SPENT NUCLEAR FUEL STORAGE
BASIC CONCEPT
Eletronuclear Policy

"Almirante Álvaro Alberto Nuclear Power Plant shall own sufficient storage capacity for the total amount of spent fuel elements generated during the life time of the units 1, 2 and 3 (60 years), comprising the storage pools of the units and a specific external store to be constructed in the Power Plant area."

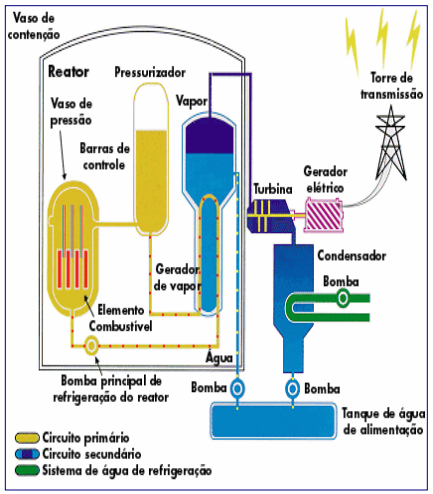
ANGRA 1+2 ➔ OPERATIONAL REQUIREMENTS
Storage Capacity of the Internal Pools

Angra	Storage capacity of the internal pools (assemblies)	Number of assemblies into the reactor core (assemblies)	End of storage capacity of the internal pools (year)
1	1252	121	2020
2	1084	193	2018

SPENT FUEL COMPLEMENTARY STORAGE UNIT - CNAAA
Brazil - Responsibilities

ELETRONUCLEAR
ETN

COMISSÃO NACIONAL DE ENERGIA NUCLEAR
CNEN



POOL

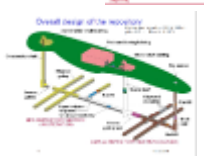
UNITS

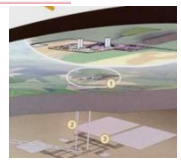
POOL

Wet

SPENT FUEL COMPLEMENTARY STORAGE UNIT (ON SITE)

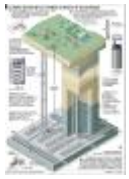
RECYCLING AND REPROCESSING

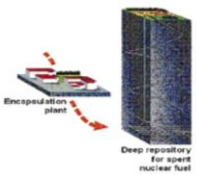




CENTRALIZED LONG TERM INTERIM STORAGE (RETRIEABILITY

LONG TERM STORAGE (GEOLOGICAL)





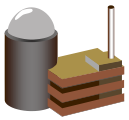
SPENT FUEL COMPLEMENTARY STORAGE UNIT - CNAAA
ELETRONUCLEAR Strategy

CENTRAL NUCLEAR ALMIRANTE ÁLVARO ALBERTO NUCLEAR – CNAAA

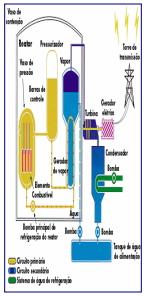
INITIAL STORAGE

DICOMBUS - CNEN

LONG TERM STORAGE COMPLEX



POWER PLANTS



ANGRA 1

ANGRA 2

ANGRA 3

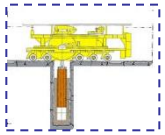
SPENT FUEL TRANSPORT

Long Term Dry Storage Development Laboratory

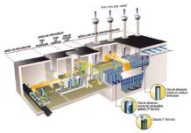
Spent Fuel Complementary Storage Unit

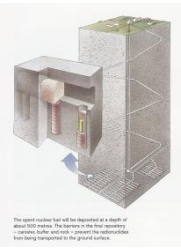
HOT CELL / ENCAPSULATION UNT

TRANSFERENCE CASK AND DEVICE



CENTRALIZED INTERIM STORAGE





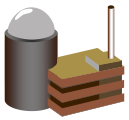
LONG TERM STORAGE

SPENT FUEL COMPLEMENTARY STORAGE UNIT - CNAAA
ELETRONUCLEAR Strategy

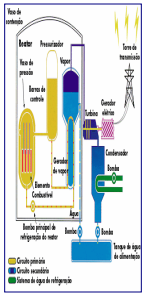
CENTRAL NUCLEAR ALMIRANTE ÁLVARO ALBERTO NUCLEAR - CNAAA

INITIAL STORAGE

DICOMBUS - CNEN LONG TERM STORAGE COMPLEX



POWER PLANTS



ANGRA 1

ANGRA 2

ANGRA 3

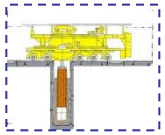
Long Term Dry Storage Development Laboratory

