40 years experience with Terrafix® filter nonwovens for waterways

Midland Canal, Germany

40 years ago: The common design of bank protection systems for inland waterways was not sufficient due to higher performance of inland cargo vessels.

1980: The introduction of the cargo vessel "Europe ship" (L/B/D = 85 m / 9.5 m / 2.5 m) caused erosion by drawdown, slip-induced waves, return flow (flow due to displacement) and propeller wash (flow due to propulsion).

1983: Considering the practical experiences gained from the Midland Canal sites, in 1983 the regulations MAG (Code of Practice Use of Geotextile Filters on Waterways) and TLG (Technical Delivery Terms for Geotextile Filters) were published by the Federal Waterways and Research Institute (BAW).

Later with RPQ the Guidelines for Testing Geotextile Filters followed with fundamental test requirements concerning abrasion resistance, filtration (static flow as well as turbulent flow) or dynamic puncture resistance for meeting adequate robustness against dumping of armour stones. These regulations until today belong to the standard literature in hydraulic engineering.

1992: Worldwide unique geotextile composite development – Terrafix® 813 sandmat made of two needle-punched nonwovens with sand ballast between carrier and cover nonwoven. All components are needle-punched to provide a high shear strength transmission on slopes for wet installation. Advantage: there is no need for a fast following armour layer installation as ballast due high hydraulic stability up to currents of about 0.8 m/s.

Until today all Terrafix® filter nonwovens perform their task without any problem and with a lifetime of up to 40 years (f) with nearly no maintenance costs.

Inventive genius, venturesome and the ability to assert oneself shown by the Federal Waterways Directorates, the construction companies and the geosynthetics industry which took part in the development of the Midland Canal formed the basis for 40 years of successful application of geotextile filters in the form of needle-punched nonwovens in revetment systems installed at the Midland Canal, Germany.

The technical affinity towards the grain filter, together with an area-wide, controlled installation of a tailor-made product at the underwater slopes to be protected and the integration into the ecosystem document the predominance of this construction method. Today approximately 200 km of stable and nearly maintenance-free revetments at the embankments of the Midland Canal carried out with geotextile filters in the form of needle-punched nonwovens are an impressive success.

1967: Worldwide pioneering application of geotextile filters made of nonwoven for canal works at the Midland Canal, Germany.

A foundation stone for this worldwide development was placed with the first installation of a filter nonwoven at the Midland Canal.

The alternative to grain filter layer was born, the risks of segregation of grains during wet installation could be ignored. New construction developments have been focused on installation of geotextile filters made of nonwovens.

Together with the progresses which could be made on the geotextile sector also the installation techniques have been developed and improved. Wet installation of filter nonwovens with a specially developed mat installer vessel.

Email: kweth@bbgeo.com

www.naue.com

NAUE GmbH & Co. KG
Gewerbestr. 2
32339 Espe/Reppen
Germany