

The ART of STORAGE

Ewoud Verhoef

COVRA, the Netherlands



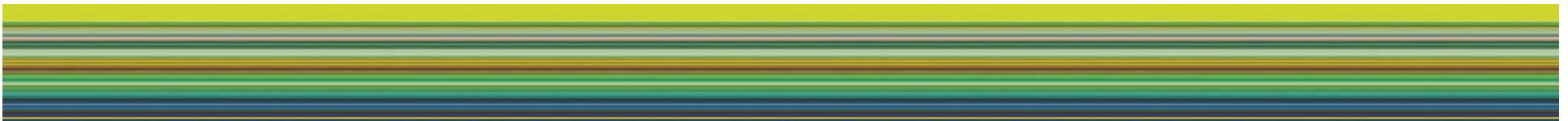
International Atomic Energy Agency Scientific Forum
**RADIOACTIVE WASTE:
MEETING THE CHALLENGE**

Science and Technology for
Safe and Sustainable Solutions

23–24 September 2014, Vienna, Austria

OUTLINE

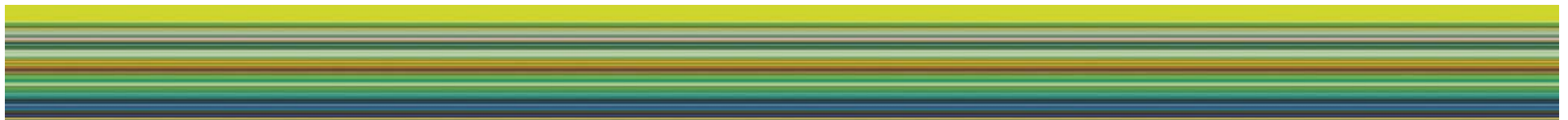
- Time for storage
- Different examples?
- Design & operation
- Emotion



