

Around the world in eighty projects

The background features several thin, dotted blue lines crisscrossing the page. Small blue icons are placed along these lines: a rocket near the top right, a boat near the middle right, a sailboat near the bottom right, and a person on a bicycle near the bottom center.



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**Around
the world in
80 days?
Can it really
be done?**

**When the fictional
Phileas Fogg sets
out to accomplish
this 19th century
impossibility,
readers know
they are in for an
adventure.**

**And truly, Jules
Verne's timeless
novel Around
the World in 80
Days delivers**

We invite you on a similar thrill ride

Our journey begins in Switzerland, traverses five continents and seven decades, spans mighty waterways, carves through mountain ranges, and burrows beneath bustling metropolises. You will see iconic bridges, elegant monorails, intricate tunnel webs, and even a futuristic metaverse in cyberspace. Through these 80 projects, ARX will take you to the very edge of innovation and elegance. Prepare to be dazzled by massive and miniscule engineering in Brazil, Australia, China, India, Italy, the US, and more.

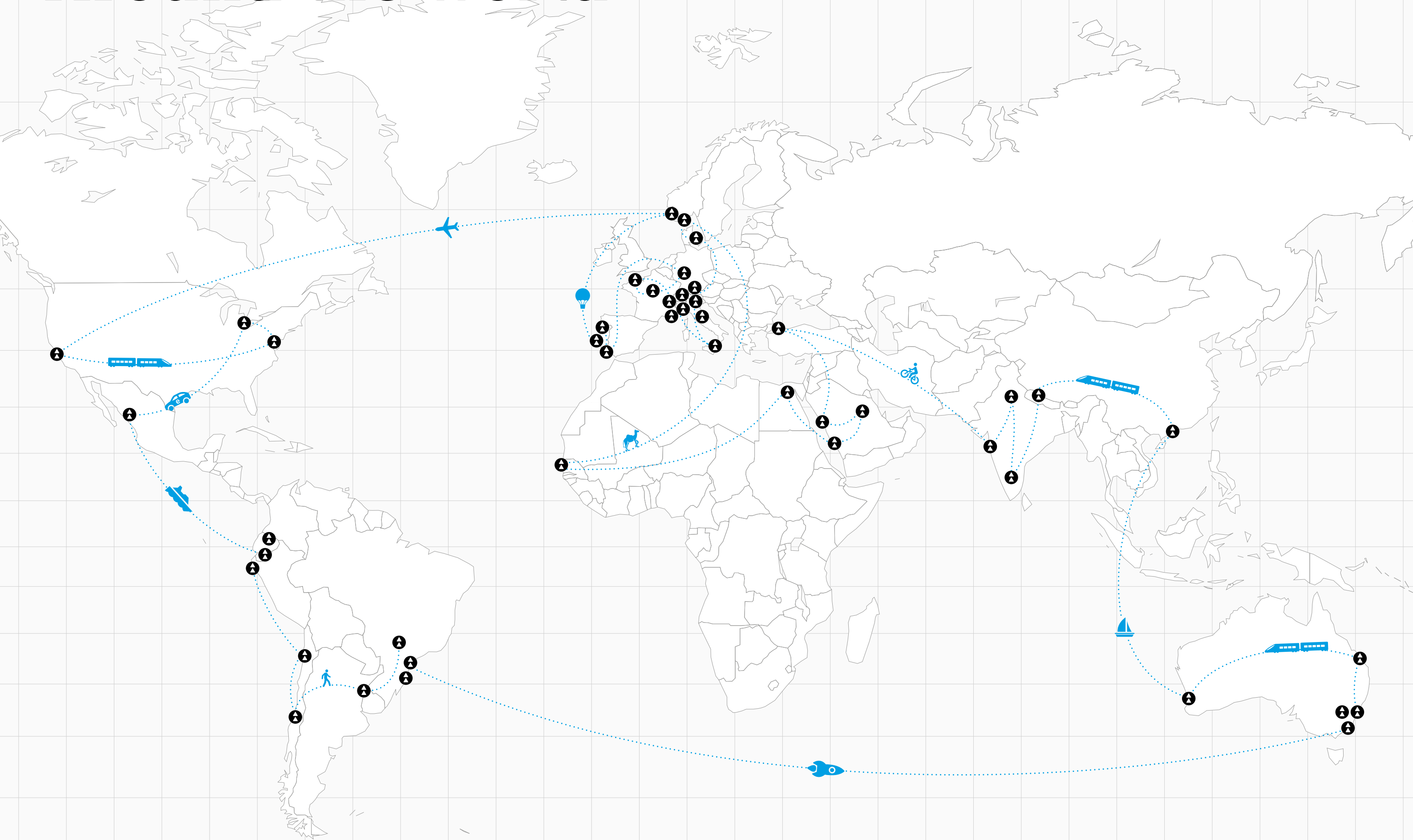
And by the end, you'll have seen the precise point where science and art meet. This is ARX's World. Innovation. Precision. Unity.

Swiss values lay at the heart of ARX. Home to many cultures and much diversity, Switzerland embraces cooperation, and so too does ARX. Weaving global expertise with local wisdom gives our projects the edge in modern engineering. This philosophy fuels efficiency. It allows for agility. And most importantly, it inspires the talented individuals who make up ARX to pursue some of the most impressive engineering feats in the world. This structure nourishes growth that is as limitless as innovation itself.

In the words of Phileas Fogg himself: "Anything one man can imagine, other men can make real."

Bon voyage.

Around the world



Our departure

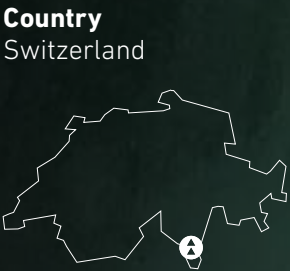
Europe

Our journey starts here: in the heart of Europe, beneath the mountains. It is the end of the 20th century, and Switzerland has decided to greenlight the new Railway Link through the Alps. ARX seizes the moment. Also this historic project is a catalyst for future ventures that break through impenetrable rock, cross national borders, and race into the world beyond.



Ceneri Base Tunnel

With a length of 15.4 km, the Ceneri Base Tunnel is the southernmost part of the larger Alp-Transit project, which is part of the European Rhine-alpine corridor. Thanks in part to its completion, northern and southern Europe are now closer together. Designed for a speed of 250 km/h, the project consists of two single-track tunnels connected by cross-passages every 325 m. The tunnel is mainly in rock with a maximum overburden of 800 m. Excavation is by drill and blast, TBM and mechanically assisted tunnelling in soft ground. After support measures with rock bolts, shotcrete and steel arches, the waterproofing and drainage system is installed and the final concrete lining is put in place. Interior finishes, cable network, concrete slab track, rigid catenary, ventilation and electrical equipment complete the infrastructure.



Country
Switzerland

Domain
Railway;
Tunnel & Underground

Client
AlpTransit Gotthard Ltd,
Swiss Federal Railways
(SBB)

Time frame
2006-2020

Construction cost
CHF 1'630'000'000

Services*

- Design
- Construction management
- Geology

Phases

- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners

When speed takes time

Shortening the Lugano-Locarno railway line by 21 minutes took almost thirty years, giving southern Swiss residents a new perspective on time and space. Previously distant places are now closer, there are more choices of where to live and work, and greater opportunities have become available. The Ceneri Base Tunnel is a regional, national, and European structure that runs along a main European railway corridor.

Drilling through a mountain is never an easy task. Drilling through the Alps even less so. But with respect for the mountains as motivation, ARX pushed forward to reduce heavy road transport and energy consumption, making roads safer and bringing people and cultures together. Facing the challenge of excavating up to ten meters under a motorway, they gathered their best experts and harnessed the team's creative abilities. The resulting design creatively combines functionality with aesthetics. There are projects that allow people and businesses to grow, projects that transform the life of a community. This is one of them.



The Ceneri Base Tunnel is a milestone in the progress of rail mobility at the Swiss level, being a fundamental element within the ambitious AlpTransit project

This infrastructure significantly improves connectivity also between the major urban centers of Canton Ticino, promoting more sustainable and integrated mobility and marking an era of development that has involved the ARX for two decades.

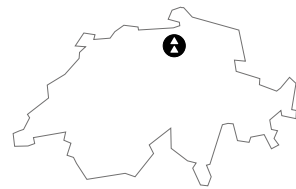
All of this has deeply influenced my professional and personal development, so traveling through the Ceneri Base Tunnel is an emotion that is worth much more than the price of the ticket!

Davide Merlini
Group CTO

Commercial Building Europaallee Zurich Site B

Architecturally elegant and brimming with energy, this structure has presence. Pre-certified with the Gold Label of the Swiss Society for Sustainable Real Estate Management (SGNI), it boasts 90'000 m³ over 12 floors. It was created under the architectural direction of Stücheli Architects and now houses several offices, restaurants as well as a variety of retail stores. An asset to its location at the edge of a new quarter, it showcases both grandeur and sustainability. The project was awarded over 72 competing bids.

Country
Switzerland



Domain
Buildings

Client
Swiss Federal Railways
(SBB)

Time frame
2012-2018

Construction cost
CHF 80'000'000

Services

- Design
- Technical site supervision

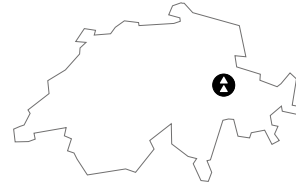
Phases

- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design
- Commissioning, completion



Sinfonia d'Aua Flims

Country
Switzerland



Domain
Hydropower

Client
Flims Electric AG

Time frame
2010-2014

Construction cost
CHF 22'000'000

Services

- Design
- Construction management
- High level supervision

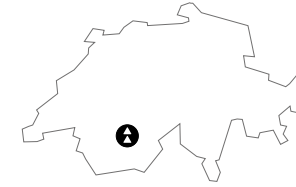
Phases

- Preliminary studies
- Preliminary design
- Final design
- Tender design
- Construction design
- Construction
- Commissioning, completion



Rhone River bed management in the Pfyn-Finges area

Country
Switzerland



Domain
River engineering

Client
Canton Valais

Time frame
2013-2016
2019-2024

Construction cost
CHF 12'000'000

Services*

- Design
- Construction management
- Measurement & Surveying

Phases

- Preliminary design
- Final design
- Construction design
- Construction
- Commissioning, completion

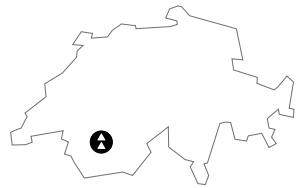
* Services in JV with partners



Valais Hospital

The Valais Hospital in Sion regroups the medical activities of the Centre Hospitalier du Valais Romand (CHVR) as a part of a new medical campus for education, research, and rehabilitation. Firstly, we are constructing a new building with 14 operating rooms complete with new medical, technical, and logistical infrastructure; and secondly, we are reorganizing and modernizing the existing hospital according to current seismic design. The total extension area is 40'500 m², in addition to the 20'000 m² of the existing hospital under construction.

Country
Switzerland



Domain
Buildings - civil engineering

Client
Valais Hospital

Time frame
2016-2029

Construction cost
CHF 298'000'000

Services*

- Design
- BIM
- Construction management
- Measurement & Surveying

Phases

- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners

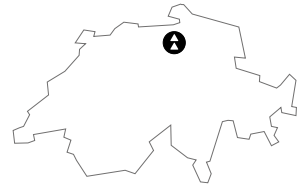


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N1 – Expansion Zurich's northern bypass 3rd Tube Gubrist Tunnel

Country

Switzerland



Domain

Roads;
Tunnel & Underground

Client

Federal Roads Office
(FEDRO)

Time frame

2019-2021

Construction cost

CHF 320'000'000

Services*

• Construction management

Phases

• Construction
• Commissioning, completion

* Services in JV with partners

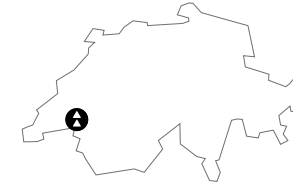


7

N9 Vennes- Chexbres Section TP5

Country

Switzerland



Domain

Bridges & other Structures;
Roads;
Tunnel & Underground

Client

Federal Roads Office
(FEDRO)

Time frame

2013-2024

Construction cost

CHF 106'000'000

Services*

• Design
• Construction management

Phases

• Preliminary design
• Final design
• Permit-obtaining procedure
• Tender design
• Construction design
• Construction
• Commissioning, completion

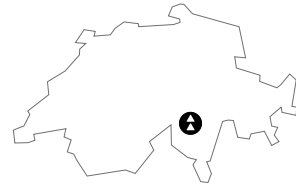
* Services in JV with partners



Gottardo Arena

Country

Switzerland



Domain

Buildings - architecture;
Buildings - civilengineering

Client

Valascia Immobiliare SA

Time frame

2019-2024

Construction cost

CHF 52'000'000

Services

• Consulting / Expertise - Financial controller

Phases

• Construction
• Commissioning, completion



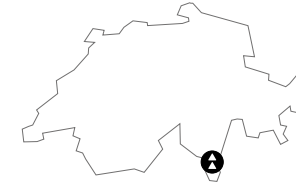
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Renovation Bellinzona Railway Station

Country

Switzerland



Domain

Buildings - civil engineering

Client

Swiss Federal Railways
(SBB)

Time frame

2013-2016

Construction cost

CHF 13'500'000

Services*

• Design
• Construction management

Phases

• Preliminary studies
• Preliminary design
• Final design
• Permit-obtaining procedure
• Tender design
• Construction design
• Construction
• Commissioning, completion

© SBB (Nicola Demaldi)

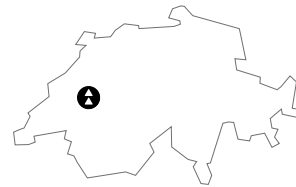
* Services in JV with partners



Scott Headquarters

Country

Switzerland



Domain

Buildings - civil engineering

Client

Scott Sports SA

Time frame

2015-2018

Construction cost

CHF 60'000'000

Services

- Design
- Construction management

Phases

- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design
- Construction
- Commissioning, completion

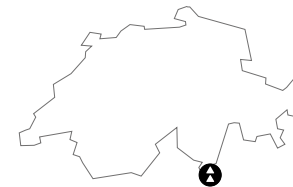
Awarded the BIM ARC AWARD 2017



New Cultural Center Lugano LAC

Country

Switzerland



Domain

Buildings - civil engineering

Client

Lugano Municipality

Time frame

2009-2016

Construction cost

CHF 150'000'000

Services

- Consulting / Expertise
- Independent checking engineer
- Project owner support
- High level supervision

Phases

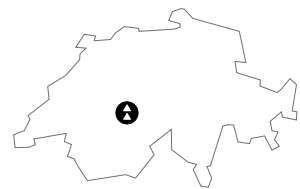
- Construction design
- Construction
- Commissioning, completion



Lötschberg Base Tunnel, South Section

Country

Switzerland



Domain

Railways;
Tunnel & Underground

Client

BLS AlpTransit AG

Time frame

1994-2007

Construction cost

CHF 1'173'000'000

Services*

- Design
- High Level Supervision

Phases

- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design
- Construction
- Commissioning, completion

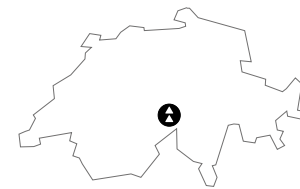
* Services in JV with partners



Grimsel Dam (Spitallamm)

Country

Switzerland



Domain

Geology;
Hydropower

Client

Kraftwerke Oberhasli AG
(KWO)

Time frame

2023-2026

Construction cost

CHF 125'000'000

Services

- Geology

Phases

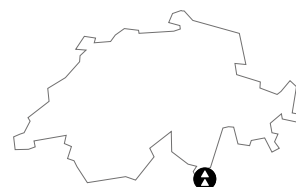
- Construction



N2 – Refurbishment Melide-Grancia Tunnel

Country

Switzerland



Domain

Roads;
Tunnel & Underground;
Equipments

Client

Federal Roads Office
(FEDRO)

Time frame

2017-2024

Construction cost

CHF 40'000'000

Services*

- Design
- Construction management

Phases

- Final design
- Tender design
- Construction design
- Construction
- Commissioning, completion

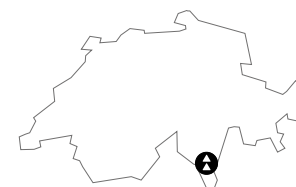
* Services in JV with partners



4-metres corridor (4MK) on the Railway Gotthard line

Country

Switzerland



Domain

Railways;
Tunnel & Underground

Client

Swiss Federal Railways
(SBB)

Time frame

2011-2020

Construction cost

CHF 125'000'000

Services*

- Design
- Construction management

Phases

- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design

* Services in JV with partners



Linth-Limmern Pumped Storage Power Plant

Europe's highest dam powers a hydroelectric power station inside a cavern. The Linthalproject is exceptional because it combines a record-breaking engineering effort (the dam, over one kilometer long, is also the longest in Switzerland) with a vision of sustainable development. The power station is reversible. This means that it can pump water to the upper reservoir (Muttsee) for later use. It works like a large storage battery, storing electricity for when it is needed.

