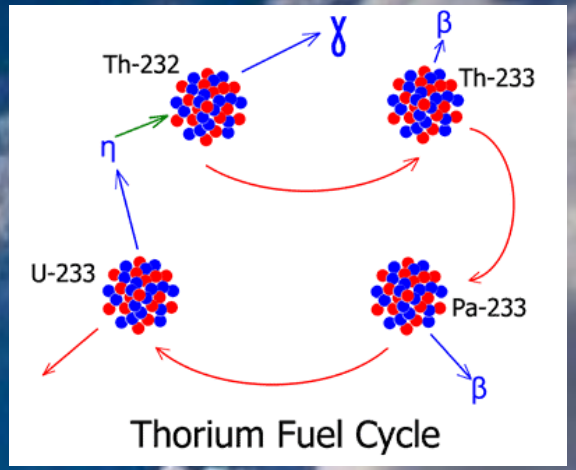
TEN | ENERGY

SUSTAINABLE ENERGY & WATER TECHNOLOGY



2050 ENERGY TECHNOLOGY ROADMAP FOR THE WORLD

SUN, COAL AND THORIUM FOR CENTURIES GLOBAL PROSPERTY AND BIRTH CONTROL

Included: The solution to stop GLOBAL WARMING: "Under a least cost strategy"

COP-21: ***Key Findings COP21 on Coal Fired Plants*** ● *The long-term temperature goal adopted in the Paris Agreement (PA) of holding temperature increase to 'well below 2°C and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels', requires a rapid decarbonization of the global power sector*

COP-26: *Energy-system models show that the phase out of unabated coal-fired power plants needs to take place around mid-century globally.* ***Under a least-cost strategy, coal phase out, by burning coal****, dates differ across regions in the world; the EU and the OECD would need to phase out coal by 2030, China by 2040 and the rest of the world, including the majority of emerging economies, would need to phase out, burning coal by 2050.*

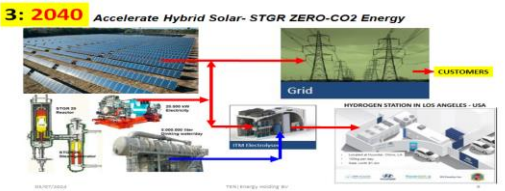
2050 Energy Technology Roadmap for the World

2050 Sustainable Energy Industry

2050 — **5** — Meet UN COP-26 Sustainability Goal & Resolve Carbon Conflict

2045 — **4** — Global Plan ZERO-CO2 Solar/Stgr and SAFE H2 - Storage/Transport

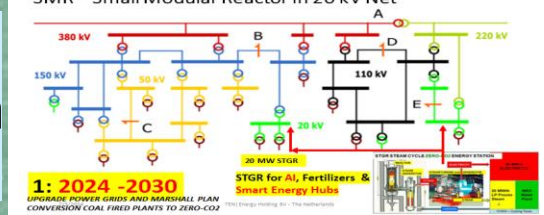
2040 — **3** — Accelerate Hybrid Solar-STGR ZERO-CO2 Energy



2035 — **2** — Execute Conversion 2.500 GW Coal Plants to STGR Energy Stations

SMR – Small Modular Reactor in 20 kV Net

2024- 2030 — **1** — Upgrade Power-grids and Marshall Plan Conversion Coal Plants to ZERO-CO2