TIME for STORAGE

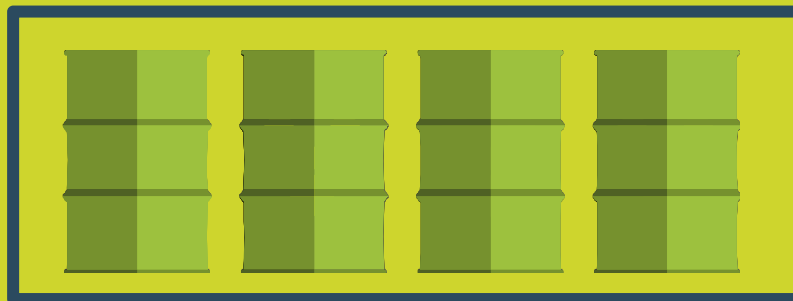
Time renders
radioactive waste
harmless

Radioactive Waste
Management
is Time
Management



TIME for STORAGE

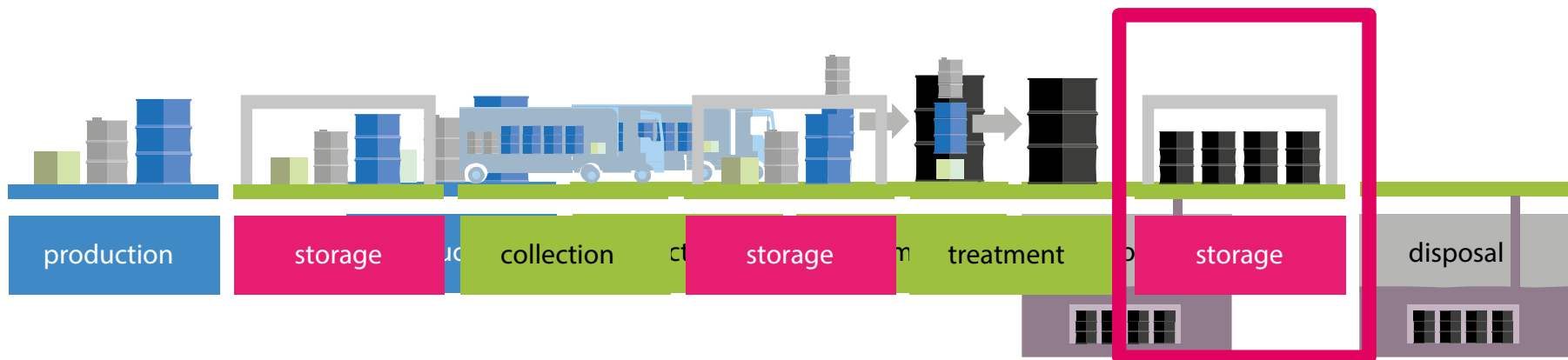
Keep radioactive
waste in a safe place



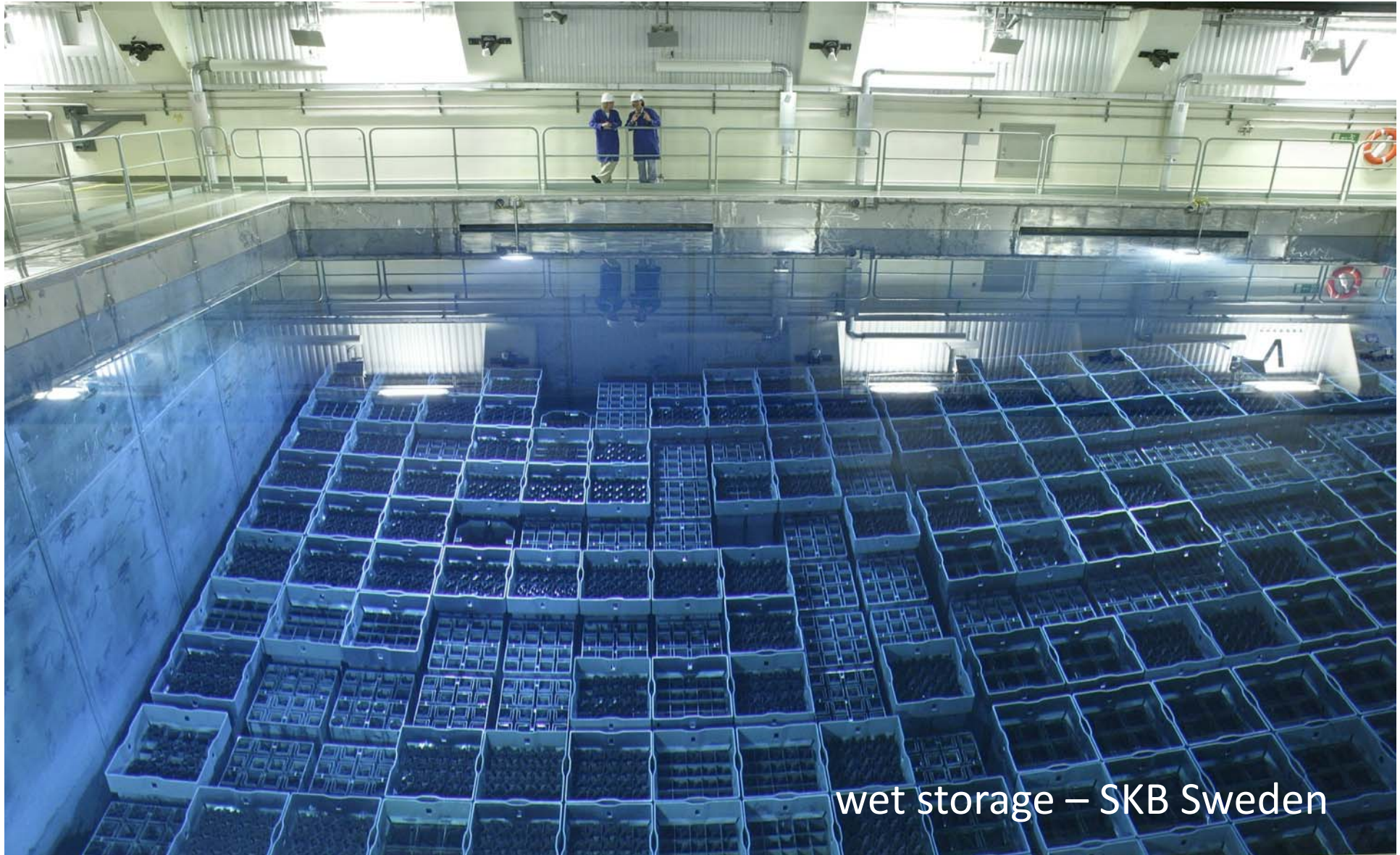
TIME for STORAGE

Isolate, Control
& Monitor

Storage connects