Country
Switzerland



Domain
Hydropower;
Tunnel & Underground

Client
AXPO AG

Time frame
2007-2019

Construction cost
CHF 1'800'000'000

Services*
• Design
• Technical site supervision

Phases
• Final design
• Permit-obtaining procedure
• Tender design
• Construction design
• Construction (construction control only)
• Commissioning, completion

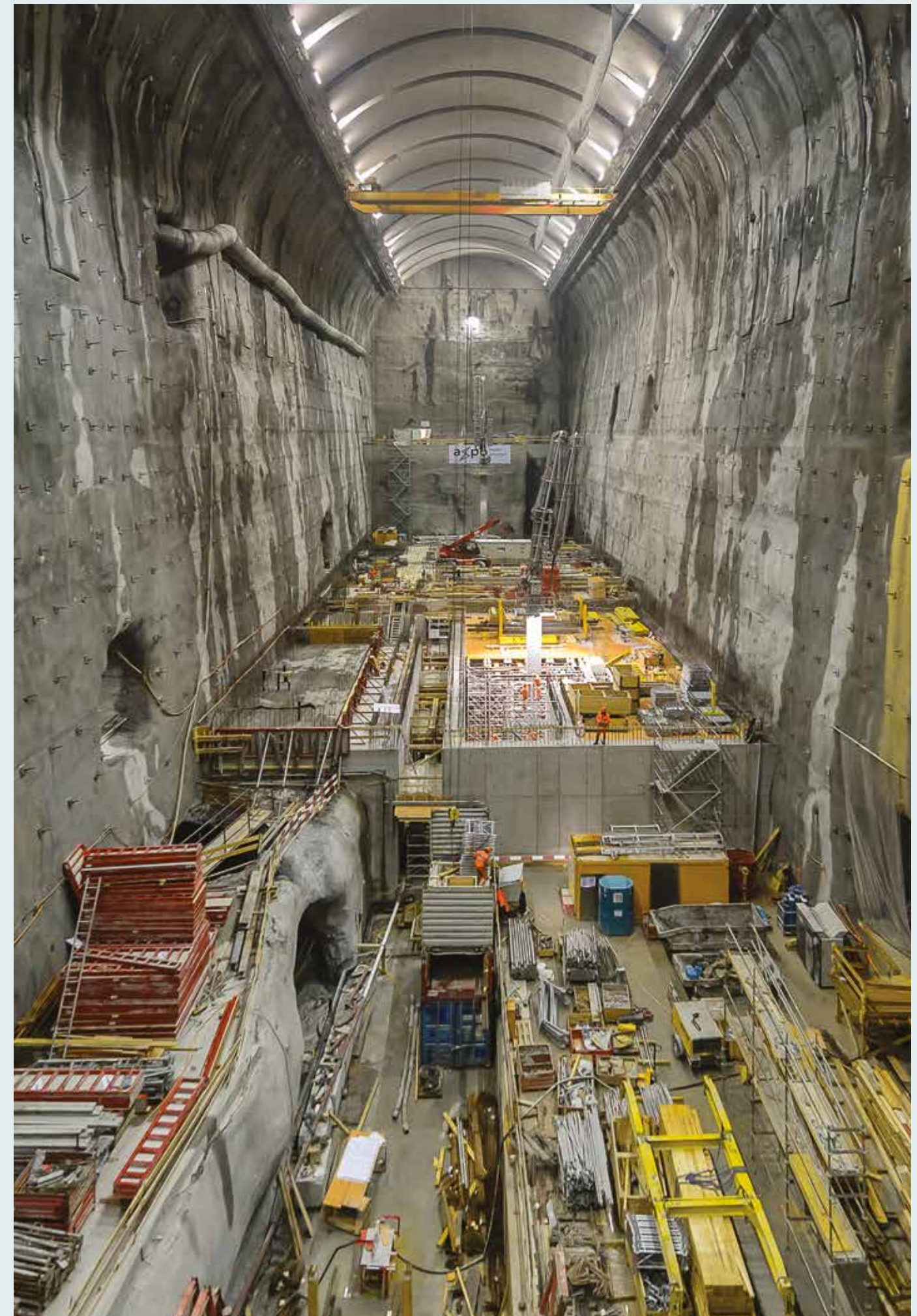
* Services in JV with partners

Maxi-hydroelectric power station in the heart of the Alps

The Limmern PSPP (1'000 MW) is a new underground hydroelectric power plant integrated into the existing power plants of Linth-Limmern hydroelectric complex, boosting the overall installed capacity from 480 MW to 1'480 MW. The plant is using the enlarged Lake Mutt (2'474 m a.s.l.) as an upper reservoir and the existing Lake of Limmernboden (1'854 m a.s.l.) as a lower reservoir. The underground power station consists of a power-house cavern with the 4 machine groups of 250 MW each (in pumping and turbine mode). It also includes a transformer cavern with the 4 transformers of approximately 200 tons each that convert the voltage of the generators from 18 kV to 400 kV. The energy produced feeds into the Swiss extra-high voltage grid.



Other underground works for the project: a headrace pressure tunnel with prestressed concrete lining; a surge shaft with reinforced concrete lining; 2 head-race pressure tunnels (2 x 1'030 m, D 5.20 m and 40° inclination ca. 84%); 2 tailrace pressure tunnels (2 x 500 m, D 5.50 m) with prestressed concrete lining; and several access tunnels and caverns including a smoke extraction shaft (L 252 m, D 4.20 m, inclination 98%).



The Linth Limmern project was extremely motivating both in terms of its scale, diversity, and the rare opportunity for us to be involved from the preliminary design review to commissioning

Personally, it constituted a significant portion of my professional life, spanning 7 years dedicated solely to it. Carried out in a JV, it also provided the opportunity to meet numerous colleagues from other engineering firms, as well as from the client.

Regis Marclay

Management member Sion Branch

Turin Automatic Metro – Line 1

Line 1 of the Turin Metro—running entirely underground with a 15.2 km-long, single-tube, twin-track tunnel (diameter of 6.8 m)—is a key element in providing a modern, collective transport network for the city. The choice of a Driverless Technology System (VAL System), the first in Italy, adds functional value to the metro in terms of reliability, economy, and safety.

Country
Italy



Domain
Metros

Client
Infra. To. Srl

Time frame
1999-2011

Construction cost
EUR 718'000'000

Services*

- Design
- Construction management

Phases

- Final design
- Construction design
- Construction

* Services in JV with partners



New Railway line Brescia-Verona

The new HS/HC Brescia East-Verona railway line is one of the linchpins of the Core Mediterranean Corridor set to connect the ports of the south of the Iberian Peninsula with the Ukrainian border. The alignment runs for approximately 48 km. The project includes the construction of three railway tunnels for a total length of almost 13 km. The tunnels are in a highly heterogeneous soft ground, for this reason the construction is performed by means of mechanized tunneling (EPB machine) and conventional method and as well as the execution of several sections by means of cut and cover and top-down. The main challenges of the project are represented by the excavation at very low overburden in soft ground underneath existing highways and buildings. Once completed, this significant railway project will allow for a swift connection between the cities of Brescia and Verona, becoming part of a broader expansion of the Italian high-speed rail network.

Country
Italy



Domain

Railways;
Tunnel & Underground

Client

GC cepav due
Final client: Italian Rail
Network (RFI)

Time frame

2018-2025

Construction cost

EUR 472'000'000

Services

- Design
- Technical site supervision

Phases

- Construction design
- Construction
- Commissioning, completion



New Railway line Messina-Catania, Giampileri- Fiumefreddo Lot 1 and Lot 2

Country
Italy



Domain

Railways;
Tunnel & Underground

Client

JV Webuild, Pizzarotti
Final Client : Italian Rail
Network (RFI)

Time frame

2020-2022

Construction cost

EUR 1'795'000'000

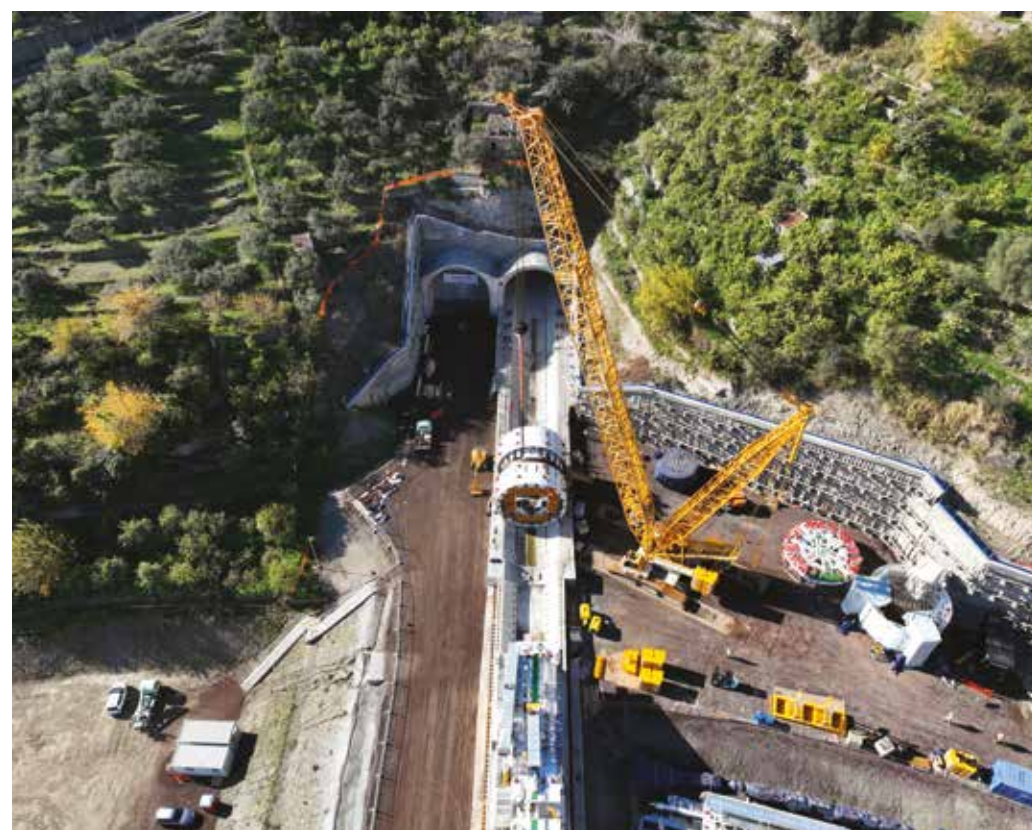
Services*

- Design
- Technical site supervision

Phases

- Detail design
- Construction
- Commissioning, completion

* Services in JV with partners



Tunnel Mont Blanc Rehabilitation vault

Country
France-Italy



Domain

Roads;
Tunnel & Underground

Client

Spie Batignolles Génie
Civil - COGEIS
Final Client : GEIE Tunnel
du Mont Blanc

Time frame

2023-2025

Construction cost

EUR 47'800'000

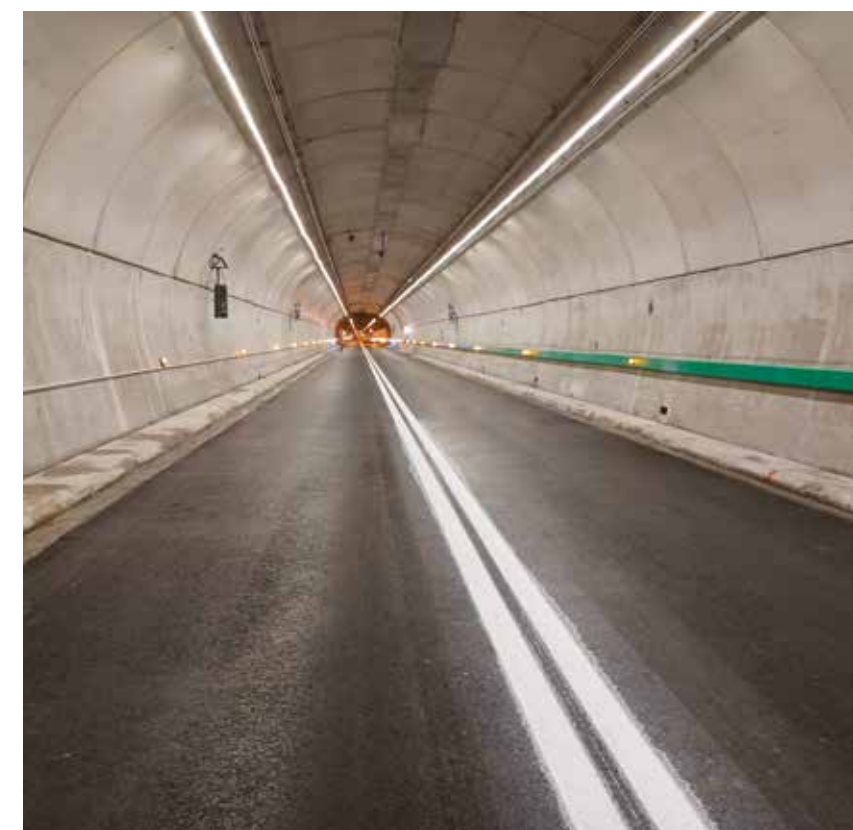
Services*

- Design
- Technical site supervision

Phases

- Preliminary design
- Final design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners



TELT Tunnel Euralpin Lyon-Turin

The Tunnel Euralpin Lyon-Turin (TELT), part of the TEN-T transport network, has a main element of the cross-border section linking France and Italy via a 57.5 km high speed railway tunnel. The tunnel crosses various alpine geological units with very heterogeneous conditions and high overburden till 2'000 m, which posed particular technical and design challenges. The tunnel comprises two twin single-track tunnels which are connected by cross-passages every 333 metres. The system is completed by 3 underground emergency and 4 access tunnels. The total excavation length is approximately 160 km. For 75% of the total length, the base tunnel is excavated using different types of TBM, depending on the expected geological risks: Gripper TBMs; Shielded TBMs; Dual Mode TBMs. Other aspects requiring in-depth design studies include logistics and the reutilization of excavated material. The work has been divided into 12 main packages. ARX is playing a major role, participating in the main construction lots both in France and Italy: Lot C08 - Underground works from the Saint-Julien-Montdenis portal; Lot C06/7 - Underground works between Saint-Martin-la-Porte and Modane; Lot C05a - Avrieux ventilation shafts and underground caverns; Lot C0 3/4 - Main Underground work in Italy, Lot C02 - Civil works in Susa; Lot C01 - Underground works for the connection of the existing line.