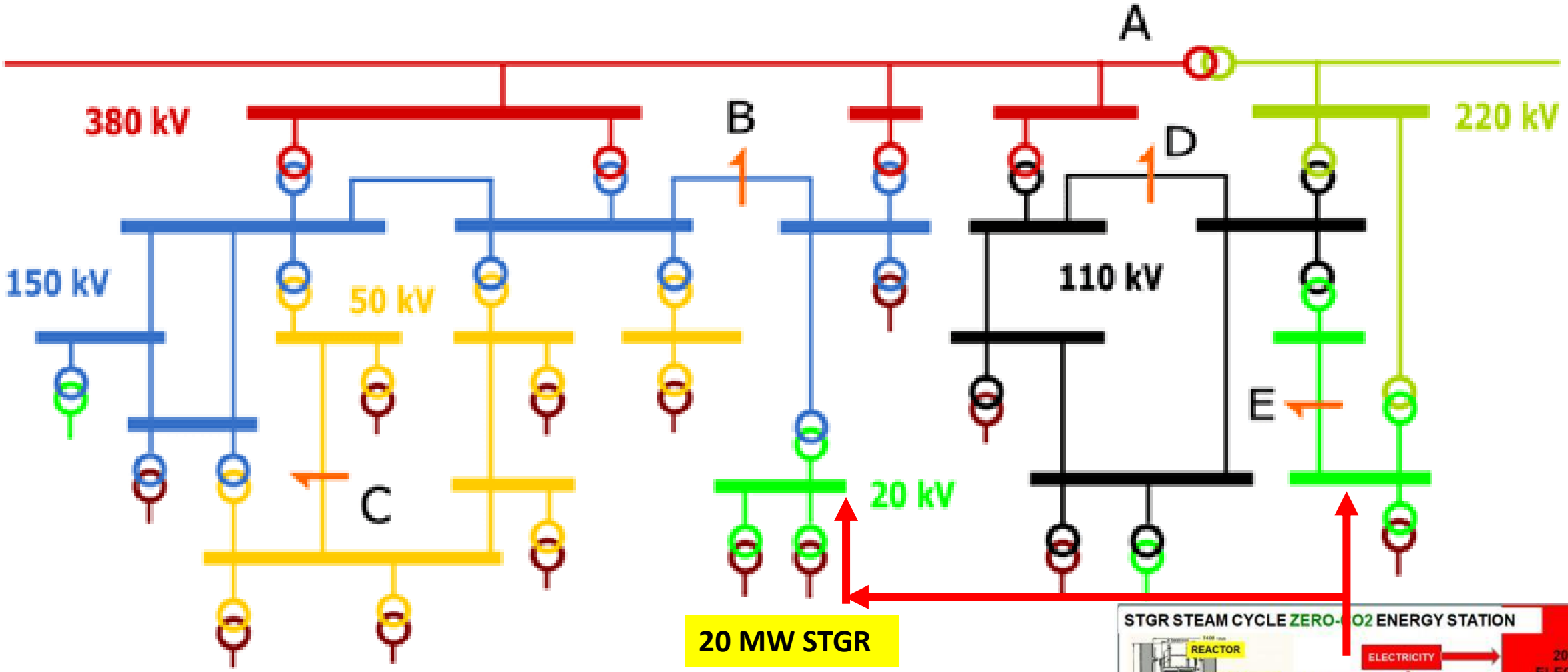


Energy Industry Needs Today

1: 2024-2030: Upgrade Power-grids and Marshall Plan Conversion Coal Plants to ZERO-CO2
2: 2035: Execute Conversion 2.500 GW Coal Plants to STGR Energy Stations. The Solution to Stop Global Warming.
3: 2040: Accelerate Hybrid Solar- STGR ZERO-CO2 Energy
4: 2045: Global Plan ZERO-CO2 Hydrogen Solar/STGR
5: 2050: Meet UN COP-26 Sustainability Goal & Resolve Carbon Conflict

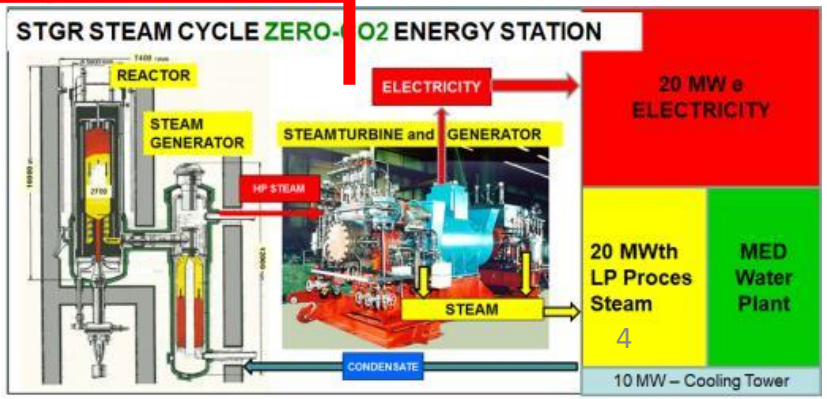
Information about the actions that have to be taken to achieve the Roadmap Milestones are included in the TEXT Field of each slide