SPENT FUEL TRANSPORT

Spent Fuel Complementary Storage Unit

2018

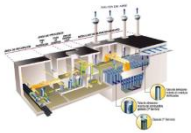
TRANSFERENCE CASK AND DEVICE

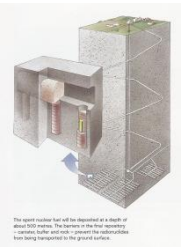


HOT CELL / ENCAPSULATION UNT

2026

CENTRALIZED INTERIM STORAGE





LONG TERM STORAGE

SPENT FUEL COMPLEMENTARY STORAGE UNIT - CNAAA
Conceptual Design

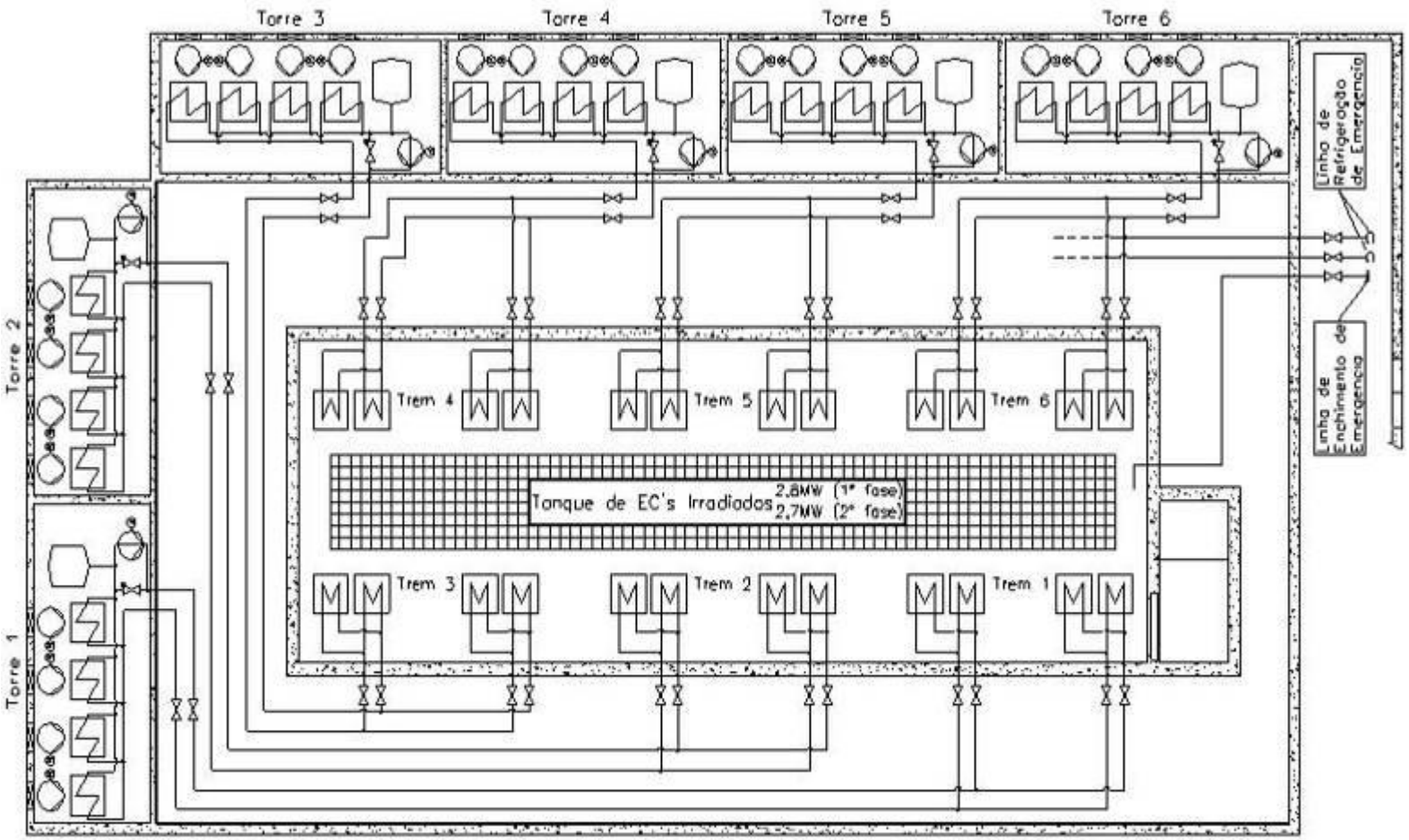
- The Spent Fuel Complementary Storage Unit will be composed of wet storage tanks, with similar conception and design of the power plants spent fuel pools;
- The Unit is being designed with two modules to be implemented in phases of construction;
- The first module will be operating in 2018, and will have a storage capacity of 2,400 fuel assemblies. The second module should have a storage capacity of 2,400 fuel assemblies;
- The heat loads are:

NPP	Unit Heat (kWt)	UFC 1		UFC 2		TOTAL	
		SFs (unit)	Heat (kWt)	SFs (unit)	Heat (kWt)	SFs (unit)	Heat (kWt)
Angra 1	0,99	900	891	1.200*	1.188*	2.100*	2.079*
Angra 2	1,25	1.500	1.875	1.200*	1.500*	2.700*	3.375*
Angra 3							
TOTAL		2.400	2.766	2.400*	2.688*	4.800*	5.454*

* The values for UFC 2 should be confirmed during the planning of the 2nd construction phase.

SPENT FUEL COMPLEMENTARY STORAGE UNIT - CNAAA
Site Selection

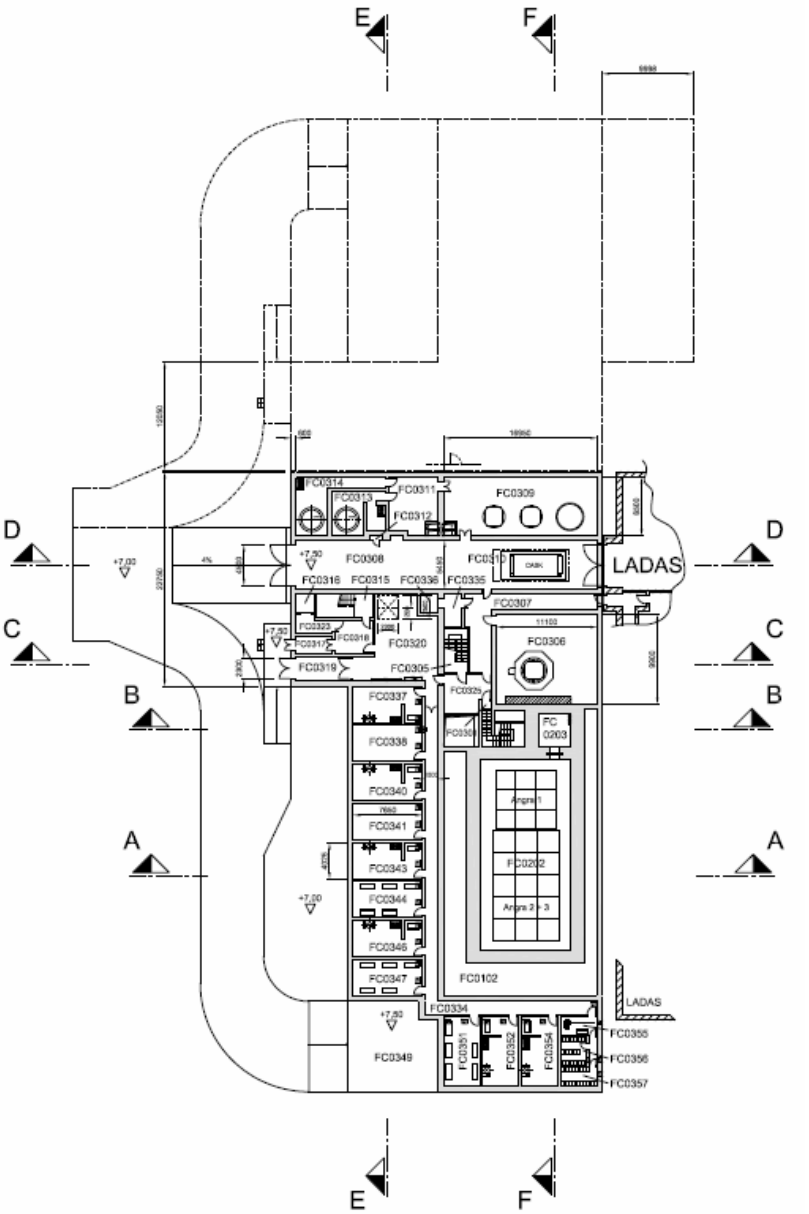
