

EDISON POWERPLANTS

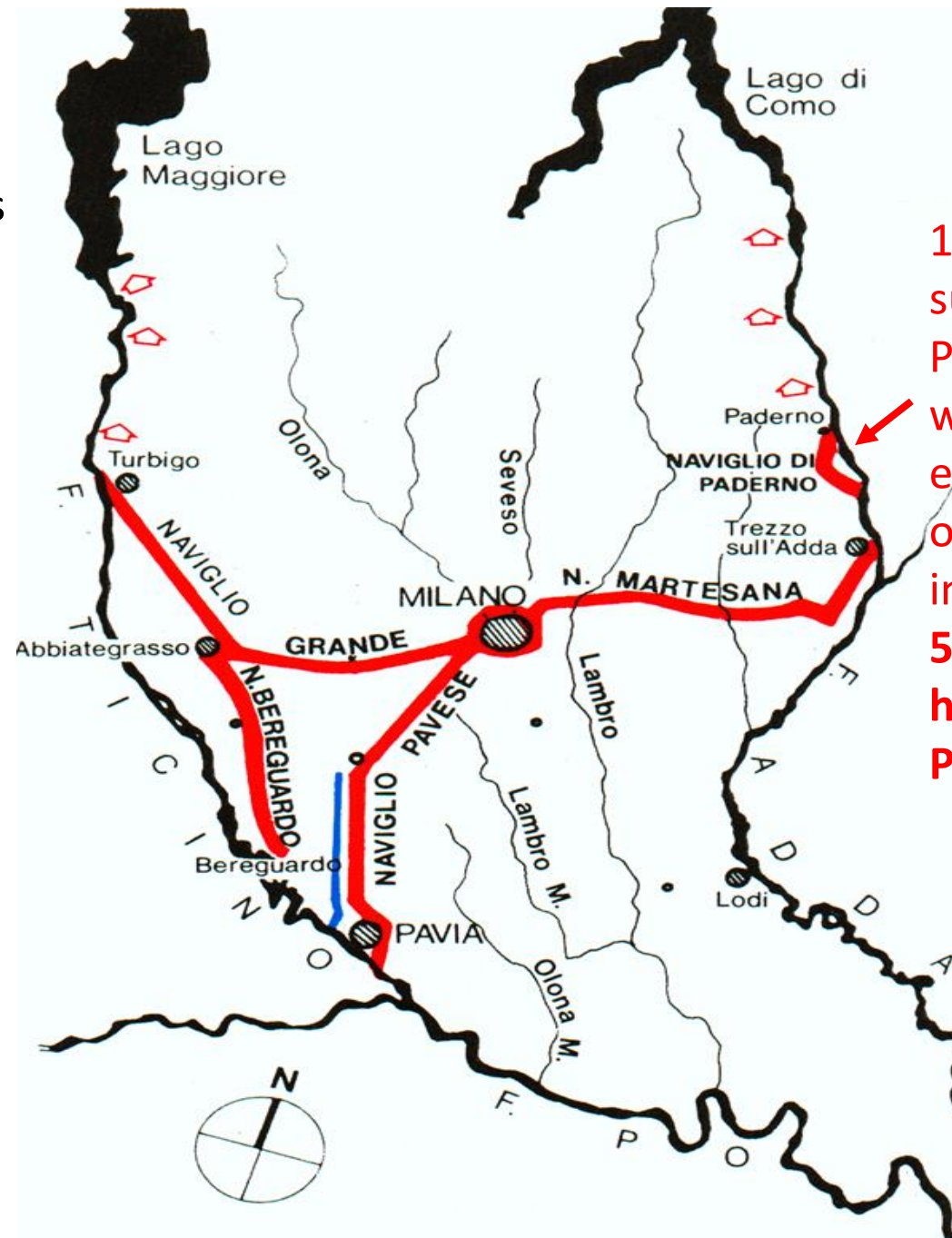
BERTINI, ESTERLE, SEMENZA

ADDA RIVER

The map shows the navigable canals around Milan.

The Naviglio Grande was completed in 1272 connecting the Ticino river to Milan and the Martesana, built in 1460, connecting Milan to the Adda river.

In 1777 Maria Teresa completed the Naviglio di Paderno, which connected Milan to the Lake of Como, overcoming the Adda rapids. The first studies were made by Leonardo da Vinci in 1515. The Naviglio Pavese was completed in 1820.



1896 Edison made a surelevation of Paderno dam, by a wooden system, and enlarged the first part of Naviglio in order to increase the flow up to **51 m³/s** for the first hydropowerplant Paderno „Bertini“



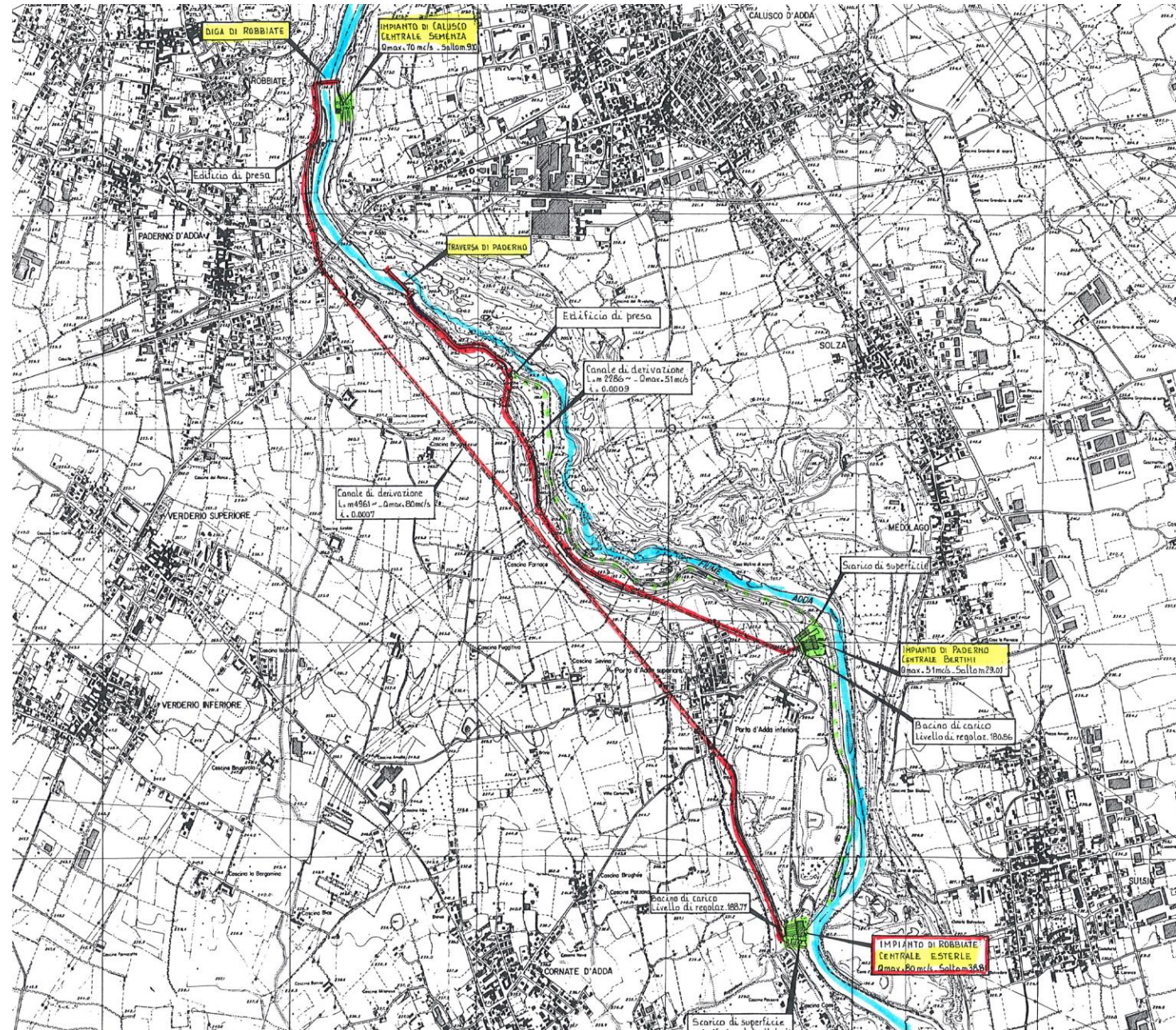


Landscape

Leonardo da Vinci painting



Edison powerplants



Powerplant Paderno "Angelo Bertini"