SMR – Small Modular Reactor in 20 kV Net



20 MW STGR

STGR for AI, Fertilizers & Smart Energy Hubs

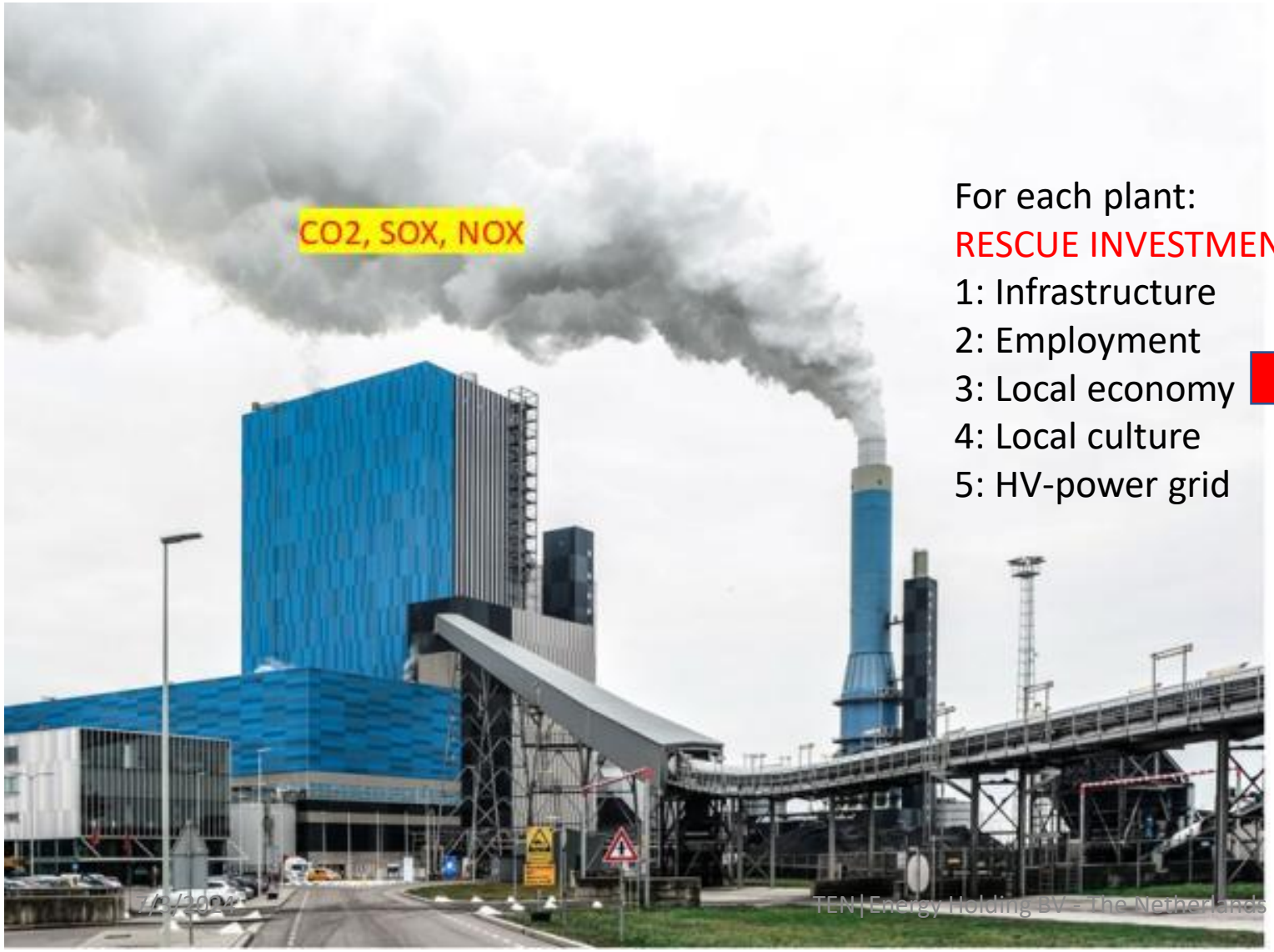


1: 2024 -2030

UPGRADE POWER GRIDS AND MARSHALL PLAN
CONVERSION COAL FIRED PLANTS TO ZERO-CO2

2: 2035 *Execute Conversion 2.500 GW Coal Plants to STGR Energy Stations*

CO2 ***emissions*** *from* ***coal*** *power plants rose to a record 10.5 Gt in 2021. (Source: IEA)*