all steps in time



EXAMPLES SF/HLW



wet storage – SKB Sweden

EXAMPLES SF/HLW



dry/cask – ZWILAG Zwitterland

EXAMPLES SF/HLW



X
dry/vault – PURAM Hungary

EXAMPLES LLW



Bátaapáti PURAM Hungary

EXAMPLES LLW



Belgoprocess - Belgium

EXAMPLES LLW



Dansk Decommissioning – Denmark

EXAMPLES LMLW

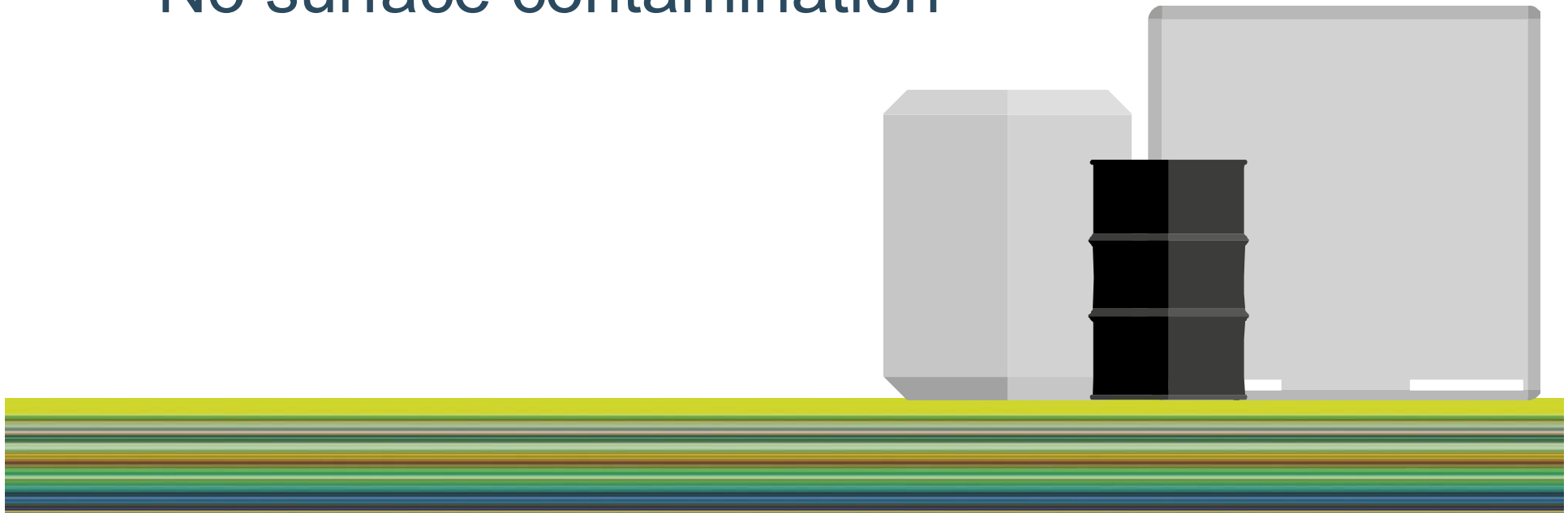


