



Agua y Saneamientos Argentinos S.A.

PROF. HÖLTERHOFF
INGENIEUR CONSULTING



Rehabilitation of a 3000 mm water supply line under operating conditions in Buenos Aires

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4th Latin American Trenchless Congress

4th Trenchless Latin American Conference and Exhibition
From May 3 to 5, 2023
Cartagena de Indias Convention Center, Colombia

Organizado por | Organised by

LAMST
LATIN AMERICAN SOCIETY FOR TRENCHLESS TECHNOLOGY
ASOCIACIÓN LATINOAMERICANA DE TECNOLOGÍAS SIN ZANJA

Patrocinador Principal | Main Sponsor

GSTT
TRENCHLESS MADE IN GERMANY

made in Germany

Drinking water Supply of Buenos Aires



22.471 Km
Pipe network

2.949 Km²
Supply area

5.400.000
m³/d
Drinking water

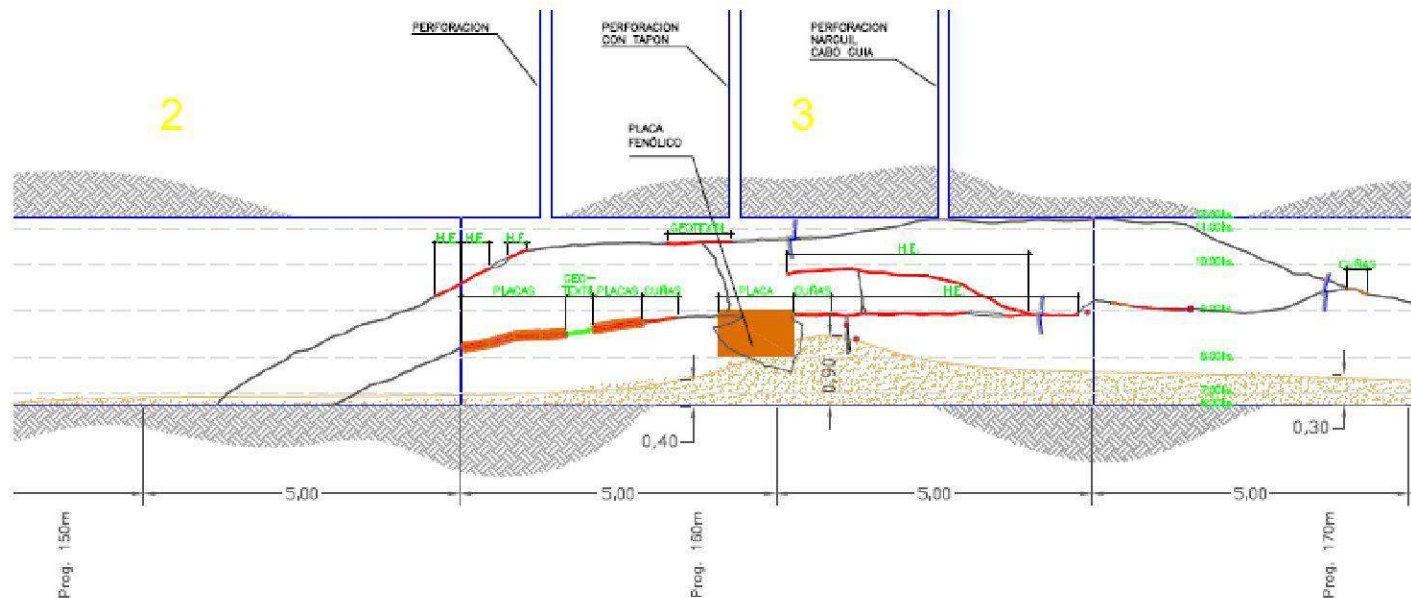
10.500.000
Inhabitants

Tendering and project planning



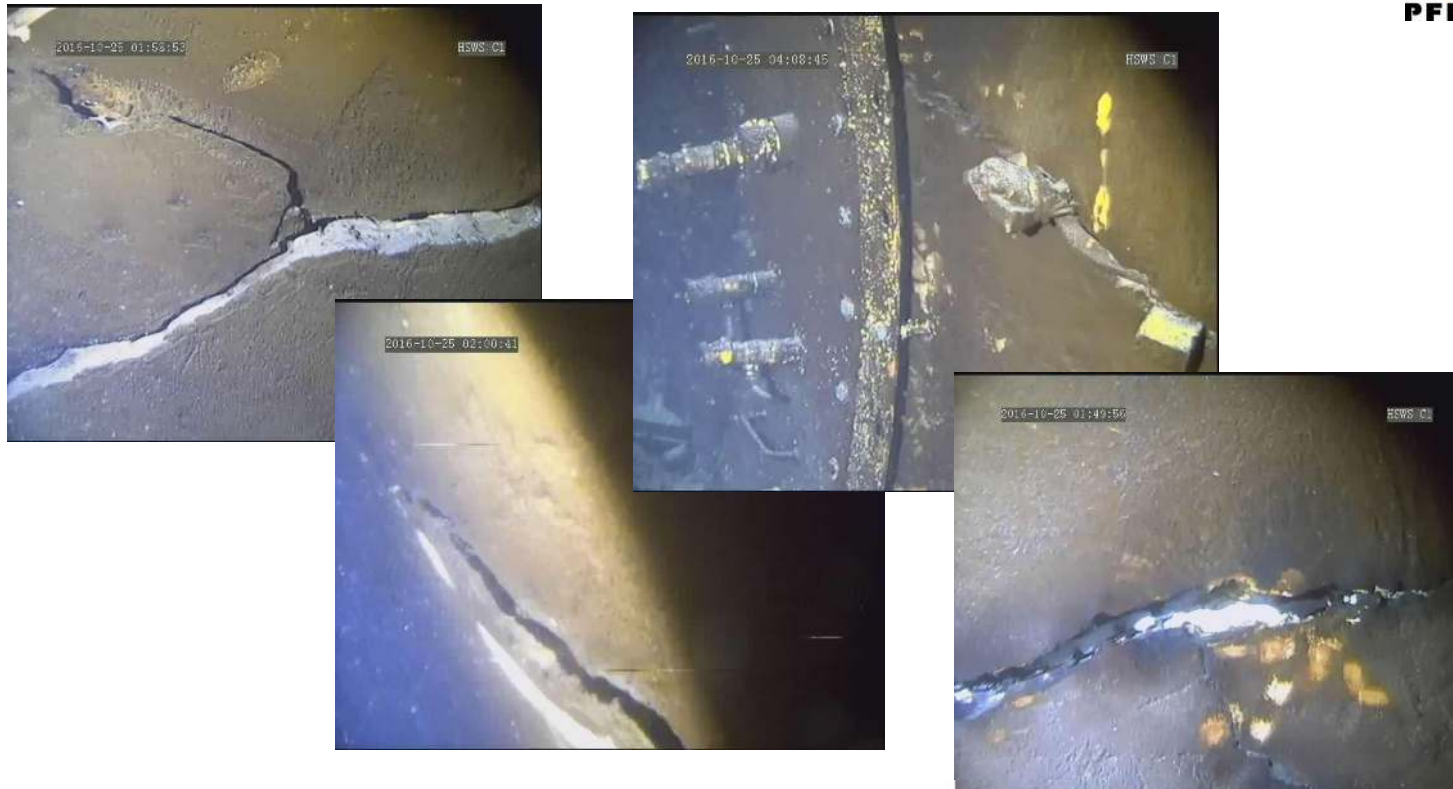
Tendering and project planning

Cracks / shards / concrete sedimentation from earlier external rehabilitation attempt



Situation was particularly critical, so that there was a danger of collapsing!

Tendering and project planning



Old pipes were formed by mining as in-situ concrete pipes without steel reinforcement / groundwater infiltrating through cracks

