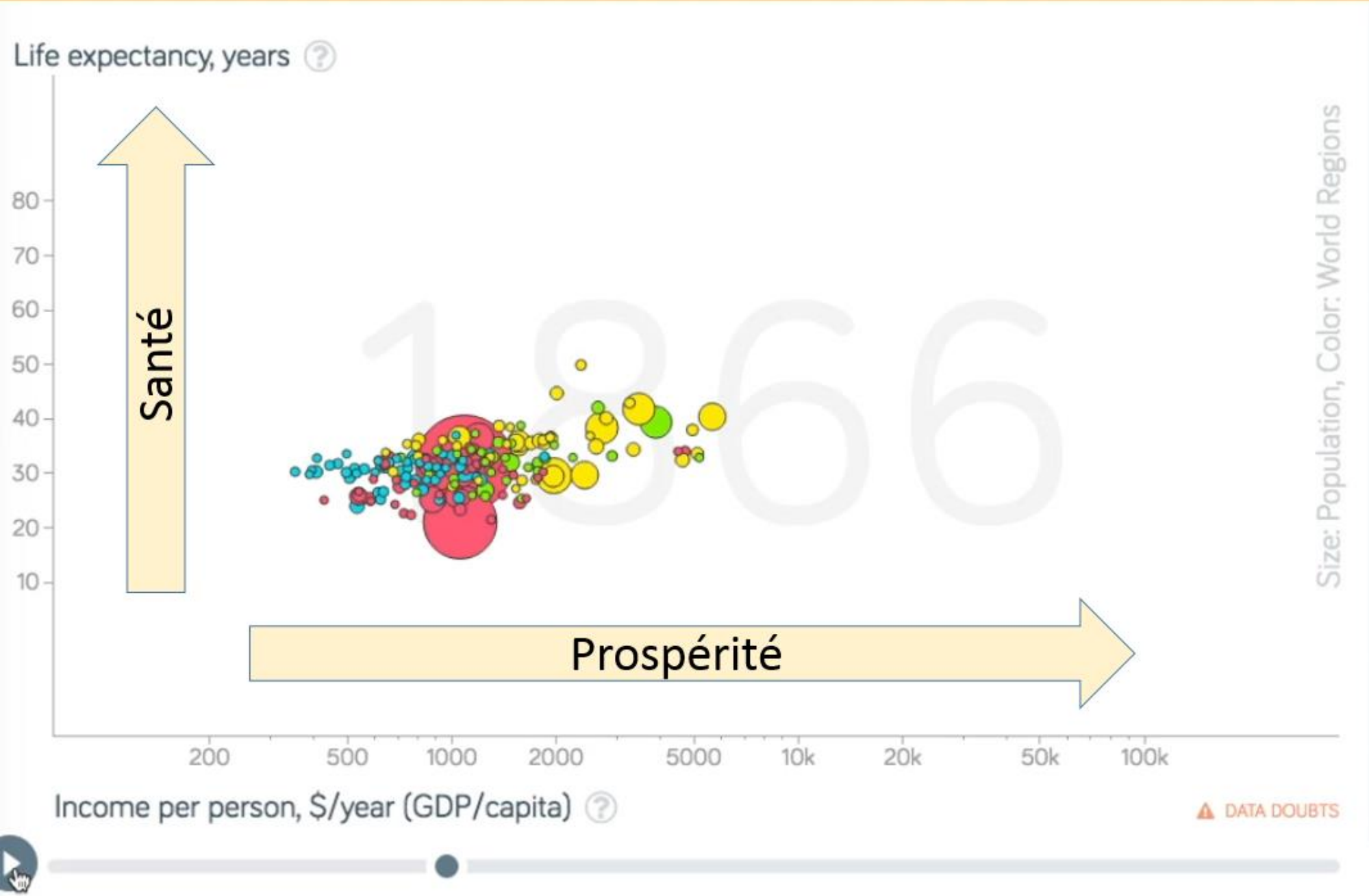
Fission Liquide & Éco-modernisme



John Laurie

http://energieduthorium.fr

Lundi 23 mai 2016



Color World Regions ▼

Find Search...

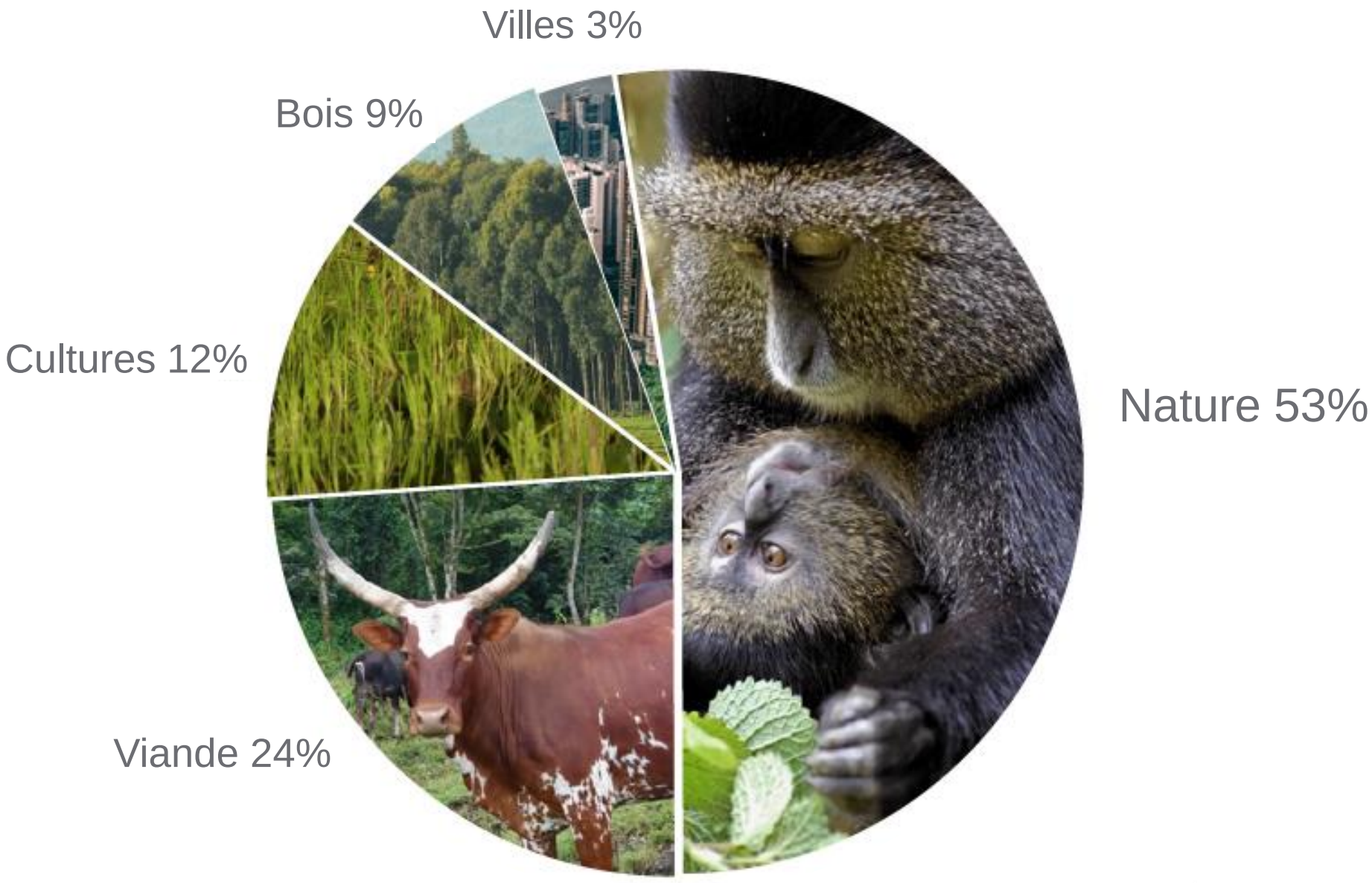
- Afghanistan
- Albania
- Algeria
- Angola
- Antigua and Barbuda
- Argentina
- Armenia