COVRA – The Netherlands

DESIGN & OPERATION

- Immobilization
- Small units
- Repairable
- No surface contamination

Conditioning



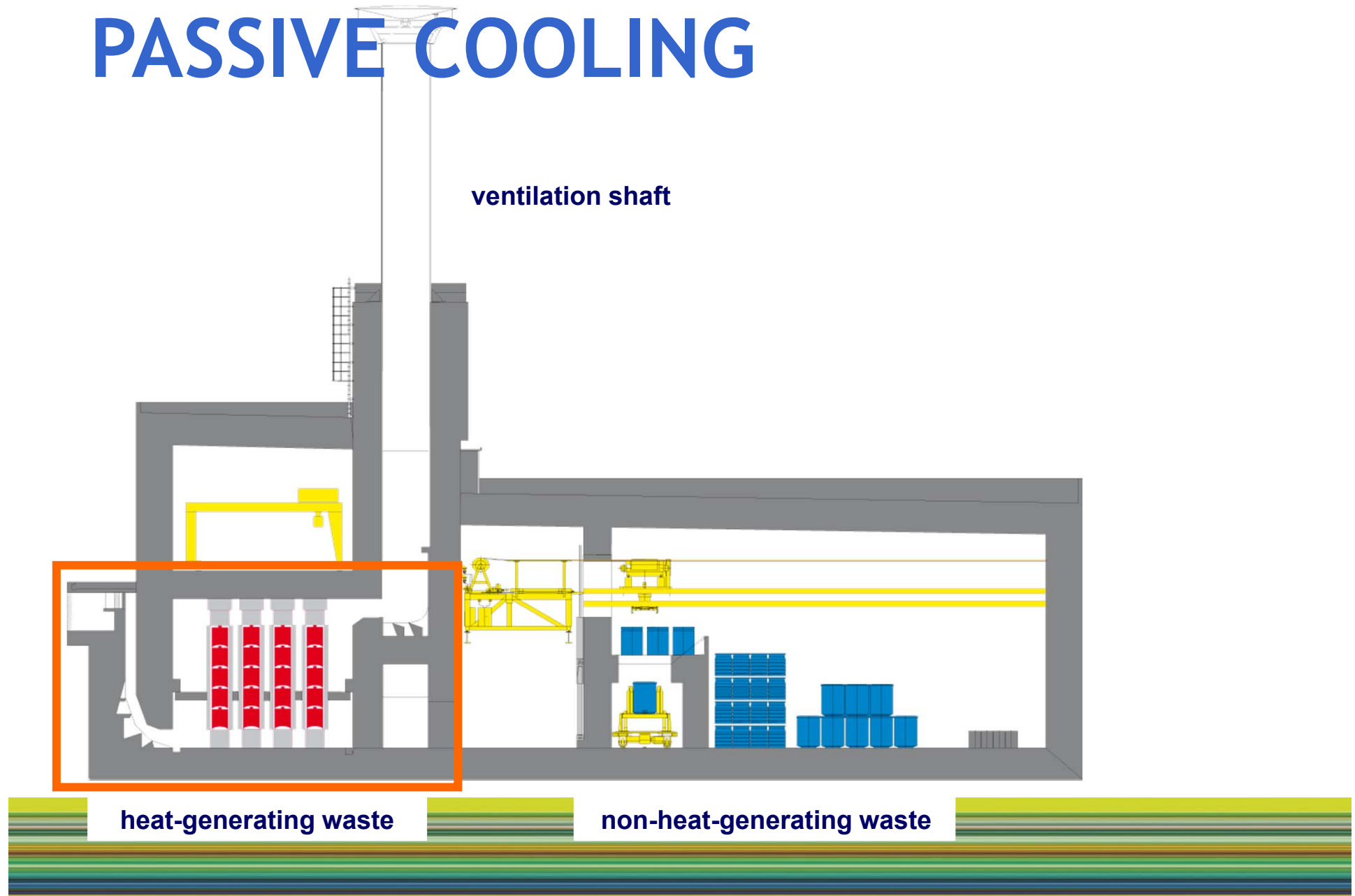
DESIGN & OPERATION

- Passive safety
- Defence in depth
- Proven technology
- Simple, robust storage buildings
- Minimal equipment
- Easy decontamination
- Humidity control