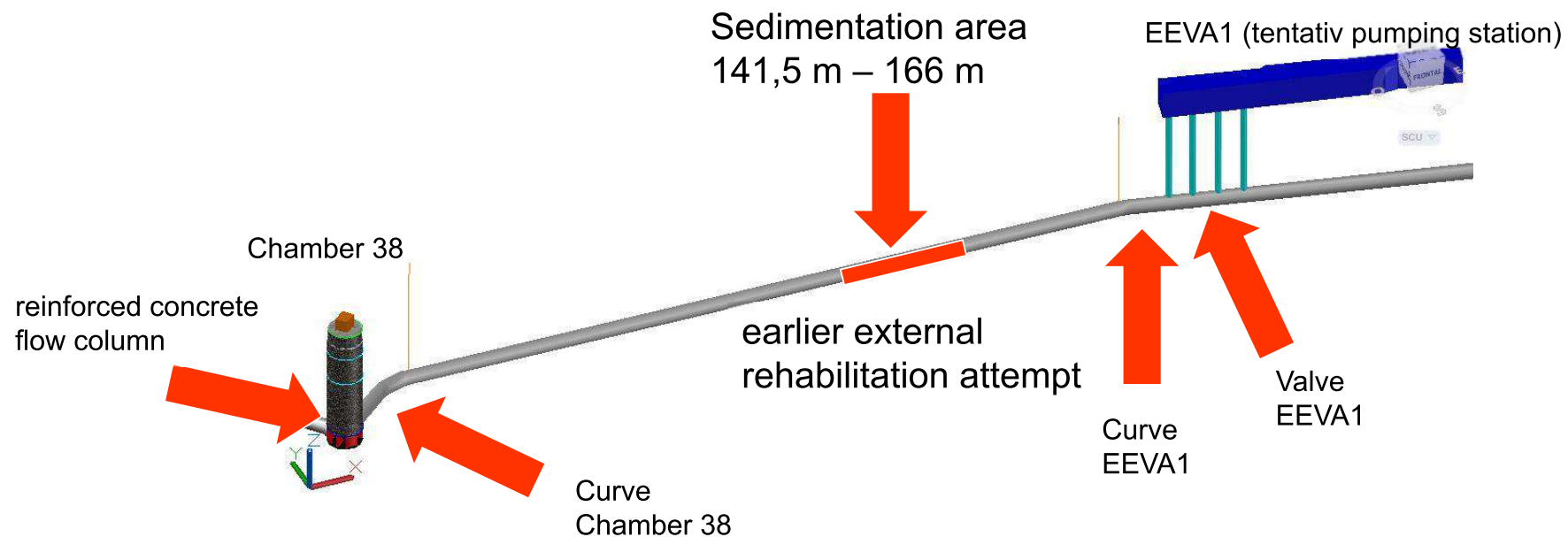
Tendering and project planning

Challenges in project planning / implementation

submit a rehabilitation concept
contract to rehabilitate the pipeline



Ludwig Pfeiffer was awarded the



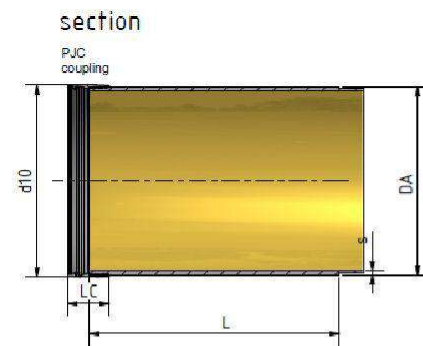
Tendering and project planning



Chamber 38
Villa Adelina

Tendering and project planning

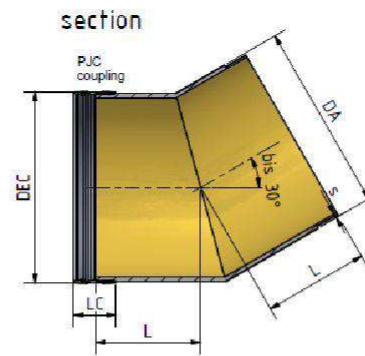
Dimensioning / order GRP pipes



pipe DN 2550 (DA 2555)					
SN (N/m ²)	PN (bar)	s min (mm)	s max (mm)	s (mm)	M min (kg/m)
20000	2	68	72	69	1147

length: L = 2,92m +25/-10mm