Domain
Railways;
Tunnel & Underground

Client
TELT SAS

Time frame
2021-2027 (Lot C08)
2018-2028 (Lot C06/7)
2020-2026 (Lot C05a)
2020-2031 (Lot C03/4)
2022-2031 (Lot C02)
2022-2031 (Lot C01)

Construction cost
EUR 230'000'000 (Lot C08)
EUR 1'430'000'000 (Lot C06/7)
EUR 220'000'000 (Lot C05a)
EUR 1'100'000'000 (Lot C03/4)
EUR 380'000'000 (Lot C02)
EUR 230'000'000 (Lot C01)

Services*
• Design (Lot C08, Lot C06/7, Lot C05a, Lot C03/4, Lot C02, Lot C01)
• Construction management (Lot C08, Lot C06/7, Lot C03/4, Lot C02, Lot C01)

Phases
• Final design (Lot C06/7, Lot C08)
• Tender design (Lot C08, Lot C06/7, Lot C03/4, Lot C02, Lot C01)
• Construction design (Lot C08, Lot C05a)
• Construction (Lot C08, Lot C06/7, Lot C03/4, Lot C02, Lot C01)

* Services in JV with partners

Bringing France and Italy closer together; bringing Europe closer together

Base tunnels aim to level out gradients in order to speed up rail traffic. The TELT base tunnel will accomplish this, reducing travel time from 80 to 25 minutes, while using significantly less energy. Once it is operating, far-reaching environmental benefits will result. Additionally, intermodal transport will increase economic opportunities throughout Europe.

The tunnel will be excavated at an altitude of 250 m above sea level and a depth of 1.7 kilometers. The excavated material will then be processed into concrete. Requiring the highest level of technical expertise, the TELT base tunnel also relies on ARX's gravitas to navigate geopolitical and administrative complexities. Two nations; two ideologies; two sets of laws; one goal.



The TELT base tunnel
is one of the world's
longest base tunnels,
and the fifth of my
career

This one is special in that it passes through the Alps, through little-known valleys, linking two major cities: Lyon and Turin. It strengthens the relationship between France and Italy, bringing neighbors together.

This professional adventure is also a human adventure, as over 1'000 people are working every day to bring the decades-long and ambitious project to fruition.

Adrian Fontana

Head of Construction Management

CERN High Luminosity Large Hadron Collider (HL-LHC), Point 5

The Large Hadron Collider (LHC) at CERN, located on the French-Swiss border near Geneva, is the largest scientific instrument ever designed and built for fundamental research. The High-Luminosity Large Hadron Collider (HL-LHC) is an upgrade of the presently operating LHC, aiding scientific progress by increasing its current performance ten-fold to further enhance its discovery potential. In order to accommodate the new technical infrastructure at the LHC's Point 5 (which houses CMS, one of the two main detectors), it was necessary to construct new surface and underground structures, including a vertical shaft 80 m deep with an excavation diameter of 12 m, a service cavern 50 m long with an excavation area of 270 m², 600 m of galleries connected to the LHC tunnel, and 14 vertical connecting cores. The first part of the vertical shaft was excavated in loose material using excavation buckets; the remainder was excavated in rock by mechanical means using a roadheader and rock breaker. The new surface structures consist of a number of technical buildings on the Point 5 site, constructed of mixed steel and concrete with a pre-cast façade.

Country
France



Domain

Buildings - civil engineering;
Tunnel & Underground

Client

CERN (European
Organization for Nuclear
Research)

Time frame

2016-2024

Construction cost

EUR 65'000'000

Services*

- Design
- Construction management
- BIM

Phases

- Preliminary design
- Final design
- Tender design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners

From the origins of the universe to cancer research

From day one, the upgrade of CERN's flagship particle accelerator captivated those who worked on it. They felt the significance of this pioneering research centre where engineers and scientists collaborated. CERN's scientific campus and its accelerator complex are home to a range of discoveries, including the invention of the World Wide Web, the operation of a unique antimatter facility, and the experimental discovery of the Higgs boson —a scalar particle with zero spin that gives mass to all other fundamental particles.

Excavation of the new underground areas for the HL-LHC upgrade was done in molasse. The proximity to the existing LHC infrastructure called for leading technical solutions, such as a BIM interface. This enabled the generation and management of intelligent data used throughout the project's life cycle.

Project awarded by The International Federation of Consulting Engineers (FIDIC)



It was my first
underground project,
and I was able
to explore different
underground
works within this
complex context of
existing scientific
infrastructures

For me, CERN has always been a mysterious place, where large scientific experiments are carried out. Now, I can say that I've played my small part in developing particle physics research in Europe.

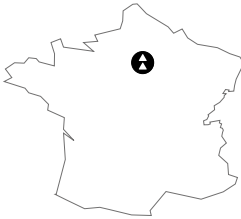
The main objective of CERN's HL-LHC project is to fully exploit the potential of the LHC infrastructure, to study the Higgs particle, and to test the Standard Model of physics to the highest accessible accuracy.

Morgane Bertrand
Engineer Underground Works

Grand Paris Express – Lot 15 Sud Lot T3C

This 8.2 km section of the Grand Paris Express joins the Fort d’Issy-Vanves-Clamart to the future Villejuif-Louis Aragon station, incorporating 5 new stations and 8 ancillary structures. Key features include the Arcueil-Cachan station, which connects to line 15 south and RER line B, and the Chatillon-Montrouge station, part of the T3C section. Villejuif Gustave-Roussy station is a major hub for lines 14 South and 15 South, situated 48 meters underground. Additionally, the OA-P04 - Park Robespierre in Bagneux features a bi-lobed molded-wall enclosure, excavated to a depth of 36.7 meters.

Country
France

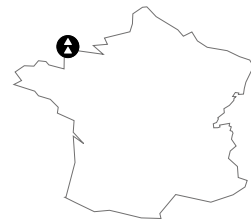


Domain Geotechnics & Special foundations; Metros; Tunnel & Underground	Services • Construction design
Client Vinci construction Final Client: Société du Grand Paris	Phases • Construction design • Construction management
Time frame 2017-2022	
Construction cost EUR 926'000'000	



European Pressurized Nuclear Reactor EPR Flamanville

Country
France



Domain
Nuclear Plants

Client
Bouygues TP/Setec
Final client: EDF

Time frame
2007-2011

Construction cost
EUR 1'900'000'000

Services*
• Design

Phases
• Final design
• Construction design

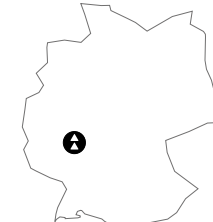
* Services in JV with partners

©EDF



Frankfurt Airport Program Management

Country
Germany



Domain
Airports

Client
Fraport AG

Time frame
2006 – 2012

Construction cost
EUR 8'500'000'000

Services
• Client's representative
• Consulting / Expertise
• General Planner
• High Level Supervision
• Project Owner Support

Phases
• Strategic planning

© Wikipedia

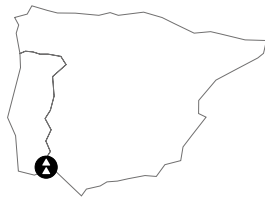


International Bridge over the Guadiana River

The International Bridge over the Guadiana River stands as one of the largest bridges in both Portugal and Spain. It was constructed in 1991 and rehabilitated from 2018 to 2021 due to corrosion detected in the cables. Boasting a central span of 324 m and a total length of 666 m, it serves as a vital link between the two countries.

Country

Portugal-Spain



Domain

Bridges & other Structures

Client

IP - Infraestruturas de Portugal

Time frame

Construction: 1990

Rehabilitation: 2018

Construction cost

Construction:
EUR 25'000'000

Rehabilitation:
EUR 13'000'000

Services

• Design

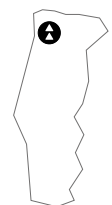
Phases

- Preliminary studies
- Preliminary design
- Construction design



Bridge over the Douro River in Entre-os-Rios

Country
Portugal



Domain
Bridges & other Structures

Client
Construtora do Tâmega,
aka, Tâmega Engineering
Final Client: ICOR
(Instituto para a
Construção Rodoviária)

Time frame
2003

Construction cost
EUR 36'000'000

Services
• Design

Phases
• Preliminary studies
• Preliminary design
• Construction design



V3 Viaduct, A4 Marão

Country
Portugal



Domain
Bridges & other Structures

Client
IP - Infraestruturas
de Portugal

Time frame
2013

Construction cost
EUR 40'000'000

Services
• Design

Phases
• Preliminary studies
• Preliminary design
• Construction design



Metro Lisbon Extension of the Red Line

This project connected the S. Sebastião station to the Alcântara station and went on to extend the line through a double track tunnel approximately 4 km long. 3 new underground stations were also added: Campolide/Amoreiras, Campo de Ourique, and Infante Santo.

Country
Portugal



Domain
Metros

Client
Metropolitano de Lisboa
E.P.E; Caba Group

Time frame
2021-2026

Construction cost
EUR 322'000'000

Services*
• Design
• BIM
• High level supervision

Phases
• Preliminary design
• Final design
• Permit-obtaining procedure
• Tender design
• Construction design
• Construction

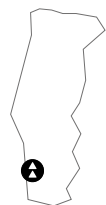
* Services in JV with partners



Terminal XXI Sines

The expansion of Terminal XXI at Sines Port, the largest deep-water port in the Iberian Peninsula, increased its presence in global shipping. Leading in national cargo volume, it accommodates an extensive range of shipping vessels and goods. With modern terminals, excellent maritime access, and a pivotal role in energy supply, Sines is poised to be a global standard in shipping.

Country
Portugal



Domain
Ports / Maritime Works

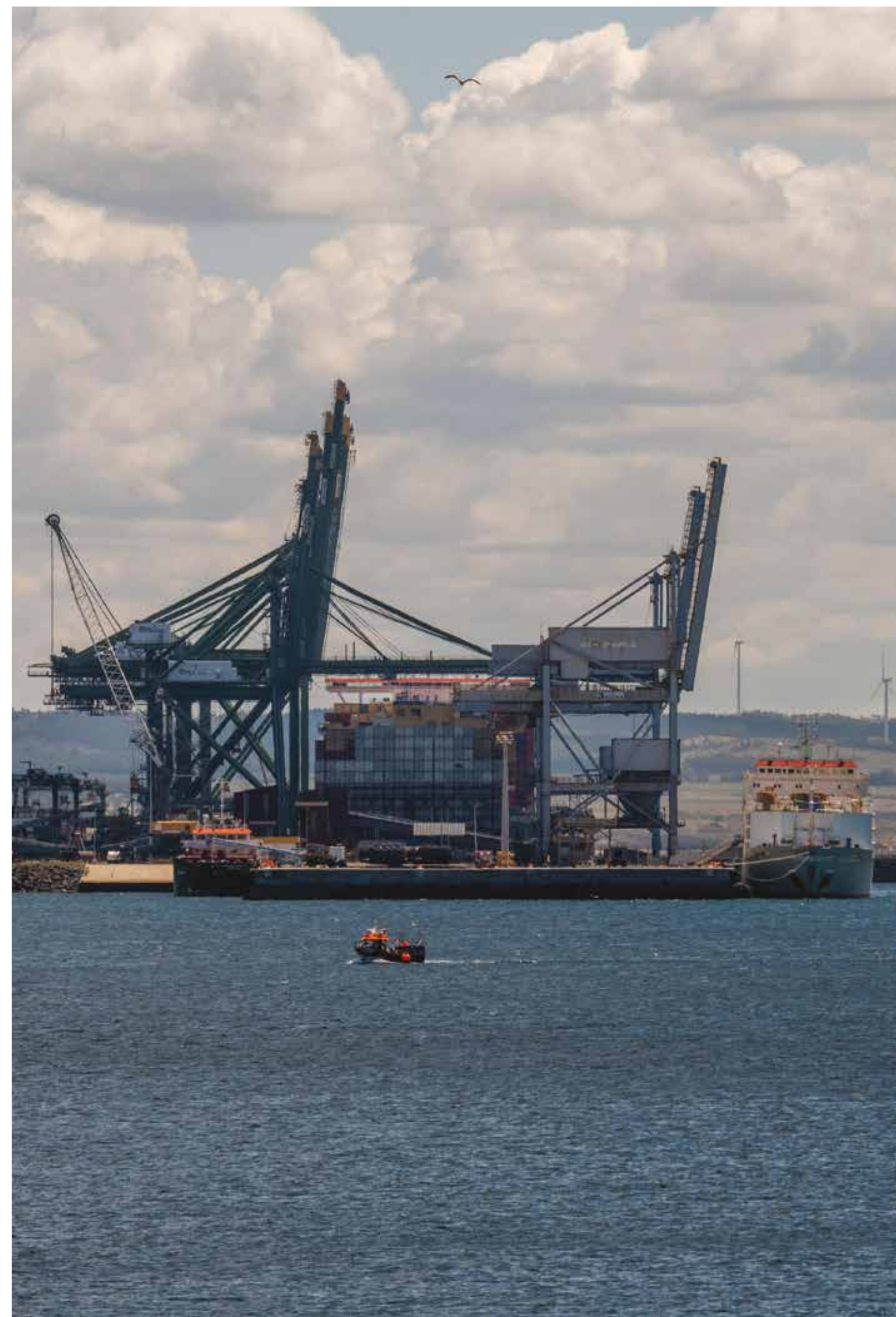
Services
• Design

Client
CPTP - Companhia
Portuguesa de Trabalhos
Portuários e Construções,
S.A.

Phases
• Preliminary studies
• Preliminary design
• Construction design

Time frame
2011

Construction cost
EUR 300'000'000



Sotra Link

Sotra Link is the largest road contract ever awarded by the Norwegian Public Roads Administration (NPRA). The project's aim is to improve travel time and safety on the west coast of the Scandinavian peninsula. It connects the island of Sotra with the urban center Bergen, creating both a road and a bicycle path, while improving adjacent secondary roads. The project includes a 900 m-long suspension bridge, in addition to 19 underpasses, 22 bridges, 9 km of motorways, 14 km of bicycle paths, and 12.5 km of tunnel. The project has been implemented with a PPP formula (Private-Public Partnership). It holds to the highest environmental standards, showing a strong commitment to reducing its carbon footprint from construction to full use.

Country
Norway



Domain

Bridges & other Structures;
Roads;
Tunnel & Underground;

Client

Sotra Link Construction
JV (Webuild, FCC
Construction, SK E&C),
Final Client: Statens
Vegvesen (NPRA)

Time frame

2020-2027

Construction cost

EUR 1'250'000'000

Services*

- Tender design
- Construction design
- Technical site supervision

Phases

- Tender design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners



No community is an island

This spectacular suspension bridge brings life on the island of Sotra closer to the city of Bergen. Located in the Norwegian county of Vestland, the Sotra Link project is a sophisticated system of bridges, tunnels, cycling paths, pedestrian underpasses, and connections to secondary roads. It implements a “macro-micro” approach to ensure sustainable mobility and unite local, regional, and national interests.

It's scheduled to open in June 2027. Once operational, it will reduce travel time by 20 minutes, eliminating traffic bottlenecks and improving access to the island of Sotra.



