

Gotthard Base Tunnel, AlpTransit Gotthard Ltd

The Gotthard Base Tunnel in Switzerland is the world's longest railway tunnel and will increase transport capacity from Italy to Germany. Pöyry's work is at the heart of the tunnel, in the technically challenging Sedrun section.



BACKGROUND

Like most modern roadways, the highways stretching from Italy up to Germany experience heavy congestion, especially from lorries carrying freight loads. To ease traffic and reduce environmental impact, the Swiss government planned to move capacity from roadways to railways, constructing a tunnel that would make existing rail lines running through the country far more efficient.

Sections of the current infrastructure date back from the 1880s and rise more than 1,000 meters above sea level. A referendum called for the construction of a passageway far beneath the Alps, making train travel safer and faster. With voters in Switzerland passing the referendum in 1992, construction of the Gotthard Base Tunnel began in earnest four years later with preparatory works at the Sedrun site.

SUCCESS FACTORS

Work on the Gotthard Base Tunnel stretches across more than two decades. Pöyry has been with the project from its inception.

Working on the midsection of the tunnel, in the heart of the tunnel, required extensive collaboration between the Pöyry team and the client and other consortium members. Communication and project management to coordinate complex work streams was critical.

According to **Hartmuth Höfle, Project manager of Alptransit Gotthard AG**, *What distinguishes Pöyry is the fact that they have the technical expertise in terms of tunnelling along with their experience in the mining industry. It's a skill set that's not easy to find. But along with that, they possess a strong understanding of the local conditions involved with the tunnel. It proved to be a compelling combination.*





KEY FACTS

Pöry's services for the Gotthard Base Tunnel covered a range of areas including:

- Environment: environmental impact assessments, landscape planning, environmental construction supervision, project assistance
- Tunnelling: studies, preliminary design, tender design and construction design, tender process, tender evaluation, final design and construction supervision
- Electromechanics: preliminary design, tender design and tender, technical support for tunnel facilities
- Railway equipment: technical coordination and organisational support for the interdisciplinary Transtec Gotthard joint venture
- Ventilation/safety: aerodynamic and thermodynamic studies, design of ventilation for construction and operation, design and tender process for operational and cross passage ventilation, technical support

CHALLENGE

When it opens in 2016, the Gotthard Base Tunnel will be the world's longest, traversing a 57 km route, making it even longer than the Seikan Tunnel in Japan. Facing a 20 year construction timeline, and the need to bore through high mountains, AlpTransit needed to employ a group of companies that could carry out the challenging work on time and on budget.

Pöry played an active role from a very early phase of the project, conducting preliminary feasibility studies in the mid-80s. Because of our deep expertise with the project and our strong local presence, we led the consortium that would ultimately carry out the design work of about 60 percent of the tunnel.

SOLUTIONS

Pöry was tapped to do the design work and site supervision of the central Sedrun part of the tunnel—given its geology, the most difficult part of the entire construction.

This section includes the intermediate adits at Sedrun (800 m vertical shaft) and the multifunction station where the adits meet the base tunnel. Pöry was also responsible for the design and supervision of a multi-purpose station. In case of emergency, trains can stop at this station and people can enter into caverns which are ventilated with fresh air from the outside.

BENEFITS

To date, tunnel construction is finished within budget and the tunnel is scheduled to open on time in December 2016. The benefits will be many: a flat route that will modernize rail passage and create shorter routes between North and South of Europe for passengers and freight trains, less traffic on the north to south highway routes through Switzerland, and increased capacity in terms of goods traffic.

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