bend DN 2550 (DA 2555)				
SN (N/m ²)	PN (bar)	s (mm)	M (6°) (kg/m)	L (mm)
20000	2	69	~ 2500	1000



Purpose:

HOBAS pipe as sewer pipe and pressure pipe drinking water according certificate N 000472

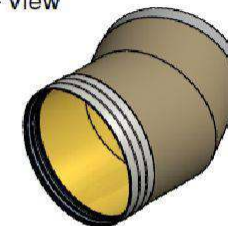
Resin quality:

Polyester resin min. type 1130 acc. DIN 16946-2

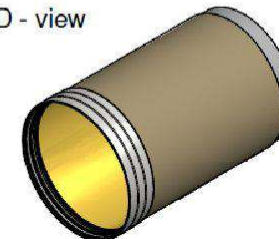
Pipe connection:

PJC coupling (stainless steel 1.4571) with EPDM-gasket

3D - view



3D - view



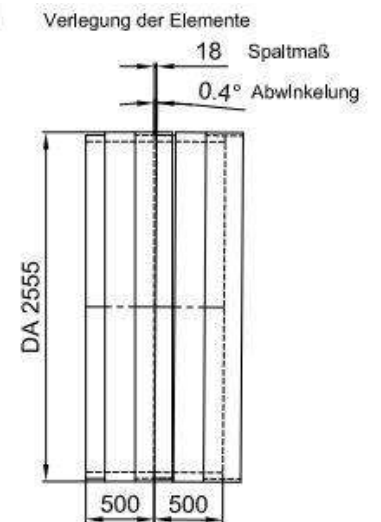
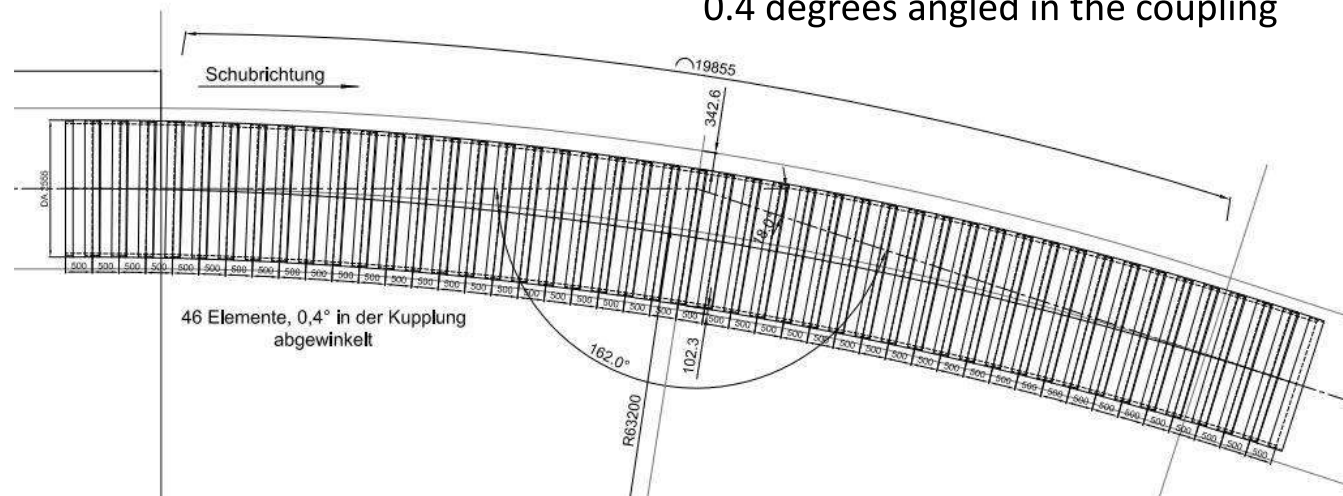
Bends Curve
Chamber 38

