Enka® Solutions

Case Study

Hydropower canal rehabilitation using EnkaDrain®

Hermillon (73), France

Project owner
Electricité De France (EDF CIH)

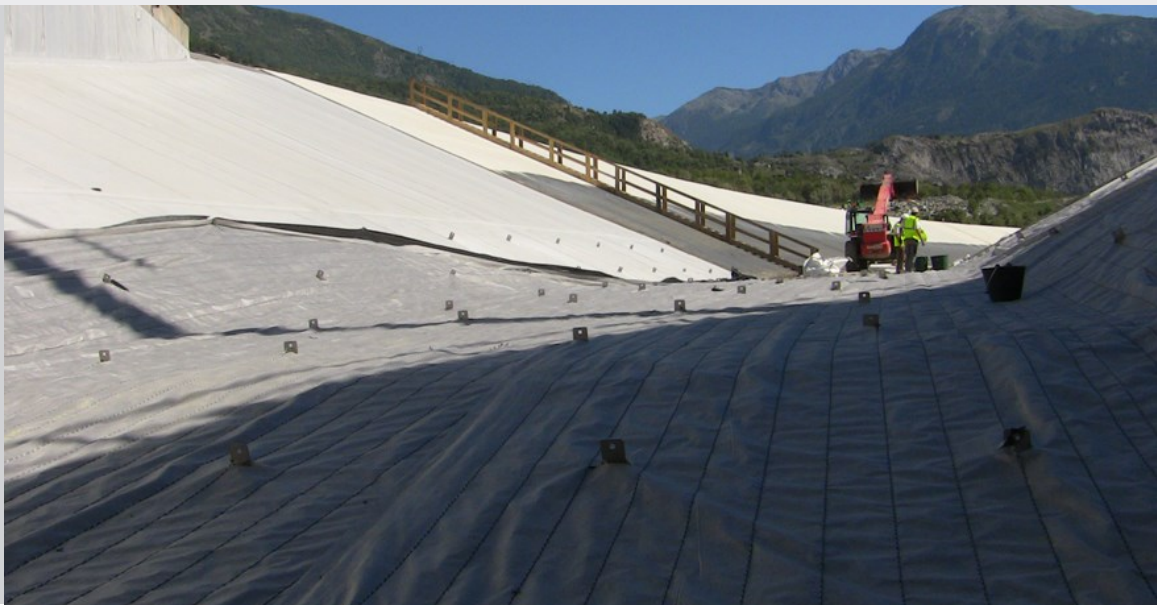
Product
EnkaDrain® 5006H/T110PP

Functions
Drainage and protection

Contractor
GCC

Volume
8 000 sqm

Pictures GCC



This canal is located in the Maurienne valley and supplies the Hermillon power station. The part to be restored has been subject to significant settlements ever since its origin, particularly the upstream inlet (diverging), the downstream outlet (converging) and the area around the access ramp.

Challenge

When operational, this section is subject to a nominal flow rate of 85 m3/s, with a maximum water velocity of 1.8 m/s and a maximum water depth of 7 m. Relining needed to be carried out in those areas where concrete slabs were not given a vinyl bituminous coating upon installation. As a result, multiple cracking, erosion under joints beneath the slabs and runoff in the foundation had become issues.

Solution

The installed relining system consists of the following components from top to bottom:

- Reinforced concrete layer (access ramp, bottom of the canal and lower parts of canal side slopes only)
- Drainage geocomposite EnkaDrain in areas with reinforced concrete protection
- 2 mm thick reinforced PVC geomembrane, UV stabilized
- Drainage geocomposite EnkaDrain
- System for detecting and locating potential leaks by means of optical fibre
- Old concrete slabs

Benefits of the solution

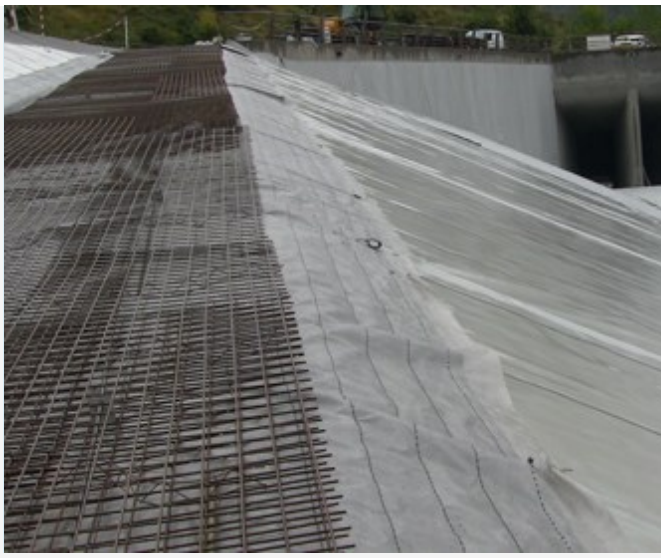
- At the bottom side:

Located at the interface of the old slabs and the geomembrane, EnkaDrain protects the geomembrane from damage due to irregularities in the shape of the concrete surface and ensures drainage function in case of a leak in the geomembrane.

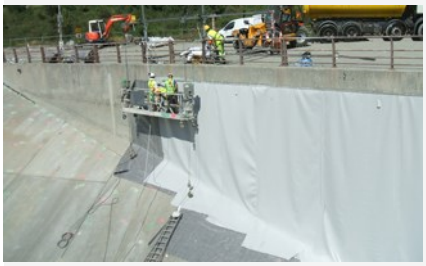
- On the top side:

EnkaDrain protects the geomembrane at the interface of the top reinforced concrete layer poured to protect the

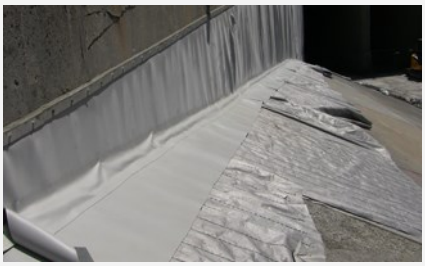
Access ramp close to the upstream inlet.



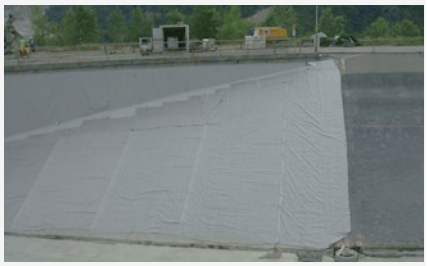
EnkaDrain Wide providing protection on the access ramp.



Use of a lifting platform to install EnkaDrain and PVC geomembrane on the diverter's abutment.



View of the diverter's abutment completed with vents and stainless steel flats fixed by screws



EnkaDrain Wide on a side slope

lining system on the access ramp, the canal bottom and the lower part of the canal side slopes.

Installation benefits

The EnkaDrain Wide product range is produced in rolls 5m in width for faster but also more efficient laying thanks to the high flexibility and the absence of shape memory of the geocomposite.

Result

The solution implemented in this way prevents the geomembrane from being damaged by high water flow velocities and the carriage phenomenon (the process of sediment moving under the effect of water).

Product used

EnkaDrain® Wide
Drainage geocomposite made with v-shape monofilament structure stitched to one or two nonwovens..

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