

CASE STUDY WATER CONTROL



Vaðlaheið Road Tunnel,
Akureyri - Iceland

CarboPur WX, CarboPur WF
and SK90 Injection Pump

OVERVIEW >>>>

The Vaðlaheiði Road Tunnel (Vaðlaheiðargöng) completed a ring road around Iceland, connecting the towns of Akureyri and Fnjóskardalur. The **9.5m diameter single-tube tunnel stretches 7.2km** and has a cross section of

66m². During construction, a **heavy ingress of geothermal water with temperatures reaching up to 65°C** brought excavation to a halt. To overcome this issue, different solutions were required at varying chainages throughout the tunnel.



SOLUTION >>>>

WATER CONTROL

At chainage 1870-1970, **invert injection** was used to reduce **water ingress, air temperature and humidity**. Four invert umbrellas comprising 12 boreholes, each 12m deep, were drilled and injected using **CarboPur WX** and accelerators, while **CarboPur WF** with additives was used in the most challenging conditions.

Following the invert injection works, additional boreholes were drilled into the tunnel wall to seal the water source. This **reduced water inflow by 80%**, from approximately 600 l/sec to 120 l/sec, allowing the remaining water to be managed via a drainage system.

At chainage 3405, **three 18m deep injection umbrellas** were drilled ahead of the face at an angle of 15° outside the tunnel profile. **CarboPur WX** and accelerators were injected to achieve a rapid set before further drilling and injection up to 25m into the face using the **SK90 Resin Injection system** and hydraulic packers. The **water ingress was eliminated**.

Following an 8-9 month delay, the successful treatment enabled excavation to resume, with both client and contractor expressing their satisfaction with the results achieved by Minova.



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