Pipes straight
section

Tendering and project planning

Dimensioning / order GRP pipes – 48 short pipes 0,5 m

0.4 degrees angled in the coupling



Short pipes
Curve EEVA1

Development of rehabilitation technology

Test and diver training site Ludwig Pfeiffer Kassel



Development of rehabilitation technology

Test site Ludwig Pfeiffer Kassel / GRP Pipe with coupling device

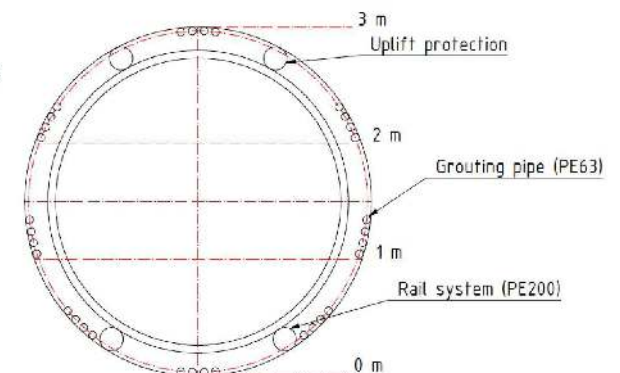


Development of rehabilitation technology

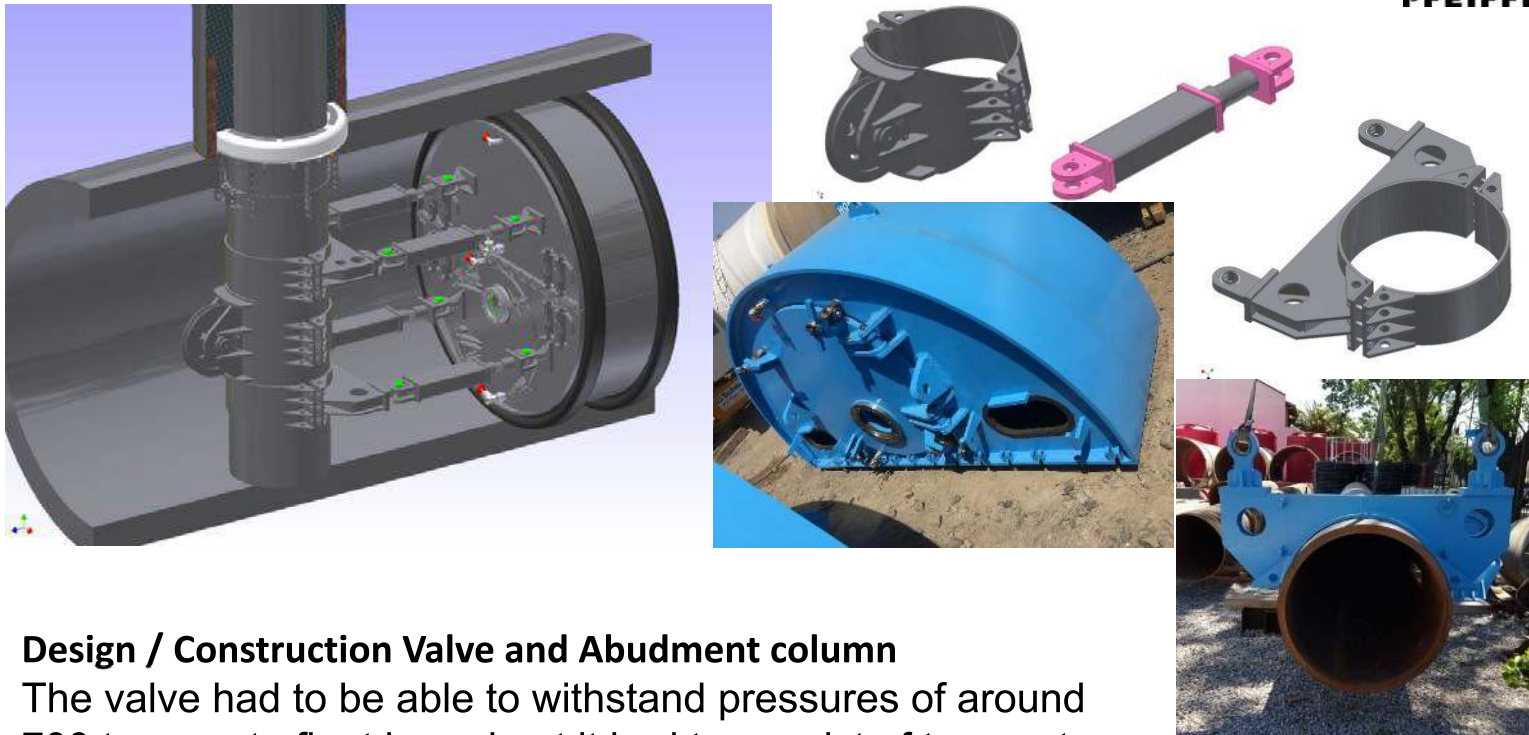
Test site Ludwig Pfeiffer Kassel



vertical Grouting
distribution



Development of rehabilitation technology



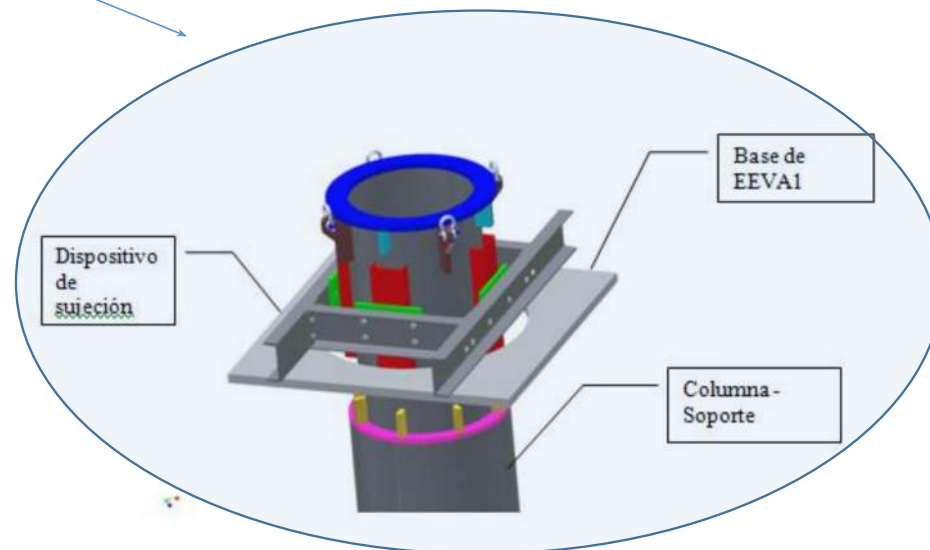
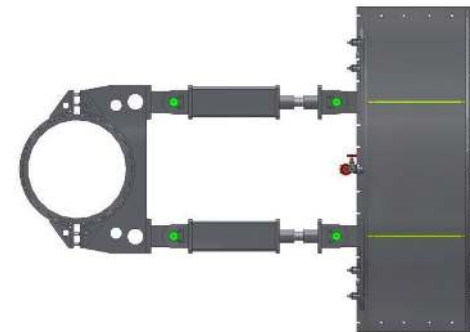