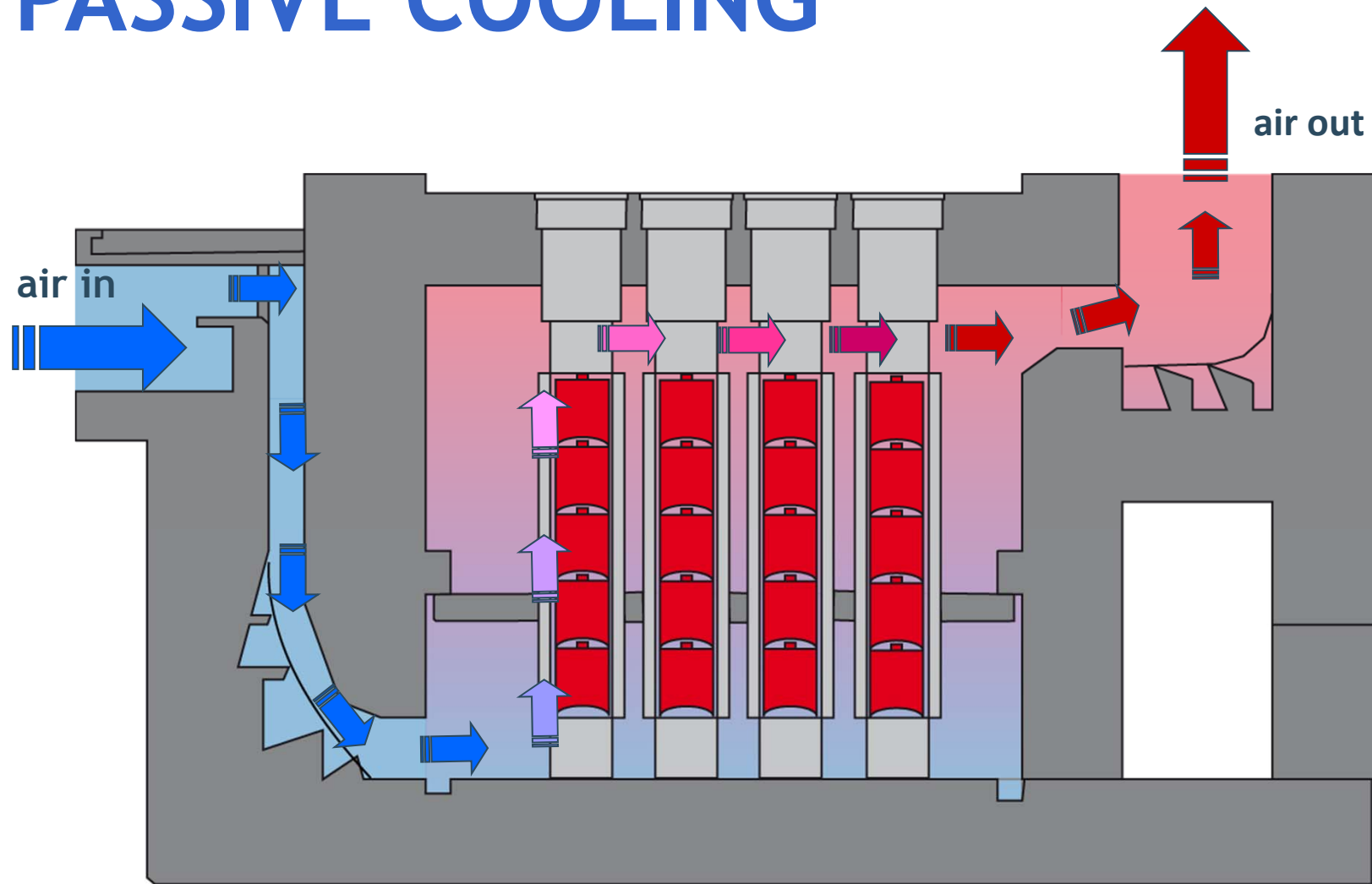
Building



PASSIVE COOLING



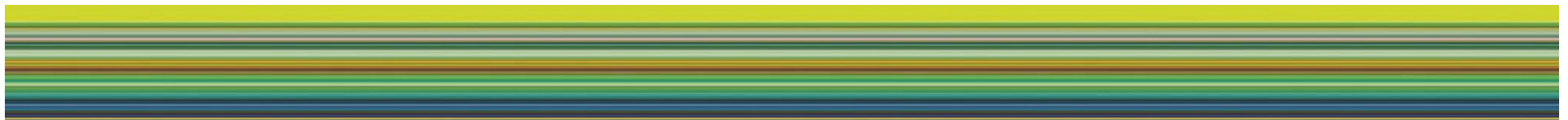
PASSIVE COOLING



DESIGN & OPERATION

Size matters?