Size Population ▼

Zoom 100%

OPTIONS EXPAND

Les humains utilisent la moitié de la Terre

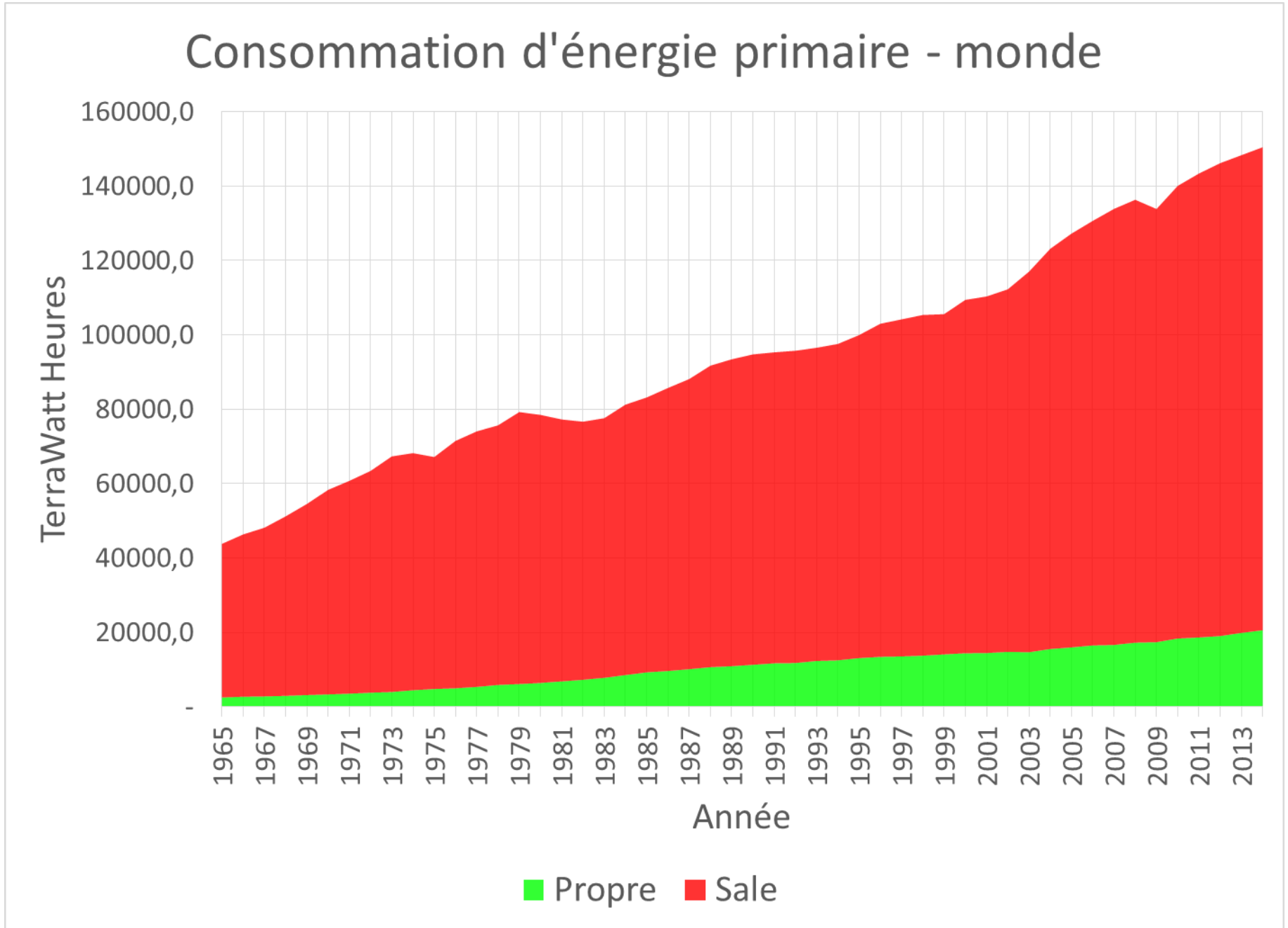


Source: The Breakthrough Institue

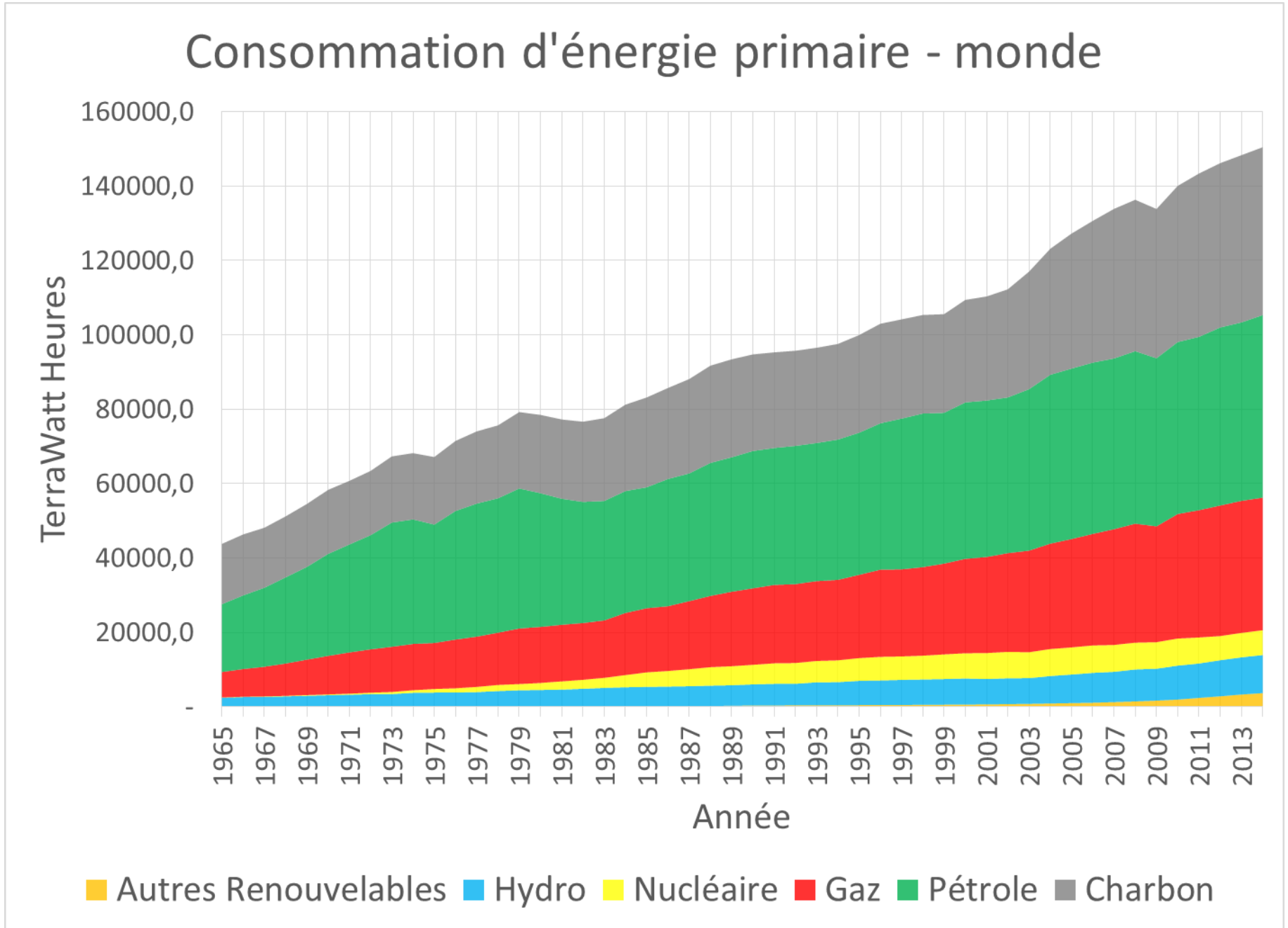
GREENPEACE

Les Amis de la Terre

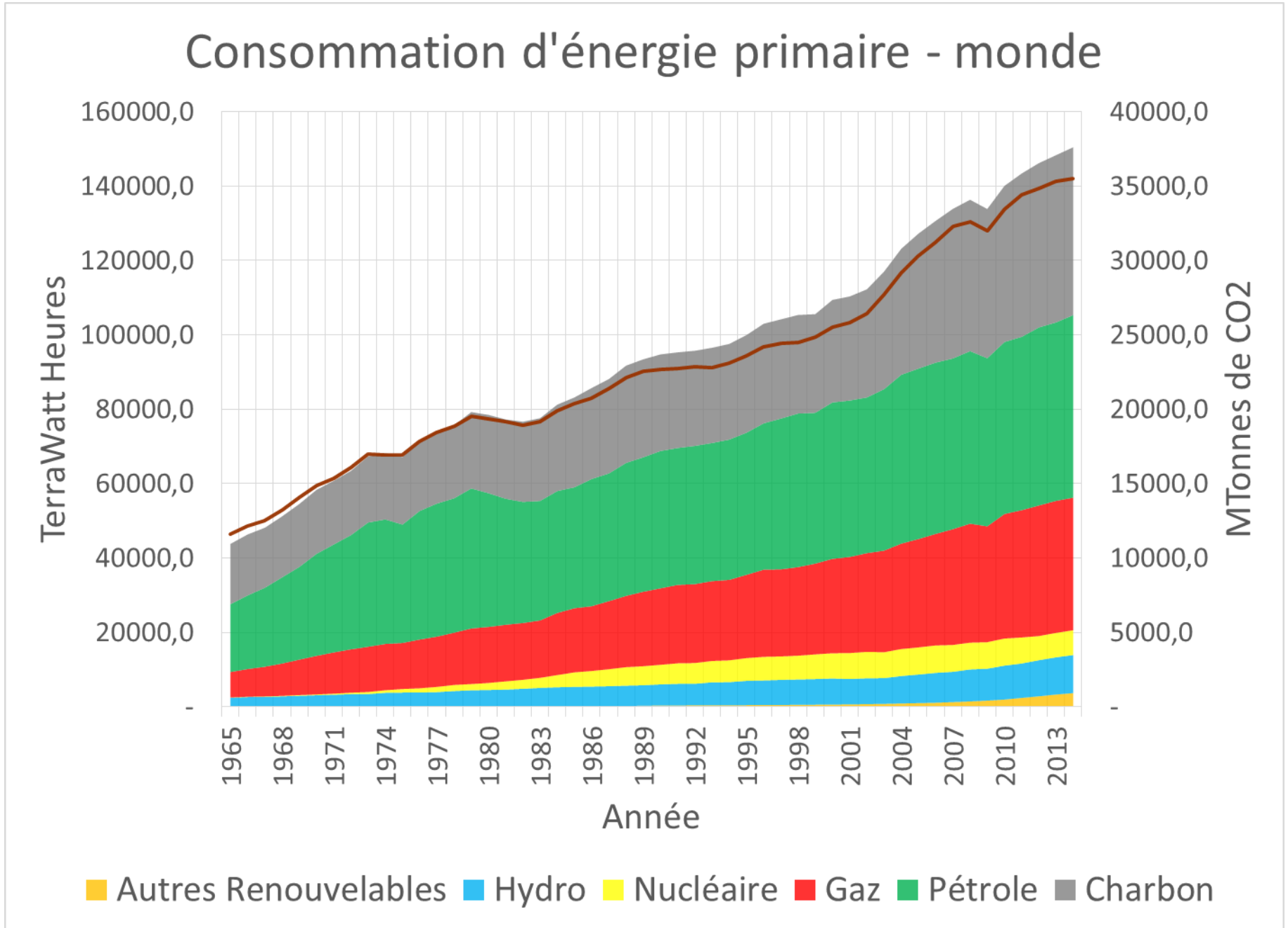
Réseau Sortir du nucléaire



Source : [BP Statistical Review of World Energy Juin 2015]



Source : [BP Statistical Review of World Energy Juin 2015]



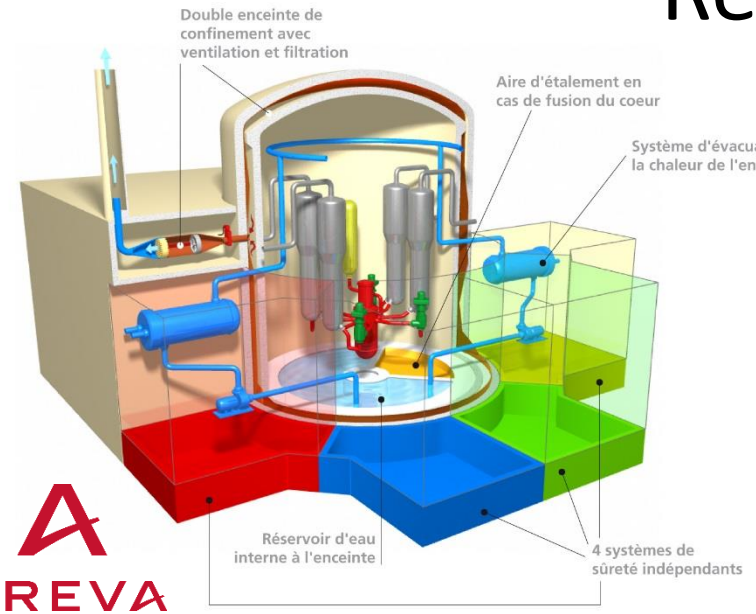
Source : [BP Statistical Review of World Energy Juin 2015]

Éco-modernisme

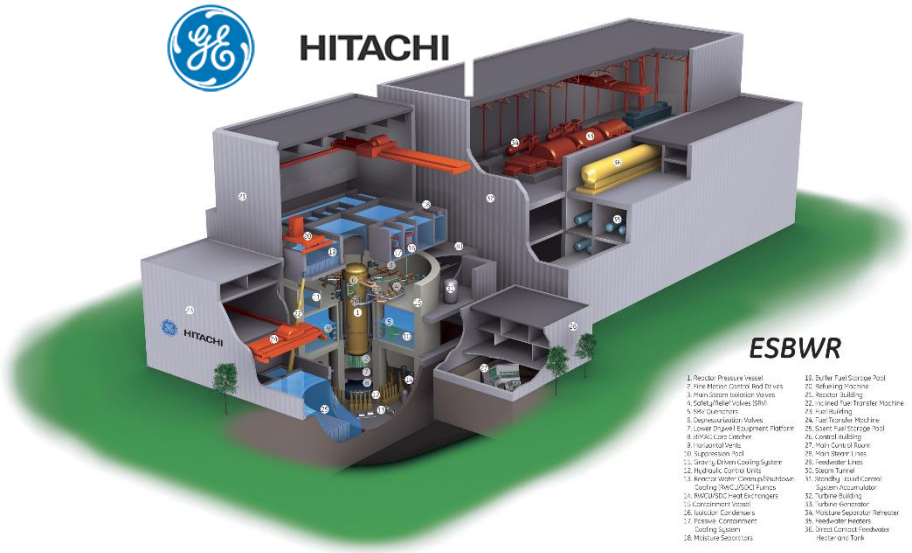
(lire le manifeste en français !)


« Peut-on être écologiste
et être pro-nucléaire ? »
« A la lumière du changement
climatique, peut-on être écologiste
et ne pas être pro-nucléaire ? »