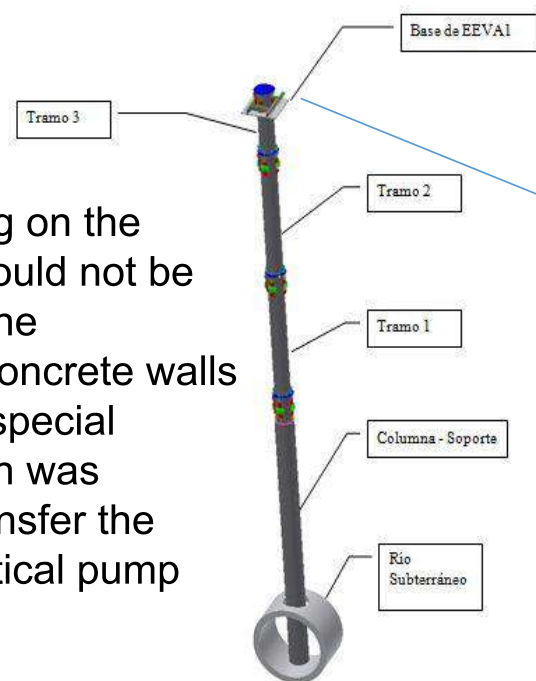
Design / Construction Valve and Abudment column

The valve had to be able to withstand pressures of around 700 tonnes, to float in and out it had to consist of two parts with maximum 2.7 meters diameter and have a flexible seal between the steel structure and the irregular concrete surface. Special seals had to be developed, tested and modified

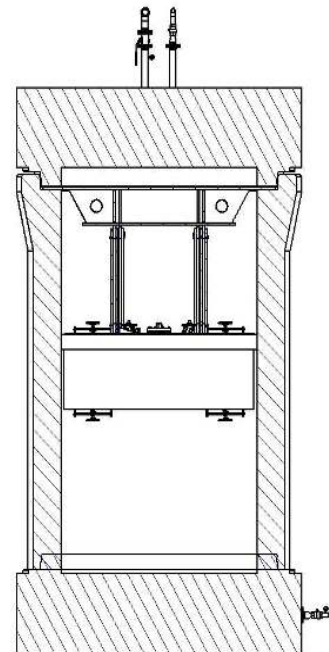
Development of rehabilitation technology

Construction abutment column

The forces acting on the installed valve could not be introduced into the non-reinforced concrete walls of the Rio, so a special abutment column was developed to transfer the forces into a vertical pump shaft