The Norwegian Public Road Authority's high environmental standards have led us to creative design solutions and the innovative use of materials. Our goal is to reduce the new infrastructure's carbon footprint throughout its life cycle

It's been an important professional challenge in my career and proves the success of ARX's "glocal" approach. We've organized a multicultural and multidisciplinary design team that combines colleagues from 9 different countries around the world, providing the best from each discipline for this project. Not only that, we've provided both timely design services and continuous onsite technical support.

Guido Barbieri
Country Manager Norway

North America

The *American Dream*. European curiosity has long dwelt on this phrase and even romanticized its boundless possibilities. Modern engineering feels its pull too: wide expanses and variable geology call out with untold challenges. ARX's first steps into the United States answer this call.

Joint Water Pollution Control Plant (JWPCP) Effluent Outfall Tunnel

This tunnel will transport secondary effluent from the Joint Water Pollution Control Plant in Carson, California to the existing ocean outfalls at Royal Palms State Beach, on the Palos Verde Peninsula. Its goal is to provide redundancy for the existing effluent tunnels and to increase the overall conveyance capacity of the system. The tunnel will have a length of approx. 7 miles (11.265 km) and a finished internal diameter of 18 feet (5.49 m). It will be excavated by a TBM designed to cope with water pressure up to 10 bar.

Country
USA



Domain

Tunnel & Underground;
Water / Wastewater
treatment

Client

Dragados (USA)
Final Client: LA County
Sanitation Districts

Time frame

2018-2027

Construction cost

USD 630'000'000

Services

- Support to contractor
- Consulting / Expertise
- Design
- Inspections & Assessment

Phases

- Preliminary design
- Construction

A Tunnel for the City of Angels

Much of the sewage produced by inhabitants of Los Angeles ends up at the Joint Water Pollution Control Plant (JWPCP) in Carson. From there, the treated water reaches the ocean through two tunnels that have been in operation for more than 60 years but are no longer meeting demand. This new 7-mile tunnel will ensure continued protection of the environment and public health.

The work ranges from 30 to 450 feet below ground, following the route of existing roads. This solution was chosen for its two distinct advantages. Firstly, working several meters underground reduces disruption to surface activities as it affects road traffic only marginally. Secondly, tunneling below streets utilizes the public right of way, minimizing authorization and bureaucratic involvement. It is expected to be completed in 2027, when the tunnel will join the existing ocean drains at Royal Palms Beach in San Pedro, California.



The new Los Angeles, California JWPCP effluent outfall tunnel is designed to provide relief and redundancy to the existing tunnels built almost a century ago

When the project was advertised, it was immediately obvious that this wasn't going to be an easy one. And because of that, without hesitation, ARX fought to become the primary geotechnical consultant.

The ground conditions are so diverse and extreme that our assumptions and plans are challenged daily. It's the perfect place to learn tunneling, and we're trying to get as many of our engineers exposed to it as possible. A job like this defines what we do and who we are as a Group.

Martino Scialpi

Technical Director – ARX USA

Potomac River Tunnel

Country
USA



Domain

Tunnel & Underground;
Water / Wastewater
treatment

Client

DC Water and Sewer
Authority

Time frame

2023-2030

Construction cost

USD 819'500'000

Services

- Client's representative
- Design
- Consulting / Expertise

Phases

- Tender design
- Construction



Three Rivers Protection and Overflow Reduction Tunnel (3RPORT)

Country
USA



Domain

Tunnel & Underground;
Water / Wastewater
treatment

Client

Salini Impregilo/Healy
Joint Venture
Final Client: Fort Wayne
City Utilities

Time frame

2017-2021

Construction cost

USD 188'000'000

Services

- Consulting / Expertise
- Design

Phases

- Construction design
- Construction



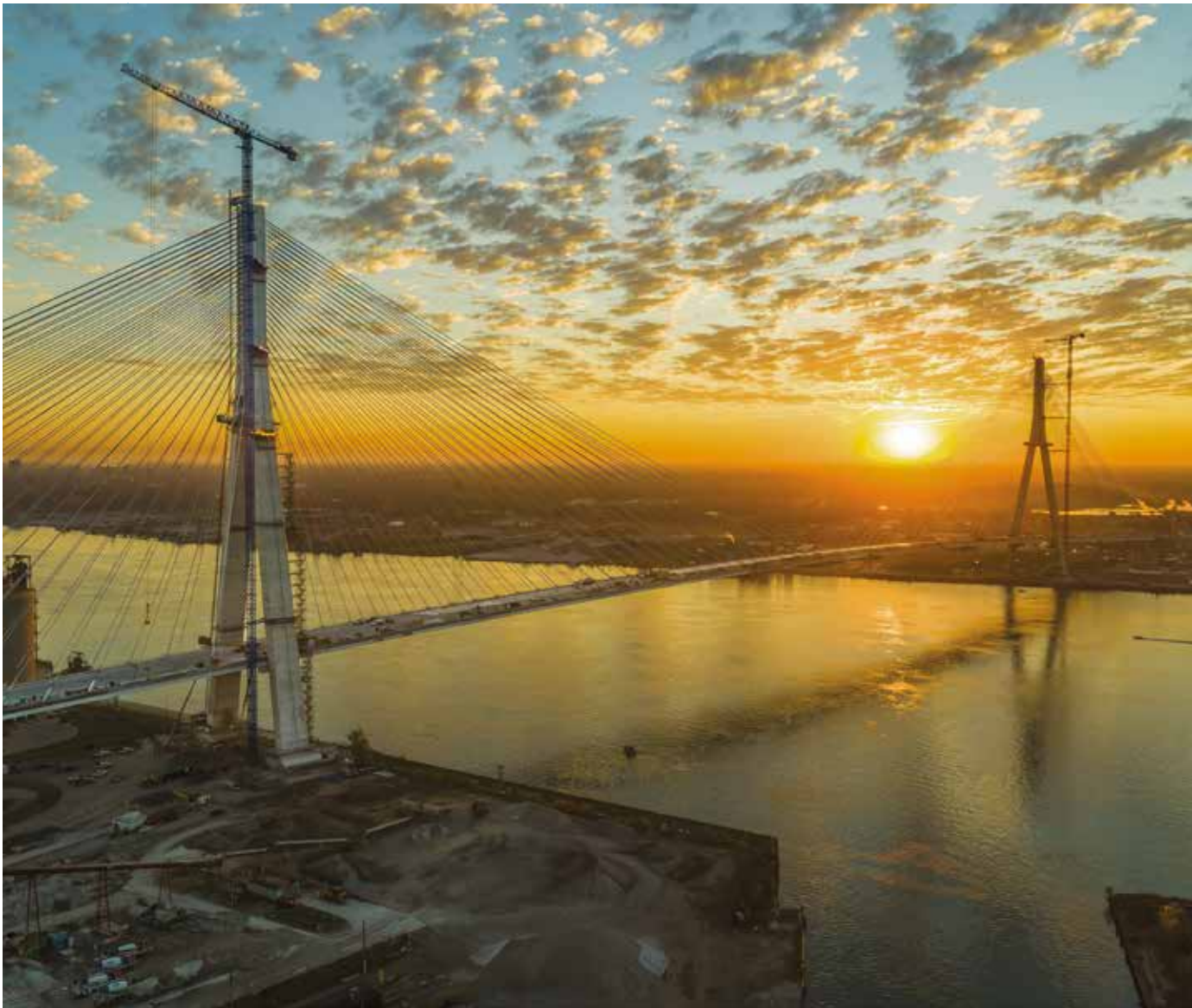
Gordie Howe International Bridge

Detroit - Windsor

The Gordie Howe International Bridge is a six-lane cable-stayed crossing spanning 1.5 miles (2,4 km), with a record 0.53-mile (0.85 km) clear span—the longest in North America. It connects the US and Canada via approach bridges linking the Ports of Entry, ensuring smooth traffic flow. Designed for sustainability and accessibility, it includes a multi-use path for pedestrians and cyclists. Once completed, it will be the longest composite span in the world.



Domain Bridge	Services* <ul style="list-style-type: none">• Design• Technical site supervision - QA/QC
Client AECOM Final client: WDBA (Windsor Detroit Bridge Authority)	Phases <ul style="list-style-type: none">• Tender design• Construction design• Construction
Time frame 2016-2025	* Services with partners
Construction cost USD 5'500'000'000	



Divisadero Chihuahua

This aerial tramway runs from Divisadero across the picturesque copper gorge “Baranca del Cobre” to a hill on the opposite side. It spans an entire valley, pillarless from station to station. With a cabin size of 60 passengers, this classic panoramic tramway offers staggering views along all 2’720 meters of cable.

Country
Mexico



Domain
Cableways

Client
Doppelmayr Garaventa Group
Final Client: Gobierno del Estado de Chihuahua, Direccion de Turismo

Time frame
2010

Construction cost
USD 13’400’000

Services
• Design

Phases
• Construction design



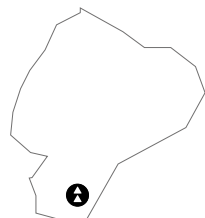
South America



South America has always pulsed to the rhythm of its many distinctive dances. Inspired by its vivacious culture, ARX is channeling this energy to further its engineering projects on the continent. South America offers countless opportunities for those willing to roll up their sleeves. Embracing the unique infrastructure, energy, and land management challenges, ARX is doing just that.

Delsitanisagua Hydroelectric Power Plant

Country
Ecuador



Domain
Hydropower

Client
Empresa Pública
Estrategica Corporación
Eléctrica Del Ecuador
"CELEC EP"

Time frame
2013-2019

Construction cost
USD 258'000'000

Services*

- Client's representative
- Independent Checking Engineer (ICE)
- High level supervision
- Project owner support

Phases

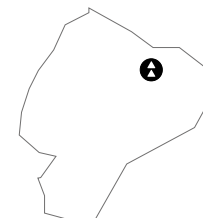
- Final design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners



Coca Codo Hydroelectric Project

Country
Ecuador



Domain
Hydropower

Client
Sinohydro Corporation Ltd
Final Client: Hidroeléctrica
Coca Codo Sinclair EP

Time frame
2009-2016

Construction cost
USD 1'980'000'000

Services*

- Design
- Construction management

Phases

- Preliminary design
- Final design
- Construction design
- Construction

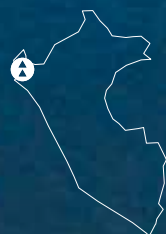
* Services in JV with partners



Port of Paita

The Port of Paita is one of Peru's main seaports and plays a crucial role in the country's commercial activities. It functions as an important gateway for the export and import of goods, facilitating trade connections with various international destinations. The Port has undergone an expansion to improve its capacity and optimize its efficiency. The expansion saw the construction of new wharves to accommodate larger ships and an improvement of the cargo handling areas.

Country
Perù



Domain
Ports / Maritime Works

Client
Etermar Engenharia
e Construção SA

Time frame
2010-2011 (Phase 1) -
new container berth with
300 m length
2020-2021 (Phase 2) -
container berth extension
with 60 m length
2020-2022 (Phase 3) -
new terminal berth with
364 m length

Construction cost
USD 131'000'000 (Phase 1)
USD 19'300'000 (Phase 2)
USD 19'800'000 (Phase 3)

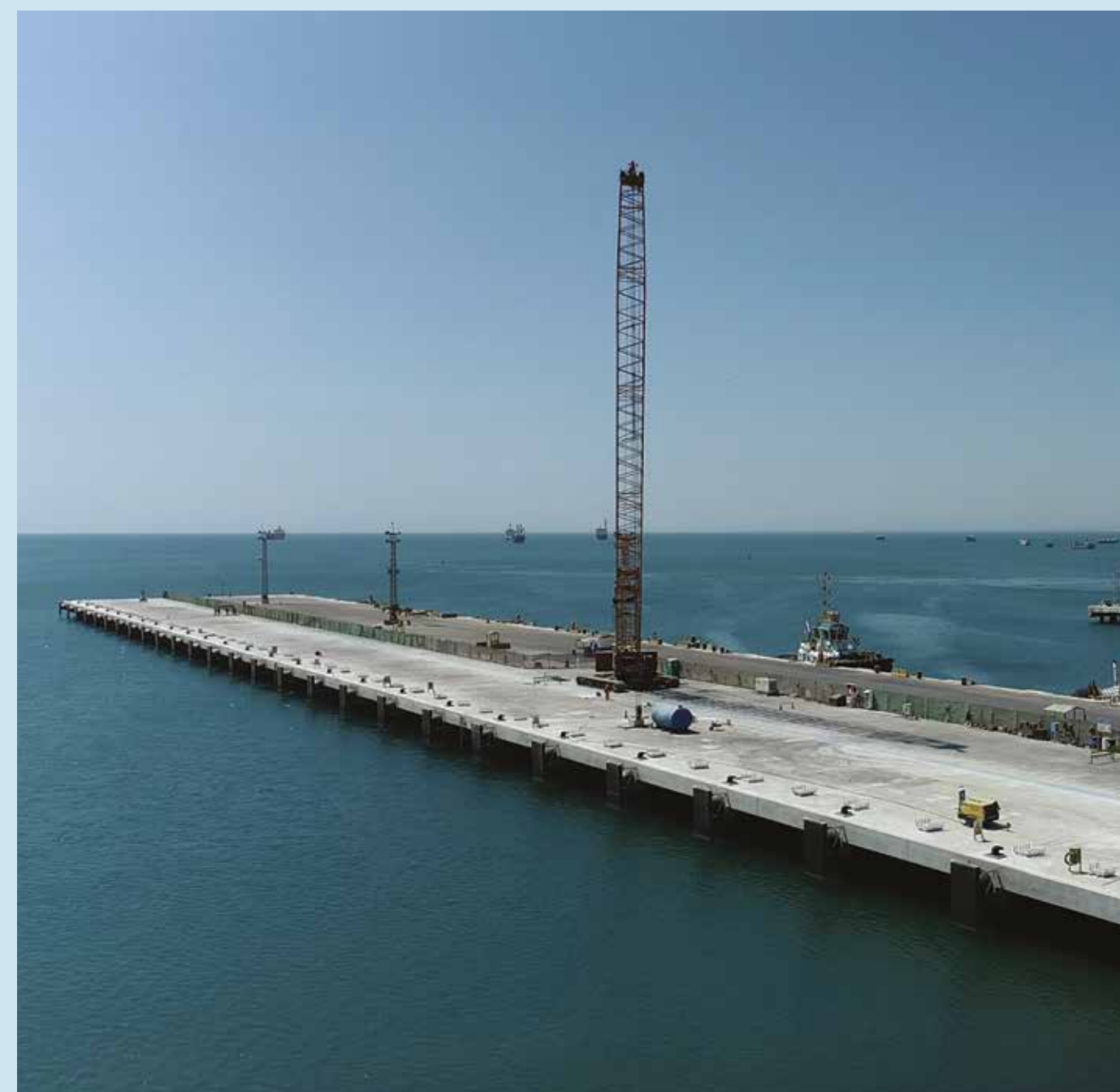
Services
• Design

Phases
• Preliminary Design
• Final Design
• Construction design

From the Andes to the ocean waves

The economy of a region, in the era of globalization, depends on its efficiency in receiving the products it needs and exporting those it makes. This is why port facilities play a strategic role, especially if one lives in a country that is largely bordered by territories with little infrastructure, such as the Andes and the Amazon, and instead has the Pacific as its gateway to the world. The modernization of the port of Paita, the second largest in Peru in terms of container movement, has made the economy of the entire region more dynamic.