Construction year:	1898
Revamping year:	1999
Units:	4 Francis-Turbines
Max flow:	51 m ³ / s
Gross head:	29,10 m
Max Power:	12,4 MW
Type:	Run-of-river
Average yearly production:	74 GWh
River:	Adda

First powerplant in Europe delivering energy at long distance to Milan. The line was 40 km long, at 13500 V, without transformers



Wooden dam

Upstream view



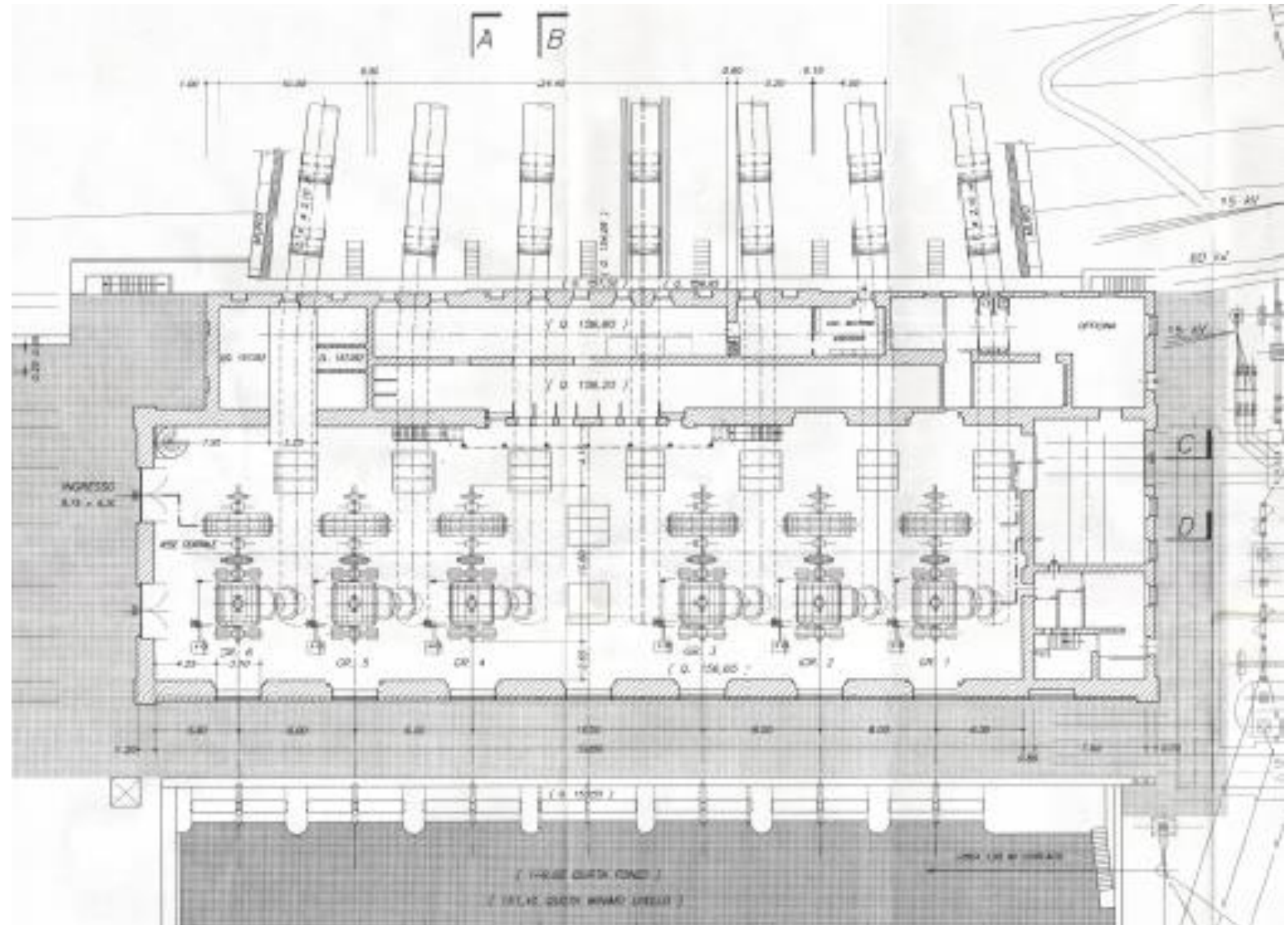


wooden dam during flood



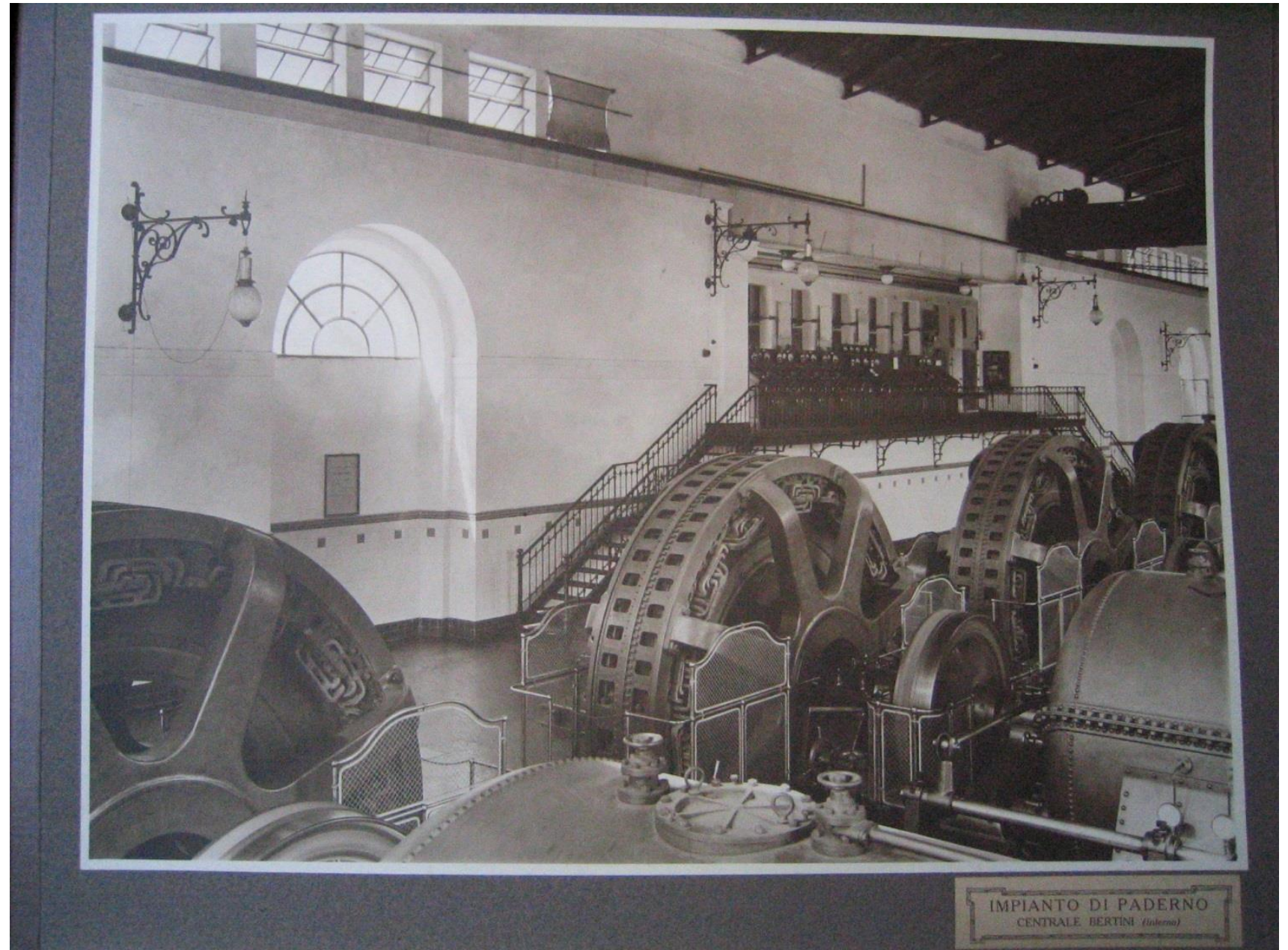
Gate before the tunnel inlet

powerhouse old layout

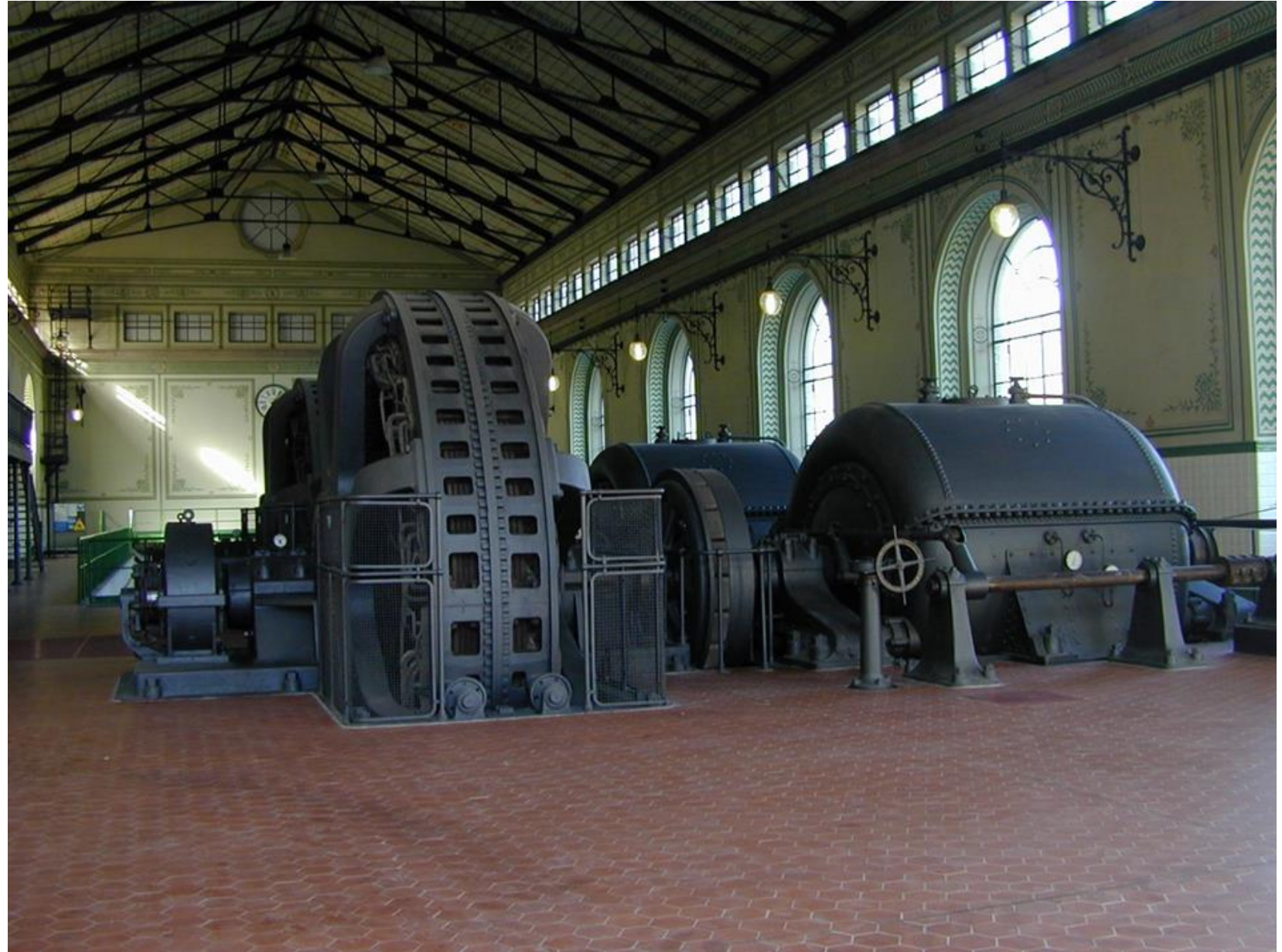


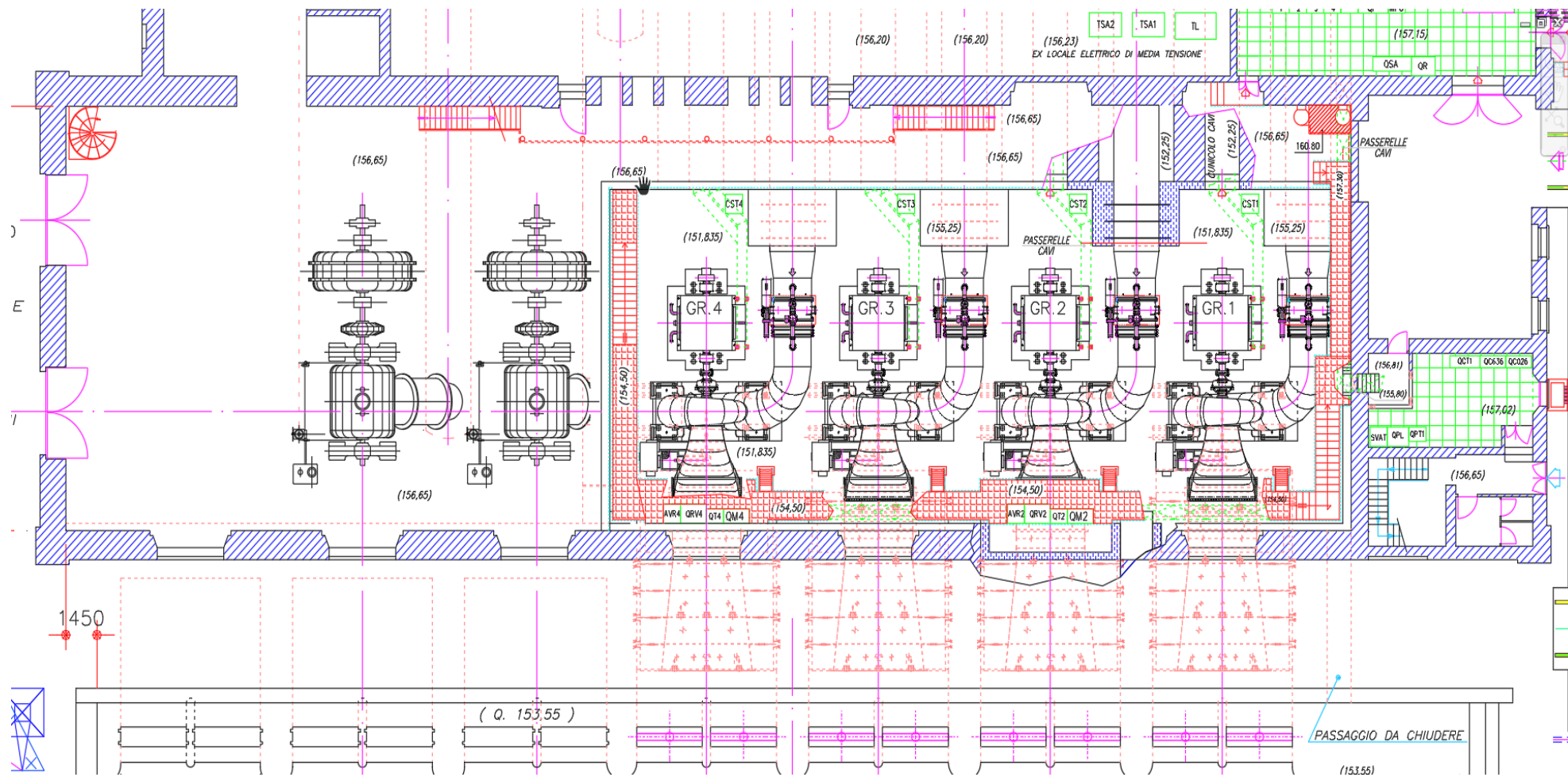