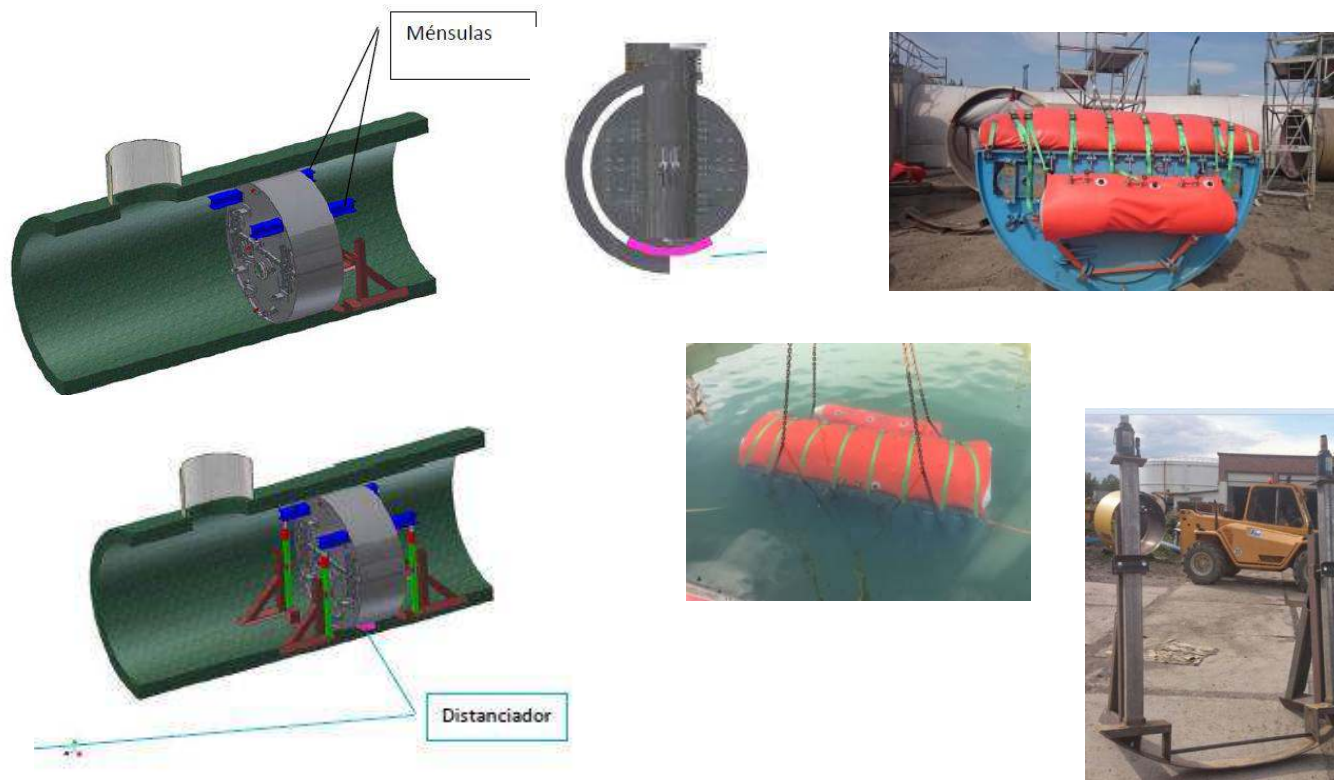


Development of rehabilitation technology



Test seal and valve

Development of rehabilitation technology

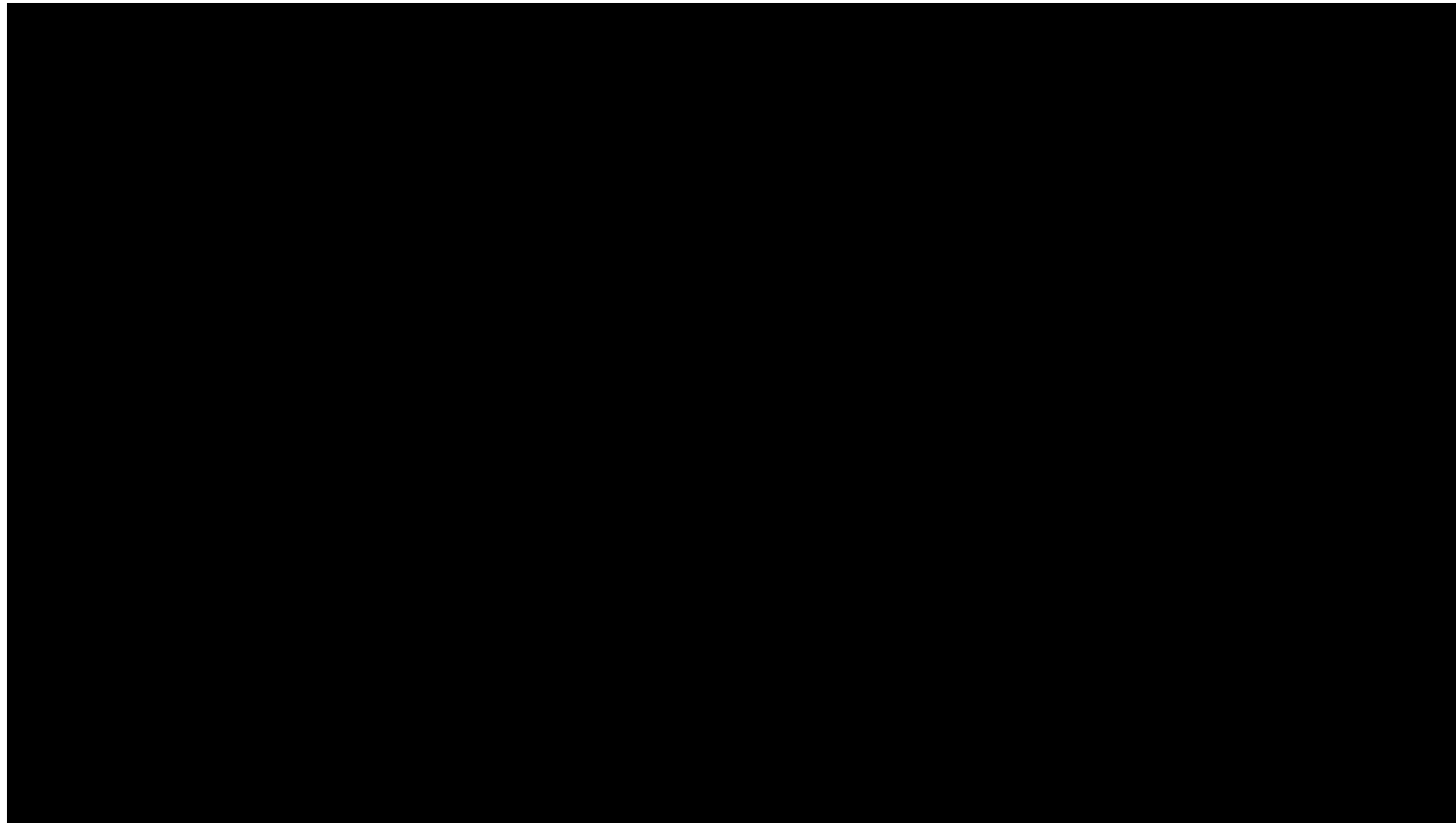