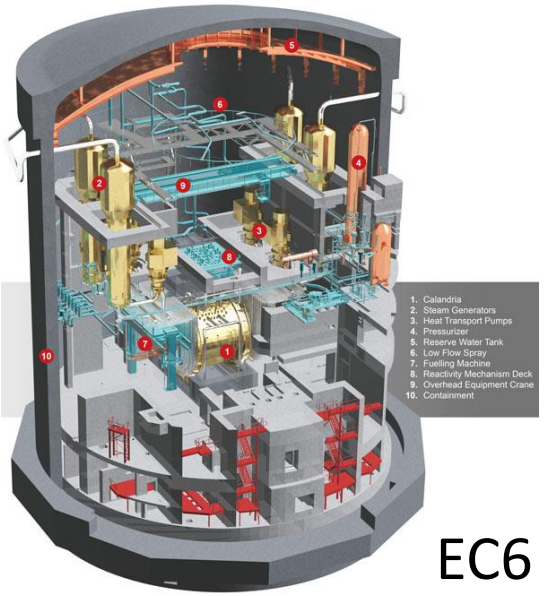
Réacteurs à Eau Pressurisée



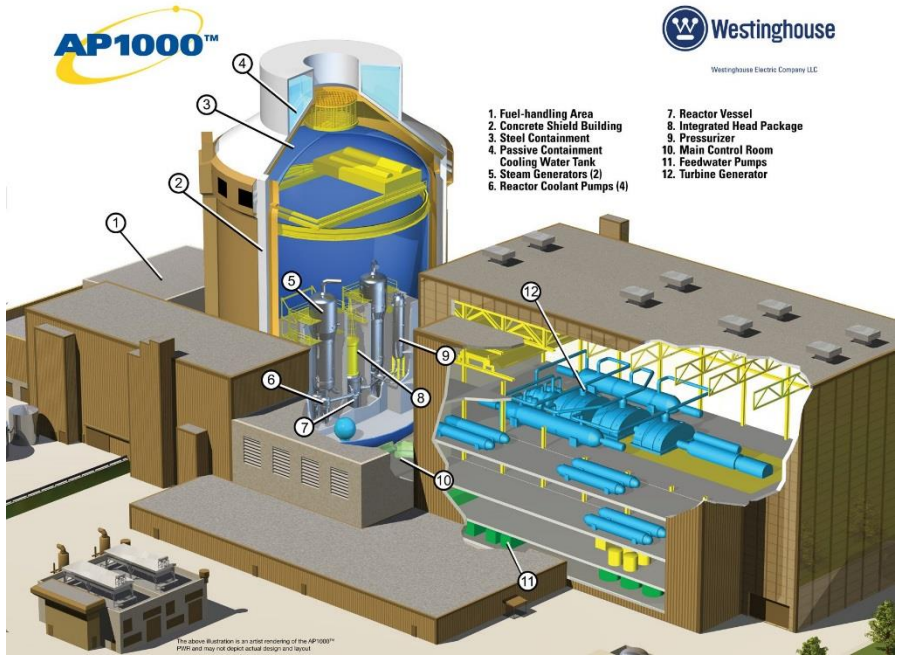
AREVA



Candu



EC6

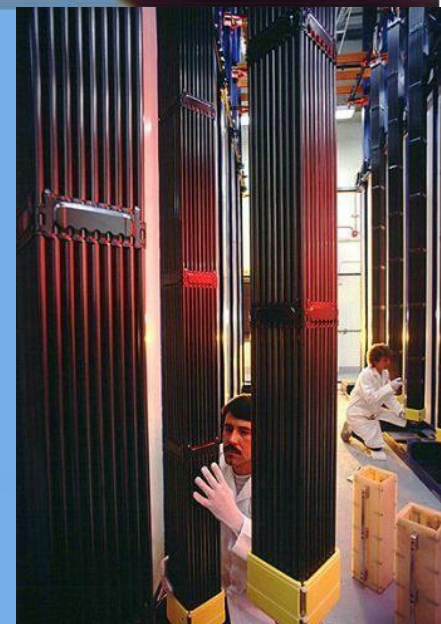


ROSATOM

VVER-1200

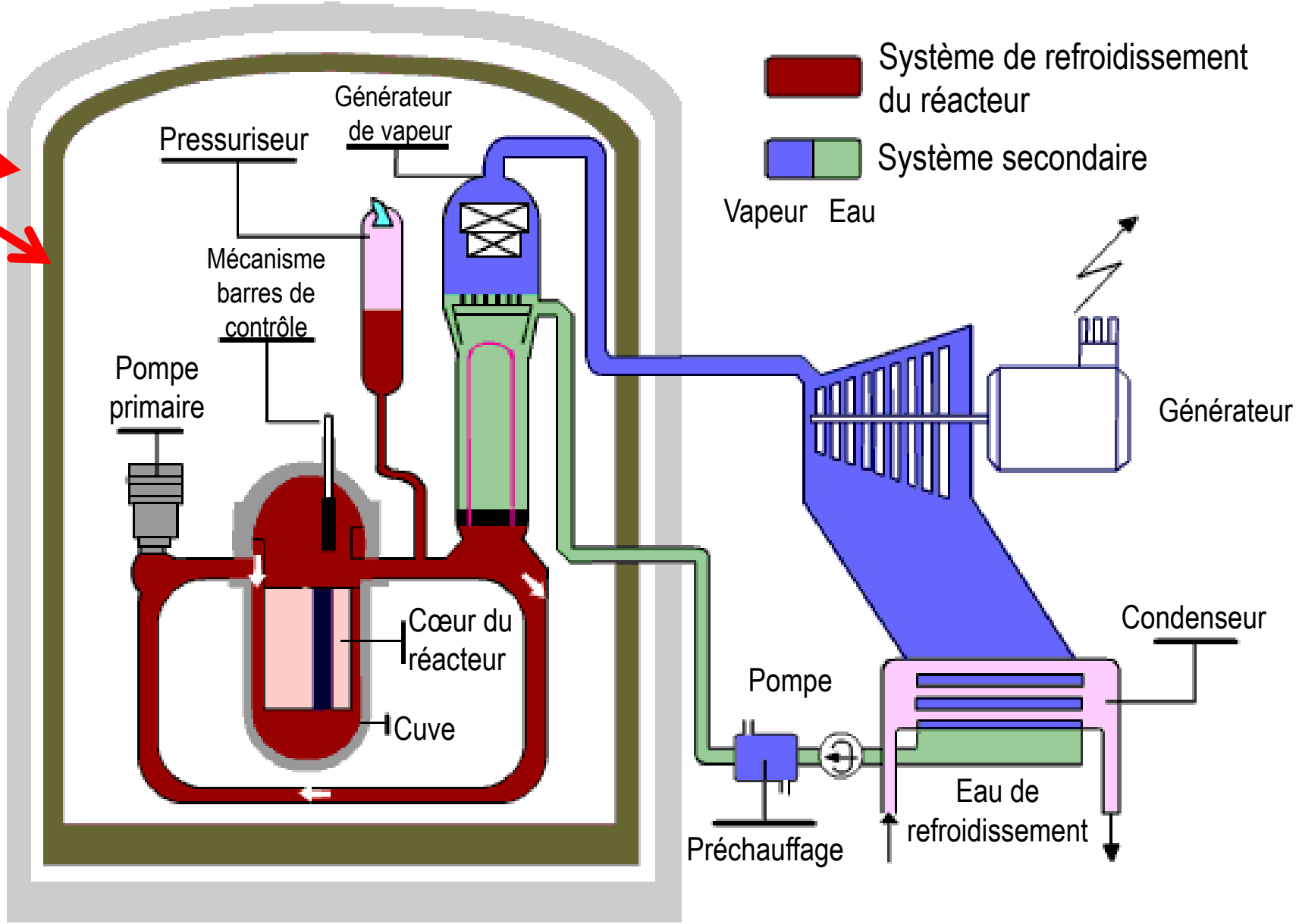
Crayon de combustible

Pastille



Assemblage de combustible

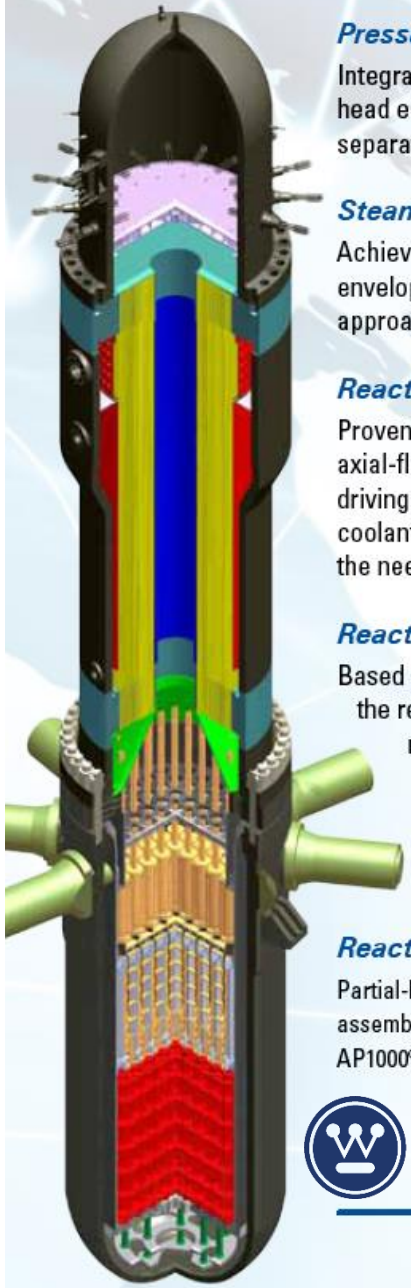
2 enceintes de confinement



Petits Réacteurs Modulaires

CNNC

Westinghouse SMR



Pressurizer

Integration into reactor vessel head eliminates the need for a separate component

Steam Generator

Achieves a compact physical envelope with an innovative approach to steam separation

Reactor Coolant Pumps

Proven, horizontally-mounted axial-flow pumps provide the driving head for the reactor coolant system while eliminating the need for pump seal injection

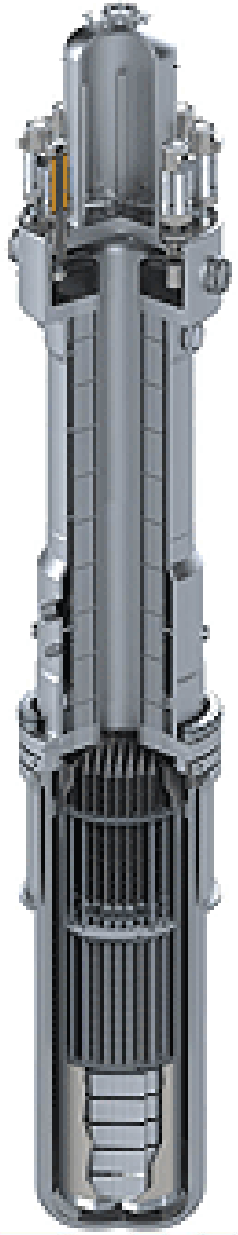
Reactor Vessel Internals

Based on the AP1000® design, the reactor vessel internals are modified for the smaller core and to provide support for the internal control drive rod mechanisms

Reactor Core

Partial-height of the 17x17 fuel assembly design used in the AP1000® reactor

Westinghouse



B&W

thebabcock&wilcoxcompany

NUSCALE POWER MODULE™

NATURAL CIRCULATION OF REACTOR COOLANT FLOW

CONDUCTION

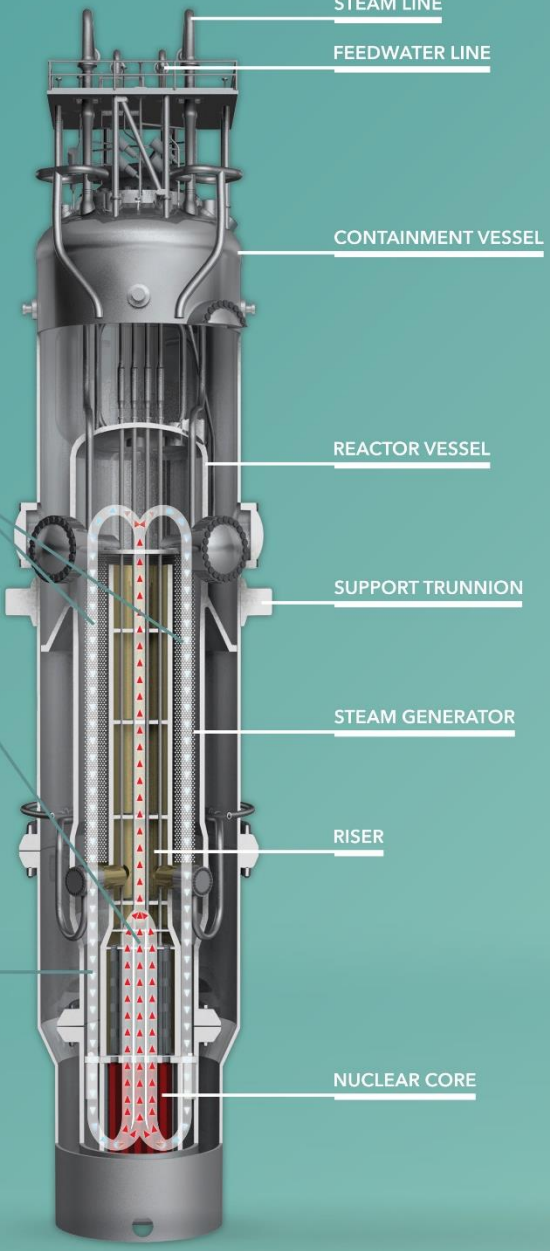
Heat is transferred from the primary coolant through the walls of the tubes in the steam generator, heating the water (secondary coolant) inside them to turn it to steam.

CONVECTION

Energy from nuclear reaction heats the primary reactor coolant causing it to rise by convection and natural buoyancy through the riser, much like a chimney effect.

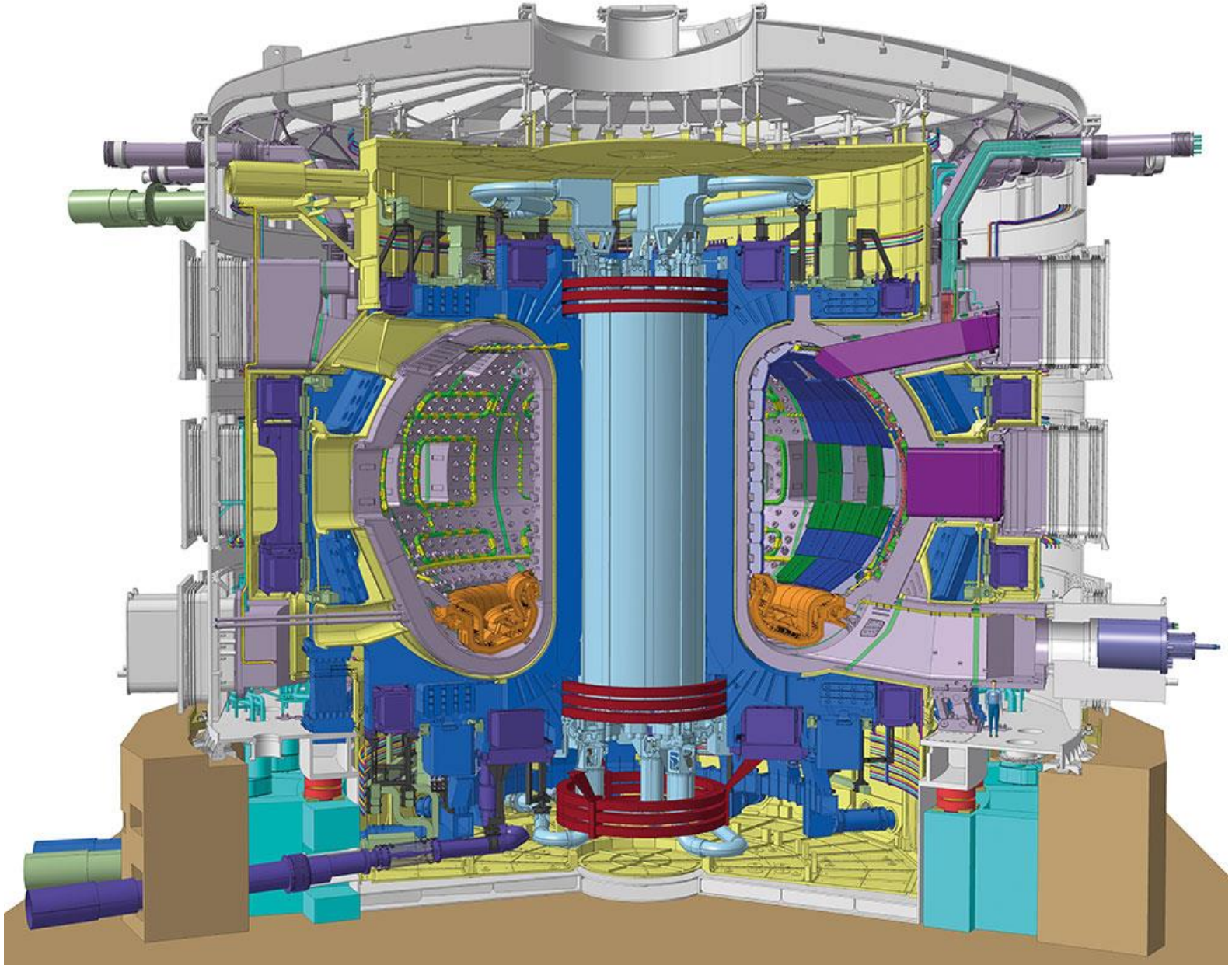
GRAVITY

Colder (denser) primary coolant "falls" to bottom of reactor pressure vessel, cycle continues.