The modernization works, including the new container pier, were inaugurated in October 2014, and made it possible to triple the terminal's performance, reaching up to 70 containers per hour/ship. As a result, Paita has become one of the top 50 ports in the American sub-continent.



Ports are gateways that facilitate the exchange of goods between nations and play a vital role in the global economy

The second port in Peru in terms of container movement, Païta mobilizes import and export containers and general cargo.

The challenge of designing all 3 extension phases was addressed by a simple honesty which goes straight to the essence of the physical characteristics of the materials under consideration of acting forces such as gravity, temperature, earthquake, mooring and berthing loads.

Luís Cândia Martins
Country Manager Portugal

Extremely Large Telescope (ELT)

Country
Chile



Domain
Buildings – civil engineering

Client
European Southern Observatory (ESO)

Time frame
2017-2028

Construction cost
USD 3'100'000'000

Services*
• Design

Phases
• Preliminary design
• Construction design

* Services in JV with partners

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Alto Maipo Hydroelectric Project

Country
Chile



Domain
Hydropower;
Tunnel & Underground

Client
Strabag SpA,
Constructora Nuevo Maipo
S.A. (Hotchief – CMC JV)
Final Client: AES Gener S.A.

Time frame
2013-2021

Construction cost
USD 3'000'000'000

Services*
• Design
• Construction management

Phases
• Final design
• Construction design
• Construction

* Services in JV with partners



Riachuelo Sewage System

The Riachuelo' System in Buenos Aires is a mega project implemented by AySA S.A. This complex system will contribute to environmentally decontaminate the area of the Matanza-Riachuelo' basin, one of the most contaminated areas in the world. The project is divided into several lots, 3 of which are interdependent and interconnected. In particular, it is Lot 1, the 'Riachuelo Left Margin Collector', which intercepts both industrial and civil wastewater and prevents it from entering the river. Lot 2, 'the Water Treatment Plant', deals with the primary treatment of wastewater. Finally, Lot 3, the 'Outfall', receives the pretreated water and discharges it by diffusion into the Río de la Plata' estuary at a distance of approximately 12 km from the coast; the outfall will discharge up to 27 M3/s of treated liquid by gravity and using the dilution process to minimize any potential negative effect in the water body.

Country
Argentina



Domain

River engineering;
Water / Wastewater
treatment

Client

Agua y Saneamientos
Argentinos S.A.

Time frame

2014-2021 (Lot 1)
2014-2022 (Lot 3)

Construction cost

USD 320'000'000 (Lot 1)
USD 434'000'000 (Lot 3)

Services*

- Client's representative
- Independent Checking Engineer (ICE)
- High level supervision
- Project owner support

Phases

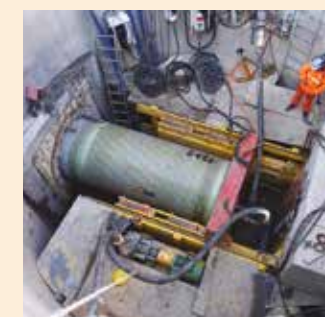
- Final design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners

The silver river shines again

In South America, the Rio de la Plata (the Silver River) is the great estuary flowing between Buenos Aires and Montevideo. Some of its tributaries, such as the Riachuelo, are considered among the most polluted basins on earth, with millions living on its banks of unfiltered industrial sewage.

Driven to put an end to this desperate situation, the local community has collaborated with the World Bank in this extensive restoration. The project is divided into several lots, 3 of which are interdependent and interconnected, presenting distinct engineering challenges. Lot 1, the 'Riachuelo Left Margin Collector', intercepts both industrial and civil wastewater, preventing it from entering the river. Lot 2, the 'Plant for Water Pretreatment', deals with the physical treatment of wastewater. And Lot 3, 'Outfall', receives the pre-treated water and discharges it by diffusion into the Río de la Plata 12 km from the coast.



Riachuelo binds land and water together, uniquely capturing the art of tunneling

As engineers, our daily work on this project was driven by passion, dedication, and innovation. My years of involvement in the design and execution of the underground works have been a once-in-a-lifetime opportunity.

I owe considerable professional and personal growth to this project, and it's been a privilege to have contributed its success.

Pierluigi Nionelli

Head of Business Line Hydropower

Bus Rapid Transportation Goiânia

Country
Brazil



Domain
Roads

Client
Prefeitura do Município
de Goiânia

Time frame
2016-2018

Construction cost
USD 75'800'000

Services*
• High level supervision

Phases
• Construction design

* Services in JV with partners



Monorail São Paulo Line 17

Country
Brazil



Domain
Metros

Client
Metrô – Companhia
do Metropolitano de
São Paulo

Time frame
2010-2011

Construction cost
USD 454'500'000

Services*
• Design

Phases
• Preliminary design
• Final design

* Services in JV with partners



Metro São Paulo Line 6

Country
Brazil



Domain
Metros

Client
Metrô – Companhia
do Metropolitano
de São Paulo

Time frame
2016-2018

Construction cost
USD 2'840'000'000

Services*
• High level supervision

Phases
• Construction design

* Services in JV with partners



Guarulhos International Airport Terminal 2 Refurbishment

Country
Brazil



Domain
Airports

Client
Concessionária do
Aeroporto Internacional de
Guarulhos - GRU AIRPORT

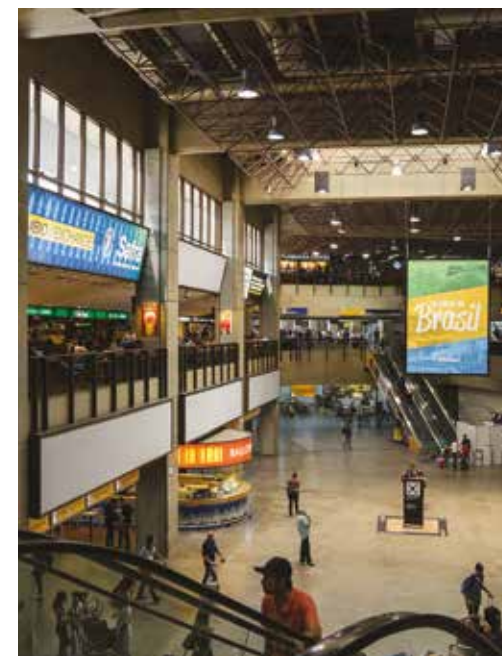
Time frame
2014-2017

Construction cost
USD 39'000'000

Services*
• Design

Phases
• Construction Design

* Services in JV with partners



Oceania

Say Australia and you likely picture kangaroos and koalas. But Downunder is more than its unique wildlife. This continent-nation is betting heavily on its future with major investments in energy supply and mobility in urban centers. ARX has an important role in both, while helping design this country's future.



Snowy 2.0 Project, NSW

Snowy 2.0, a pumped hydropower storage plant, is the largest renewable energy project currently under construction in Australia. It will add 2'200 megawatts of on-demand renewable energy and about 350'000 megawatt hours of large-scale storage capacity to the existing scheme and the national electricity market.

Country
Australia



Domain

Hydropower;
Tunnel & Underground

Client

Future Generation Joint
Venture (FGJV)
Final client:
Snowy Hydro Ltd

Time frame

2018-2028

Construction cost

AUD 12'800'000'000

Services

- Design
- Design (Optimisation and review)
- Technical site supervision (TBM follow-ups)

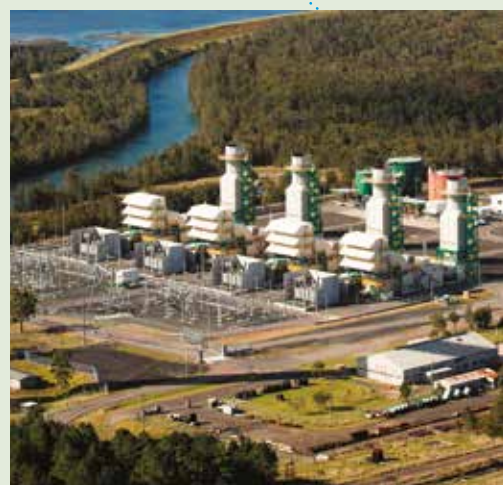
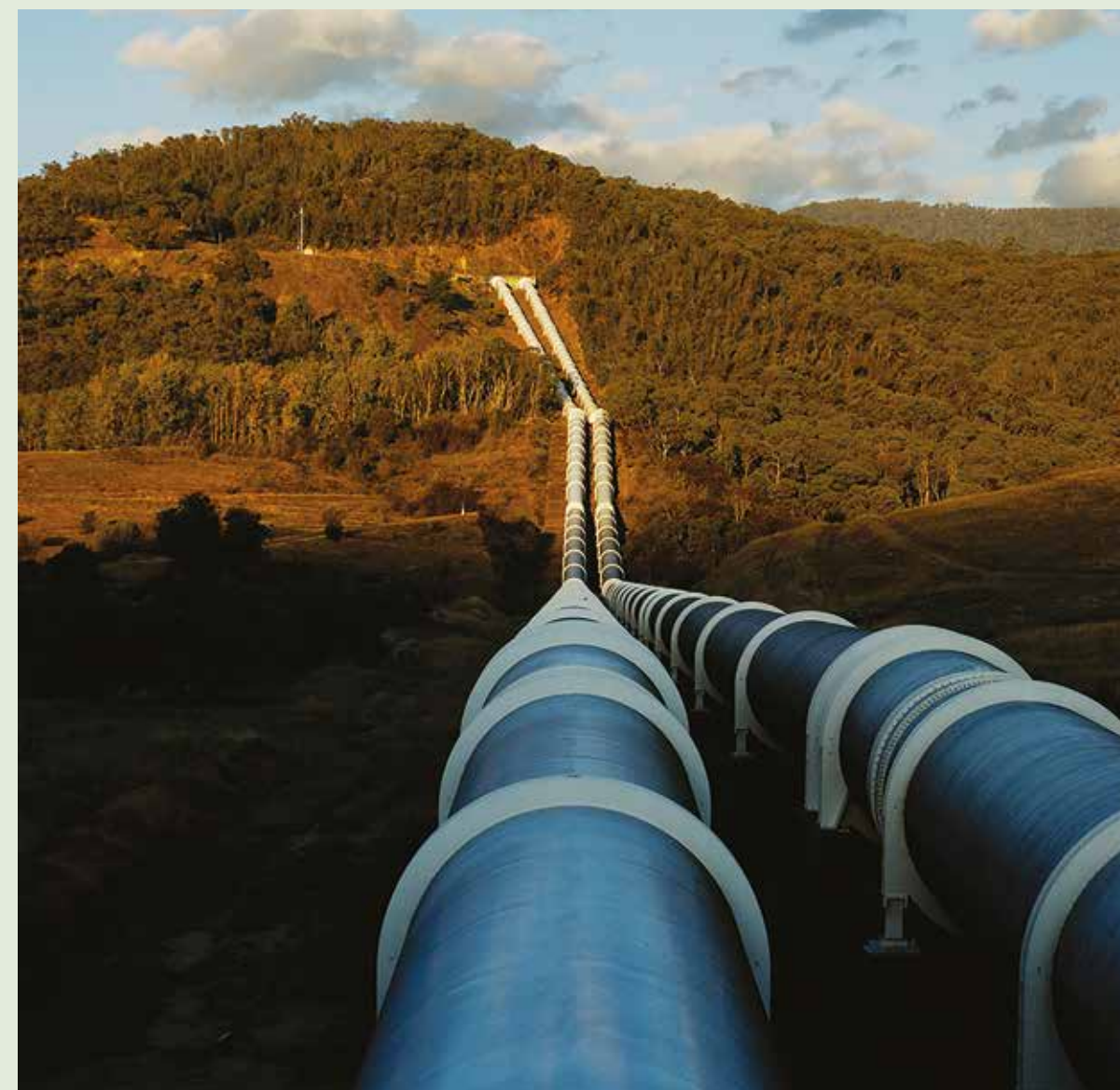
Phases

- Tender design
- Detailed design
- Construction

Energy from the ground for a sustainable future

The weakness of renewable energy is its dependence on uncontrollable factors: the presence of the sun for photovoltaics, and rainfall that fills reservoirs for hydroelectricity. In Australia, Snowy 2.0 is a cyclopean project, extending for tens of kilometers underground, based on a closed-loop hydroelectric production system. Using excess photovoltaic and wind energy to replenish the water used in storage reservoirs, there is always water available for energy production.

The project, owned by Snowy Hydro, connects two existing reservoirs belonging to the Snowy Mountain Scheme—Tantangara and Talbingo—through 27 km of tunnels and the construction of a new underground power station at a depth of about 800 metres. Snowy 2.0 is considered a vital project for Australia's economy and energy transmission. Its aim is to provide massive water storage for the hydroelectric generation needed to balance the growth of wind and solar energy. This will result in the retirement of thermal power stations.



Snowy 2.0 is a cornerstone project allowing Australia to progress toward a renewable future, poised to realize the government's ambitious net zero target by 2050

Its complexity is unparalleled, encompassing challenges in geology, scale, transient pressures, design longevity, and the intricate load cycles throughout its operational lifespan. Engaging with such a multifaceted endeavor has been amongst the highlights of my technical career journey, offering a profound opportunity for all involved to appreciate the marvels of modern engineering.

Moreover, it serves as a rich repository of lessons learned, invaluable for guiding the development of future plants in the country.

Sabrina Kost

Country Manager Australia

Sydney Metro – WSA – Station Boxes & Tunnels, NSW

Country
Australia



Domain
Metros

Client
CPB & Ghella JV
Final client: Sydney Metro

Time frame
2021-2023

Construction cost
AUD 1'800'000'000

Services
• Design
• Technical Site supervision

Phases
• Tender design
• Construction design
• Construction



Northern Sydney Freight Corridor (NSFC), NSW

Country
Australia



Domain
Railways

Client
Transport for NSW (TfNSW)

Time frame
2014

Construction cost
AUD 1'600'000'000

Services
• Consulting / Expertise

Phases
• Preliminary design



Cross River Rail, QLD

Cross River Rail is a 10.2 km rail line in Brisbane, between Dutton Park and Bowen Hills, which includes a 5.9 km twin tunnel under the Brisbane River and Brisbane CBD. The project also includes construction of four new high-capacity underground stations at Boggo Road, Woolloongabba, Albert Street, Roma Street and redevelopment of the existing over Dutton Park Station. The project will integrate with proposed Brisbane Metro services.

Country
Australia



Domain
Railways;
Tunneling & Underground

Client
CPB-Ghella-BAM-UGL
(CBGU) JV
Final client: Cross River
Rail Authority

Time frame
2018-2022

Construction cost
AUD 2'700'000'000

Services
• Design
• Technical site supervision

Phases
• Tender design
• Construction design
• Construction



Forrestfield-Airport Link, WA

The Forrestfield-Airport Link is a train line that connects the outer Perth suburb of Forrestfield to the city. This vital project has opened up Perth's eastern suburbs to the rail network for the first time; a trip to the Perth Airport is now five minutes shorter by train than by car. The suburban 8.5 km rail link includes twin tunnels 7.1 km long and 6.17 m ID, bored by two variable density TBMs. It also provides 3 new rail stations—2 underground (Redcliffe Station and Airport Central Station), and 1 above ground (Forrestfield Station).

Country
Australia



Domain
Railways;
Tunneling & Underground

Client
Webuild
Final client: Public
Transport Authority of
Western Australia (PTA)

Time frame
2016-2020

Construction cost
AUD 1'860'000'000

Services
• Design
• Technical site supervision

Phases
• Tender design
• Construction design
• Construction



Asia



Asia is a continent of records. It's the largest, at more than 43 million square kilometers, and the most densely populated, with more than 100 people for each of those square kilometers. That equates to more than 4 billion inhabitants! These numbers bring with them a multitude of issues to be faced over the next few centuries. ARX is up for the challenge. Tackling complex projects with innovative solutions, our eye is on Asia's future.