Old units

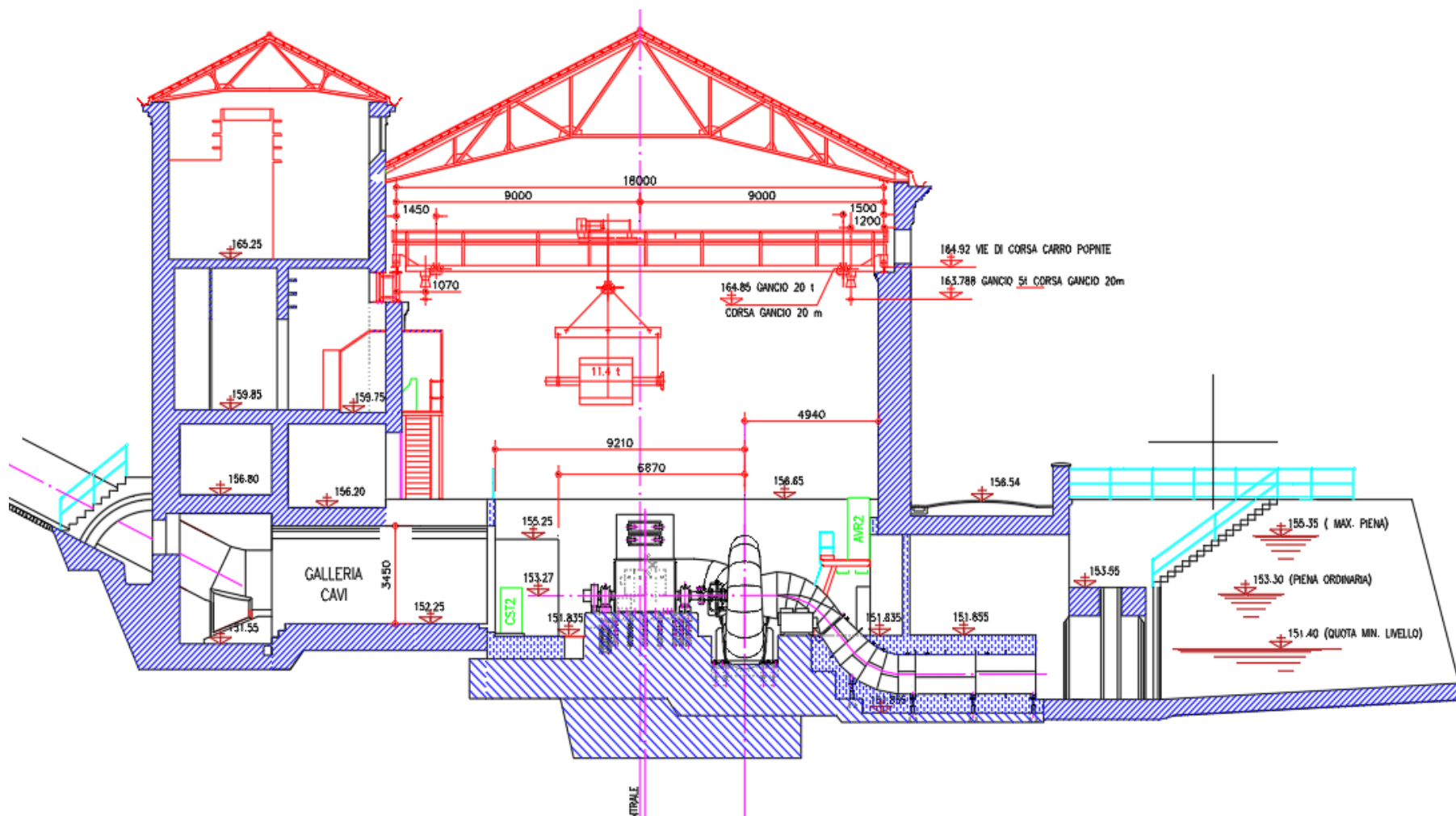


Old unit,
today as a museum





Revamping layout



Cross section



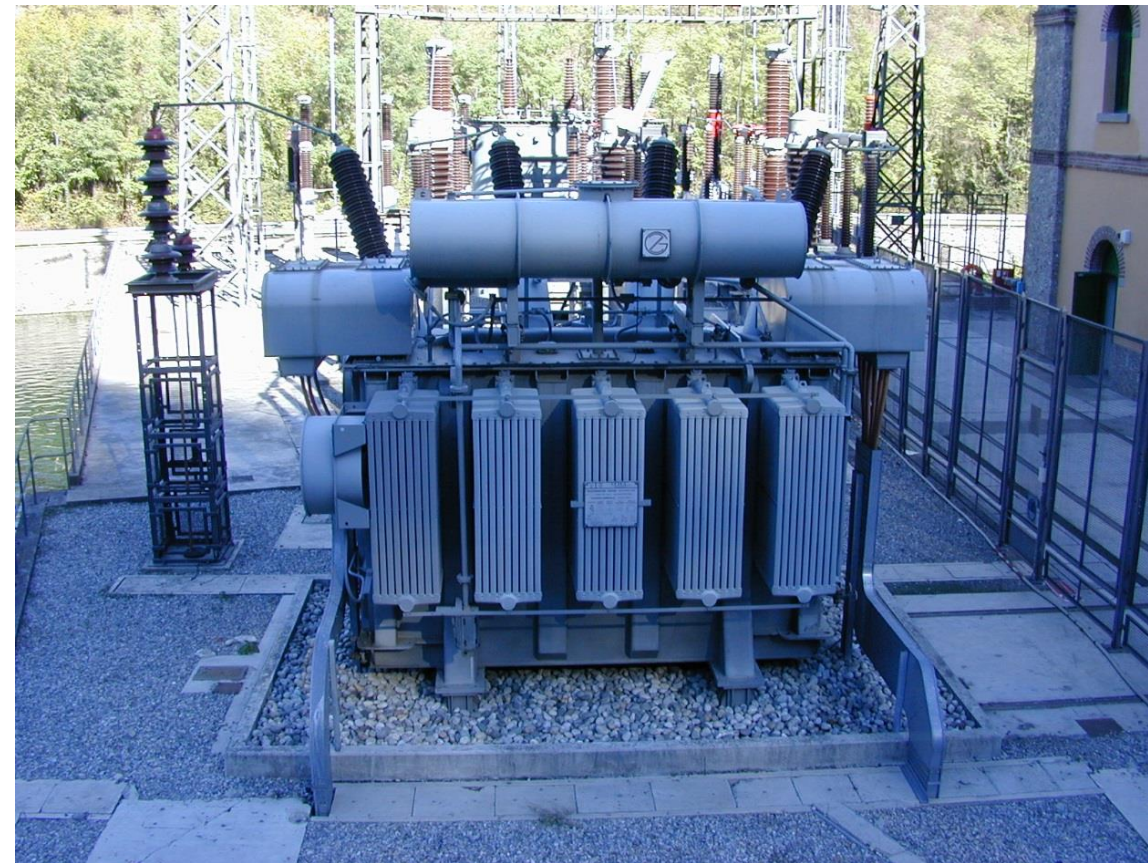
Revamping works







New penstocks



New transformer

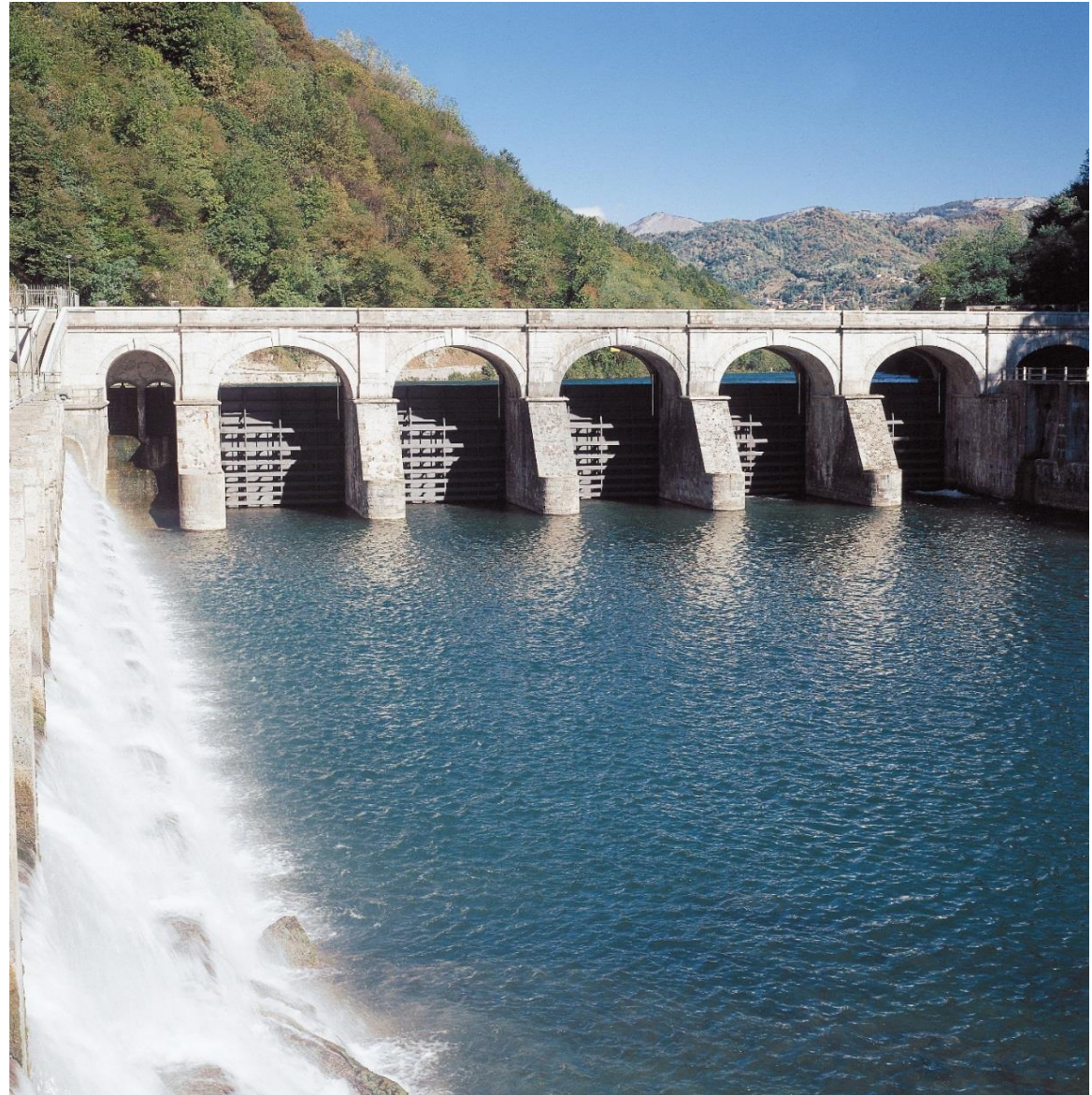


