PLANNING – REALISATION – OPERATION

Future-oriented solutions for underground facilities

AMBERG ENGINEERING

AMBERG ENGINEERING

WHENEVER THINGS GET CHALLENGING

Amberg Engineering offers holistic and comprehensive services for the construction, operation and maintenance of underground facilities. Our engineers and specialists guarantee the highest standards in planning and implementation, which are characterised by our commitment to innovation. Challenging and complex tasks are our passion.

Engineering services with a view to a sustainable future

We understand professional project management as a combination of adherence to deadlines, impeccable quality and cost awareness, taking sustainability and environmental awareness into account. Continuous training of our employees in the latest underground construction technology ensures quality and safety - and the sustainable success of your projects.

Success as a tradition

For around 60 years, Amberg Engineering has been a leader in the development of innovative solutions in the fields of railway, road and metro tunnels, caverns and infrastructure facilities. With headquarters in Switzerland and offices throughout Europe, Canada and India. Amberg Engineering is a family-run company committed to quality and certified to ISO 9001.

Together with the other companies in the Amberg Group - Amberg Technologies, Amberg Loglay, Amberg Infra 7D, Amberg Infocon, QAECY and the Hagerbach Test Gallery – Amberg Engineering offers a comprehensive range of services from the construction and operation to the maintenance of underground infrastructures and facilities.

THE WORLD OF AMBERG ENGINEERING

UNDERGROUND INFRASTRUCTURES

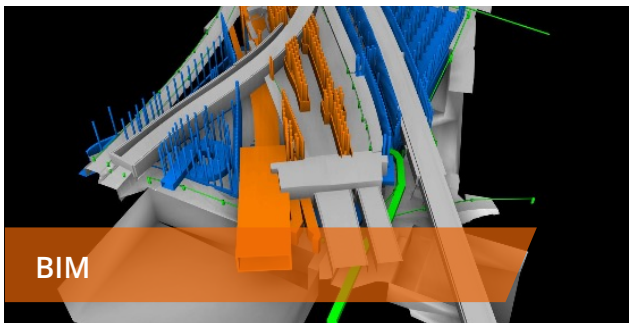
Road tunnels relieve the surface of the earth from traffic. In addition to the road itself, requirements for service and escape tunnels, cross-connections, ventilation shafts and underground control centres must also be considered. Amberg Engineering integrates all aspects of tunnel operation right from the planning phase.

Modern railway tunnels are sophisticated systems. Depending on their purpose, they have separate tubes for each direction of travel, a fixed carriageway for high-speed traffic, customised railway technology and safety systems and often ventilation systems. Amberg Engineering brings all requirements under one roof.

The planning and construction of metro systems are associated with significant challenges. What are the special features of the ground subsoil? What is the right tunnel design? How the stations be designed? How should passenger flows be organised?
The innovative solutions from Amberg Engineering optimally combine safety and efficiency.

Amberg Engineering has many years of experience planning and constructing small-diameter tunnels, even in densely built-up inner-city areas.

Space on the Earth's surface is becoming increasingly scarce. Caverns offer the possibility of constructing facilities with little impact on the landscape.
High protection, energy efficiency and low land requirements are further advantages of underground facilities.



Amberg Engineering is one of the pioneers of building information modelling in infrastructure construction. Tunnels, shafts, and caverns are planned and realised using BIM methods, which enable the highest quality standards and smooth project realisation.

COMPREHENSIVE SERVICES

Underground projects are complex with widely varying requirements. From design and execution through to operation and renewal, we support you throughout the entire life cycle of a structure. Amberg Engineering offers numerous services for the entire project cycle of your infrastructure projects.

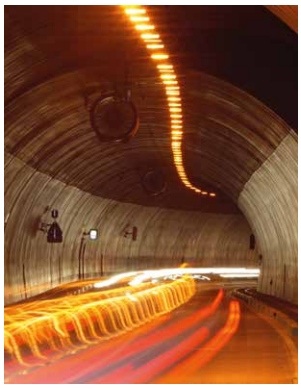
Amberg Engineering is your competent, experienced and innovative partner from feasibility through planning, design and construction to the renewal of your infrastructure projects. Trained specialists and experts in the fields of planning and construction, geotechnics, structural design, numerical calculations, project management, site investigation and construction supervision, underground space and cavern development, aerodynamics and ventilation, safety and risk analysis, refurbishment and renewal as well as building information modelling.

Impressive projects

Whenever complex tasks need to be solved for underground projects, Amberg Engineering is the right address. It is therefore no coincidence that Amberg Engineering has a leading role in important infrastructure projects. Rely on the leading company in this field.