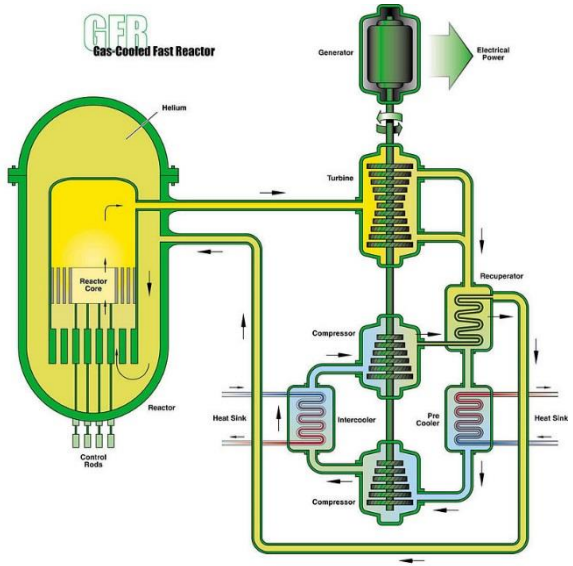
NuScale Power™

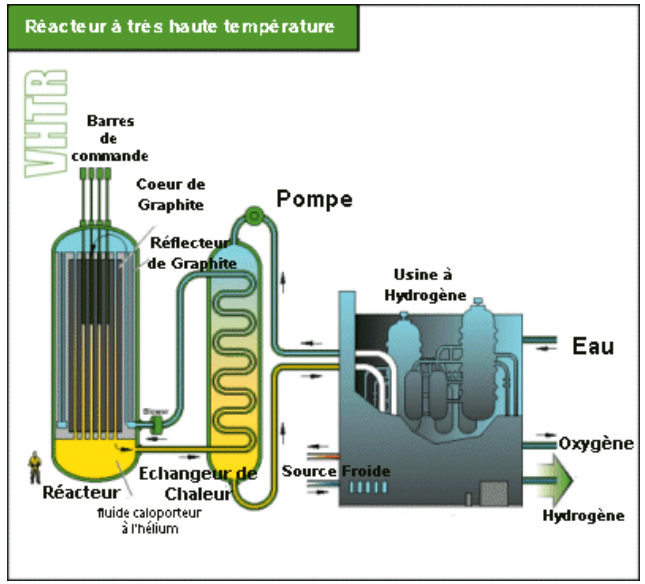
La Fusion : ITER

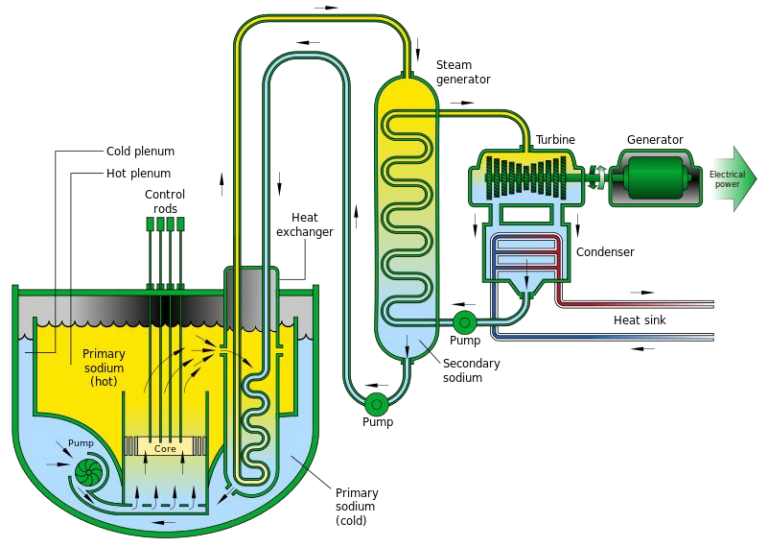


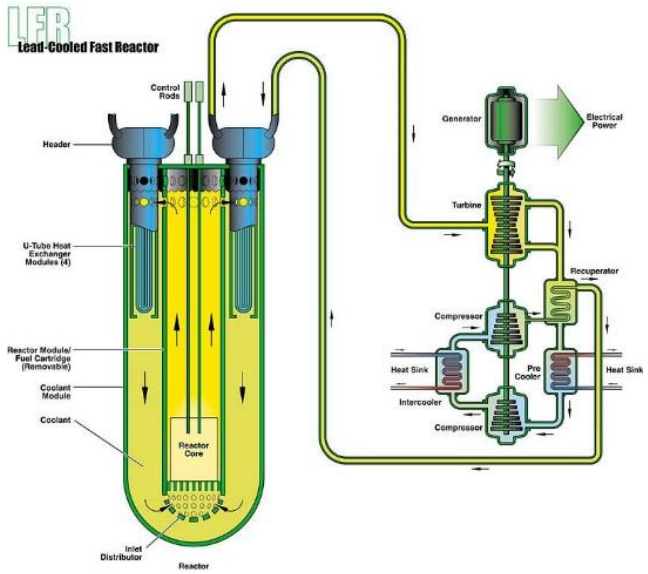
Sources : gen-4.org, wikipédia

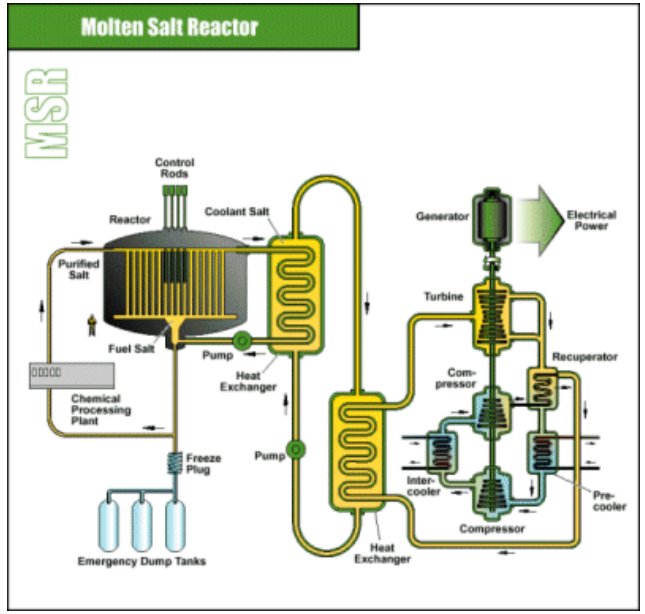
GEN IV International Forum

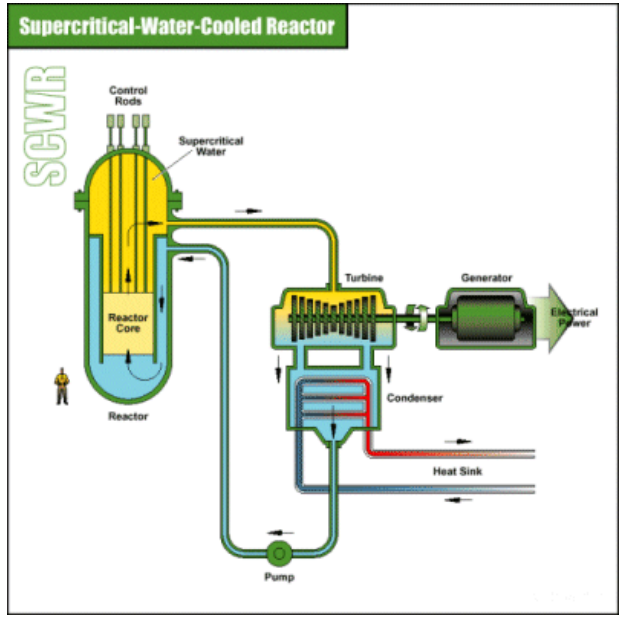