Bertini powerhouse today

Powerplant Robbiate "Carlo Esterle"

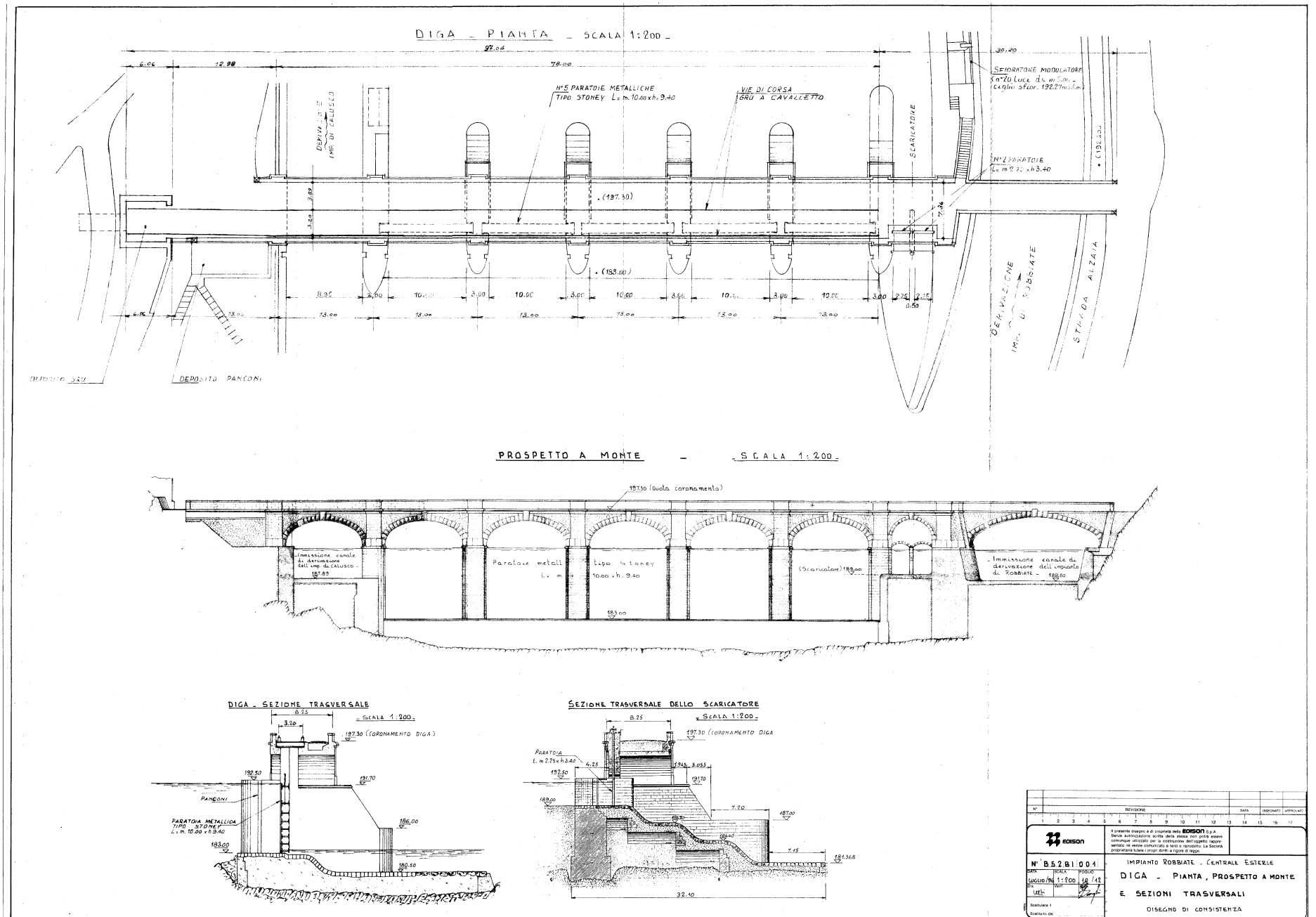
Construction year:	1914
Revamping period:	1998-2000
Units:	6 Francis-Turbines
Max flow:	80 m ³ / s
Gross head:	38,81 m
Max power:	25 MW
Type:	Run-of-river
Average yearly production	178 GWh
River:	Adda

