

IGHEM 2008

The 7° International Conference on Hydraulic Efficiency Measurements

LATEST A2A HYDRO-ELECTRIC INVESTMENTS – PURSUING BETTER EFFICIENCY

ATO/SIE-INGEGNERIA - R. Castellano

Casa dell'Energia – september 5th - 2008



A2A OVERVIEW

A2A WAS BORN ON 1ST JANUARY 2008 FROM THE MERGER OF AEM/ASM/AMSA

A2A COMES IN RESPONSE TO DEVELOPMENTS IN THE ITALIAN LOCAL UTILITIES SECTORS, WHICH IS BEING GRADUALLY OPENED TO COMPETITION.

AS A CONSEQUENCE, A CONSOLIDATION PROCESS IS UNDER WAY THAT IS RESULTING IN A SMALLER NUMBER OF LARGER ENTITIES.

THE COMBINED ENTITY HAS A SIZE COMPARABLE TO MAJOR EUROPEAN PLAYERS, AS THE FIGURES FOR 2007* SHOW:

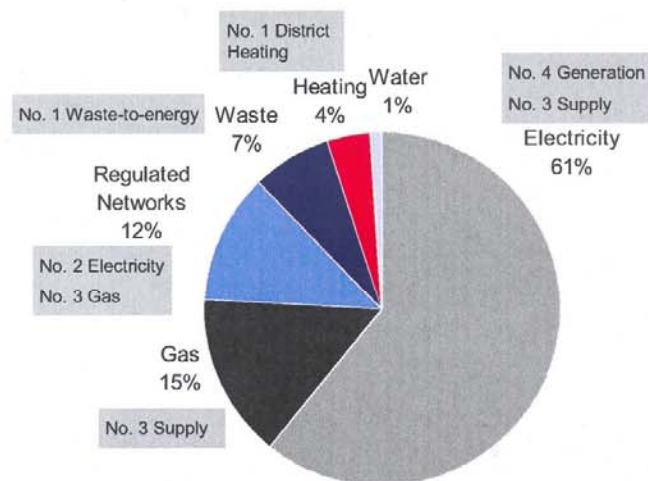
- REVENUES: EUR 5.2 BILLION;
- EBITDA: EUR 1.0 BILLION;
- STOCK MARKET CAPITALISATION IS APPROXIMATELY EUR 8 BILLION.

Financial and business overview

2006 Key financials

€mm	AMSA	AEM	ASM	Combined
Sales	320	6,852	2,052	9,224
EBITDA	52	1,400	381	1,833
% margin	16%	20%	19%	20%
Group Net Income	3	302	238	543
Capital employed ¹	201	9,126	2,336	-
ROCE ²	11.4%	10.5%	10.5%	-
Net debt 31/12/2007	82	4,915	802	5,799
ND/EBITDA	1.6x	3.5x	2.1x	3.2x
FFO/Net Debt ³	39%	20%	47%	24%
Net debt 31/03/2007	n.a.	4,424	693	-
Rating	-	BBB	A+	n.a.

2006 EBITDA breakdown



EBITDA = €1,8bn

Position in Italian market

¹ Defined as Net Debt + Equity

² Defined as EBIT (pre-equity investments) / (Net Debt + Equity – Minorities)

³ Defined as (Net Income + D&A) / Net Debt

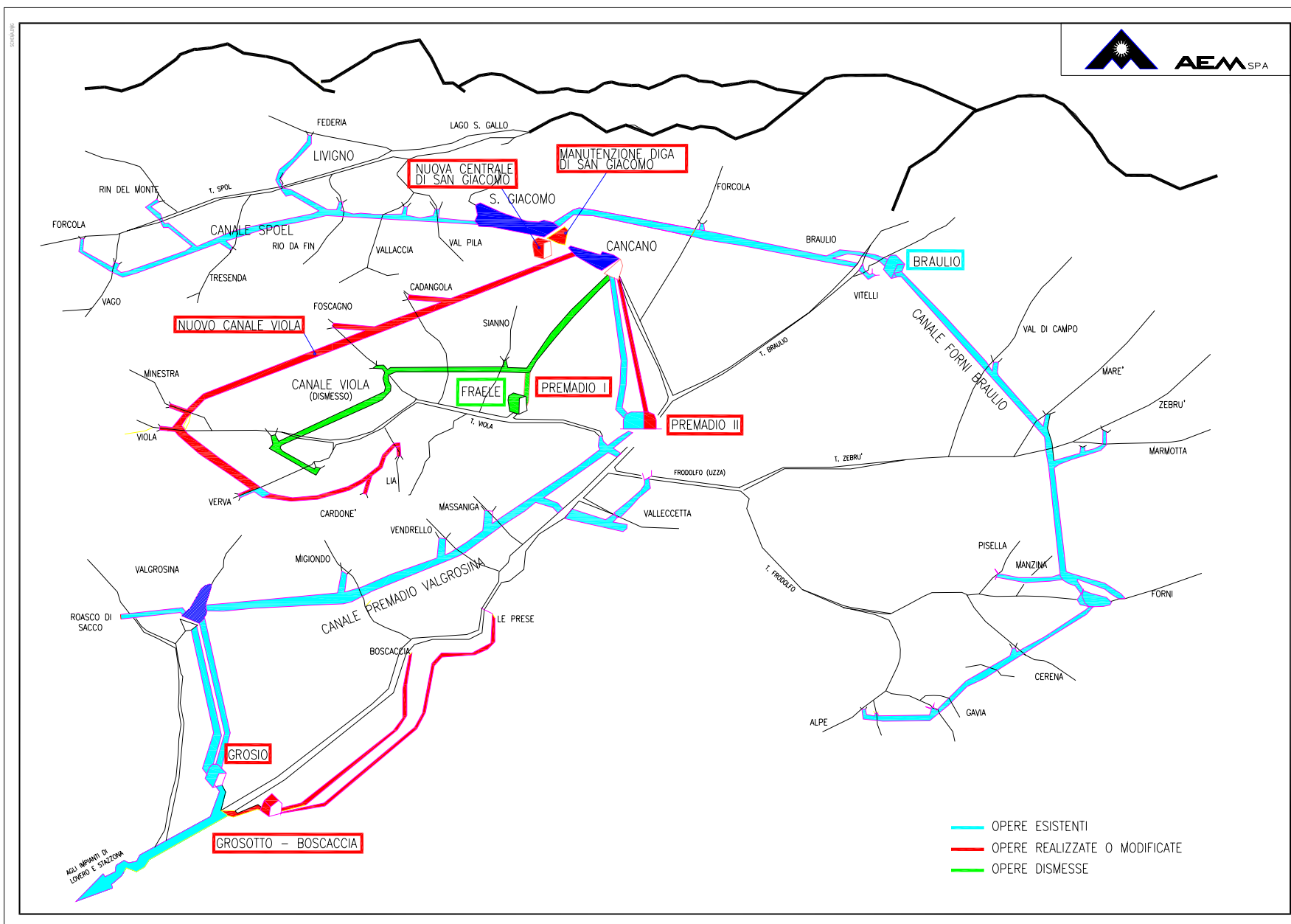
THE CORE OF A2A HYDROELECTRIC SYSTEM WAS BUILT IN THE PERIOD BETWEEN 1930 AND 1960.

TILL THE MID-NINETIES ITS MAIN PARTS WERE:

- 3 HYDRAULIC CANALS FROM THE INTAKES TO THE RESERVOIRS
- 2 RESERVOIRS WITH TOTAL VOLUME OF ABOUT 160 Mio m³
- 4 POWER PLANTS REGULATED BY THE RESERVOIRS (PREMADIO, GROSIO, LOVERO, STAZZONA)
- 2 RUN-OF-THE-RIVER POWER PLANTS (BRAULIO, FRAELE)

THE INSTALLED POWER WAS OF ABOUT 580 MW

ANNUAL PRODUCTIVITY: ABOUT 1500÷2000 GWh



IN THE NINETIES THE HYDRO ELECTRIC SYSTEM WAS MODERNIZED BY A NEW INVESTMENTS PROGRAMME WITH THE FOLLOWING AIMS:

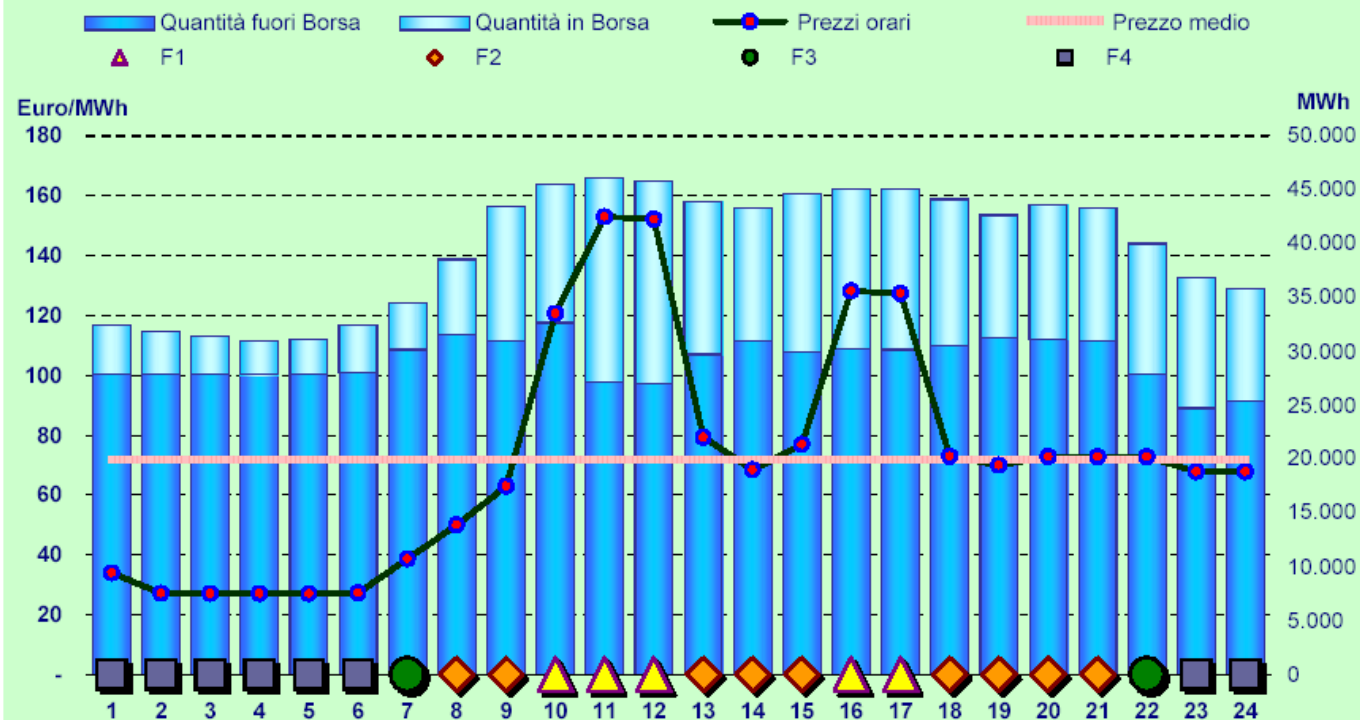
- 1) INCREASE INSTALLED POWER AND/OR RESERVOIR VOLUME, TO ACHIEVE AN INCREASE IN VALUE OF THE ENERGETIC PRODUCTION, PARTIALLY SHIFTING THE PRODUCTION FROM OFF-PEAK HOURS TO PEAK HOURS
- 2) INCREASE SYSTEM RELIABILITY
- 3) INCREASE ENERGY PRODUCTION, EVEN BY BETTER EFFICIENCY OF THE POWER PLANTS



Mercato del giorno prima

mercoledì 15 settembre 2004

	Prezzo Unico Nazionale - Euro / MWh			Quantità scambiate - MWh		Liquidità
	Media giornaliera	Minimo	Massimo	in borsa	nel Sistema Italia	
	ponderata Sistema Italia	Valori orari		Valori medi orari		
Fasce orarie	77,01	27,01	152,96	10.562	39.694	27%
F1	136,34	120,62	152,96	16.081	45.496	35%
F2	69,82	49,92	79,25	12.319	43.069	29%
F3	57,29	38,62	72,82	8.235	37.256	22%
F4	39,57	27,01	67,77	5.719	32.879	17%



San Giacomo di Fraele Dam

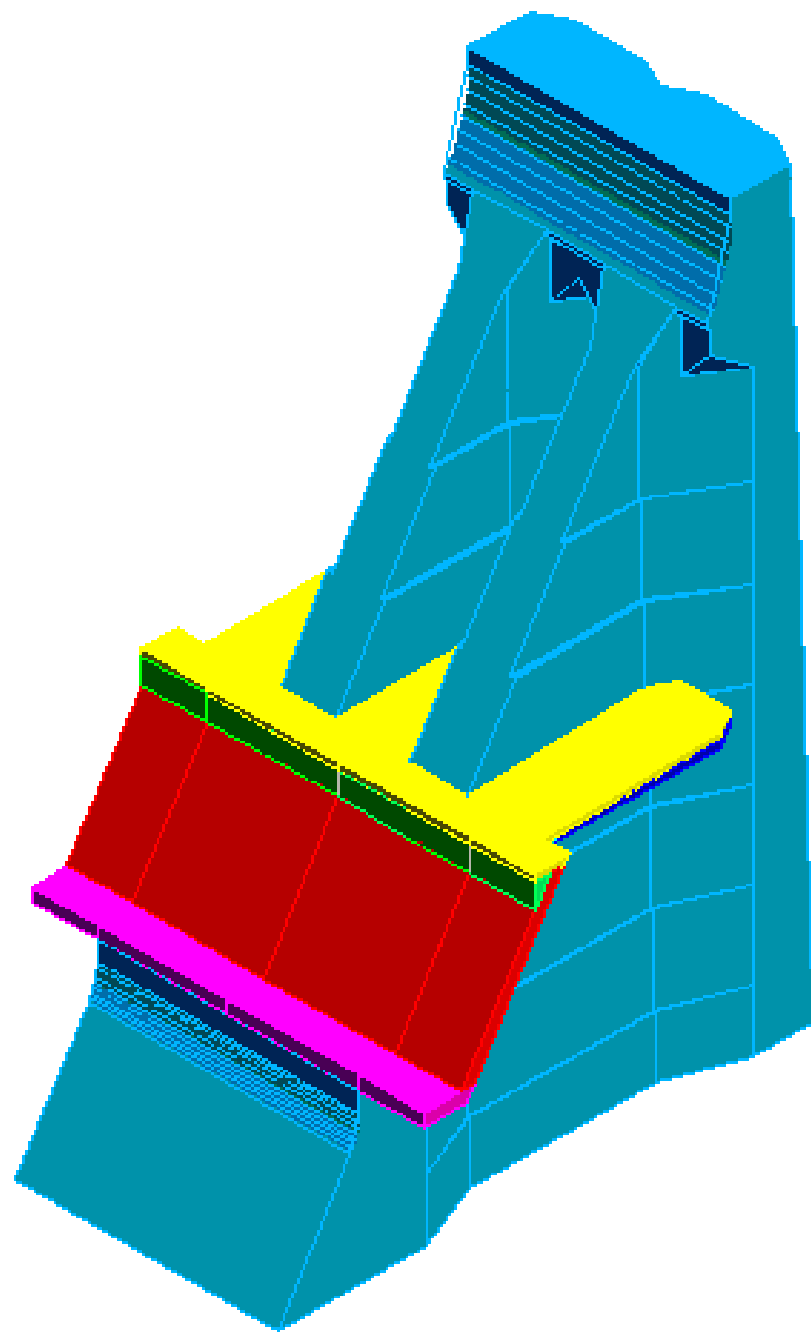
AIMS:

- 1) INCREASE RESERVOIR VOLUME
- 2) INCREASE SYSTEM RELIABILITY

ACHIEVED BY:

STRENGTHENING OF THE DAM RESULTING IN AN
INCREASED VOLUME OF ABOUT 20 Mio m³









San Giacomo di Fraele power plant

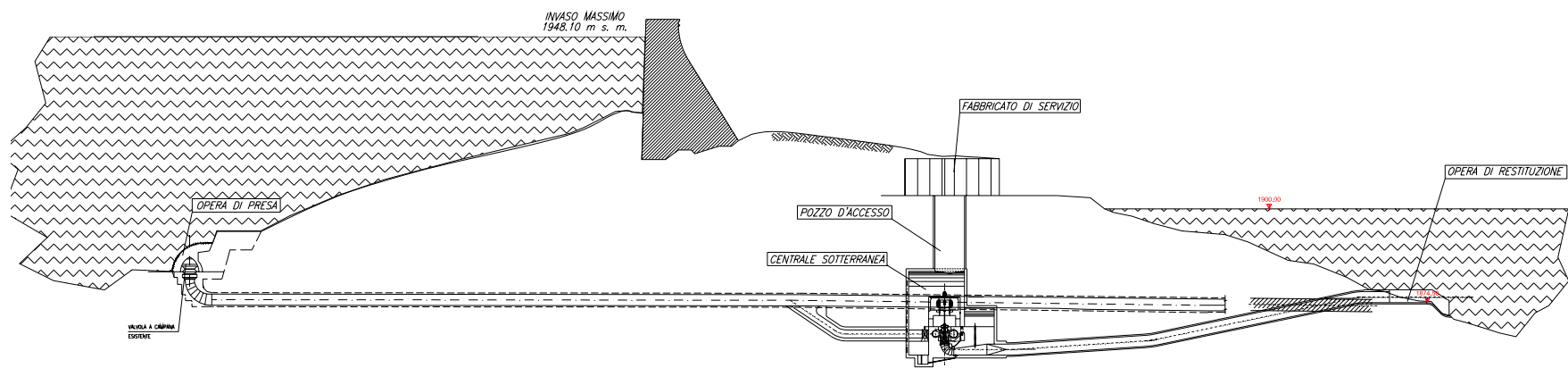
AIMS:

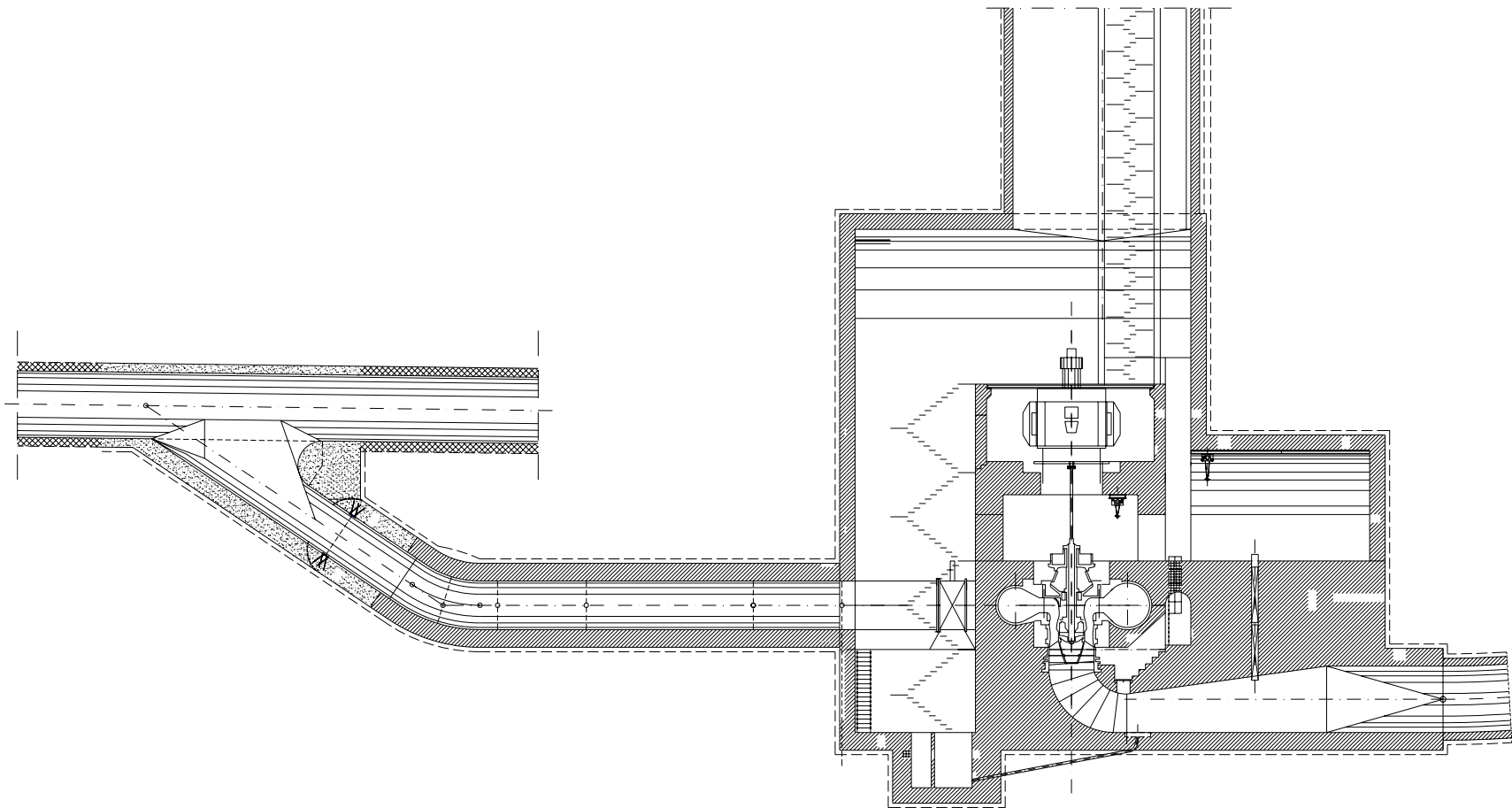
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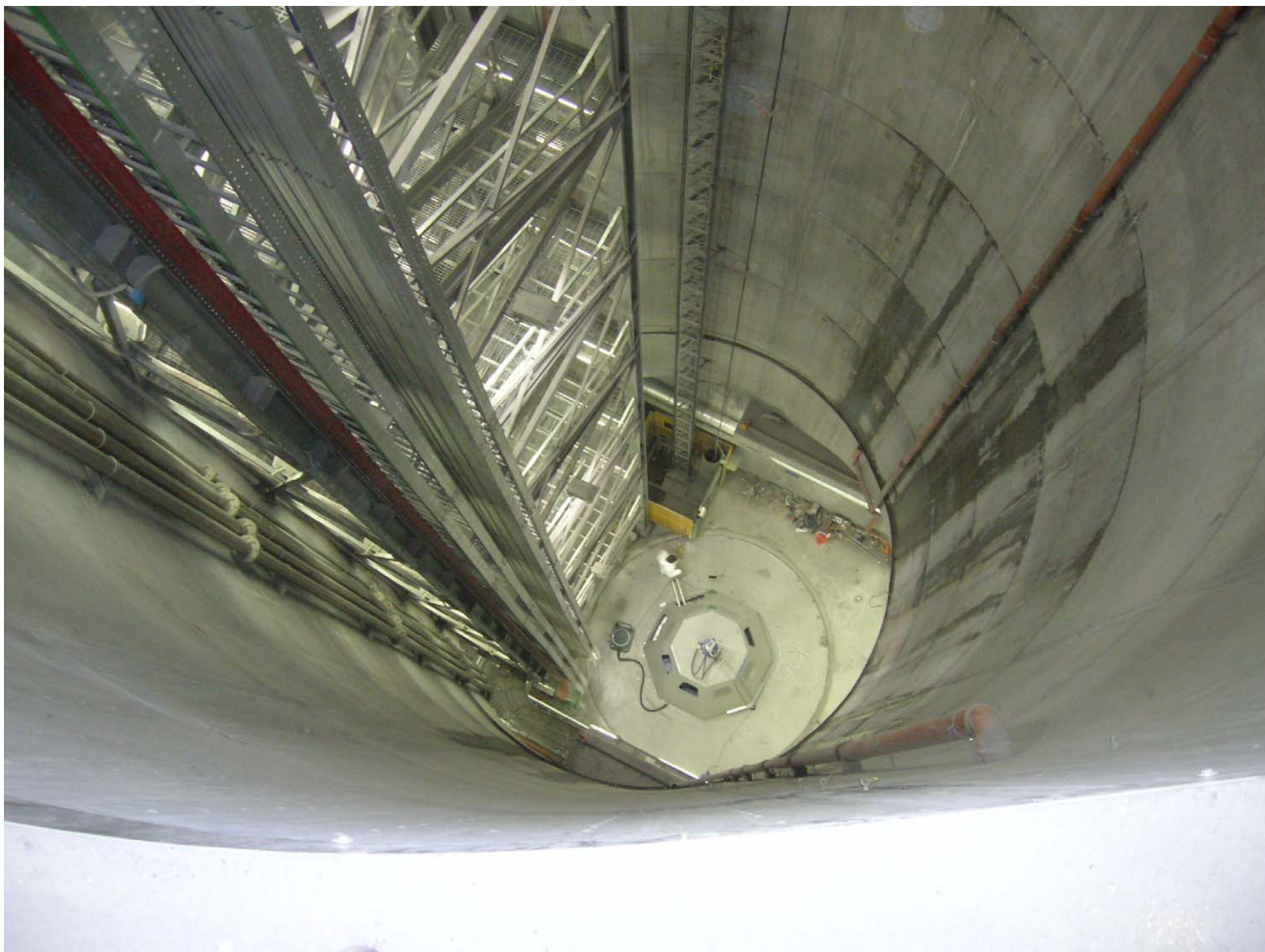
ACHIVED BY:

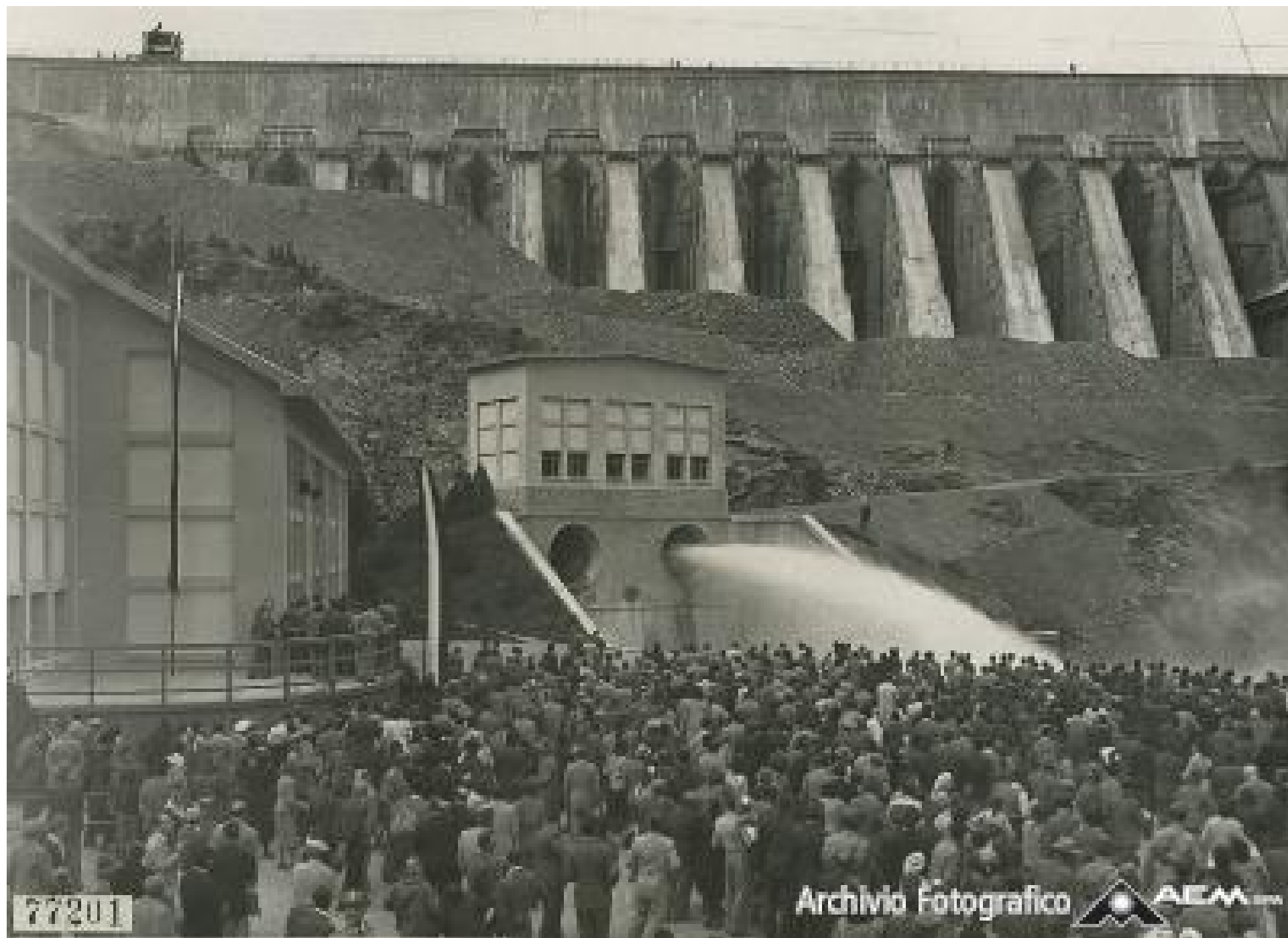
EXPLOITATION OF THE WATER HEAD BETWEEN “SAN GIACOMO” RESERVOIR AND “CANCANO” RESERVOIR, BY THE INSTALLATION OF A NEW 11 MW KAPLAN TURBINE UNIT – INCREASED ANNUAL PRODUCTIVITY: ABOUT 23 GWh