Strong team

Amberg Engineering has highly trained employees at the cutting edge of technology in all areas of infrastructure construction. Outstanding performance is possible when a team harmonises optimally and complements each other perfectly. This is precisely what Amberg Engineering places great value on. Experience from a wide range of sectors and countries and an open culture ensure that the best ideas prevail, benefiting your project.

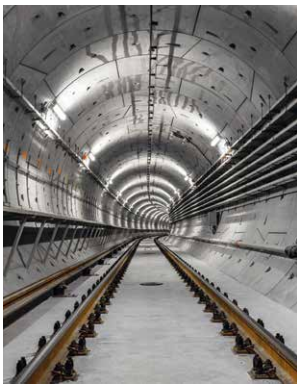


Planning and Design

- Project design from A to Z
- Across all project phases
- Rail, Road, Metro, Hydro, Utility, Underground Space
- All underground structures
- From rock to soft ground
- NATM, TBM, drill and blast
- Risk assessments

Geotechnics

- Project-specific and custom-tailored
- BIM-Model based numerical analysis
- Monitoring design and data analysis
- Geotechnical surveys
- Ground characterisation



Structural Engineering

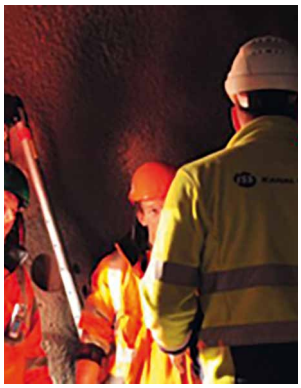
- Project-specific & custom-tailored design
- BIM supported structural analysis
- Fire design & thermal analysis
- Logistical concepts and capacity dimensioning
- Expertise in international design standards

Renewal and Refurbishment

- Structural inspection & assessment
- Operational safety
- State-of-the-art technology for mapping and monitoring
- Value conservation and maintenance planning
- Future proofing

Project Management

- Overall project management
- Project support
- Procurement
- Cost management
- Risk management
- Public relations
- Development and maintenance of project platforms

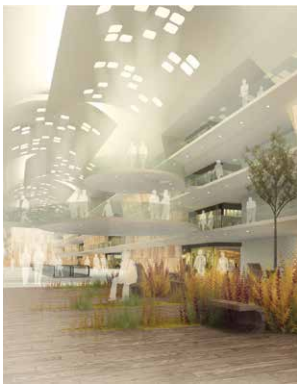


Risk & Safety Management

- Safety and fire protection concepts
- Fire simulation and evacuation design
- Safety assessment and risk analysis
- Quantitative risk analysis
- Testing and safety certifications

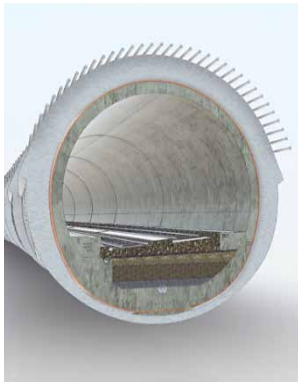
Aerodynamics & Ventilation

- Ventilation design and assessment
- Optimum ventilation control
- Comprehensive aerodynamic and fire modeling
- Comfort and health analysis of high-speed rail tunnels
- Realisation and commissioning



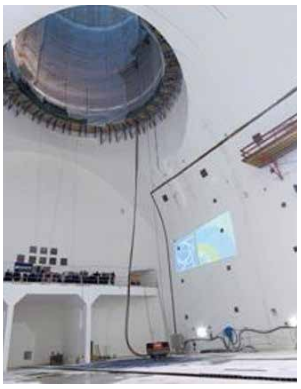
Underground Space

- Sustainable and space-saving solutions for urban areas
- Planning and design large span caverns
- Geotechnically optimal layout and configurations
- Planning logistical aspects
- Stakeholder management



BIM

- BIM strategy consulting
- BeyondBIM
- Parametric Design
- Rapid Engineering
- BIMtoGIS, BIMtoGEO
- RetroBIM
- Data analytics and business intelligence



Nuclear Waste Management

- Safe and structurally sound long-term solutions
- Geotechnical investigations
- Design and planning
- Supervision and monitoring
- Implementation and operation

Service for contractors

- Smart engineering solutions
- Value engineering
- Independent design verification
- Trouble shooting

Site supervision

- Technical expertise and consulting
- Time, cost and quality monitoring
- Definition and monitoring of procedures and requirements
- Commissioning and handover

Find out more about our services:

ambergengineering.com/services

ROAD: Gubrist Tunnel, 3rd tube

Zurich, Switzerland

The expansion of the Zurich northern bypass is a key project in the Swiss motorway network and contributes significantly to better mobility in the Zurich area. A third tunnel tube supplements the two existing 3,250 m long road tunnels.

