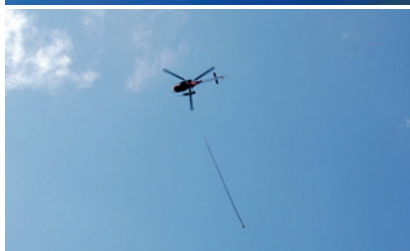


Tough conditions for SIMONA® PE 100 SPC RC-Line pipes at the Simplon Pass



From top down: Rough terrain calls for pipes with properties that provide maximum protection; pipe trains measuring 60 metres in length were transported by helicopter; structures to be repaired

On account of its North-South axis, the Simplon Pass is one of the most important traffic routes connecting Germany to Italy. This part of the A9, with a length of 42.5 km, runs between Brig in Switzerland and Gondo in Italy at an altitude of over 2,000 metres. The road was widened in the 1970s and 1980s in order to cope with the higher volume of traffic. It is used by 850,000 vehicles a year, 10% of which are lorries.

The project at a glance

Project

Renewal of fire-fighting and drinking water pipelines at the Simplon Pass

Dimensions of the pipes

- Minimum water flow 7 l/s
- Maximum water flow 24 l/s
- Source feed pipe
d 200 mm l = 1160 m
- Drinking water network feed pipe
d 125 mm l = 300 m
- Reservoir discharge pipe
d 200 mm l = 370 m
- Fire-fighting water feed pipe
d 225 mm l = 310 m

Requirements

- Source feed pipe to the drinking water and fire-fighting water reservoir with slight difference in altitude
- Barely accessible, rocky pipe route with fill from excavated soil
- Good abrasion resistance
- High stress crack resistance

Client

Federal Roads Office ASTRA,
Thun Branch

Contractor

Debrunner Acifer AG, Visp

Engineering consultancy

BSAP Ingenieure, Brig

Pipelaying by helicopter

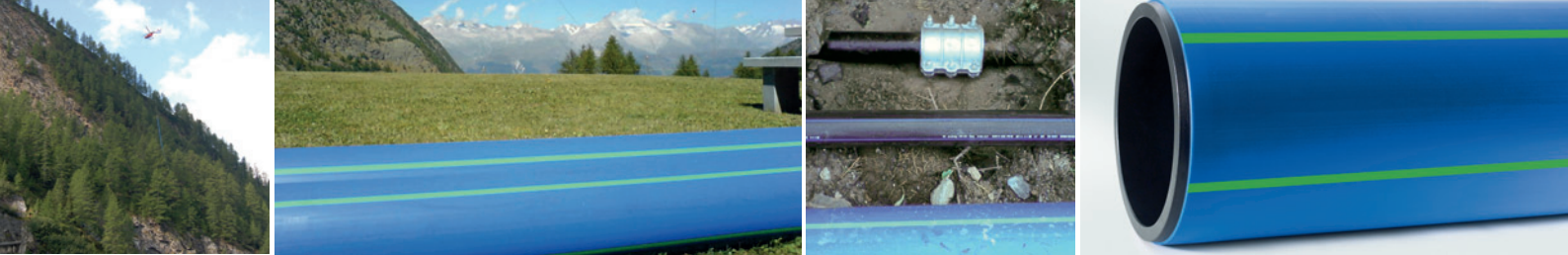
Reinhard Heinzen, Ried-Brig

Products used

- SIMONA® SPC RC-Line drinking water pipe with SVGW approval (blue with green stripes), d = 200 – 250 mm, SDR 17 and 11 (3,000 m)

Project execution

2009



From left to right: Pipelaying by helicopter; the SIMONA® PE 100 SPC RC-Line pipe against the backdrop of the Alps; the 40-year-old cast-iron pipe (top) is replaced by new pressure pipe (bottom); a provisional pipe made of PE (centre) ensures temporary supply; SIMONA® PE 100 SPC RC-Line pipe

SIMONA® PE 100 SPC RC-Line – the ultimate in ruggedness

Initial situation

Owing to extreme environmental influences and rising demand for water, the existing fire-fighting and supply lines have to be renewed.

Task

At the Simplon Pass an old cast-iron pipe (d 90 mm) is to be replaced by a modern plastic pipe for the Bergalpe-Brig region and the A9 national road. At this altitude the soil is very poor and stony. As regards open-trench laying of new pressure pipelines, however, it is not financially viable to transport fine sandy bedding material up to this altitude. Therefore, Debrunner Acifer AG Visp, as the supplier to the installation company Reinhard Heinzen, placed particularly high demands on the new pressure pipe:

- Good abrasion resistance
- High stress crack resistance
- Good resistance to point loads (e. g. stones, fragments)
- Excavated soil to be used as backfill material
- High resistance to slow crack growth

Solution

SIMONA® PE 100 SPC RC-Line drinking water pipes with SVGW and DVGW approval meet all requirements specified. The multi-layered pipe consists of an inner pipe made of PE 100 RC (RC = "high resistance to crack") and a protective jacket made of modified polypropylene (SIMONA® PP Protect). The surface of the pipe provides protection against dangerous notches and cracks caused by stones and fragments. Even very deep scores fail to reach the inner pipe when exposed to subsequent service loads. The individual pipes delivered were welded on the ground by Reinhard Heinzen to make up 60 m pipe trains and then flown into position by a helicopter. A total of 3,000 m SIMONA® PE 100 SPC RC-Line drinking water pipes (d 200 – 250 mm) were laid. In order to maintain the water supply during the construction phase, a PE 100 pipe was installed provisionally.

SIMONA® PE 100 SPC RC-Line

Properties

- Excellent bond strength and shear strength between inner pipe and protective jacket
- High abrasion resistance
- High stress crack resistance
- No crack propagation from the protective jacket to the inner pipe
- High inner pipe resistance (PE 100 RC) to slow crack growth
- Extreme protection against severe physical damage such as notches, abrasion and wear (PP Protect)
- Open laying without preparation of the excavated soil
- Trenchless laying for very high stresses

Range of products

- Pipes

Further information

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