PROFILO LONGITUDINALE









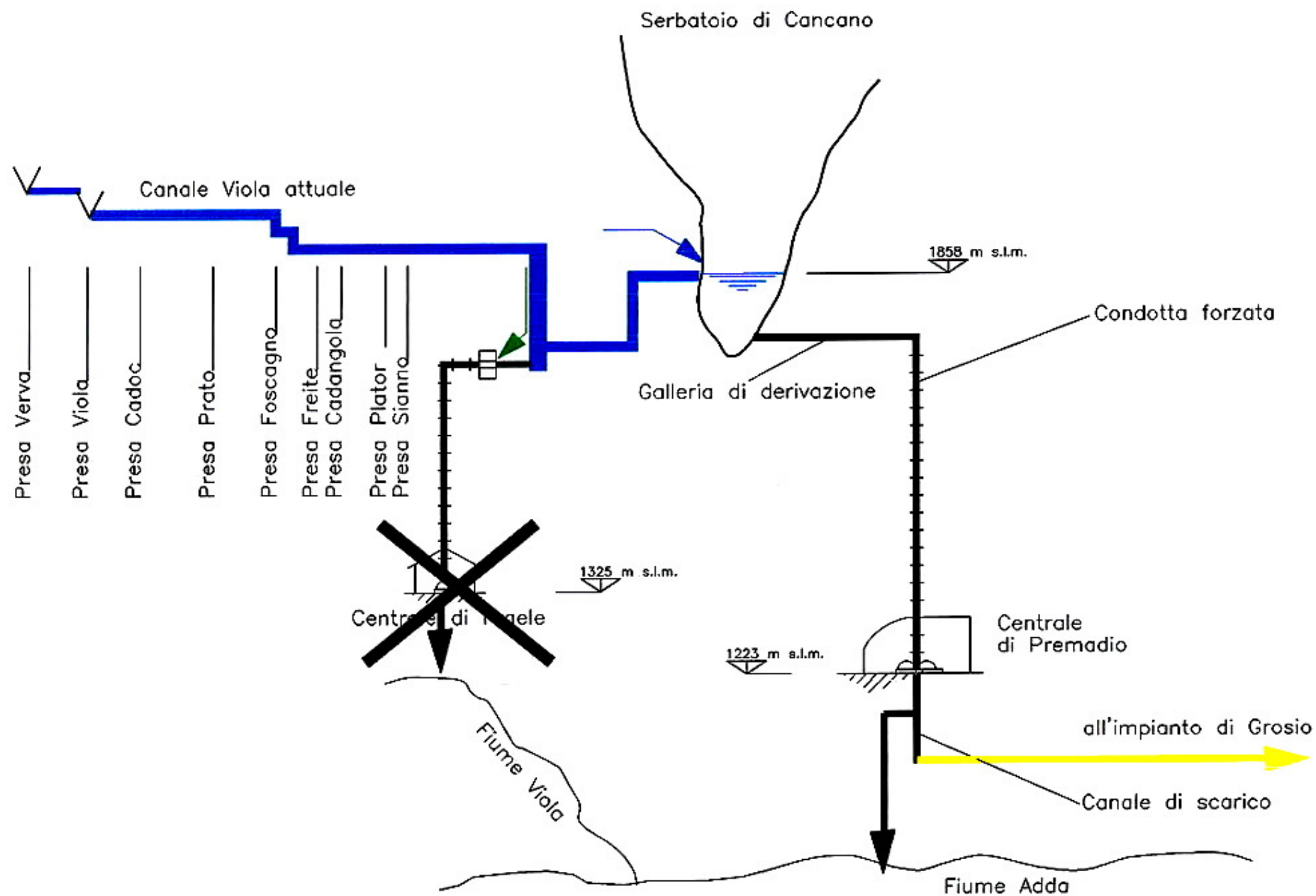
Nuovo Canale Viola

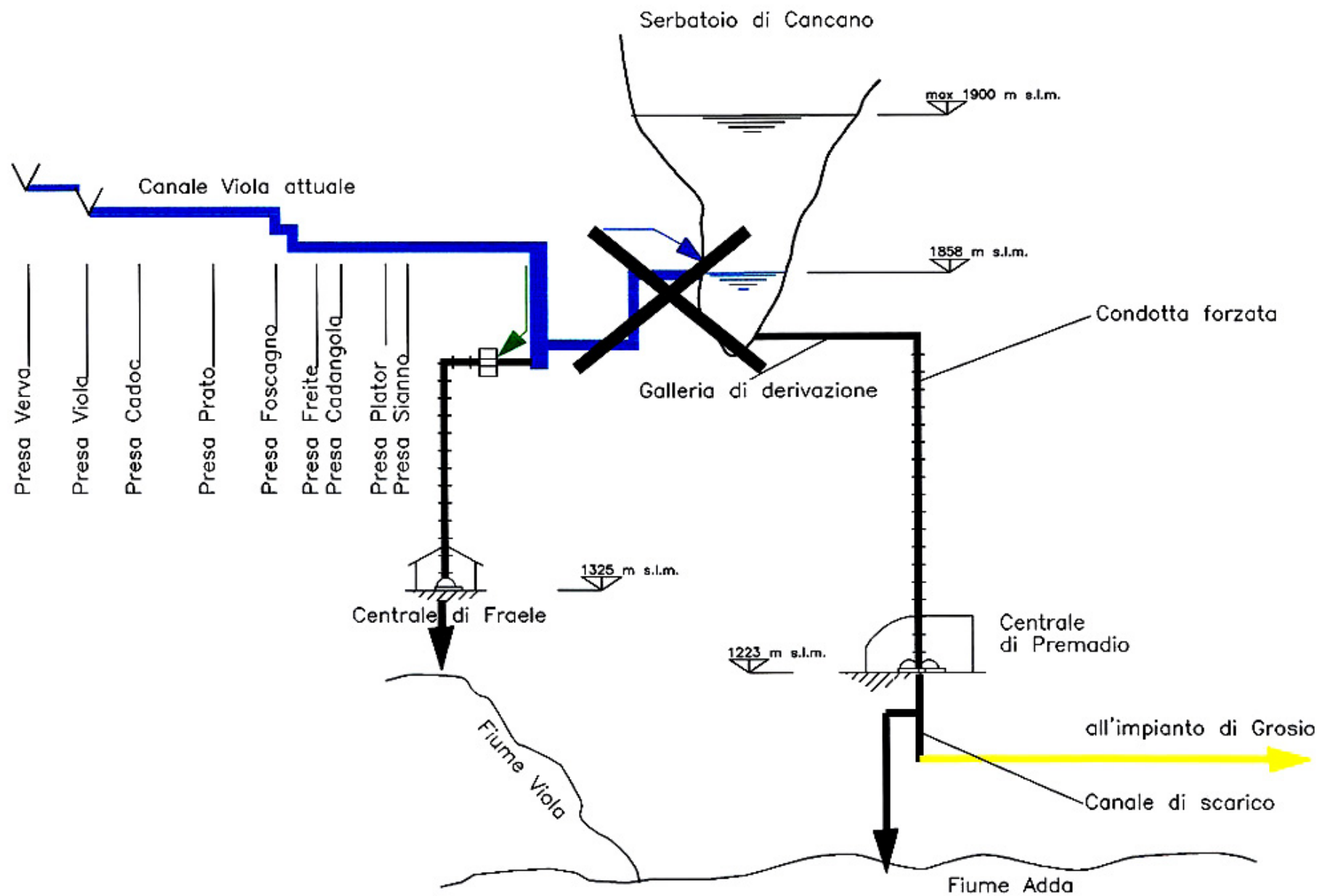
AIMS:

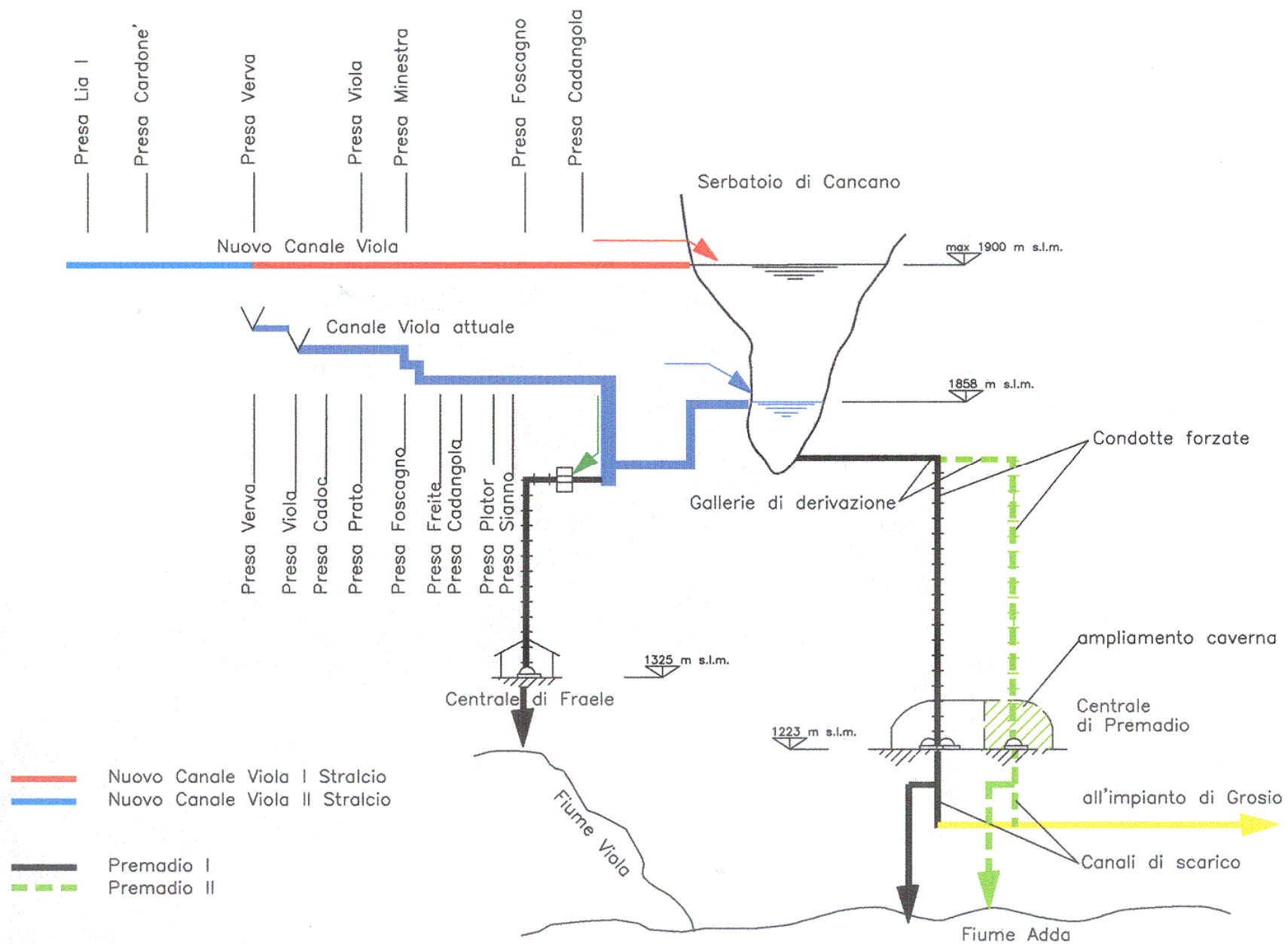
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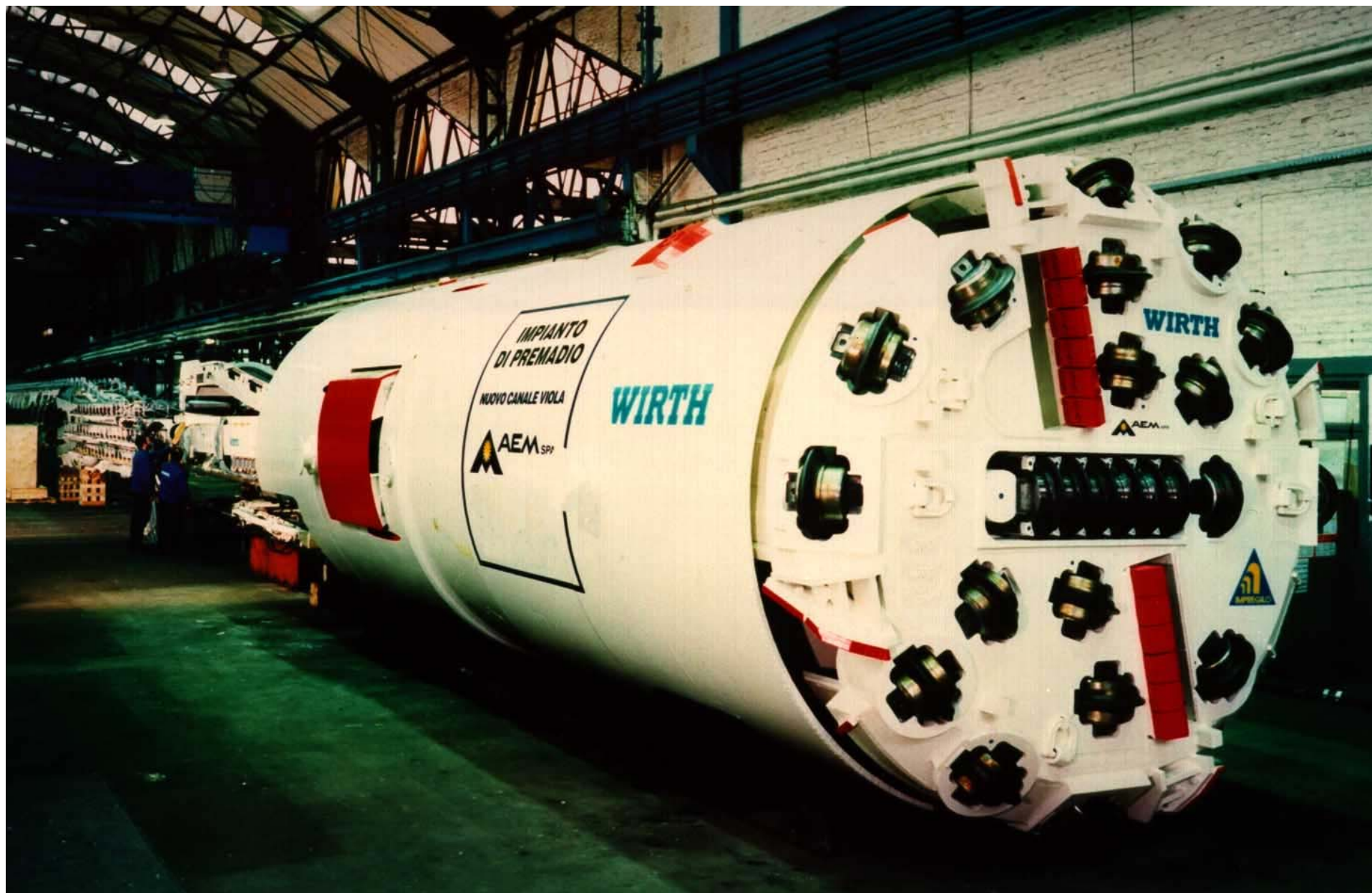
ACHIEVED BY:

CONSTRUCTION OF A COMPLETELY NEW WATER CHANNEL, WITH AN ELEVATION OF THE CANAL MOUTH HIGHER THEN BEFORE. THE CONSEQUENCE IS A GREATER WATER STORAGE IN CANCANO RESERVOIR AND EXPLOITATION OF THE WHOLE WATER RESOURCE IN PREMADIO POWER PLANT (INSTEAD OF IN FRALE POWER PLANT) - INCREASED ANNUAL PRODUCTIVITY: ABOUT 35 GWh







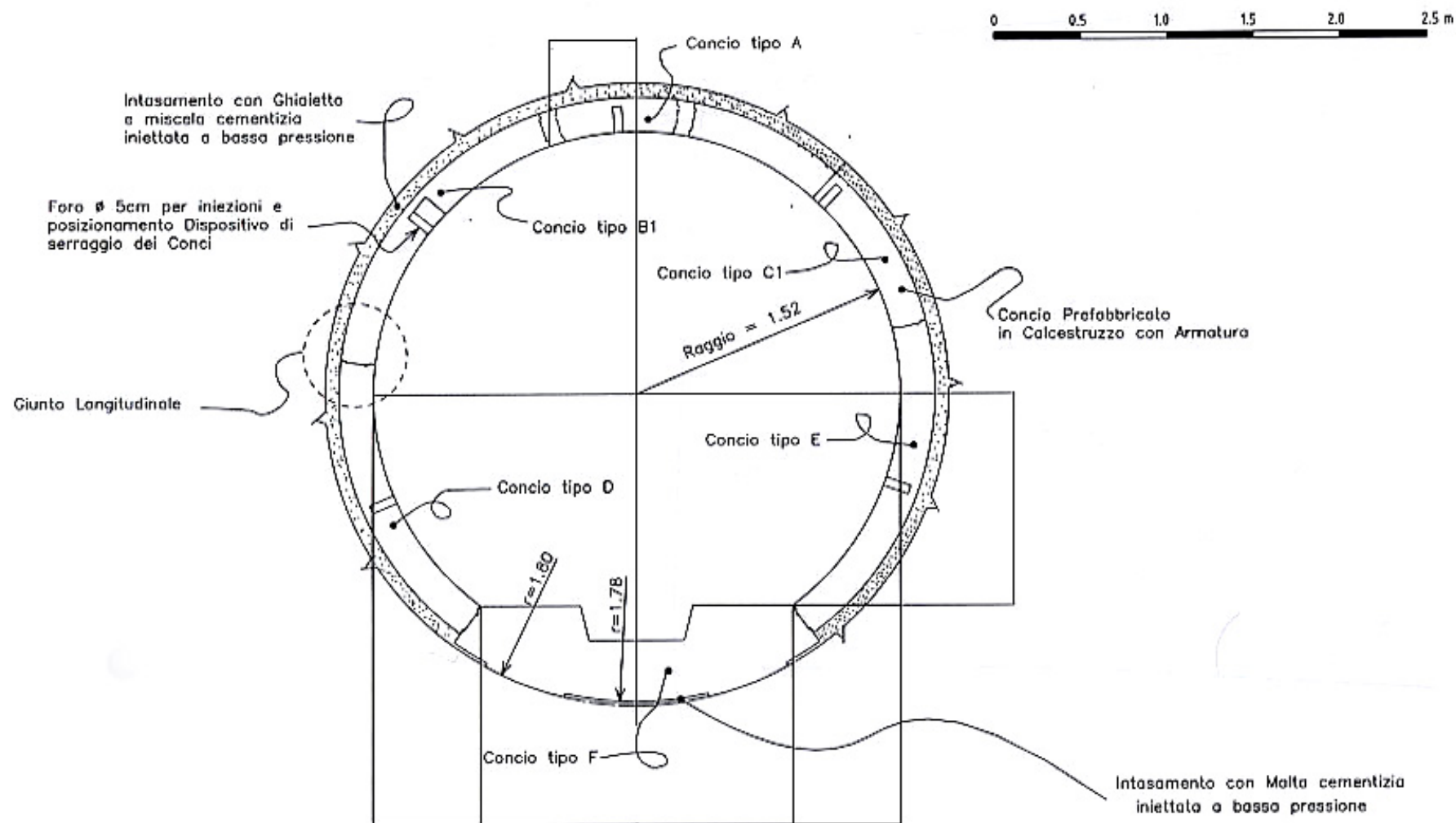






SCHEMA 1

SEZIONE TIPO DI RIVESTIMENTO





Nuovo Canale Viola mini-hydro unit

AIMS:

- 1) INCREASE INSTALLED POWER
- 3) INCREASE ENERGY PRODUCTION

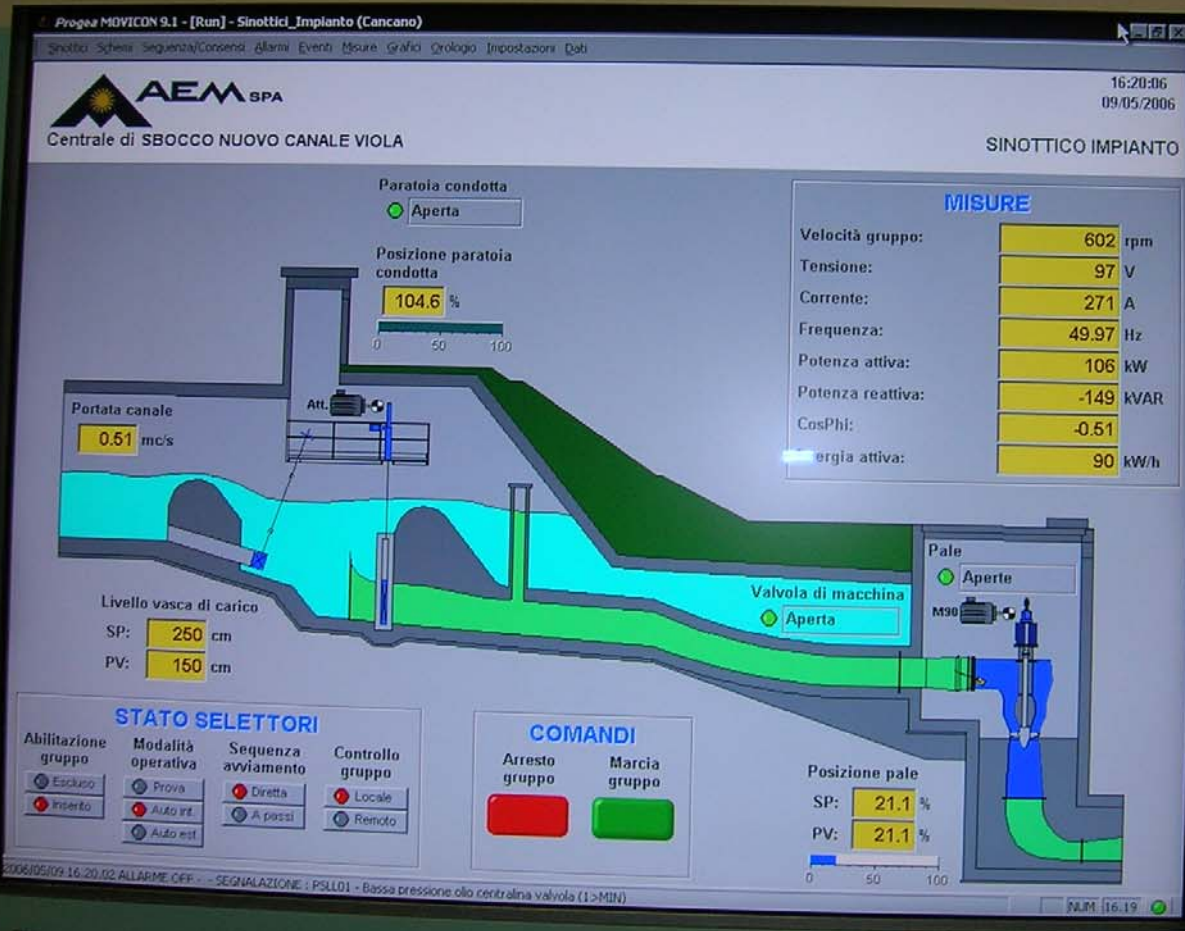
ACHIEVED BY:

EXPLOITATION OF THE WATER HEAD BETWEEN THE MOUTH OF NUOVO CANALE VIOLA AND CANCANO RESERVOIR BY THE INSTALLATION OF A NEW 0.4 MW KAPLAN TURBINE UNIT – INCREASED ANNUAL PRODUCTIVITY: ABOUT 1.5 GWh

PANNELLO DI CONTROLLO

SIEMENS

SIMATIC PANEL PC





Premadio power plant repowering

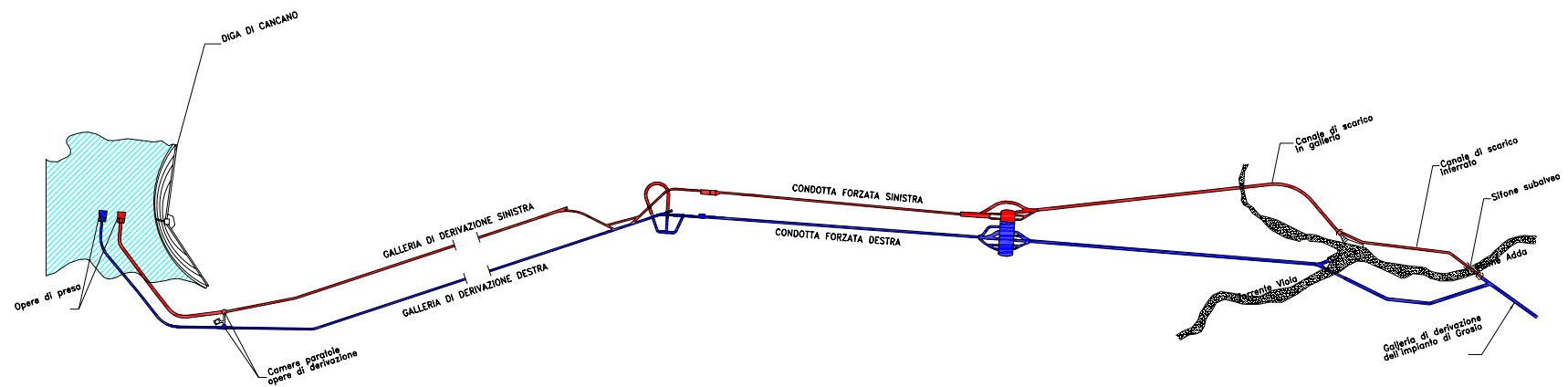
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- 3) INCREASE ENERGY PRODUCTION

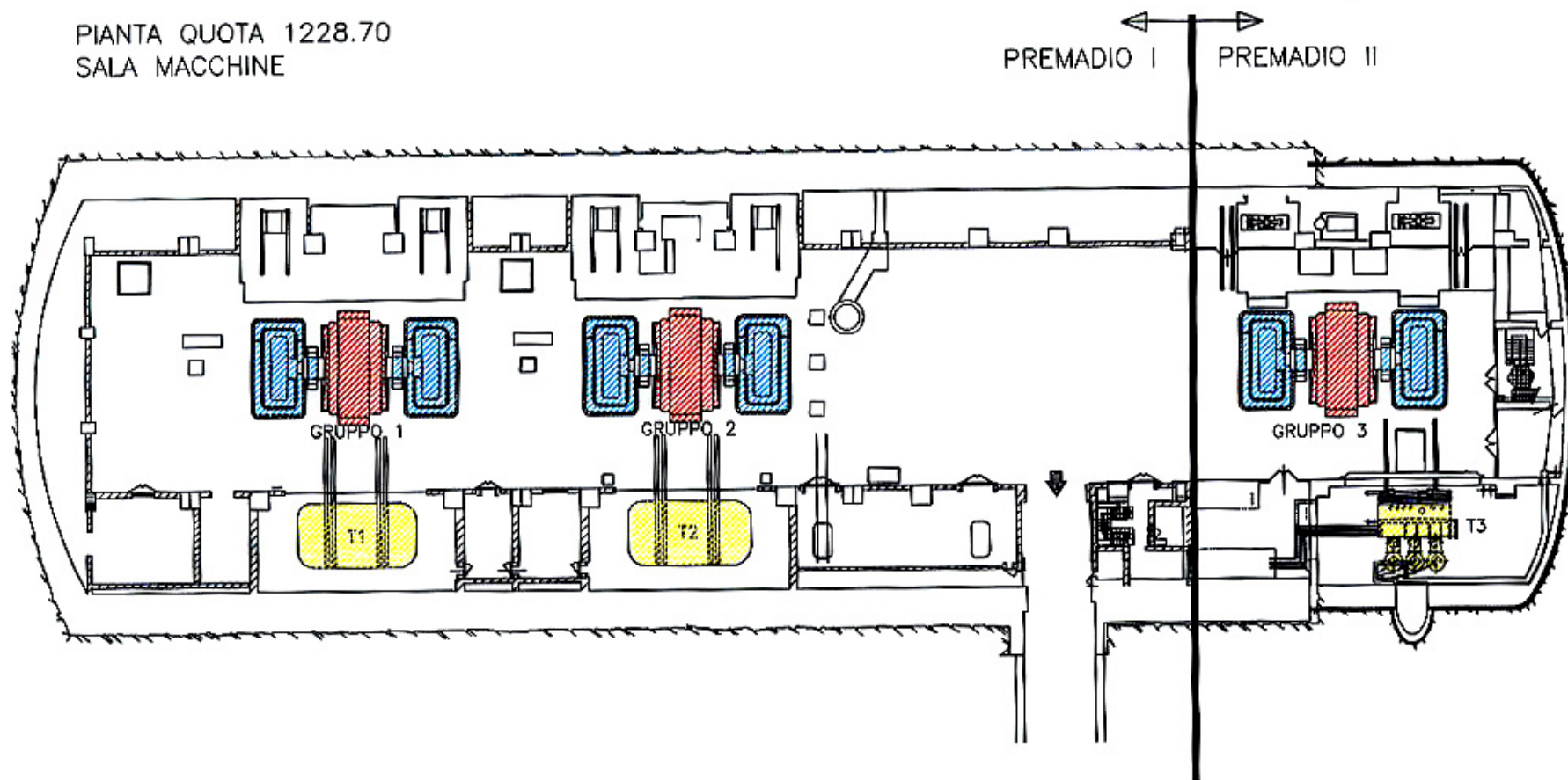
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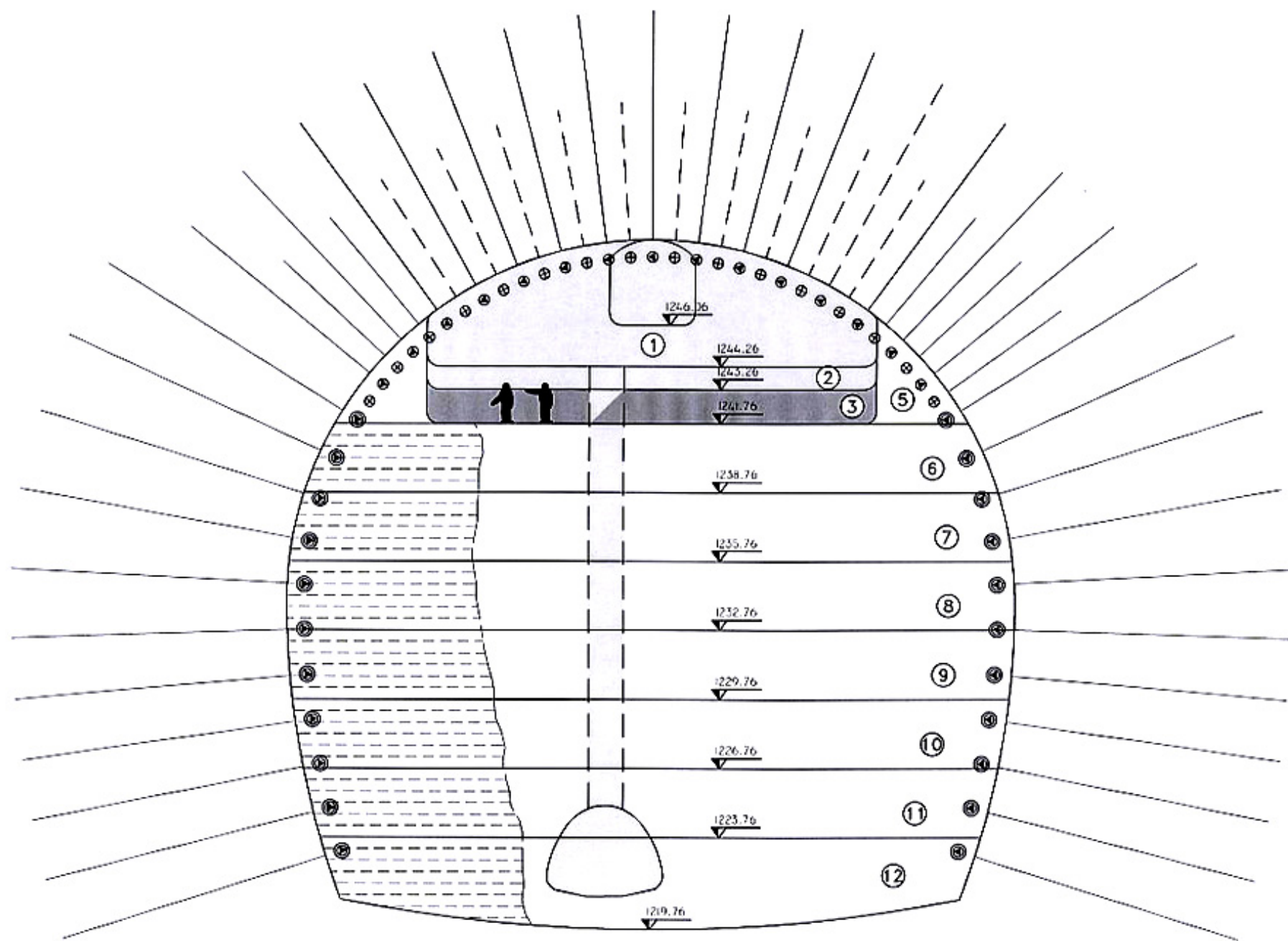
INSTALLATION OF A NEW OF A NEW 80 MW PELTON TURBINE UNIT, FEEDED BY A NEW HEADRACE (ALL THE UNITS CAN BE FEEDED BOTH BY THE OLD HEADRACE AND BY THE NEW HEADRACE); NEW PELTON RUNNERS AND NEW GENERATORS FOR ALL THE UNITS – INCREASED ANNUAL PRODUCTIVITY: ABOUT 30 GWh (BOTH BY BETTER FLOW RESISTANCE AND BY BETTER UNITS EFFICIENCY)