Friendship Bridge over the South China Sea

The Friendship Bridge has become one of Macau's many attractions. Open since 1994, it is the longest of the three bridges crossing the Bay of Praia Grande in the South China Sea with a total length of 4'400 m. It's comprised of two cable-stayed bridges with 112-meter spans and reaches a maximum height of 30 meters, allowing ships to pass beneath. Most of the bridge uses viaducts with 35-meter spans and a system of piles to ensure continuous operation.

Country
China



Domain
Bridges & other Structures

Client
Government of Macau

Time frame
1994

Construction cost
USD 55'000'000

Services
• Design

Phases
• Preliminary studies
• Preliminar design
• Construction design

Friendship travels over the waves of the sea

Macau consists of a single peninsula and two islands. One of these, the island of Taipa, is connected to the peninsula by several bridges. At 3 km, the longest and most impressive of these is the 'Ponte da Amizade' (Friendship Bridge), which is crossed by the millions of visitors every year who land at the international airport and travel to Taipa. In Macau, Asian exotic charm meets Portuguese colonial architecture. The result is futuristic buildings such as the Macau Tower, more than 300 meters high, and the luxurious hotels and casinos in the 'Las Vegas of the Orient'.

The Friendship Bridge was prefabricated in nearby Chinese shipyards. A fourth bridge connecting the peninsula and Taipa is currently under construction as the island's transformation continues.



When built, the Friendship Bridge was important for improving the mobility in the territory of Macao but also, to no lesser extent, as a political symbol of the cooperation between Portugal and China

The immaterial dimension of the bridge as a link between the past and the future was counterbalanced by the harsh reality of a design-build tender.

The challenge of a functional, aesthetically pleasing and yet economic crossing that comprises a South Trestle, Inner Bridge over the access channels to the port, Outer Bridge over the two access channels to the Passenger Terminal and North Trestle was addressed by the extensive use of precasting at highly competitive production and transport costs.

The choice has proved to be the right one.

José Cândio Martins
Senior Engineer

Siddhababa road tunnel



The Siddhababa tunnel, situated on the Butwal-Palpa section of the Siddhartha Highway, extends 1.126 km. This specific segment presents significant risks due to frequent rockfalls and landslides, particularly during the monsoon season. The completion of the tunnel will improve the safety conditions of the road. Local residents also anticipate that the tunnel will play a key role in promoting the economic development of the region.



Domain Roads; Tunnel & Underground	Services <ul style="list-style-type: none">• Consulting / Expertise• High level supervision• Project owner support
Client Swiss Agency for Development and Cooperation (SDC)	Phases <ul style="list-style-type: none">• Construction design• Construction
Time frame 2022-2024	
Construction cost USD 56'600'000	



Metro of Bangalore

The introduction of these metro lines represents more than just a physical infrastructure upgrade; it symbolizes a commitment to prioritizing the well-being of the city's inhabitants. By embracing innovative solutions for urban mobility, Bangalore is paving the way towards a greener, more livable future, where the relentless pulse of the city is harmonized with the tranquility of clean air and smooth travel.

Country
India



Domain
Metros

Client
BMRCL UG1 Project /
COASTAL-TTS JV

Time frame
2011-2018

Construction cost
USD 110'000'000

Services

- Design
- Technical site supervision QA/QC

Phases

- Preliminary design
- Final design
- Tender design
- Construction
- Commissioning, completion

A metro marathon against traffic

Efficient transportation solutions are top priority in Asia's megacities, where traffic and pollution may undermine quality of life if left unchecked. Bangalore, a metropolitan area of 8 million people in the south-west of India, has taken on collective transportation as the solution. Two new metro lines now run through the commercial and residential center of the city, for a total of about 42 kilometers.

The contract concerns a 3.6 km section of the Bangalore Metro's north-south corridor. The tunnels, each 2'515 m long, have a double-drilling configuration for a single track with an internal diameter of 5.6 meters and were excavated using three EPB-TBMs. Conversely, the two tunnels on the north and south sides were bored using the cut-and-cover technique for a total length of 600 m. The project also includes two underground stations, City Market and Chickpete, each 225 m long and constructed in cut-and-cover with bottom-up structures, excavated below the water table. Two TBM shafts, a bypass near the Majestic station, and three safety cross passages complete the job. The tunnel travels under densely urbanized areas and passes through soft, water-saturated soils, including silty sand and clay silt, beneath granite rock.



Bangalore is the capital of Karnataka state, situated in the southern India. It's also known as the Silicon Valley of India, with a reputation for being a happening and vibrant city

It attracts a young and ambitious workforce eager to pursuing IT careers and explore entrepreneurial ventures.

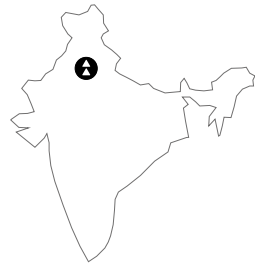
In an attempt to decongest this ever-expanding city, authorities decided to implement a metro line. It was a great opportunity for us to design the underground part of the north-south corridor of the Bangalore Metro. Participating in the design and execution phases was an unforgettable experience, almost like fiction for us to see an underground line be built in India. When the project was commissioned, it was the first metro line in the southern part of India and considered an engineering marvel, on par with any modern metro in the world.

Lalit Chhabra
Country Manager India

Delhi Metro, Phase III

Delhi Metro is one of the fastest growing networks in the World. Phase III is 120 km long (60% elevated and 40% underground), and it is divided into 7 sections. The 58.6 km-long Mukundpur-Shiv Vihar Corridor interconnecting north, west and east Delhi, is one section of the ambitious Phase-III. It includes the CC04 Contract for the northern end of Line 7.

Country
India



Domain
Metros

Client
DMRC Delhi Metro
Corporation Ltd /
Continental Engineering
Corporation Ltd.

Time frame
2012-2015

Construction cost
USD 61'000'000

Services

- Design
- Technical site supervision QA/QC

Phases

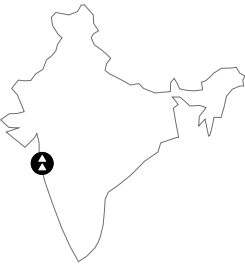
- Preliminary design
- Final design
- Tender design
- Construction
- Commissioning, completion



The Mumbai-Pune Missing Link Project

The link from the Khopoli Exit to the Sinhgad Institute will complete the 3+3 lanes expressway currently in operation from Mumbai to Pune. The link will improve transportation throughout the region. This 13.3km-long link with a string of viaducts, tunnels, and bridges aims to bypass the Khandala Ghat's hairpin turns which are prone to landslides and traffic jams. Due to the straighter route, distance will be reduced by 6 km and travel time by 25 minutes.

Country
India



Domain
Roads

Client
Maharashtra State Road
Development Corporation
Ltd. (MSRDC)

Time frame
2017-2024

Construction cost
Package 1: USD 323'000'000
Package 2: USD 174'000'000

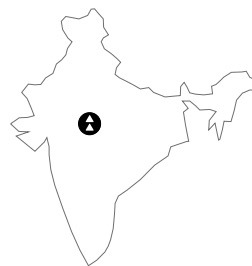
Services
• Construction management

Phases
• Tender design
• Construction design
• Construction
• Commissioning, completion



Metro Rail Project at Bhopal and Indore

Country
India



Domain
Metros

Client
Madhya Pradesh Metro Rail Co Limited (MPMRCL)

Time frame
2018-2026

Construction cost
USD 1'790'000'000

Services

- Construction management

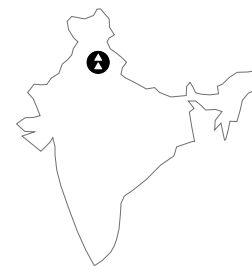
Phases

- Tender design
- Construction design
- Construction
- Commissioning, completion



Rishikesh-Karnaprayag line – Tunnel Package 3

Country
India



Domain

Railways;
Tunnel & Underground;
Bridges & other structures

Client
Rail VIKAS NIGAM LIMITED

Time frame
2019-2026

Construction cost
USD 284'000'000

Services

- Design
- Construction management

Phases

- Preliminary design
- Final design
- Tender
- Construction
- Commissioning, completion



Middle East



Next on our journey around the world, we arrive in the Middle East. Nestled between North Africa and West Asia, this region has its own unique charms and challenges. The rich culture and intense speed of change is unparalleled, providing opportunity for engineering at every turn. Where there was desert, now stand the world's tallest skyscrapers—evidence of where ingenuity will take in the Middle East.

Istanbul Metro

Country
Türkiye



Domain
Metros

Client
Kolin, Kalyon Cengiz (KKC)
Construction JV + Republic
of Türkiye, Ministry of
Transportation, Maritime
and Communications,
Directorate General of the
Infrastructure Investments

Time frame
2016-2024

Construction cost
USD 1'000'000'000

Services

- Design
- BIM
- Independent Checking Engineer
- Project owner support
- Support to contractor

Phases

- Final design
- Construction design

Gayrettepe - Istanbul Airport Metro Line connects the airport to the city center. Built entirely underground, it is a well-integrated 38-km double line that provides fast transport (120 km/h). Capacity is up to 75 passengers per hour per direction, from both the European and the Anatolian sides. The line has 8 stations in total, and 3 of them are inside the airport limits.



North-South Railway (NSR) Track Doubling

The NSR line is a 1'710-mile rail network in central and eastern Saudi Arabia, built and operated by Saudi Arabia Railway (SAR). To enhance freight capacity, the project focuses on optimizing infrastructure size and location along the corridor. Internal studies have identified key bottlenecks, prompting the construction of a second track parallel to the main line. Alongside the new track, the project includes a state-of-the-art maintenance depot with a final capacity of 3'600 wagons, ensuring efficient operations and long-term sustainability.



Domain Rail network	Services <ul style="list-style-type: none">• Design
Client Ministry of Transport and Logistics Services Supervised by: Saudi Arabia Railways (SAR)	Phases <ul style="list-style-type: none">• Preliminary studies• Preliminary design• Tender design• Construction design
Time frame 2024-2026	
Construction cost USD 1'800'000'000	



Lake Perimeter

Webuild, commissioned by NEOM, will construct three dams and related works, forming a freshwater lake in the mountain destination Trojena, Saudi Arabia. Over 10'000 people will participate in this futuristic infrastructure project in the desert mountains. The main dam will be made of roller-compacted concrete (RCC) and will be 145 meters high, 475 meters long, with a volume of approximately 2.7 million m³. The second dam will also be in RCC, while the third one will be in rock, with a volume of 4.3 million m³. The artificial lake will cover an area of 1.5 km² and have an island reserved for botanical dives and walks.



Domain Roads; Tunnel & Underground; Geology; Geotechnics & Special foundations;	Services • BIM • Design
Client Webuild Final client: NEOM	Phases • Detailed design
Time frame 2024-2026	
Construction cost USD 4'700'000'000	



RPP2 Cooling Water Intake Structure

The 2'800 MW Rabigh Power Plant No. 2 features a cooling water intake pumping station and valve pit, along with a bridge over the intake basin. The 200 m-long intake structures, 60 m wide and 14.50 m high, are designed for full unit emptying during maintenance. Key design considerations include uplift, watertightness, and soil-structure interaction. Additional structural elements encompass the header pit, on-ground slabs, and a 193 m-long bridge.



Domain
Ports / Maritime Works

Client
Huta Marine Works Ltd.

Time frame
2013

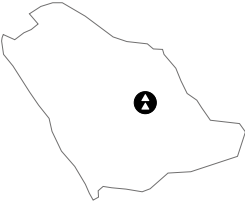
Construction cost
USD 77'000'000

Services
• Design

Phases
• Preliminary studies
• Preliminary design
• Construction design

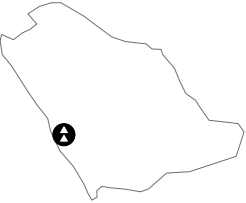


King Abdul Aziz Road (KAAR) Infrastructure Project

Country Saudi Arabia	Domain Bridges & other Structures; Roads; Tunnel & Underground	Services • Consulting/Expertise
	Client Nesma & Partners Contracting Company Limited	Phases • Preliminary studies
	Time frame 2016-2018	
	Construction cost USD 1'750'000'000	



Old Makkah Road Bridge

Country Saudi Arabia	Domain Bridges & other Structures	Services • Design
	Client Huta Marine Works Ltd.	Phases • Preliminary studies • Preliminary design • Construction design
	Time frame 2006	
	Construction cost USD 12'000'000	



Africa

Africa is a land of variety. Transected by the equator and the tropics of Cancer and Capricorn, it provides a wide scope of climates and environments. Similarly, project opportunities range widely from economic ventures to humanitarian endeavors. ARX's presence here speaks to both, capturing opportunity and transcending it to modernize facilities and infrastructure where needed most.



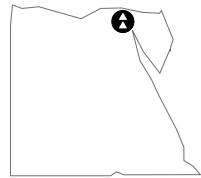
Cairo Metro

Line 3

Phase 3

Line 3 of the metro crosses Cairo from east to west, connecting districts west of the Nile to the airport, over a distance of nearly 40 km. The Phase 3 of this project is divided in 3 parts: common trunk from Attaba to exist shaft after Sudan Station (identified as Phase 3A), then north branch to Imbaba (Phase 3B) and the south branch to Mohandisine (Phase 3C), 17.7 km and 15 stations.

Country
Egypt



Domain
Metros

Client
Egyptian French Joint
led by Vinci
Final client: NAT (National
Authority of Tunnels)

Time frame
2018-2023

Construction cost
USD 1'100'000'000

Services
• Design

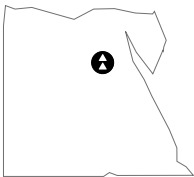
Phases
• Final design
• Construction design



New Assiut Barrage

The New Asyut Barrage is one of the largest water infrastructure projects recently built on the Nile River. The dam replaces the ancient barrage, built in 1909. Its purpose is to secure the water needs of present and future generations, while enhancing and regulating irrigation in Middle Egypt. Additionally, the dam will improve navigation on the Nile through an advanced control system. The project also includes the construction of a clean hydroelectric power plant, notable for its long lifespan and low operational and maintenance costs.