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Implementation of the rehabilitation



Implementation of the rehabilitation



Implementation of the rehabilitation



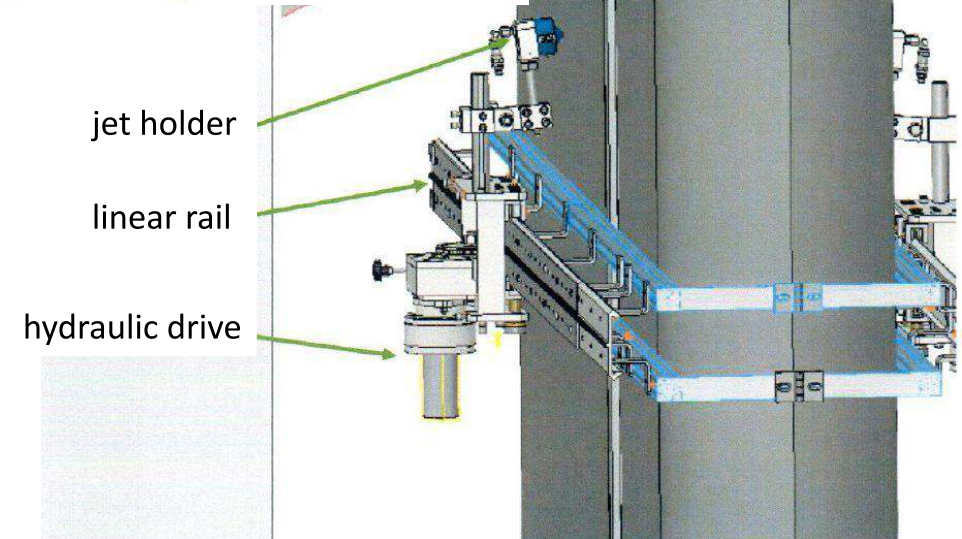
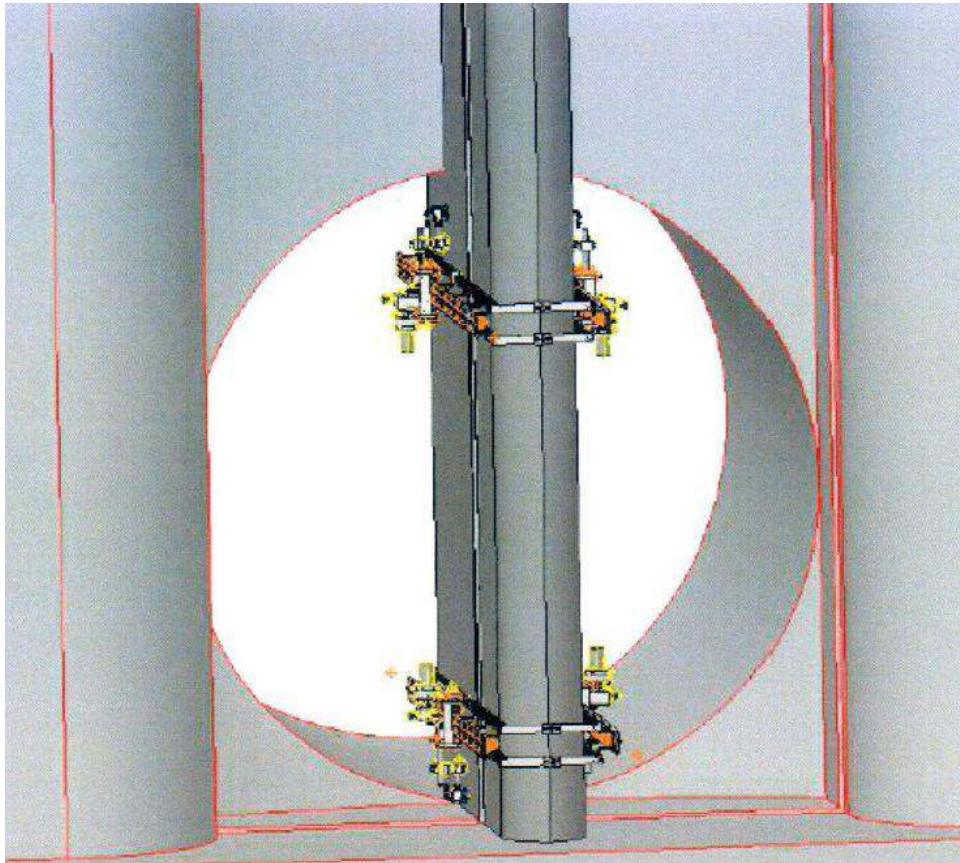