Order

Amberg Engineering is realising the challenging project with other engineering offices encompassing disciplines of tunnel construction, foundation engineering, structural engineering, road construction and ventilation.
In addition to the new tunnel, the Sunnenrain control centre with a volume of 5'000 m^3 was excavated.

RAILWAY: Gotthard Base Tunnel

Gotthard, Switzerland

The Gotthard Base Tunnel, with a length of 57 km and an overburden of up to 2,300 m of rock, is the longest railway tunnel in the world. It consists of two parallel single-track tunnels and various access tunnels, 178 cross-cuts and shafts, and two multi-functional stations.

Order

Amberg Engineering was there from the very beginning: From the development of the ordinance project to the construction project, and from the tendering to the final design, including structural documentation and on-site construction supervision. Tendering, testing and commissioning were also part of the tasks.

METRO: Grand Paris Express

Paris, France

Agnettes station, Source: Cabinets d'architectes (AIA Architectes / Dubuisson Architecture / Richez Associés)

The Grand Paris Express will connect Paris's metropolitan region with the greater Île-de-France area. The 7-kilometre-long northern section of Line 15 West includes four underground stations, a single-tube double-track tunnel, and eight ancillary structures, including crossings under the Seine and sensitive SNCF infrastructure in densely built-up areas.

Order

Support with tunnel and system design, creating a 3D hydrogeological model, GIS development and the proposal of monitoring systems. Our integrated solutions help meet the project's ambitious engineering and logistical challenges.

CAVERN: Sha Tin sewage treatment works

Hong Kong, China

As part of the development strategy to create better living space in the city of Hong Kong and to ensure the long-term sustainable development, the Sha Tin Sewage Treatment Works is being moved into caverns. This will free up 28 hectares of valuable land in the urban area.

Order

Amberg Engineering supported the project with a quantitative risk analysis (QRA) for the proposed design and all emergency scenarios. This ensured that the project met the required level of safety according to the international state of the art.

HYDROPOWER: Grimsel storage power station

Innertkirchen, Switzerland

The Grimsel 3 power station is primarily used to adjust electricity production to current demand at short notice. Surplus electricity is used to pump water into higher-lying lakes. As soon as the demand for electricity increases, the power station can generate up to 660 MW of electricity again.

Order

Amberg Engineering was responsible for the overall planning of the underground structures, such as a pressure shaft, a penstock tunnel, a power station control room and various ancillary structures.

SERVICE TUNNEL: The Waisen Tunnel

Berlin, Germany

The existing Waisen Tunnel under crosses the river Spree in the centre of Berlin. It serves as an operating tunnel connecting the U5 and U8 lines. Built in 1917, it is a piece of contemporary history that needs comprehensive renovation.

Order

As deputy overall project manager, Amberg Engineering is responsible for the overall coordination of BIM and the structural planning. Amberg Engineering is significantly involved in the work from the basic investigations to the preparation of the tender.

AMBERG GROUP

Contributing to a smart use of space

Where experience and expertise open up new horizons

The Amberg Group is a unique knowledge, engineering and technology provider of logistics, constructions and infrastructures for smart cities, hubs and networks through innovative combinations of above and underground space usage.

AMBERG GROUP

amberggroup.com

- **Amberg Technologies AG**
  Infrastructure Experts
  ambergtechnologies.com
- **Amberg Loglay AG**
  Smart cities and Construction Logistics Experts
  ambergloglay.com
- **Hagerbach Test Gallery Ltd.**
  The Underground Future Lab
  hagerbach.ch
- **Amberg Engineering AG**
  Underground Experts
  ambergengineering.com
- **Amberg Infra 7D AG**
  Digital Infrastructure Experts
  amberginfra7d.com
- **Amberg Infocon Pvt Ltd.**
  Design and Construction Experts
  infocon-services.com
- **QAECY AG**
  The AI Assistant for the AEC industry
  qaecy.com

Research infrastructure of
NATIONAL IMPORTANCE

Amberg Engineering AG
Trockenloostrasse 21
8105 Regensdorf
Phone +41 44 870 91 11
ambergengineering.com

AMBERG ENGINEERING