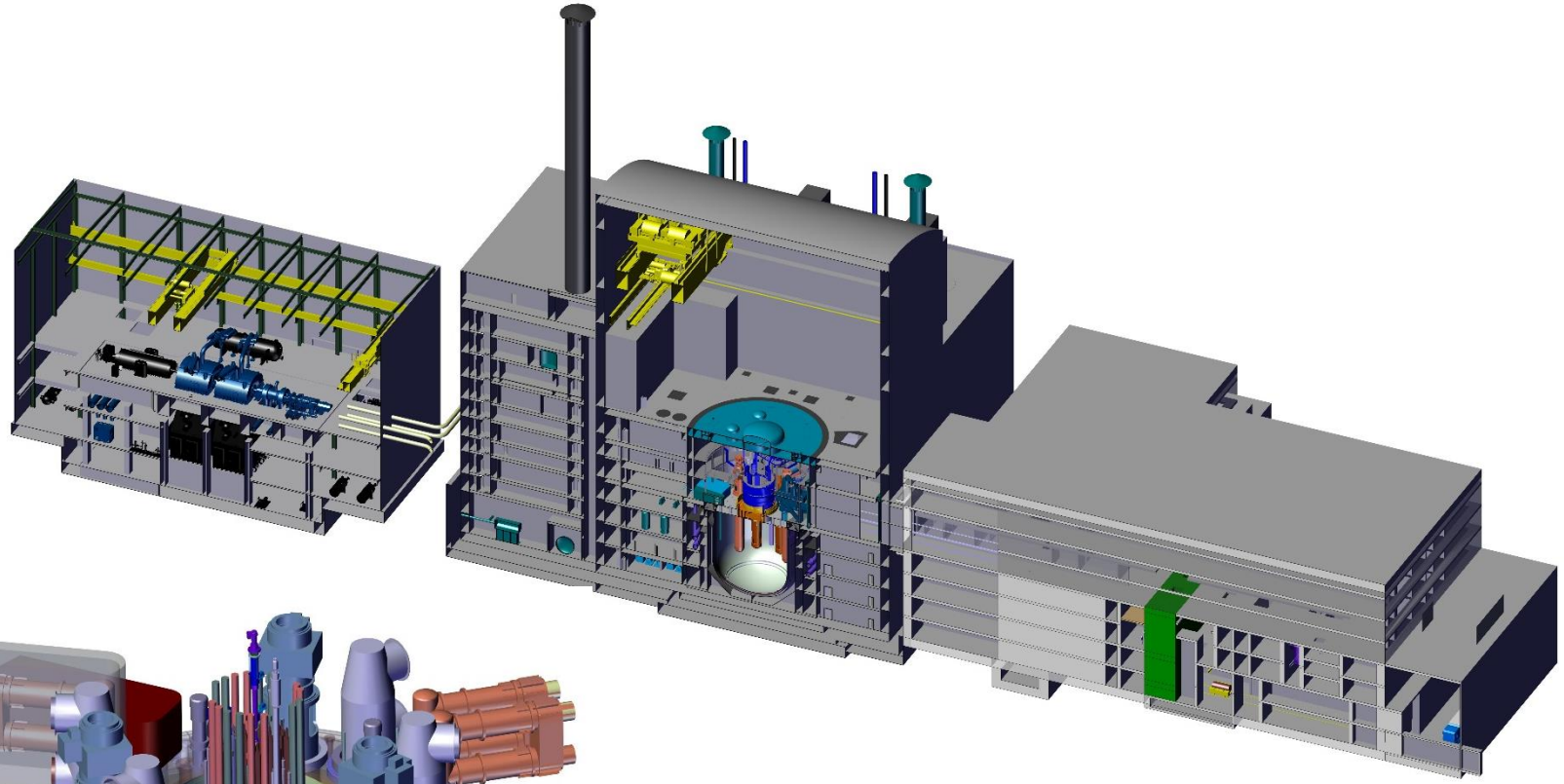


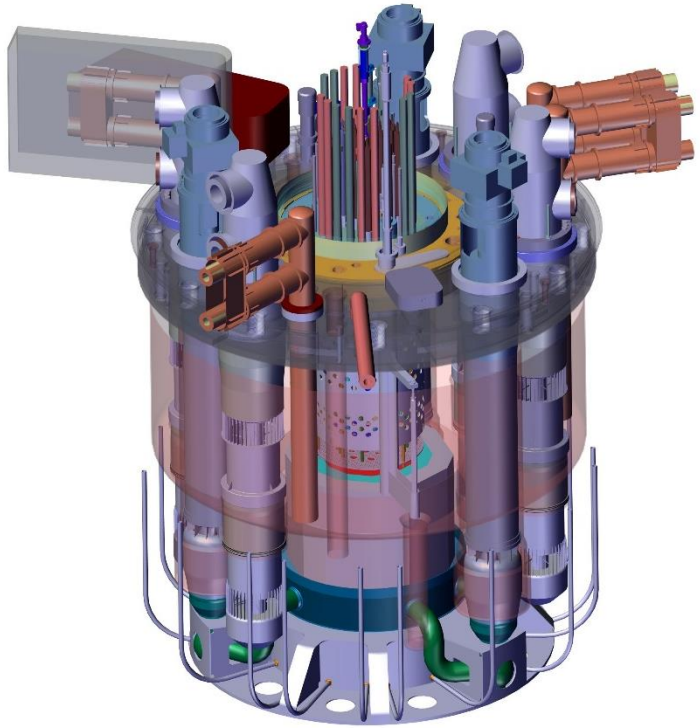




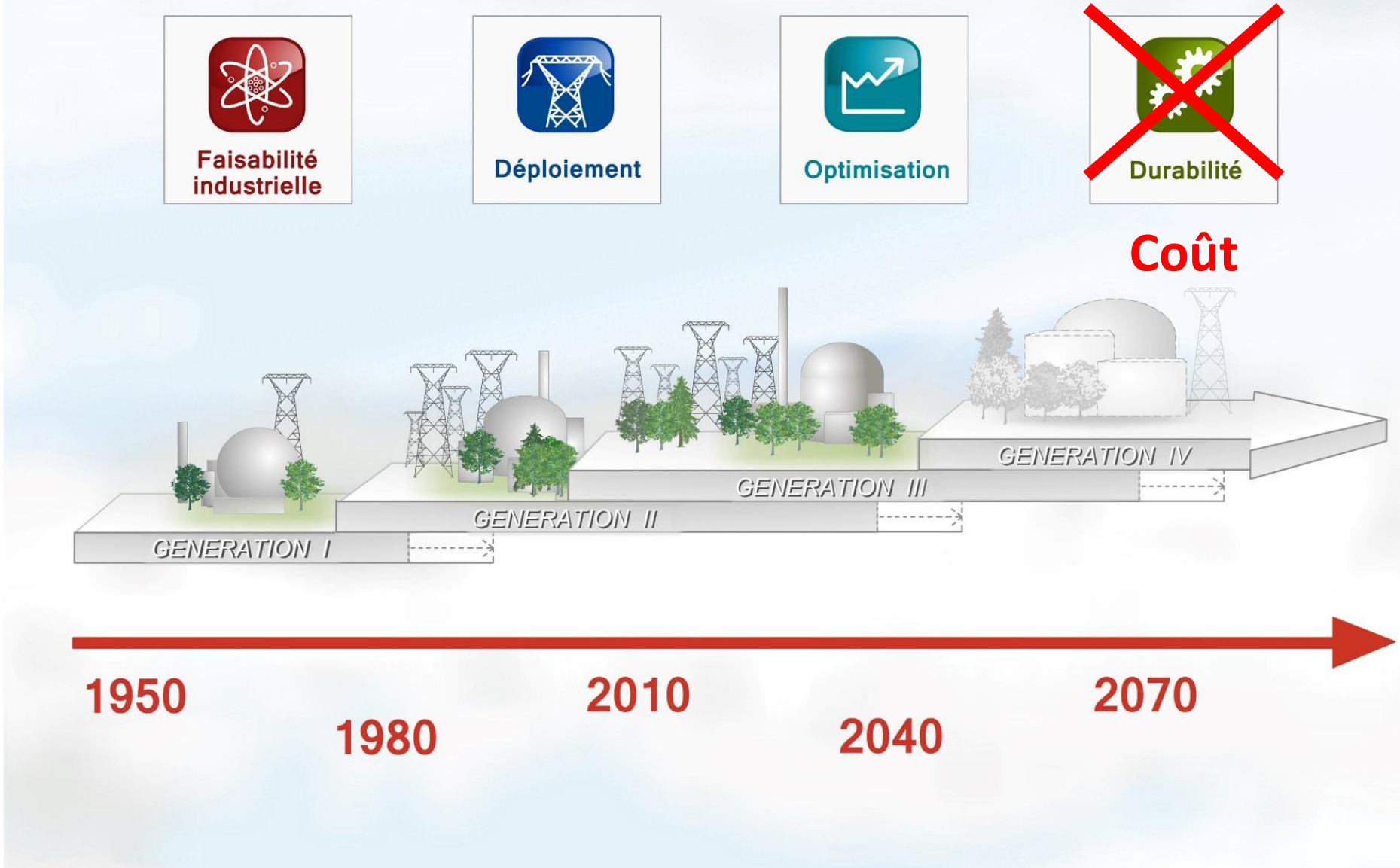

SAMOFAR
Kick-off meeting, August 24-25, 2015, Delft

La France : ASTRID

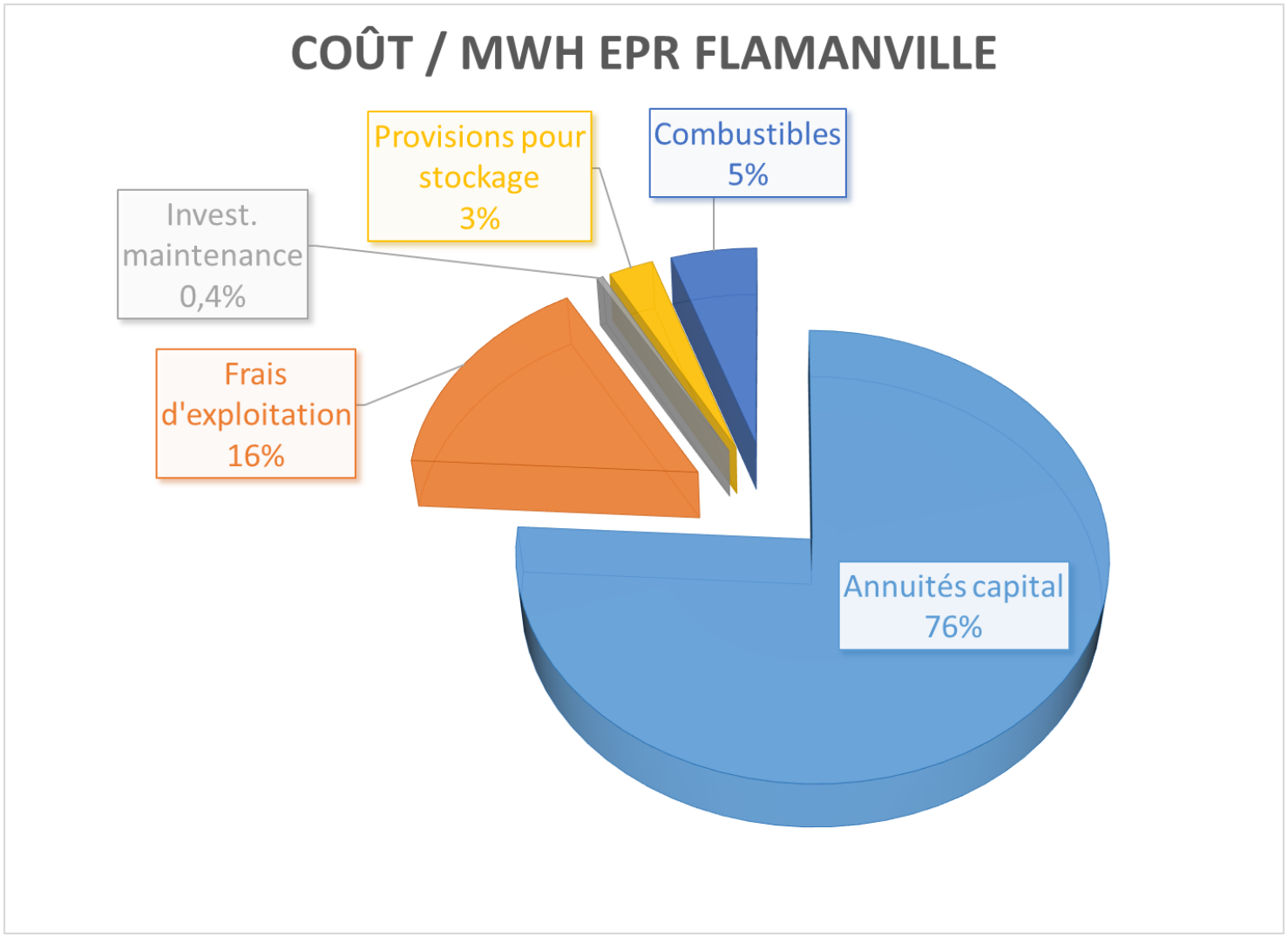


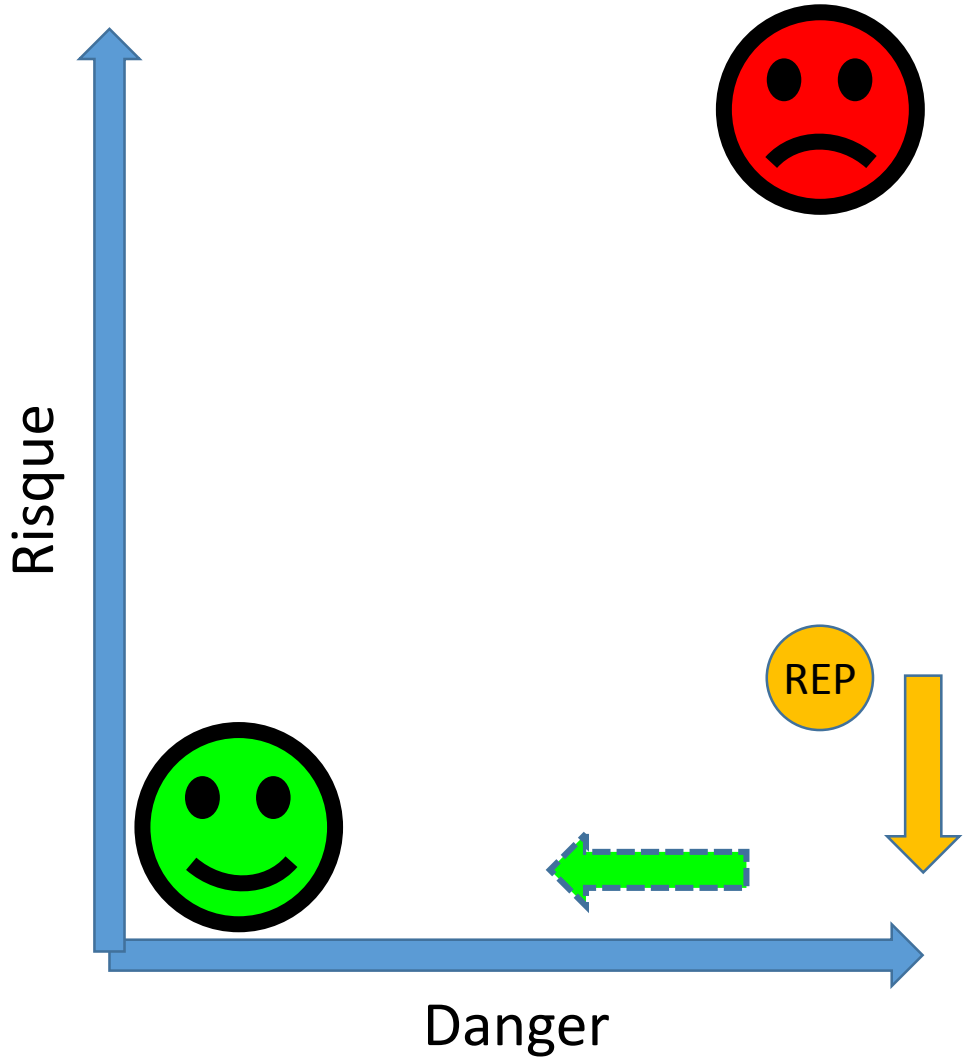


LES GÉNÉRATIONS DE RÉACTEURS NUCLÉAIRES



Pourquoi le nucléaire est cher ?