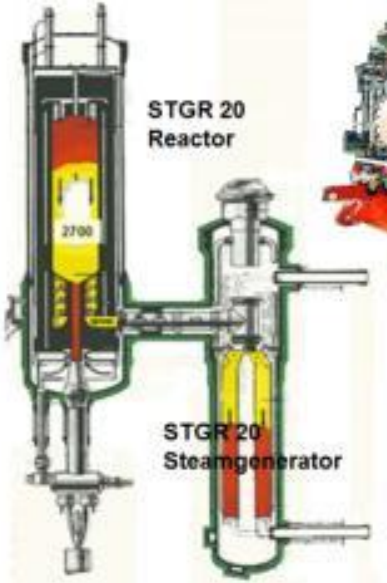
For each plant:
RESCUE INVESTMENT
1: Infrastructure
2: Employment
3: Local economy
4: Local culture
5: HV-power grid

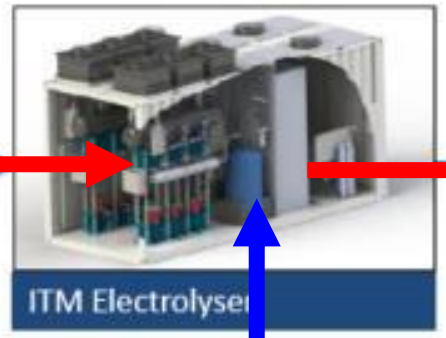
ZERO-CO2 HYDROGEN POWER PLANT

ZERO - CO2 EMISSION
ZERO - AIRPOLLUTION

3: 2040 *Accelerate Hybrid Solar- STGR ZERO-CO2 Energy*

CUSTOMERS

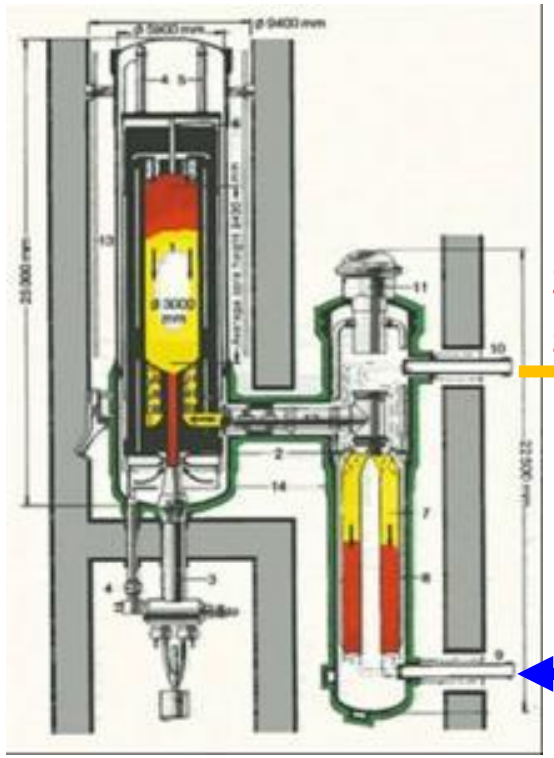


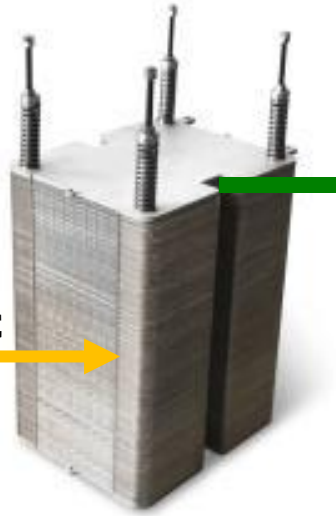


HYDROGEN STATION IN LOS ANGELES - USA

4: 2045

Global Plan ZERO-CO2 Solar/STGR 20 and SAFE H2 Storage and Transport FOR HPE- AND HTE- HYDROGEN