CONCEPTUAL DESIGN – Flow diagram



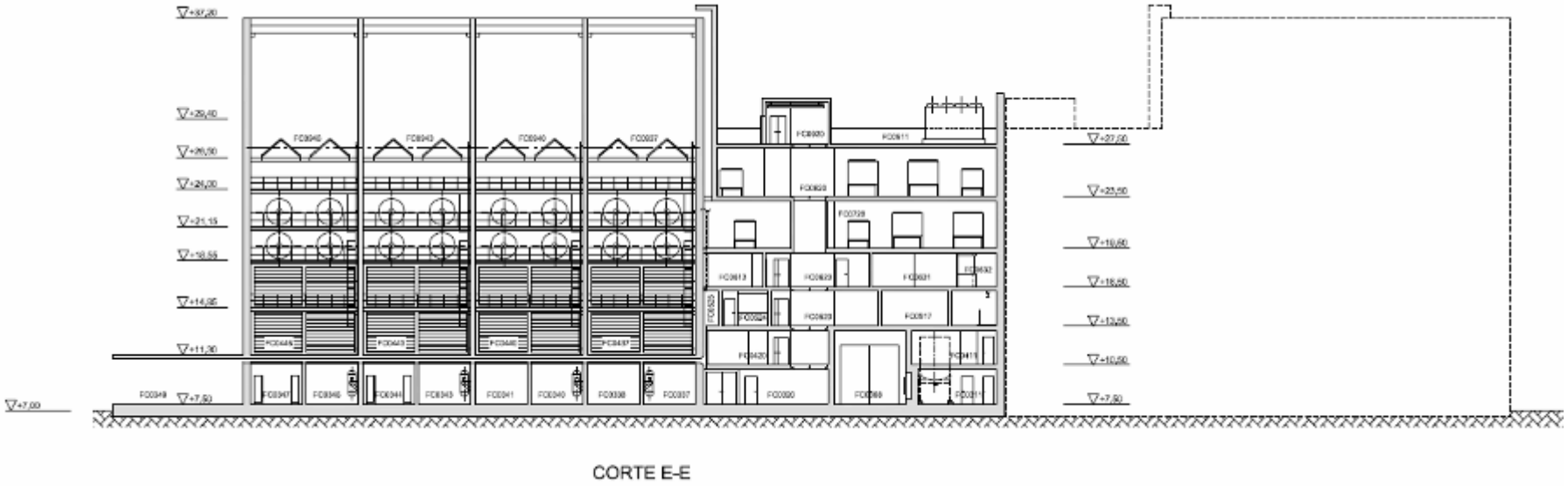
CONCEPTUAL DESIGN – Layout

2ª Phase of Constuction

1ª Phase of Constuction



CONCEPTUAL DESIGN – Layout

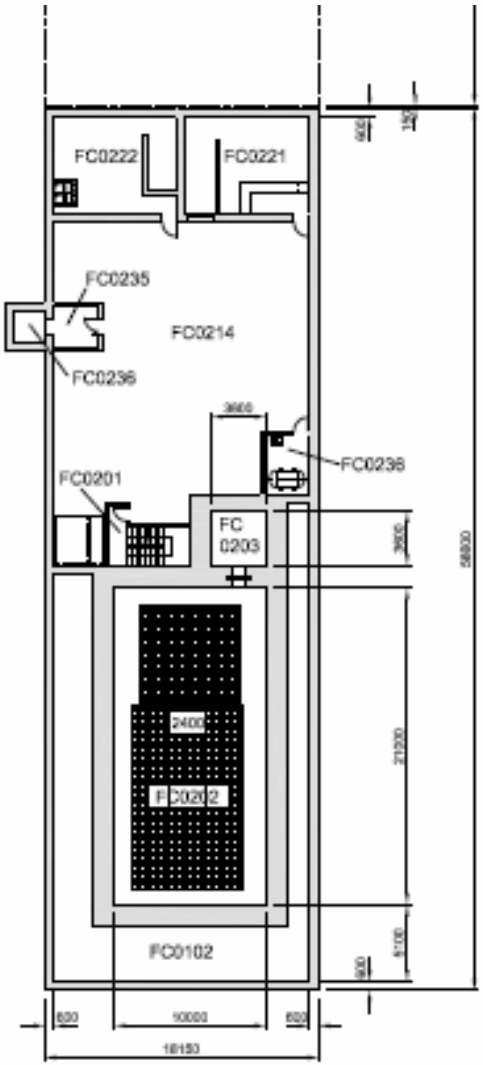


CORTE E-E