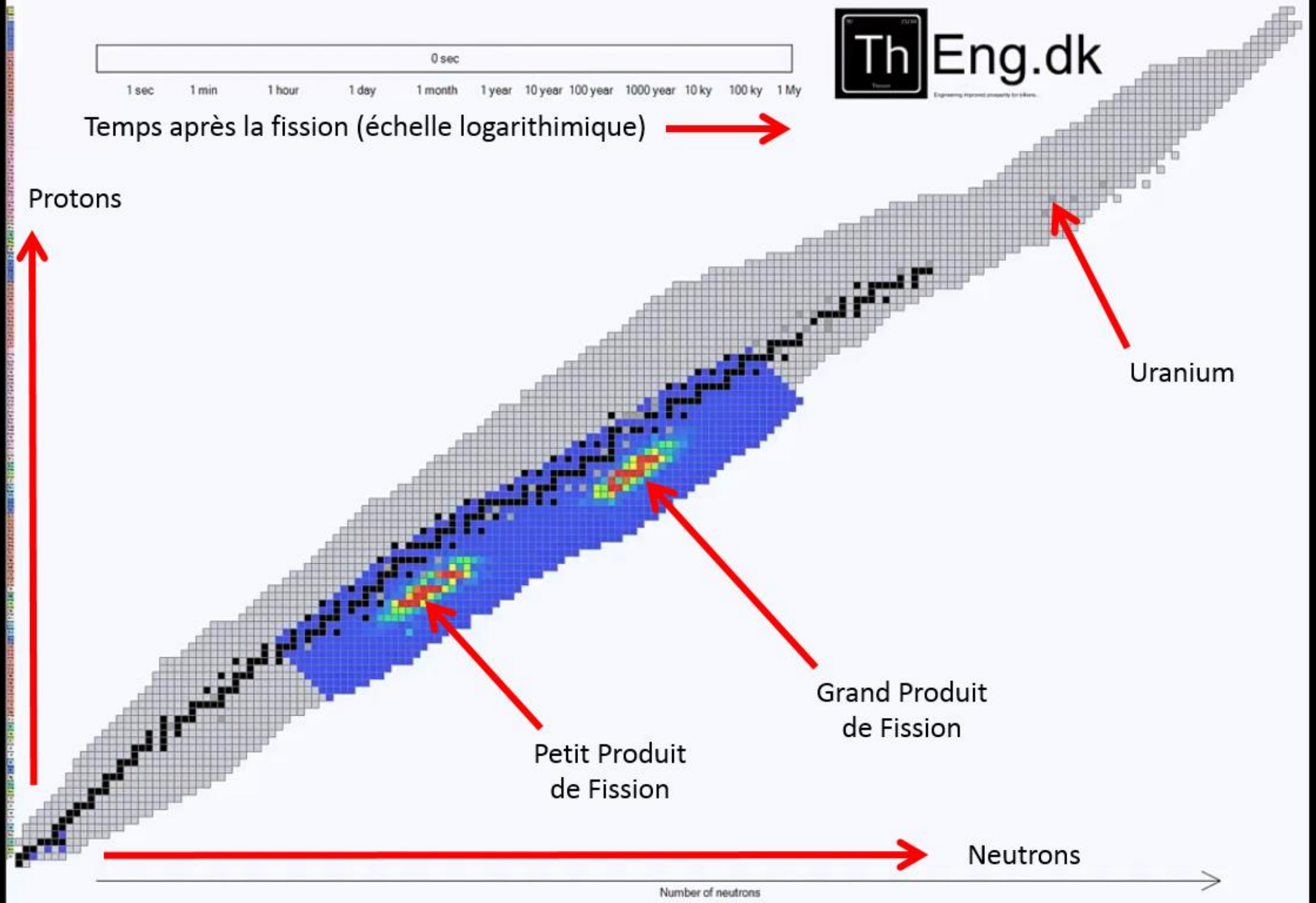




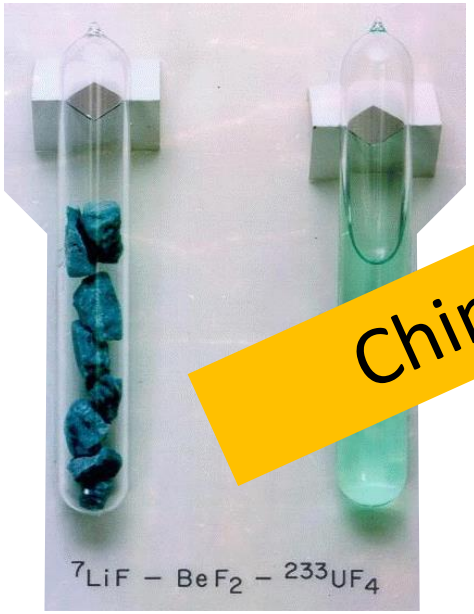
Source : http://negawatt.org

accelerated
neutron

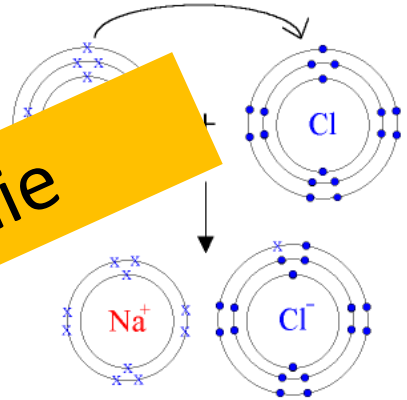
uranium


0 sec
1 sec
1 min
1 hour
1 day
1 month
1 year
10 year
100 year
1000 year
10 ky
100 ky
1 My
Temps après la fission (échelle logarithimique)
Th Eng.dk
Protons
Uranium
Grand Produit
de Fission
Petit Produit
de Fission
Neutrons
Number of neutrons

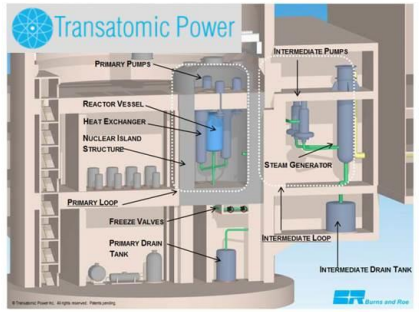

Fission
Liquide

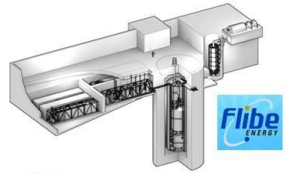


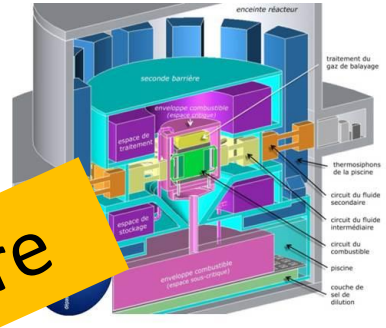
Chimie

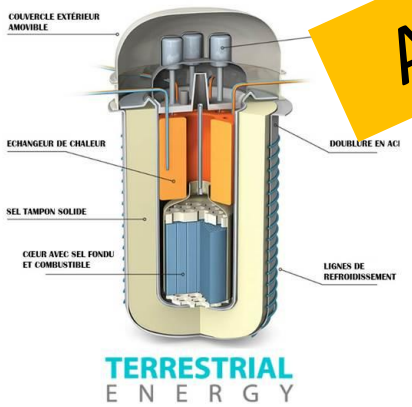


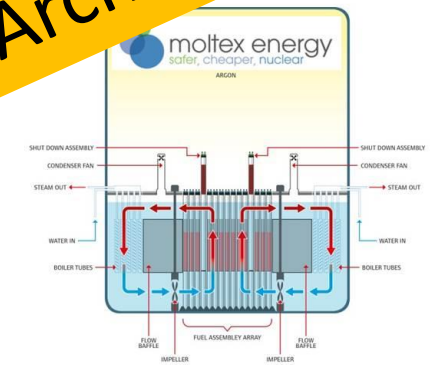
Liaison
Ionique

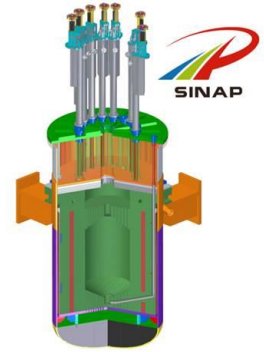






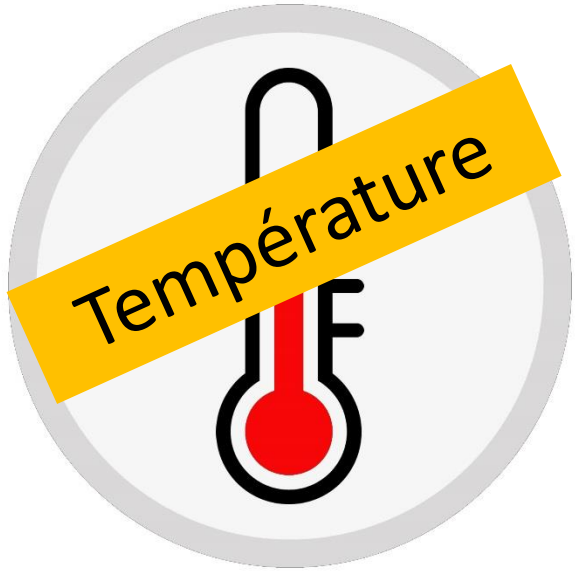




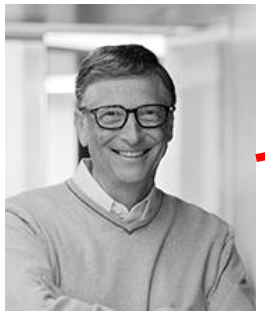


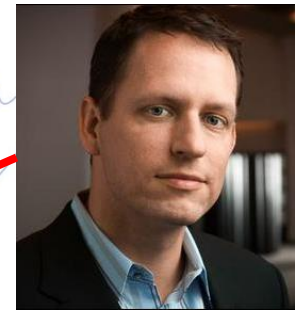
Architecture

Modularité



Température





CANADA

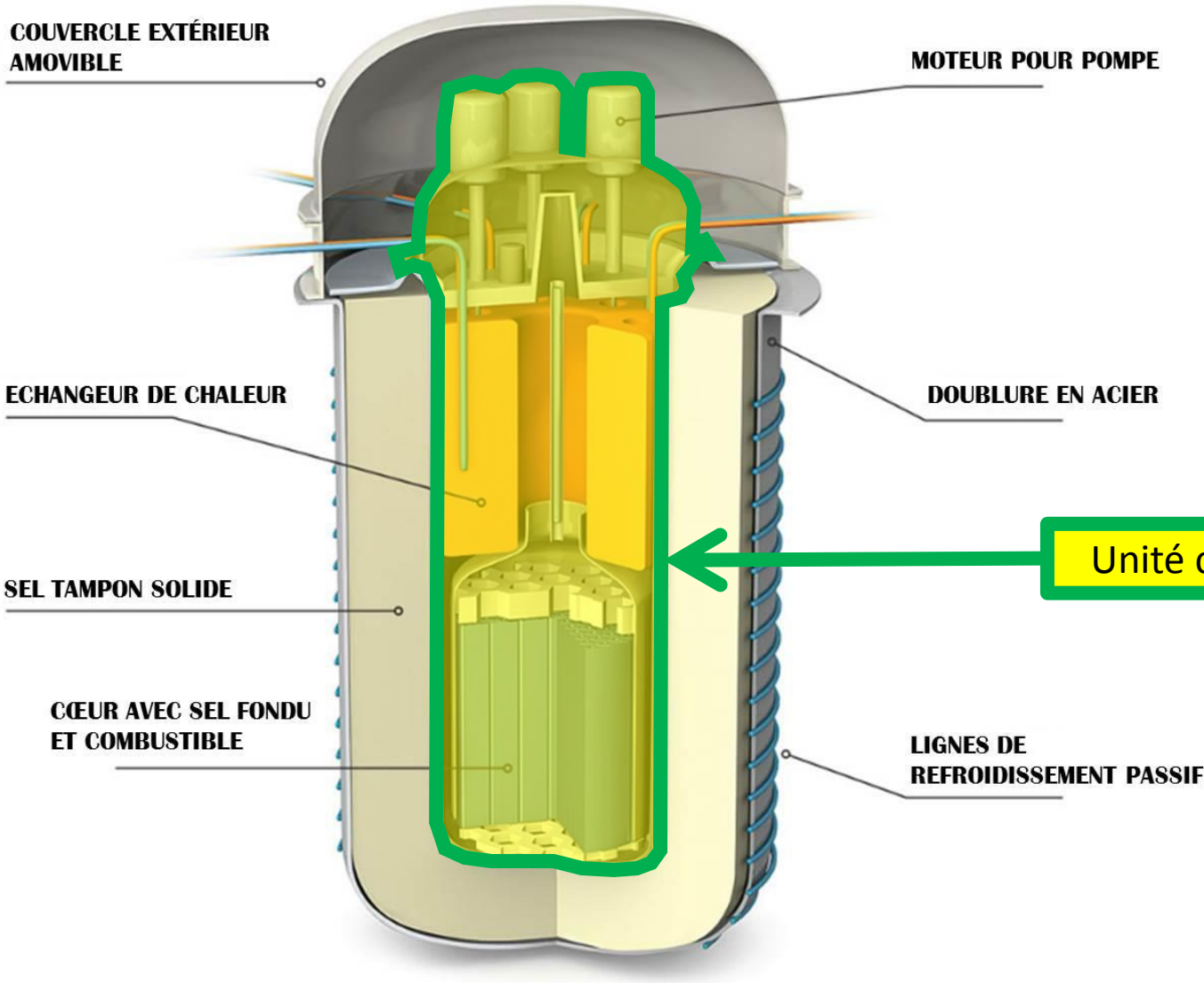
General Fusion
Helion Energy
TWR
SuperCritical
NuScale
PB-FHR
Thorenco
National Ignition
ENHS
UPower
G4M
University of Missouri
Hybrid
SMR
STAR
Integral MSR
SMART
Leadir-PS100
Widetronix
Fusion Science Center
Starcore Nuclear
TAP
FHR
RADIX
Lawrenceville Plasma Physics
Princeton Plasma Physics Laboratory
Westinghouse
Lightbridge
ARC-100
X-Energy
DOE Next Gen
HyperV
Lockheed Martin
SC-HTGR
L-ESSTAR
GEMSTAR
SmATHR
PRISM
mPower
LFTR
General Atomics
Tri Alpha
TPS
MIFTI
EM2 and MHR
NumerEx
Z Machine
Thorcon
SMR-160
NanoTritium

Reactor Design Types

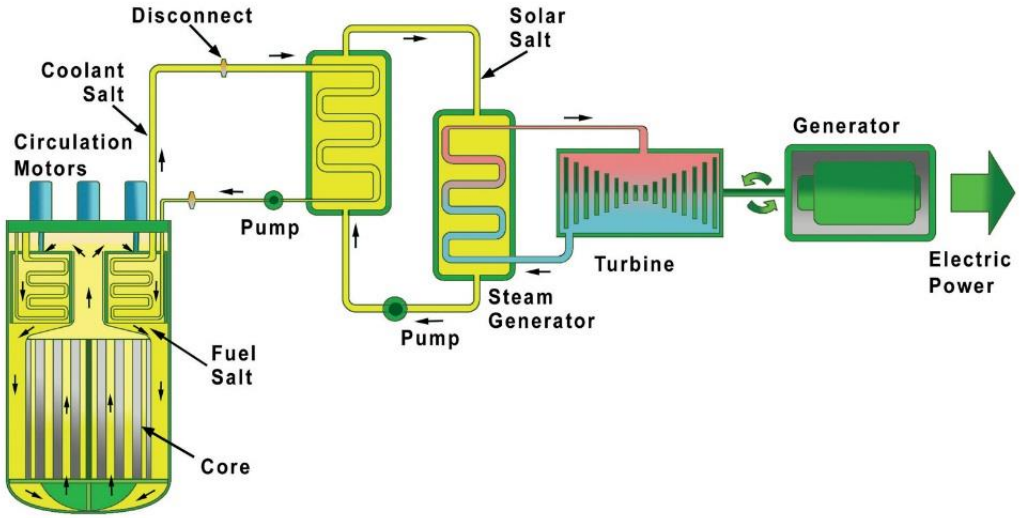
- Molten Salt Reactor
- Fluoride Salt-cooled High Temperature Reactor
- Liquid Metal-cooled Fast Reactor
- High Temperature Gas Reactor
- Pebble Bed Reactor
- Nuclear Battery Reactor
- Designs Advanced Nuclear Fuels
- Small Modular Reactor
- Fusion Reactor
- Super-Critical CO_2 Reactor