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Seperation of reinforced concrete flow columns under water with high pressure water jet in chamber



Implementation of the rehabilitation

Floating valve part



Implementation of the rehabilitation Diver control center



Implementation of the rehabilitation

Installation of Liner Plates DA 2,88 m
for diver protection in the critical area



Implementation of the rehabilitation



Expansion of concrete sedimentation by diamond saws and hydraulic splitter, floated out with air bubbles

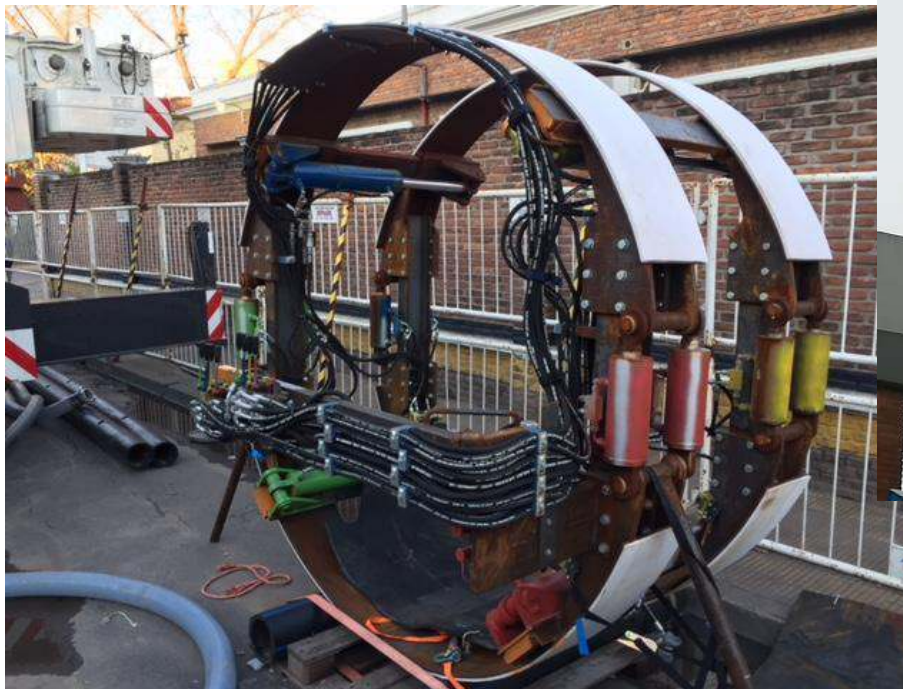
Implementation of the rehabilitation



Installation of the floats and floating of the short tubes to curve EEVA 1

Implementation of the rehabilitation

Installation of the Coupling device



Implementation of the rehabilitation

Installation of GRP jacking pressure pipes and bends



Implementation of the rehabilitation

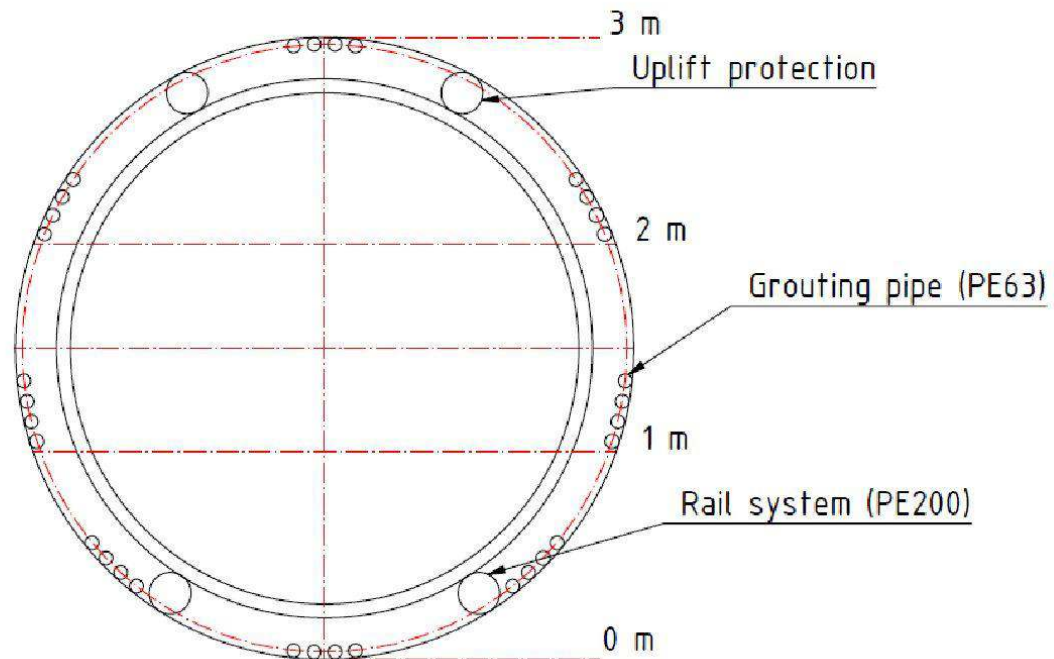
Installation of GRP jacking pressure pipe and bends



Implementation of the rehabilitation

Rio Subterraneo grouting the annular space

vertical Grouting
distribution





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Questions?

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