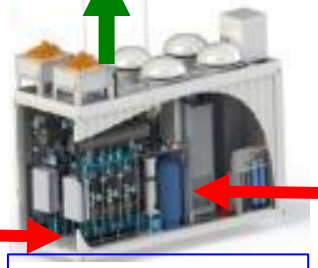


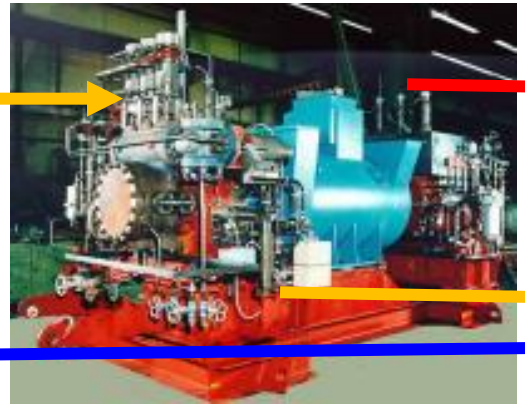


Superheated steam 750 ° C

HTE Hydrogen

HPE Hydrogen





Pure Water

Condensate

90 ° C

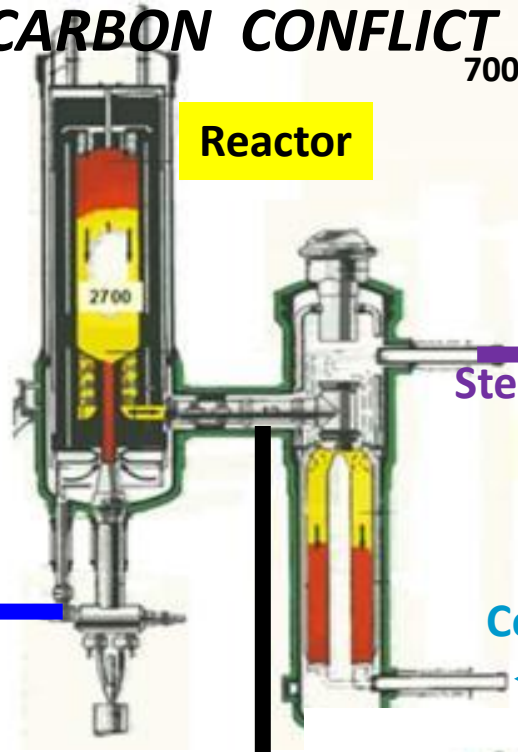
Water

2050

MEET COP-26 SUSTAINABILITY GOALS AND SOLVE CARBON CONFLICT

700° Celsiu

Reactor



HTE- HYDROGEN

Steam

2 x 10 MW Skidmounted Units

HPE-HYDROGEN

Condensate

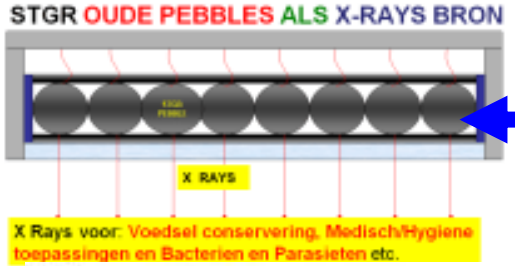
25 bar

1-11 bar

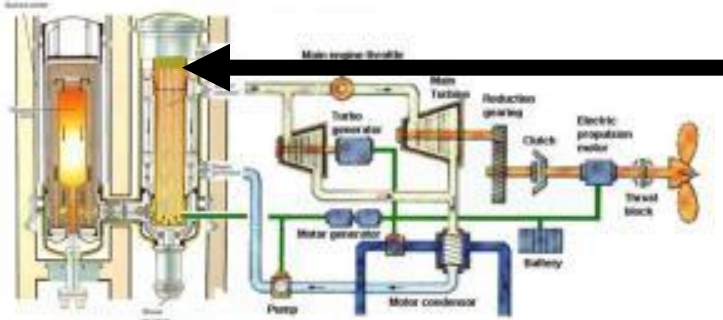
Local Power Grid

GAMMA RAYS

Food Preservation



ZERO-CO2 LOW PRESSURE STEAM FOR HEAT-APPLICATIONS



SHIPPROPULSION

Reactor + Steamgenerator

RESIDENTIAL HEATING

AIR-CONDITIONING

WATER