Country
Egypt



Domain
Bridges & Other structures;
River engineering

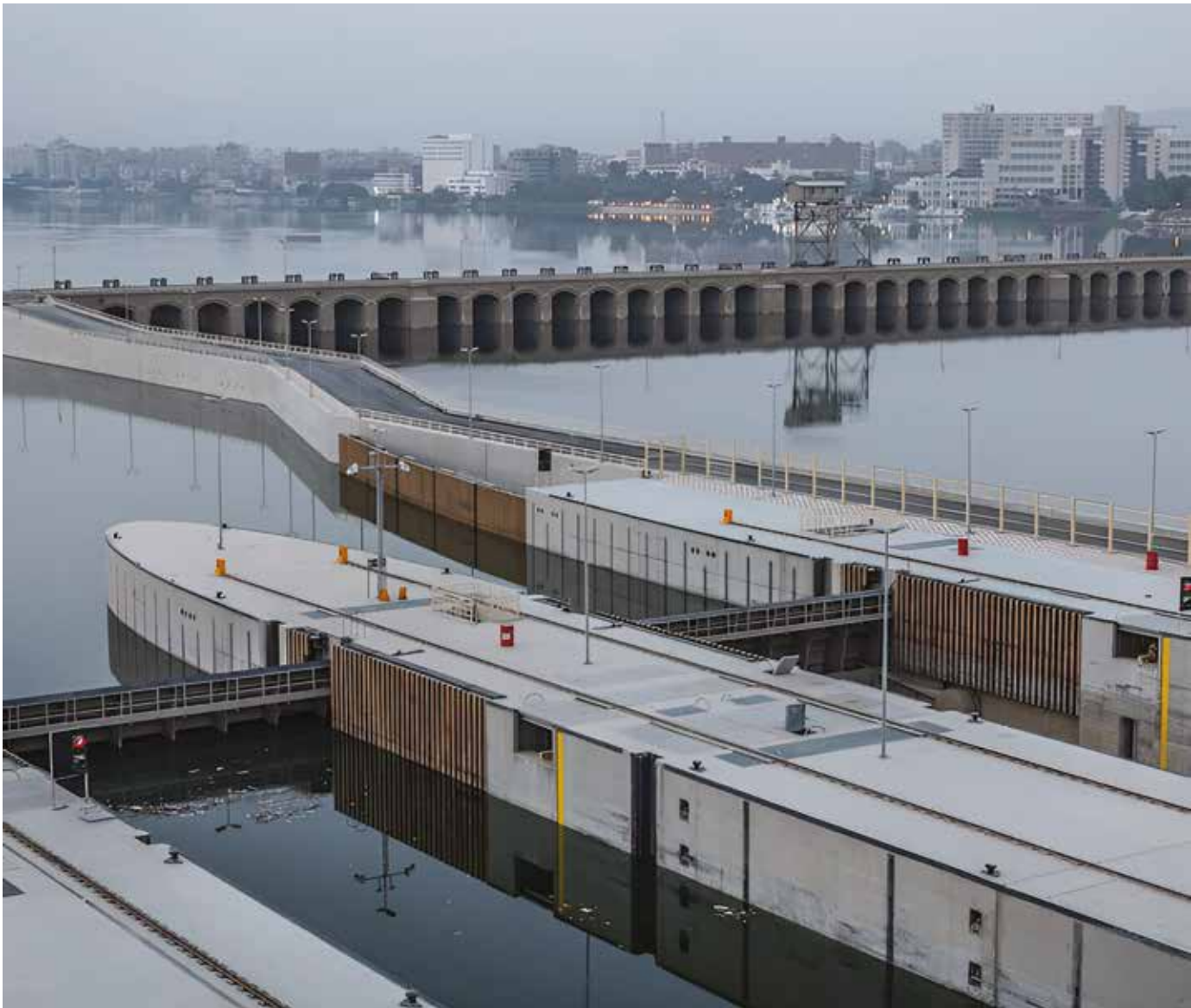
Client
Egyptian French JV
(Leader Vinci Construction)

Time frame
2013-2015

Construction cost
USD 370'000'000

Services
• Design

Phases
• Final design
• Construction design



MRO & Cargo infrastructures

Airport Blaise Diagne

This airport features a single 3'500-meter runway, which allows it to accommodate long-haul flights and large aircraft. The expanded capacity of the airport was intended to support growing air travel demands in the region. ARX designed aeronautical infrastructure to support the cargo terminal, the maintenance, repair, and overhaul (MRO) hangar, and the hangar's concrete slab internal paving.

Country
Senegal



Domain
Airports

Client
Eiffage Sénégal
Final client: AIBD

Time frame
2022-2024

Construction cost
USD 15'500'000

Services*

- Design
- Construction management

Phases

- Final design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners



Where planes and the economy take off

The Blaise Diagne International Airport is Dakar's gateway to the world. Those traveling to other major African cities, Europe, the Middle East, and America take off from its 3'500-meter runway; those investing in Senegal use it to enter the country. In recent years, the growth of the Senegalese economy has necessitated greater international connection. Together with the Côte d'Ivoire, Senegal is one of the most dynamic of the French-speaking countries in the sub-Saharan area, and its development depends on the quality of its infrastructure.

The airport is located 43 kilometers east of the city center and is named after the first West African citizen elected to the French parliament in 1914. The airport has been in operation since 2017, when it replaced the historic Léopold Sédar Senghor airport.



The development of the MRO hangar's infrastructures at Dakar Airport is a cornerstone project for me, symbolizing a major step forward in enhancing the aviation infrastructure in West Africa

It represents our commitment to boosting regional economic growth, improving safety, and fostering aviation within the community.

This initiative not only sets Dakar on the map as a key aviation hub but also underscores the vital role of aviation in connecting cultures and supporting economic development. I am proud to contribute to a project that promises to elevate the industry and benefit the region as a whole.

Rafael Capel
Head of Business Line Airports

Back to Europe

Geographically, our journey ends where it began. But just as Phileas Fogg returned from his trip around the world a changed man, we too see the future differently. Borrowing Jules Verne's visionary mindset, we conclude this last chapter with a look into the metaverse. Enjoy projects that take us beyond imagination, with new territories and adventures that will stay with you long after you put this book down.



Glasblokkene Haukeland Children Hospital with Womens Clinic

Country
Norway



Domain
Buildings – architecture

Client
Health Bergen HF

Time frame
2006 – 2022

Construction cost
EUR 51'000'000

Services*

- BIM
- Consulting / Expertise
- Design
- General Planner
- Inspections & Assessment
- Technical site supervision QA/QC

Phases

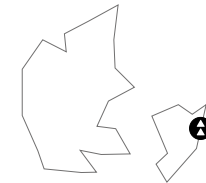
- Strategic planning
- Preliminary studies
- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Completion

* Services in JV with partners



Copenhagen Metro

Country
Denmark



Domain
Metros

Client
Ørestadsselskabet I/S
(now Metroselskabet)

Time frame
1995 – 2003

Construction cost
EUR 69'000'000

Services*

- BIM
- Consulting / Expertise
- Design
- General Planner
- Inspections & Assessment
- Technical site supervision QA/QC

Phases

- Strategic planning
- Preliminary studies
- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Completion

* Services in JV with partners



BBT – Brenner Base Tunnel

The Brenner Base Tunnel (BBT) is the high-speed rail link between Italy and Austria. It will cross the Alps along the new European rail corridor called Scandinavia-Mediterranean and will be a paramount corridor for the European economy and mobility. With a length of more than 55 km (64 km including the existing Innsbruck railway bypass), this is one of the longest tunnels in the world. The BBT project comprises two twin single-track tunnels and an exploratory tunnel located 12 metres below the main tunnels. The latter will be connected by cross-passages every 333 metres. The system is completed by 3 underground emergency stops 20 km apart and 4 access tunnels. In total, the project comprises more than 220 km of tunnels, and crosses various alpine geological units with very heterogeneous conditions and high overburden till 1700 m, which posed particular technical and design challenges. 50% of the total excavation will be done by TBM and 50% by conventional methods. At the south portal the tunnel undercrosses the Isarco River using the ground freezing technique. ARX is playing a major role in the project, participating of the main construction lots both in Austria and Italy.



Country Austria-Italy	Domain Railways; Tunnel & Underground	Construction cost EUR 320'000'000 (Lot H71 Isarco River Underpass - Italy) EUR 1'067'000'000 (Lot H61 Mules 2-3 - Italy) EUR 959'000'000 (Lot H53 Pfons-Brenner - Austria) EUR 102'000'000 (Lot H52 Hochstegen - Austria) EUR 651'000'000 (Lot H41 Sill Gorge-Pfons - Austria) EUR 490'000'000 (Lot H33 Tulfes-Pfons - Austria)
Client BBT SE	Time frame 2014-2023 (Lot H71 Isarco River Underpass - Italy) 2013-2025 (Lot H61 Mules 2-3 - Italy) 2023-2028 (Lot H53 Pfons-Brenner - Austria) 2022-2023 (Lot H52 Hochstegen - Austria) 2022-2028 (Lot H41 Sill Gorge-Pfons - Austria) 2014-2022 (Lot H33 Tulfes-Pfons - Austria)	Services* • Design (Lot H61) • Technical site supervision (Lot H61) • Construction management (Lot H33, Lot H41, Lot H52, Lot H53, Lot H71)
		Phases • Tender design (Lot H61) • Construction design (Lot H61) • Construction management (Lot H33, Lot H41, Lot H52, Lot H53, Lot H41, Lot H71)

* Services in JV with partners

Tunneling a mountain to connect two cultures

Different languages, different mindsets, different documentation, different customs. Italy and Austria overcame these challenges and more to create the Brenner Base Tunnel. In 2012—before teleconferences—the success of this project relied heavily on creating teams motivated to unite, identifying the best local skills, and relying on trusted long-standing partners.

As an important part of the Scandinavian-Mediterranean Corridor between Helsinki and Valletta, this tunnel probes between the Alpine and African tectonic plates, presenting complex technical issues. Using expertise gained during the planning of the Monte Ceneri Base Tunnel, ARX used all technical solutions to ensure trains run safely and quickly. The results have made the difficulties worth tackling. Excavating under a river through freezing the ground was rewarded with a tunnel that will continue to unite people, cultures, and economies for centuries. The skill, passion, and solidarity of the multi-cultural teams on this project ensured its success.



Working on the Brenner Base Tunnel project gave me the opportunity to play an active role in an important transnational infrastructure project

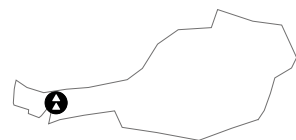
The special geological challenges, the application of modern engineering techniques, and the complexity of the interfaces not only provided professional development opportunities, but also enabled enriching interpersonal encounters and the exchange of expertise on an international Team.

Julia Oberhuber
Claim Manager

Kühtai Pumped Storage Power Plant

The expansion of the existing Sellrain-Silz power plant group involves the construction of a dam (Kühtai reservoir) and a penstock to the existing Finstertal reservoir. Works include a power plant cavern and a diversion tunnel with 6 intakes in the Ötztal and Hinteres Stubaital. The result is an important contribution to the energy transition in Austria's Tirol region.

Country
Austria



Domain
Hydropower

Client
TIWAG-Tiroler
Wasserkraft AG

Time frame
2021-2026

Construction cost
EUR 500'000'000

Services*
• Construction management

Phases
• Construction

* Services in JV with partners



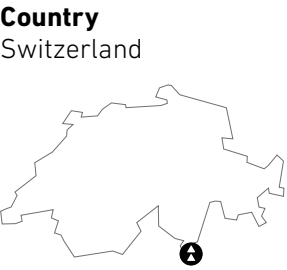
PoLuMe

N2 Enhancement

Lugano Sud

Mendrisio

The PoLuMe project involves expanding the N2 highway section between Lugano and Mendrisio by constructing a dynamic third lane, active only during peak hours. The total length of 19.8 km is divided into: embankment 14.9 km, structures 1.85 km, tunnel 3.05 km. This project significantly improves mobility in the southern part of the Canton of Ticino and strengthens the broader connection between Switzerland and Italy.



Domain
Bridges & Other structures;
Equipments;
Geotechnics & Special foundations;
Roads;
Tunnel & Underground

Client
Federal Roads Office (FEDRO)

Time frame
2018-2025

Construction cost
CHF 1'900'000'000

Services*
• Design

Phases
• Strategic planning
• Preliminary design
• Permit-obtaining procedure

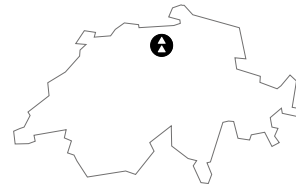
* Services in JV with partners



Cargo Sous Terrain initial section

The central component of this system is a nationwide tunnel network in Switzerland, connected to the surface through vertical conveyance shafts with logistics hubs. Freight transportation occurs fully automated using self-driving tunnel vehicles. CST plans to build and operate an initial section from Härkingen to Zurich North by 2031 (approximately 70 km of tunnels, expected to connect around 10 hubs).

Country
Switzerland



Domain
Tunnel & Underground

Client
Cargo sous terrain AG

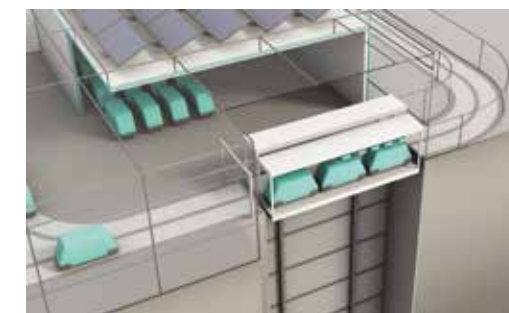
Time frame
2020-2026

Construction cost
CHF 3'600'000'000

Services*
• Design

Phases
• Preliminary study
• Preliminary design
• Permit-obtaining procedure

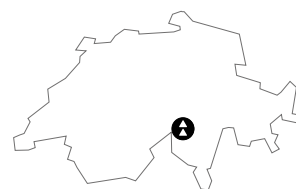
* Services in JV with partners



N2 Second Tube San Gottardo, south section

This new 17 km tunnel will be situated 40 meters east of the existing one and primarily ex-cavated using a TBM with a diameter of 12,4 m. The project includes the construction of a 5 km South Access Tunnel with a shielded TBM of 7,4 m diameter, and the excavation of lo-gistic works using explosives for a 300 m section with a cross-section of 180 M2. Additionally, 7,5 million t of excavated material will be repurposed for concrete aggregates, Airolo roofing, and the renaturation of the Reuss delta in Canton Uri.