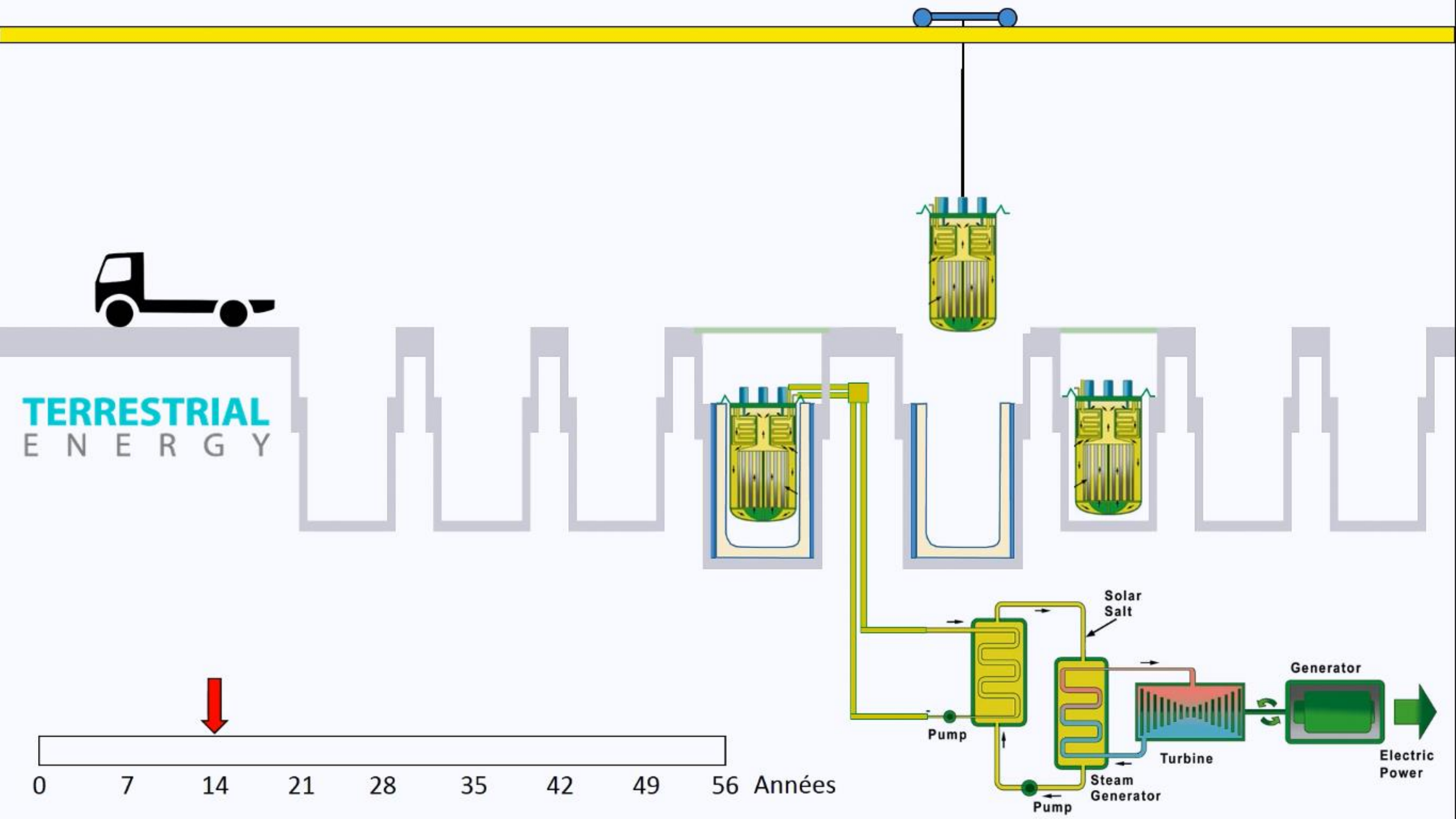
third way
fresh thinking

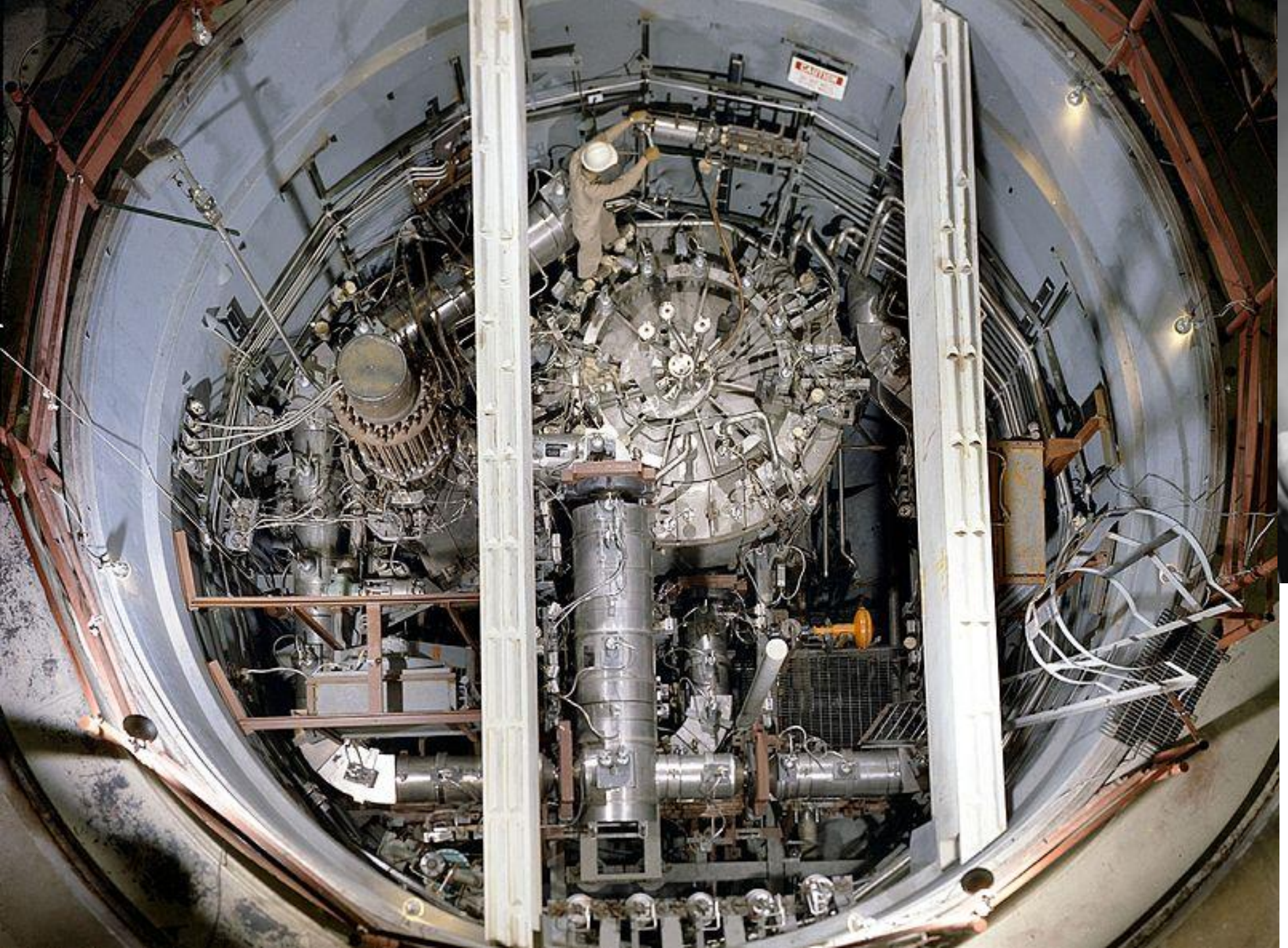
TERRESTRIAL ENERGY



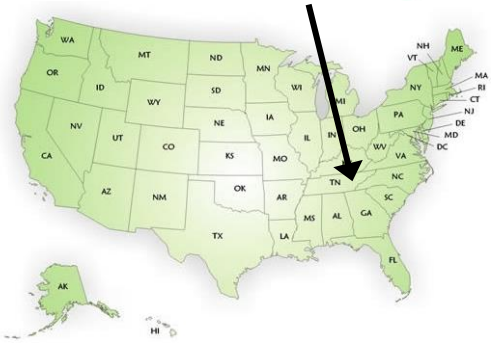
Unité cœur



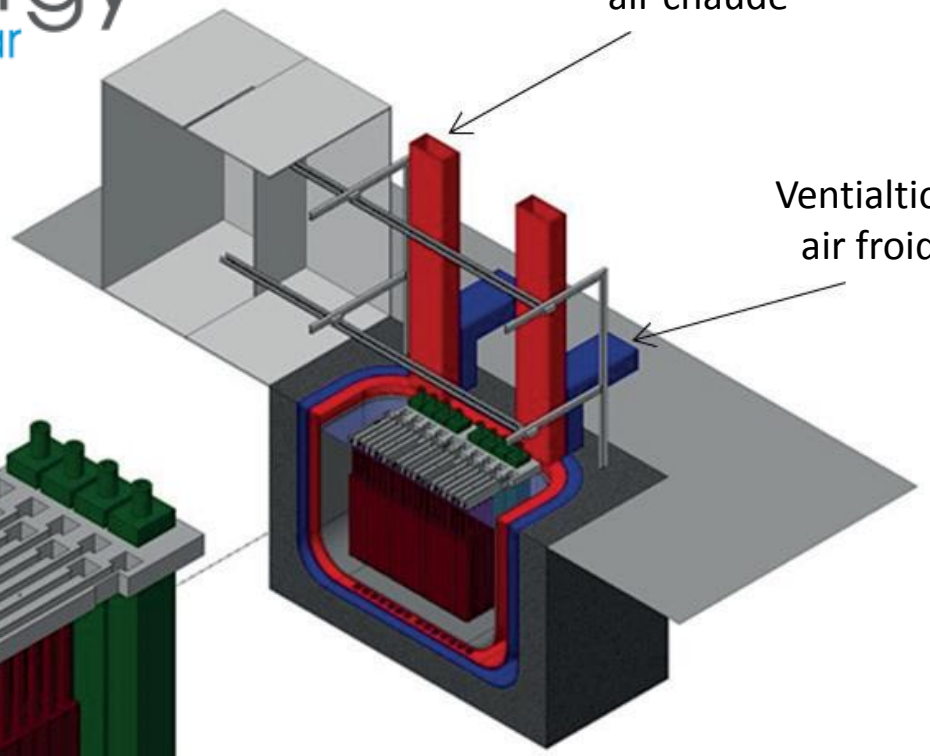

TERRESTRIAL
ENERGY
Solar
Salt
Pump
Pump
Steam
Generator
Turbine
Generator
Electric
Power
0
7
14
21
28
35
42
49
56
Années