- Safety and Security
- Emplacement and Retrieval
- Shielding (and Cooling)
- Monitoring and Inspection



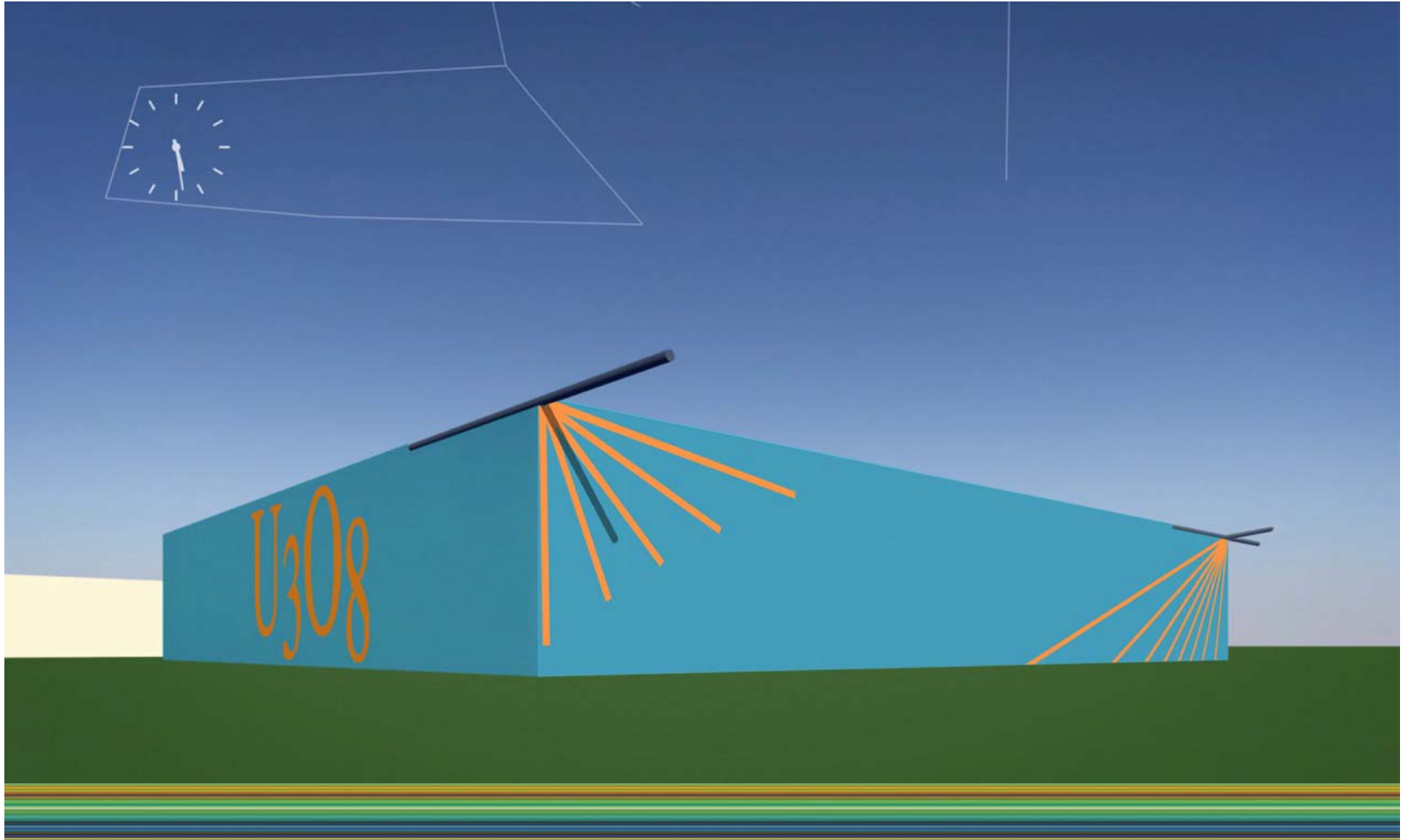
EMOTION



EMOTION



EMOTION



The ART of STORAGE

**TIME to CONSIDER
SAFE is BEAUTIFUL**