Country
Switzerland



Domain
Roads;
Tunnel & Underground

Client
Federal Roads Office
(FEDRO)

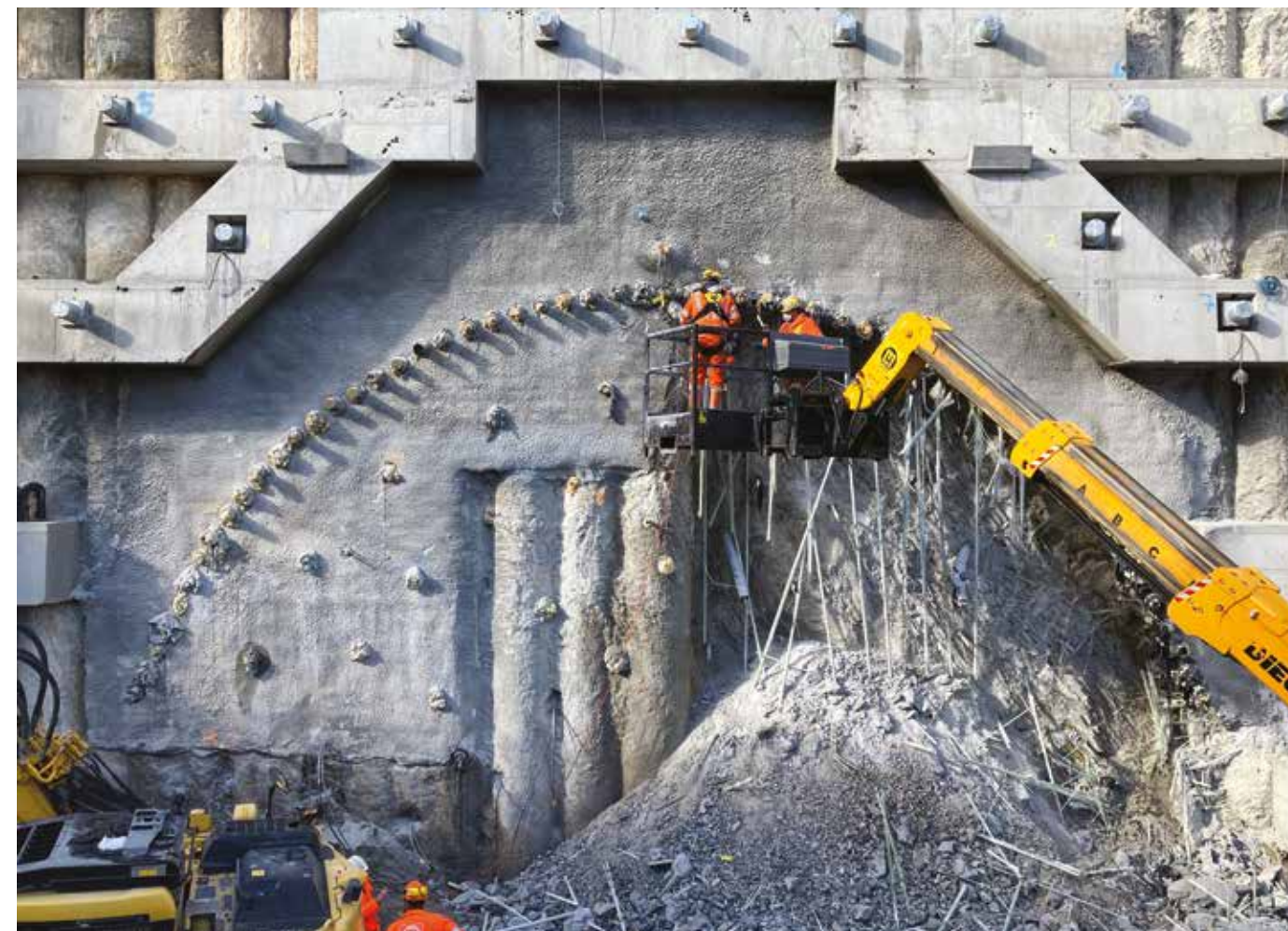
Time frame
2020-2030

Construction cost
CHF 2'053'000'000

Services*
• Construction management

Phases
• Tender design
• Construction
• Commissioning, completion

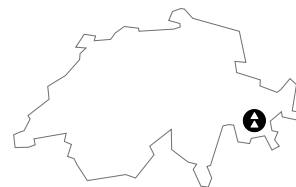
* Services in JV with partners



See-Infra events frozen lake St. Moritz

St. Moritz is a well-known tourist destination in the heart of the Swiss Alps. Every winter, several international events take place on the frozen lakes. Various preparatory works and ice layer monitoring services are necessary to ensure the safety of these events. Assessment of the ice begins as soon as Lake St. Moritz freezes over – initial visual tests are followed by a series of measurements using different methods. Quantitative monitoring commences when the ice reaches a thickness of 6 centimeters, at measurement points spread out across the lake.

Country
Switzerland



Domain
Environment

Client
See-Infra Ltd

Time frame
2013-ongoing

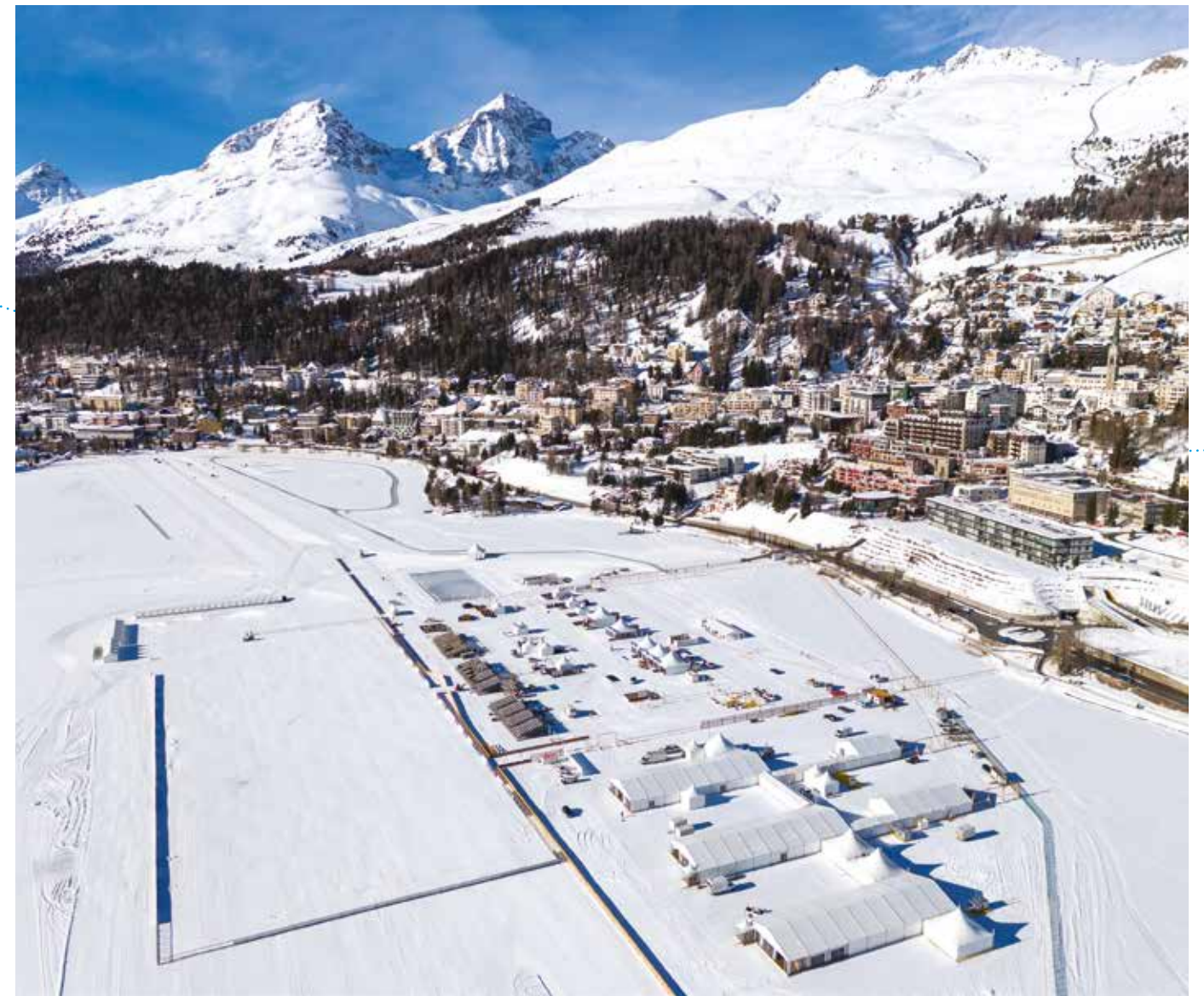
Construction cost
NA

Services

- Design
- Construction management
- Consulting / expertise
- Inspections & assessment

Phases

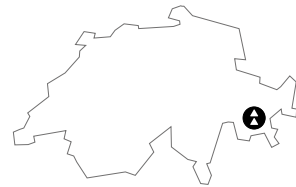
- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design
- Construction
- Commissioning, completion



Hotel Grace St Moritz

Country

Switzerland



Domain

Buildings – civil engineering

Client

La Margna Holdings GmbH

Time frame

2015-2022

Construction cost

CHF 60'000'000

Services

- Design
- Construction management

Phases

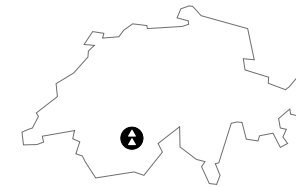
- Preliminary design
- Final design
- Tender design
- Construction design
- Construction



N9 Tunnel Susten

Country

Switzerland



Domain

Roads;
Tunnel & Underground

Client

Canton Valais

Time frame

2021-2033

Construction cost

CHF 340'000'000

Services*

- Design
- Geology
- Technical site supervision

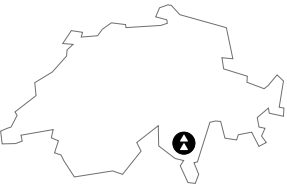
Phases

- Preliminary design revision
- Final design
- Tender design
- Construction design
- Construction
- Commissioning, completion

* Services in JV with partners



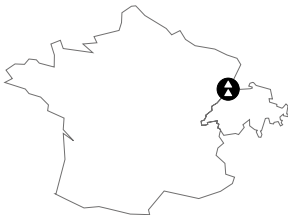
EP17 – Multi-service area and heavy vehicle control center

Country Switzerland	Domain Roads; Buildings – civil engineering	Services* • Design
	Client Federal Roads Office (FEDRO)	Phases • Preliminary design • Final design • Permit-obtaining procedure • Tender design • Construction design • Construction • Commissioning, completion
	Time frame 2015-2023	
	Construction cost CHF 130'000'000	* Services in JV with partners

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EuroAirport Runway Underpass

Country France-Switzerland	Domain Airports; Bridges & Other Structures	Services* • Design • High level supervision • Construction management
	Client EuroAirport Basel-Mulhouse	Phases • Preliminary design • Final design • Tender design • Construction • Commissioning, completion
	Time frame 2022-2024	
	Construction cost € 9'000'000	* Services in JV with partners



Metaverse Art Gallery

The “Helmallery” in Decentraland integrates virtual and physical architecture, tackling technical challenges with innovation. This multi-story virtual environment has cultural, artistic, and corporate value. Leveraging blockchain technology for secure digital asset management and interactivity, it allows users to engage with the metaverse. Serving as a pivotal case study for ARX, the Helmallery project offers valuable insights into designing immersive virtual spaces that connect us to modern technology.

Country

Metaverse - Decentraland

Domain

Digital & Innovation

Services

Design (Metaverse Real Estate)

Client

ARX Client: Helm High-End
labs for the Metaverse
Final client: Silvano
Repetto and Chiara
Capobianco

Phases

- Preliminary design
- Final design

Time frame

2022

Construction cost

Partnership





**Consider
this simple
artistic truth:
creativity
inspires
creativity**

And just as the engineering feats of Jules Verne's day—the American transcontinental railroad, the Suez Canal, the linking of the Indian railways—undoubtedly spurred the fictional circumnavigation growing in Verne's mind, modern engineering is poised to crack open the globe. Can we even guess what fantastic ideas will emerge? Perhaps they're waiting on the other side of that bridge. Perhaps they're glowing at the end of that tunnel.

Our work

Areas of expertise

Infrastructure
City
Energy
Industry

Domains

- Airports
- Bridges & other Structures
- Buildings - architecture
- Buildings - civil engineering
- Cableways
- Digital & Innovation
- Environment
- Equipments
- Geology
- Geotechnics & Special foundations
- Hydropower
- Metros
- Nuclear plants
- Oil & Gas
- Pipelines & Networks
- Ports / Maritime works
- Railways
- River engineering
- Roads
- Traffic & Mobility
- Tunnel & Underground
- Water / Wastewater treatment

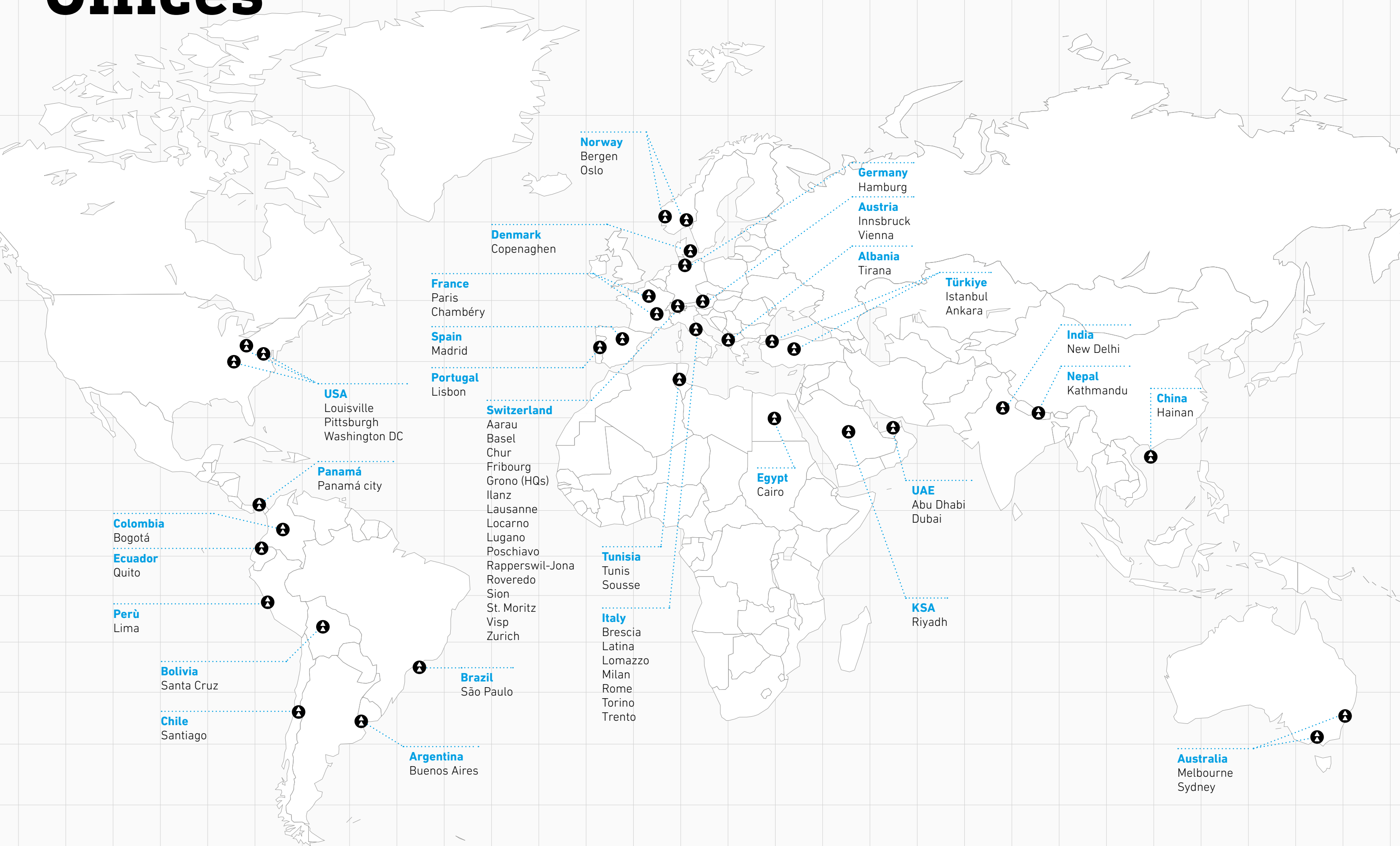
Main services

- BIM
- Client's representative
- Construction management
- Consulting / Expertise
- Design
- General planner
- Independent Checking Engineer (ICE)
- Inspections & Assessment
- Measurement & Surveying
- High level supervision
- Project owner support
- Public Private Partnership (PPP)
- Support to contractor
- Technical site supervision QA/QC

Project phases

- Strategic planning
- Preliminary studies
- Preliminary design
- Final design
- Permit-obtaining procedure
- Tender design
- Construction design
- Construction
- Commissioning, completion
- Operation, Control, Maintenance

Offices



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Edition IV



ARX is not just a name. ARX is an adventure.

In these pages, we take you around the world with 80 of our most iconic and representative projects. Circumnavigating the globe, travelling from project to project, you will see the talent, value, and potential ARX holds. Tunnels, bridges, ports, airports, hydroelectric power plants, and even the metaverse can be found in our portfolio. No matter the location or the challenge, we are poised to carry out projects of any size or complexity.

And for this, we thank our global network of smart minds.

Andrea Galli
Group CEO