OAK RIDGE
National Laboratory

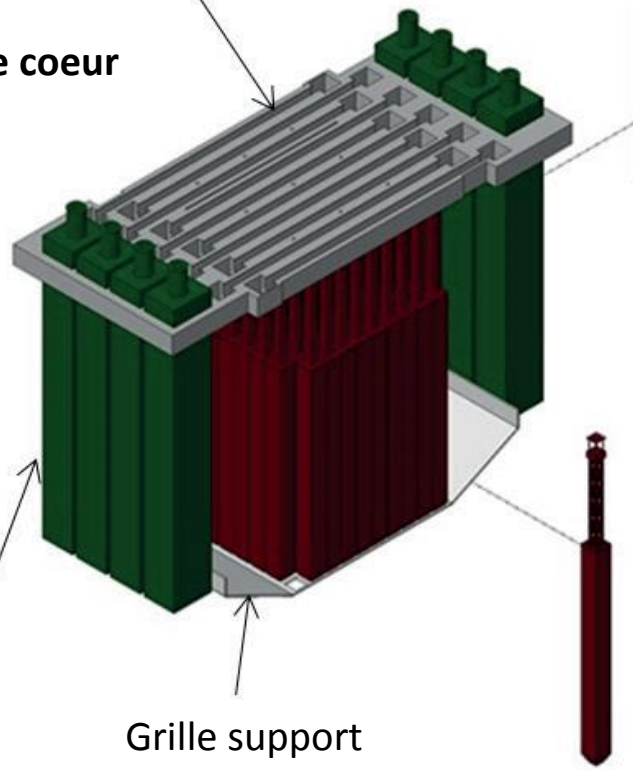


moltex energy
safer, cheaper, nuclear



Structure pour support & migration des assemblages de combustible

Module de coeur

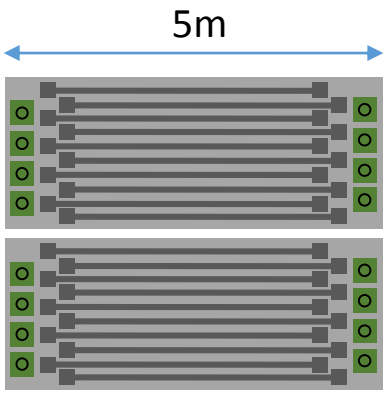


Echangeurs de chaleur

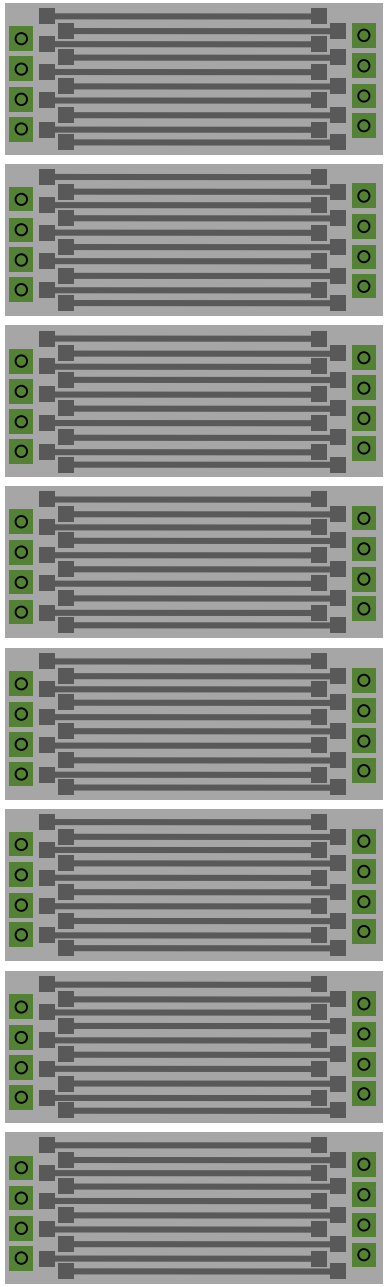
Grille support pour assemblages

Assemblage de combustible

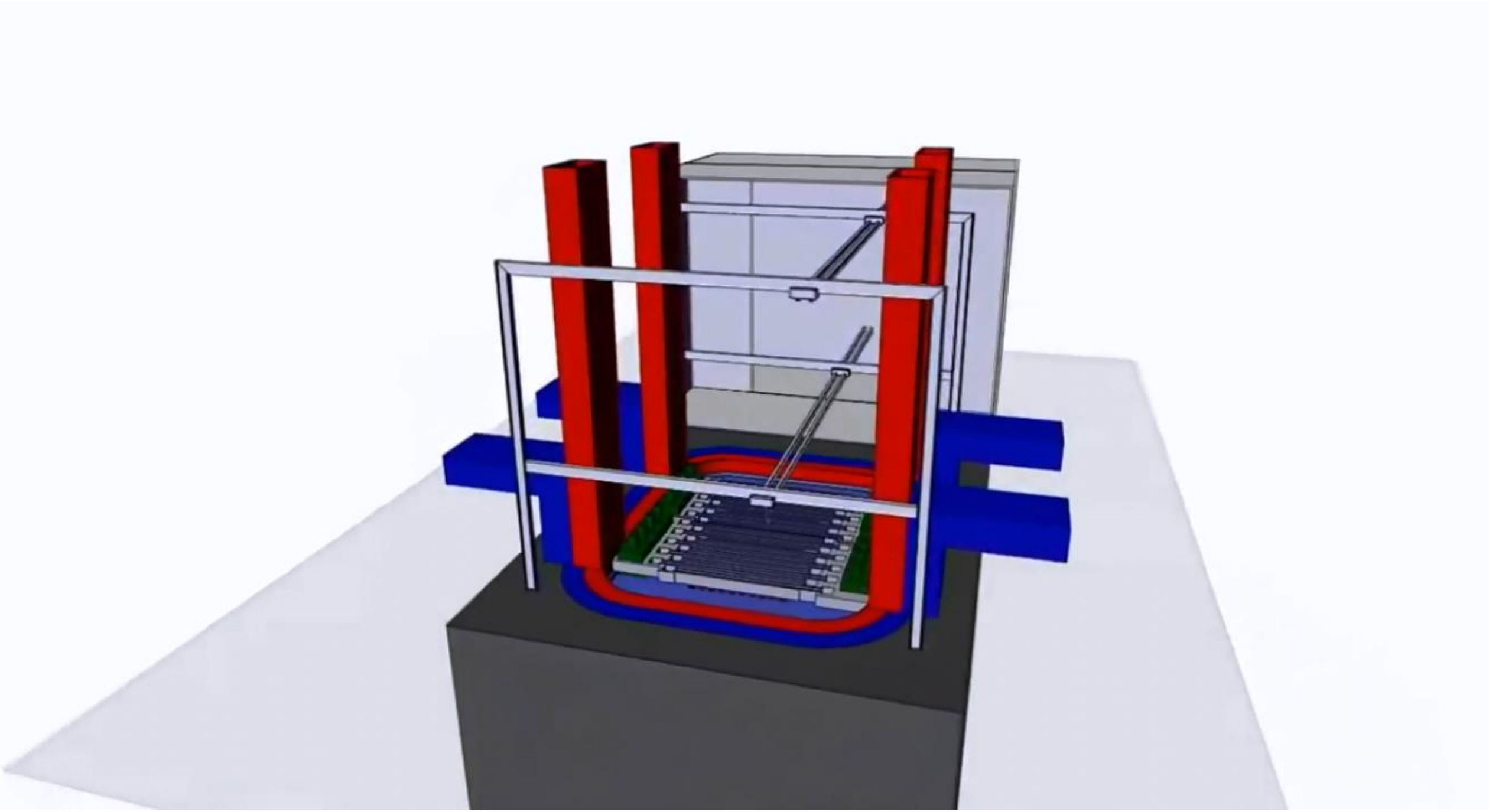
Réacteur à Sels Stables : section du coeur

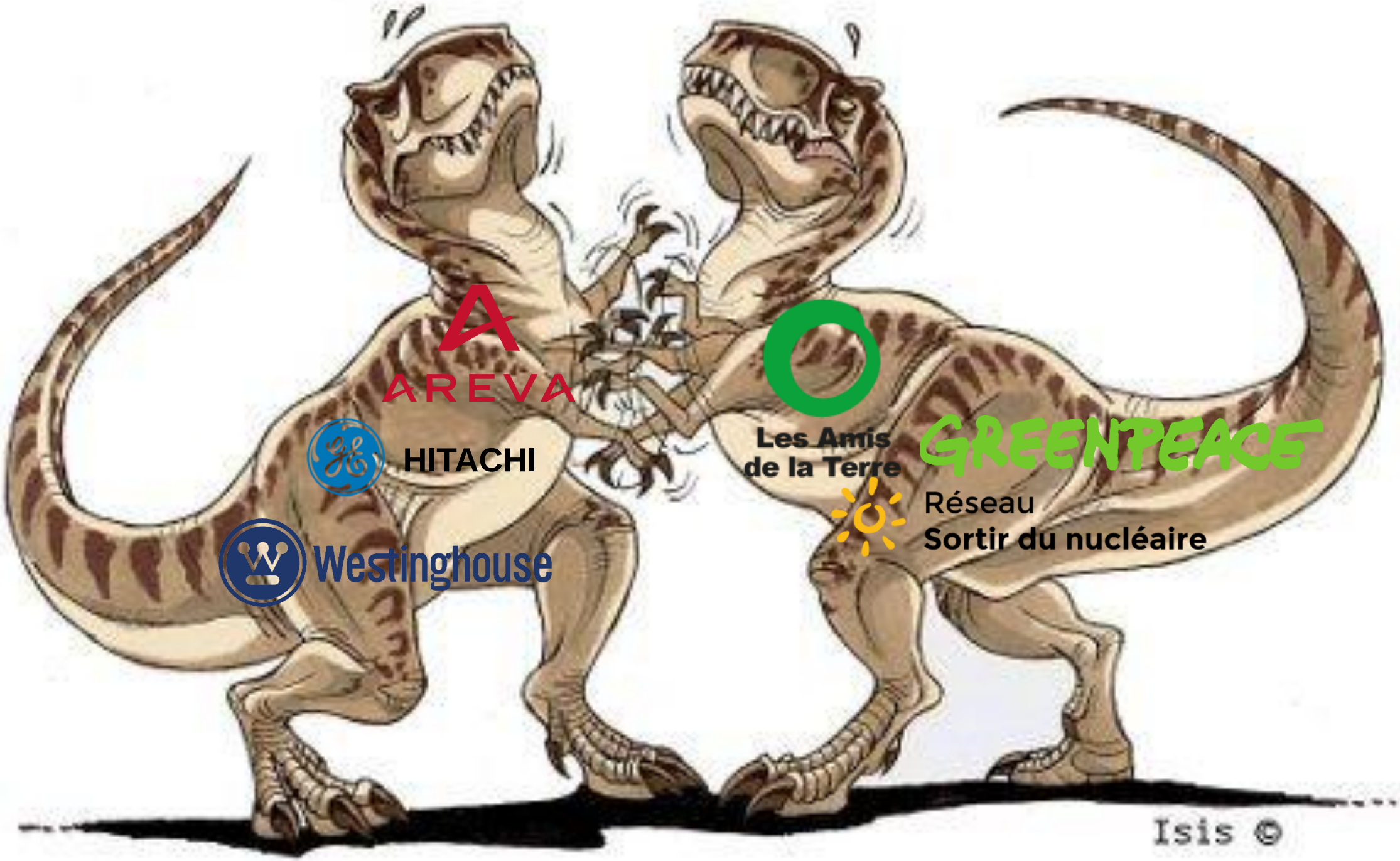


2 modules : 300MWe

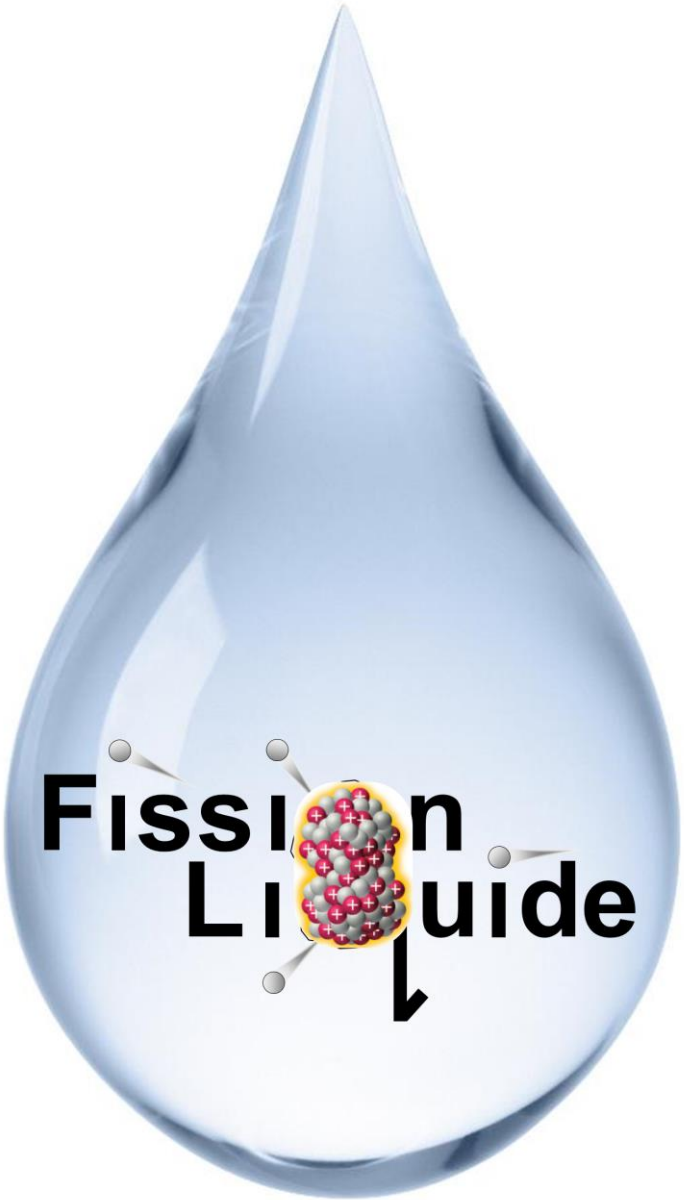


8 modules : 1200MWe

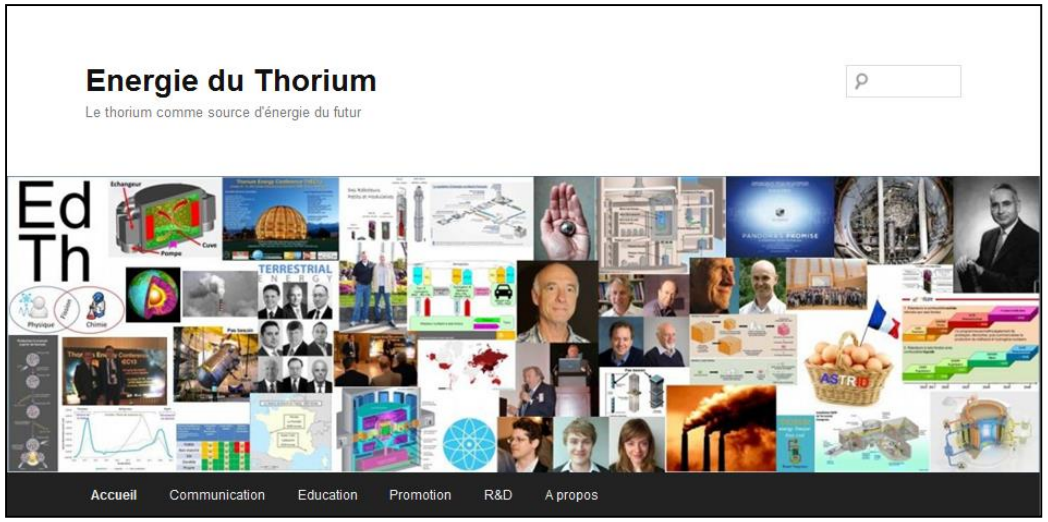



AREVA
HITACHI
Westinghouse
Les Amis de la Terre
GREENPEACE
Réseau Sortir du nucléaire
Isis ©

Un partenariat pour l’avenir



Pour en savoir plus :



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