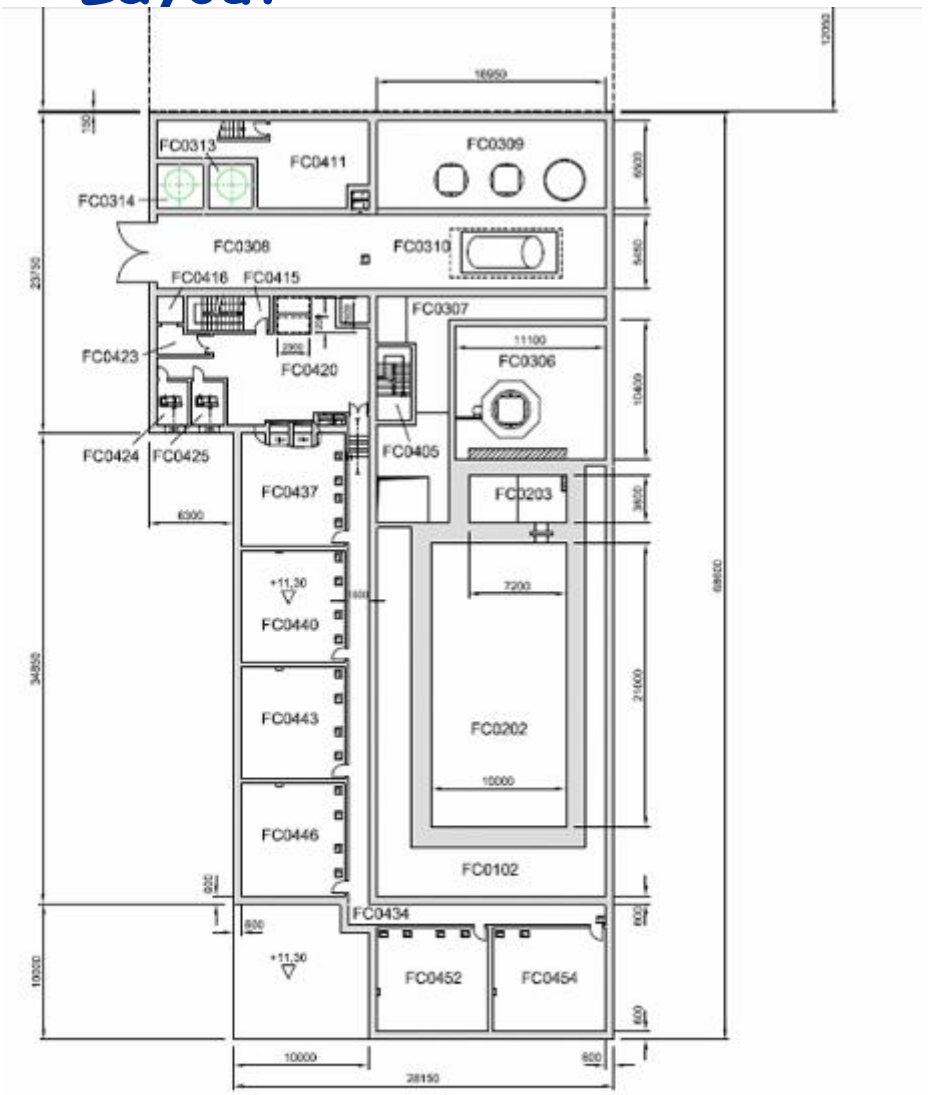
1ª Phase of Constuction

2ª Phase of Constuction

CONCEPTUAL DESIGN – Layout

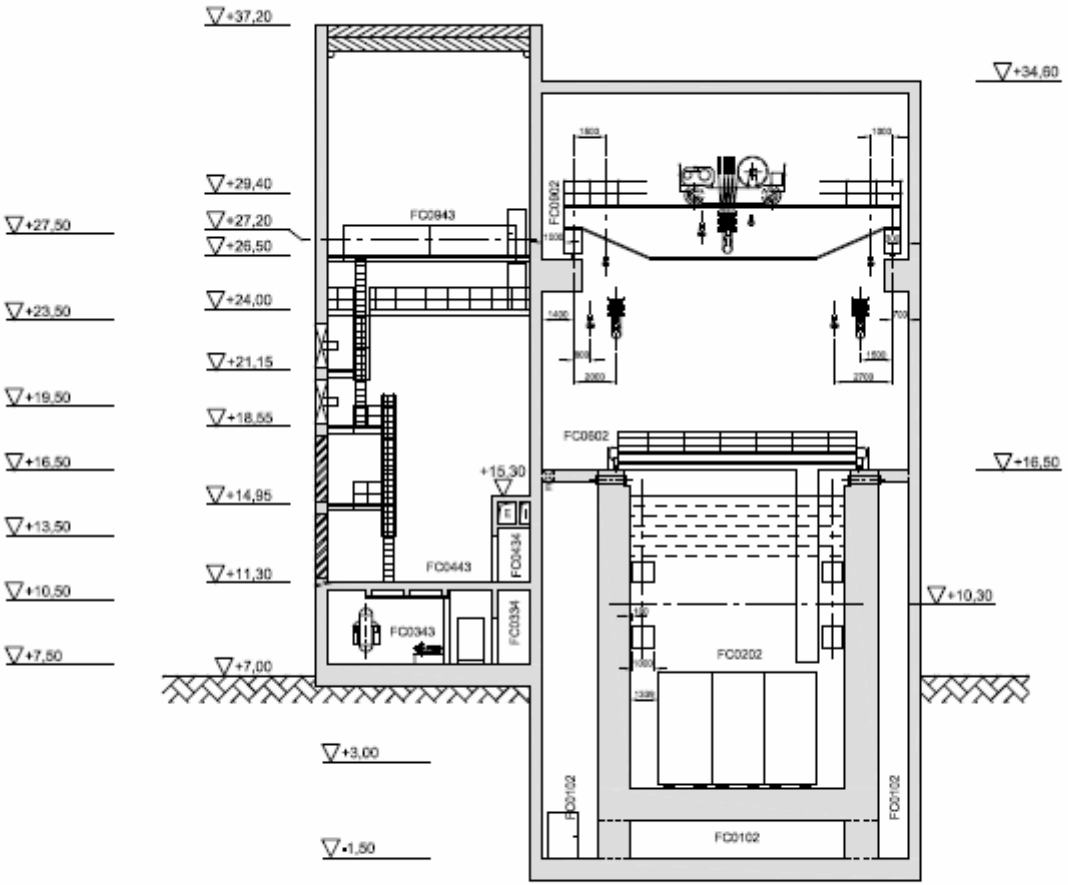


EL. +3,00 m



EL. +10,50 m

CONCEPTUAL DESIGN – Layout



CORTE A-A