Robbiate dam



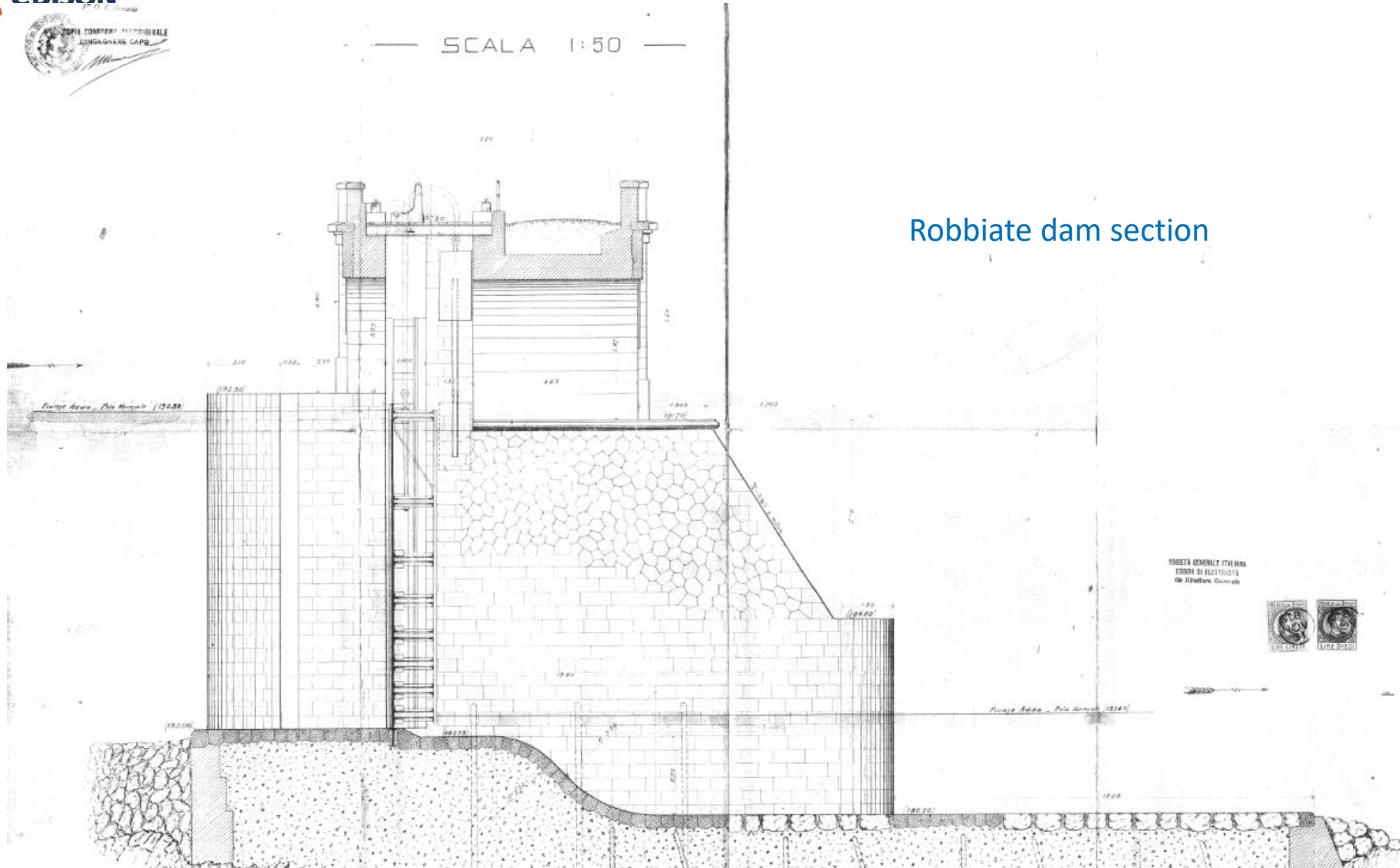


Navigation lock and fish-pass

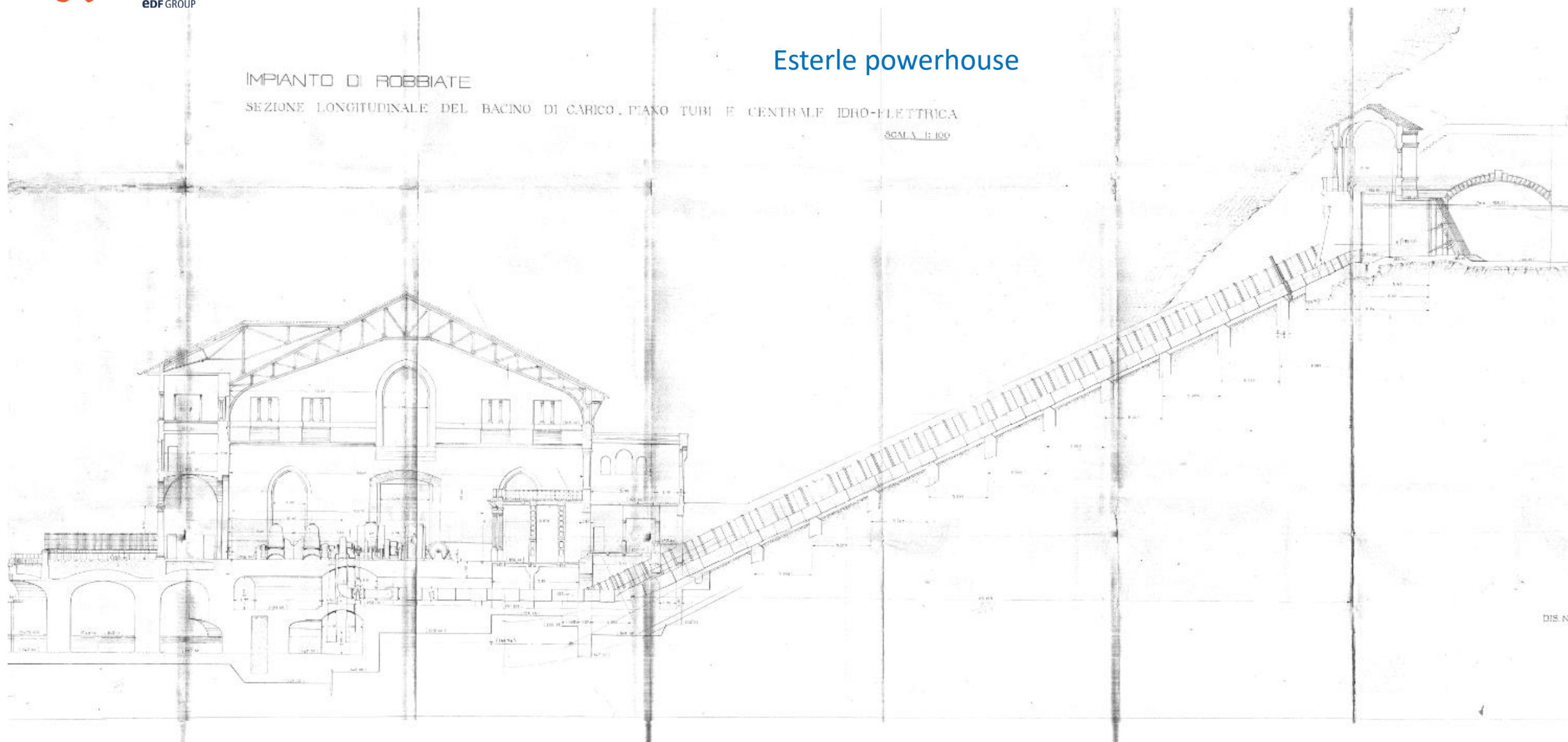


SCALA 1:50

Robbiate dam section

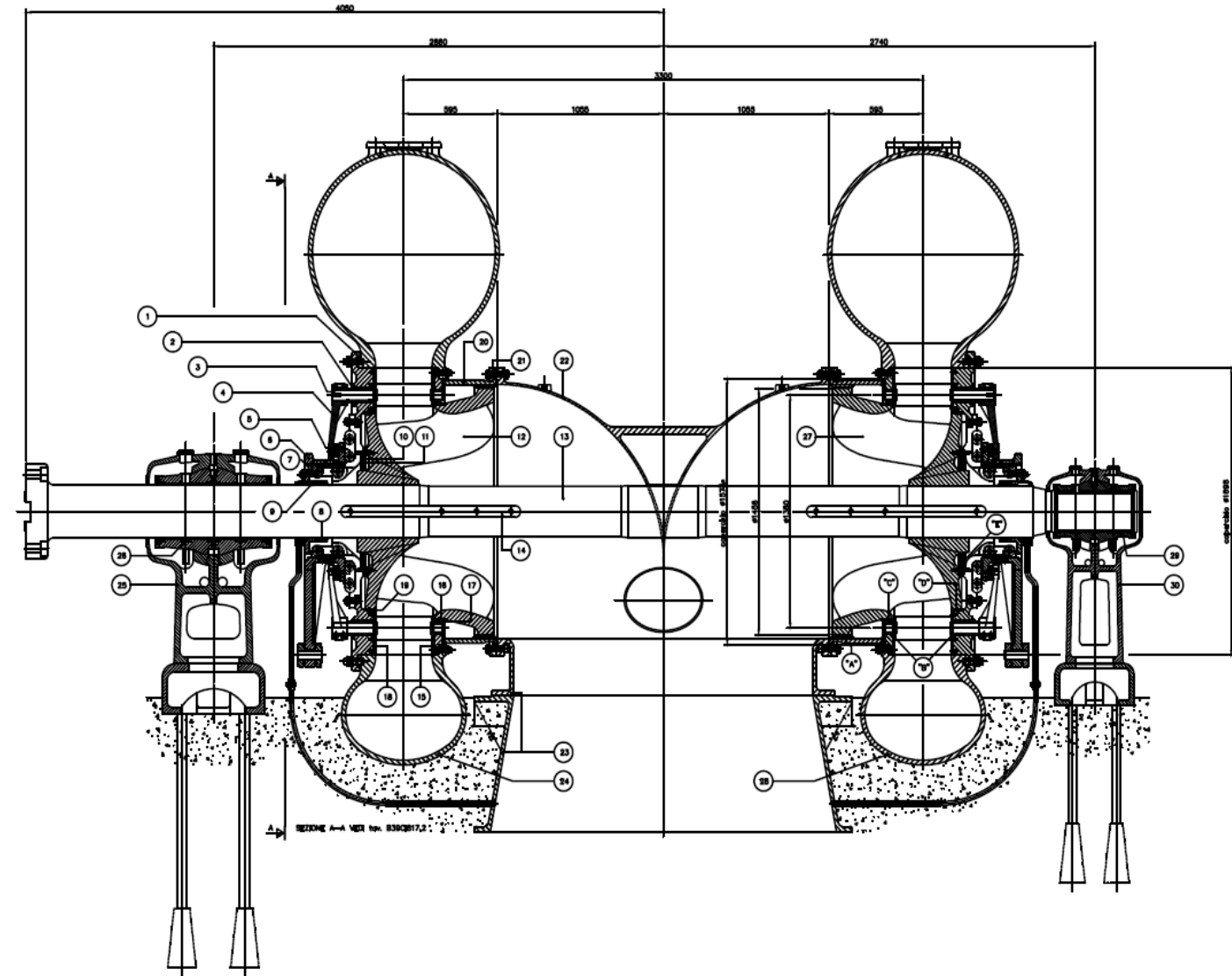


Esterle powerhouse









Turbine rehab



New runner



Turbine rehab

New transformer



Esterle powerhouse



Esterle powerhouse







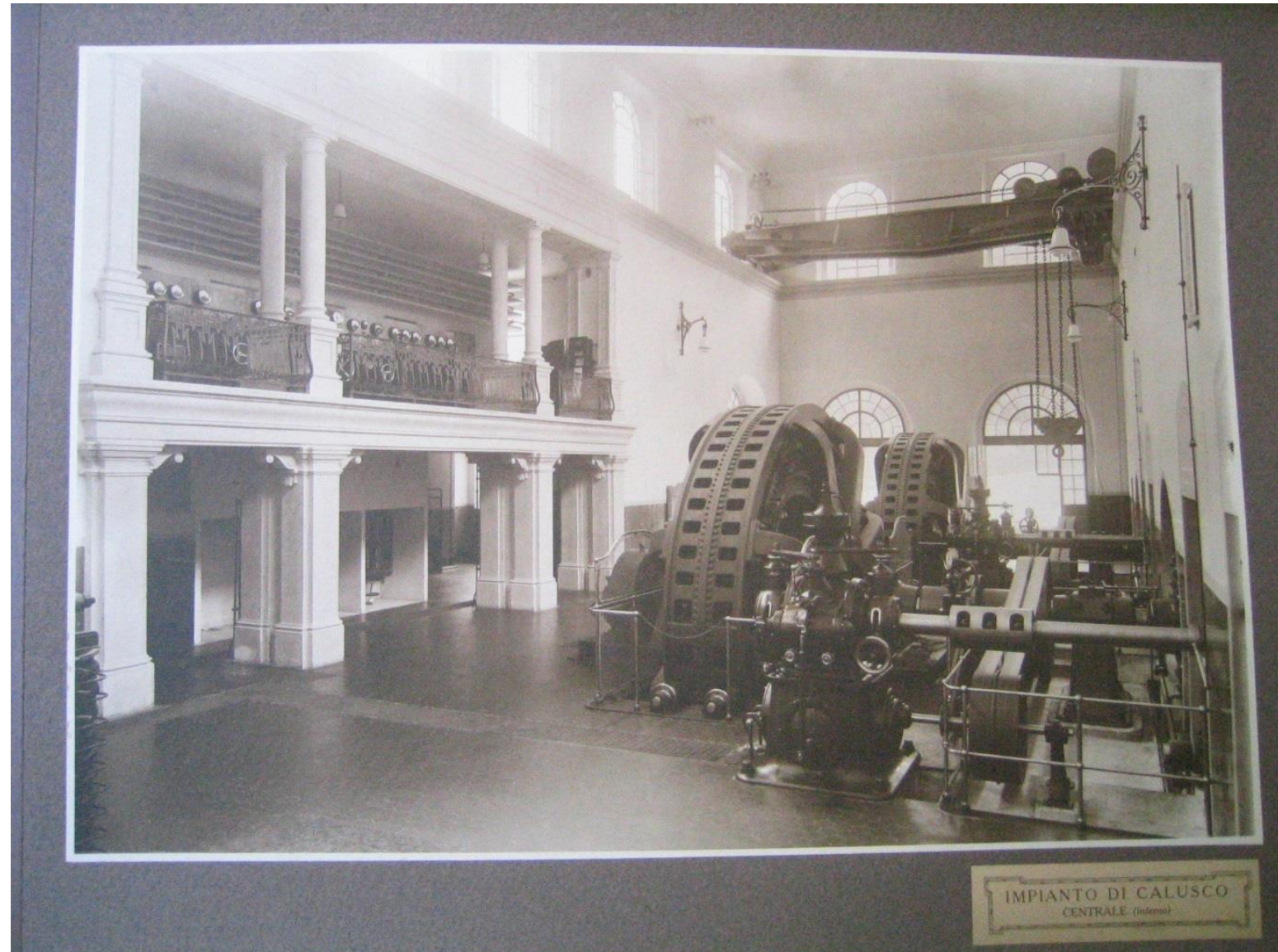
Powerplant Calusco "Guido Semenza"

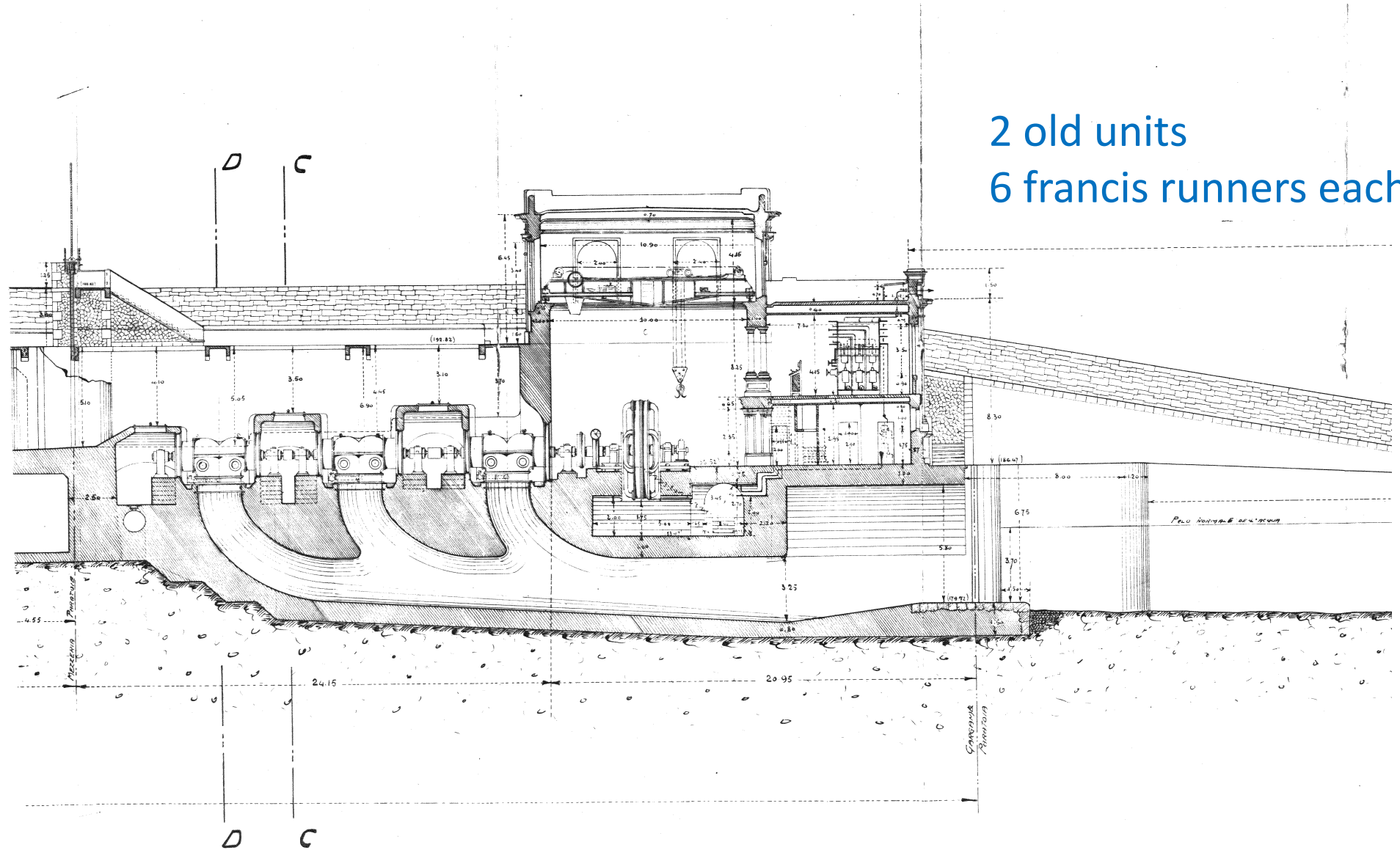
Construction year:	1920
Revamping year:	2003
Units:	2 Horizontal Kaplan-Turbine
Max flow:	70 m ³ / s
Gross head:	9,10 m
Max power:	6 MW
Type:	Run-of-river
Average yearly production:	32 GWh
River:	Adda

Semenza powerhouse



Old units





2 old units
6 francis runners each





Revamping works



New turbines



New generators



Environment

- The the adda plants since their construction had been equipped by fish-pass
- The navigation lock near the Robbiate dam, built to facilitate the connection to the lake of Como, was recently refurbished
- The ecological flow, imposed by law, released by the Semenza turbines , close to Robbiate dam, and released at the Paderno wooden dam
- Powerhouse buildings maintained in very good conditions
- Power plants are inside the Adda-nord regional park

Adda-nord regional park

The Adda-nord Park covers the coastal areas of the river Adda downstream Lake of Como. In this context the river, often between deep banks, highlighting the typical conglomerate named “ceppo”, and gives shape to a characteristic landscape, immortalized in Leonardo's painting.

The predominant productive activities are agriculture, mining and industries, both of ancient tradition and of new settlement. The park is particularly rich from an architectural and monumental point of view: in fact, the hydraulic engineering works and hydroelectric power plants, designed at the beginning of the century, which are inserted into the environment with singular elegance, are also noteworthy for other engineering works, including the iron bridge of Paderno, as well as examples of industrial archeology.