SCHEMA PLANIMETRICO DELL'IMPIANTO DI PREMADIO



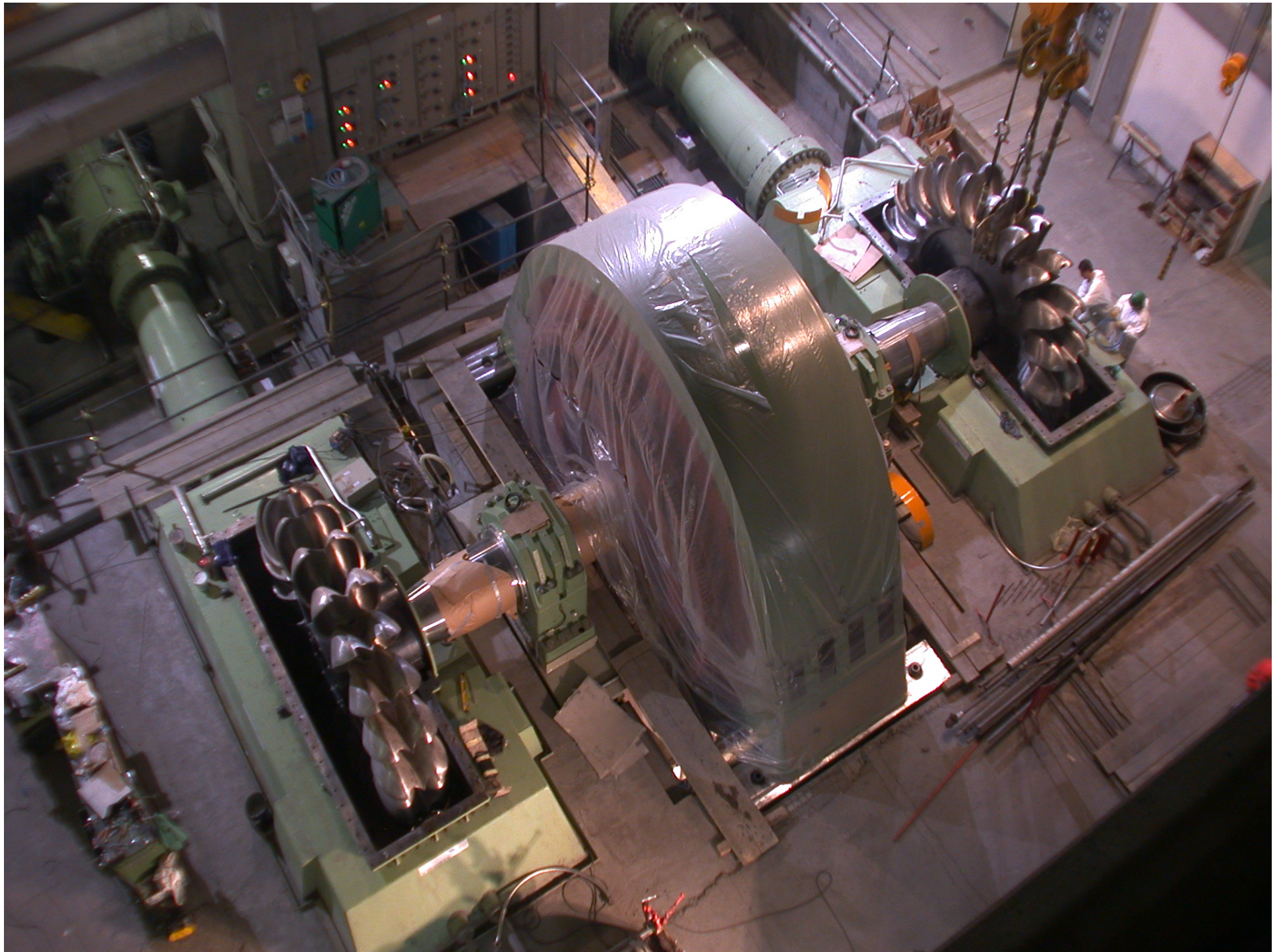
PIANTA QUOTA 1228.70
SALA MACCHINE

















Grosio power plant repowering

AIMS:

- 1) INCREASE INSTALLED POWER
- 3) INCREASE ENERGY PRODUCTION

ACHIEVED BY:

INSTALLATION OF A NEW 110 MW UNIT; NEW PELTON RUNNERS FOR ALL THE UNITS – INCREASED ANNUAL PRODUCTIVITY: ABOUT 15 GWh (BY BETTER RUNNERS EFFICIENCY)





Lovero power plant repowering

AIMS:

- 1) INCREASE RESERVOIR VOLUME
- 2) INCREASE ENERGY PRODUCTION

ACHIEVED BY:

CONSTRUCTION OF NEW BASINS TO ALLOW BETTER REGULATION OF THE FLOW FROM GROSIO TO LOVERO POWER PLANT; NEW FRANCIS RUNNER – INCREASED ANNUAL PRODUCTIVITY: ABOUT 10 GWh (BY BETTER RUNNER EFFICIENCY)





Boscaccia and Grosotto power plants reput in service

AIMS:

- 1) INCREASE INSTALLED POWER
- 3) INCREASE ENERGY PRODUCTION

ACHIEVED BY:

REPUT IN SERVICE OF POWER PLANTS OUT OF SERVICE BECAUSE OF 1987 FLOOD, BY INSTALLATION OF 3.5 MW UNIT (BOSCACCIA) E 10 MW UNIT (GROSOTTO) – INCREASED ANNUAL PRODUCTIVITY: ABOUT 14 GWh (BOSCACCIA) AND 23 GWh (GROSOTTO)



AFTER THE COMPLETION OF THE NEW INVESTMENTS
PROGRAMME A2A HYDRO-ELECTRIC SYSTEM IS
FORMED BY:

- 3 HYDRAULIC CANALS FROM THE INTAKES TO THE RESERVOIRS (ONE OF THEM COMPLETELY NEW)
- 2 RESERVOIRS WITH TOTAL VOLUME OF MORE THEN 180 Mio m³
- 5 POWER PLANTS REGULATED BY THE RESERVOIRS (SAN GIACOMO, PREMADIO, GROSIO, LOVERO, STAZZONA)
- 4 RUN-OF-THE-RIVER POWER PLANTS (BRAULIO, NCV, BOSCACCIA, GROSOTTO)

THE INSTALLED POWER HAS INCREASED FROM 580 MW
TO ABOUT 800 MW (+ 35%),

ANNUAL PRODUCTIVITY HAS INCREASED OF ABOUT
150 GWh/year (+ 7-10% DEPENDING ON
METEOROLOGIC PRECIPITATIONS)

CONCLUSIONS:
BY BETTER EXPLOITATION OF THE SAME WATER
RESOURCE AND BY BETTER EFFICENCY, A2A HAS
SUBSTANTIALLY INCREASED ITS INSTALLED POWER AND
ITS ENERGY PRODUCTIVITY



a2a