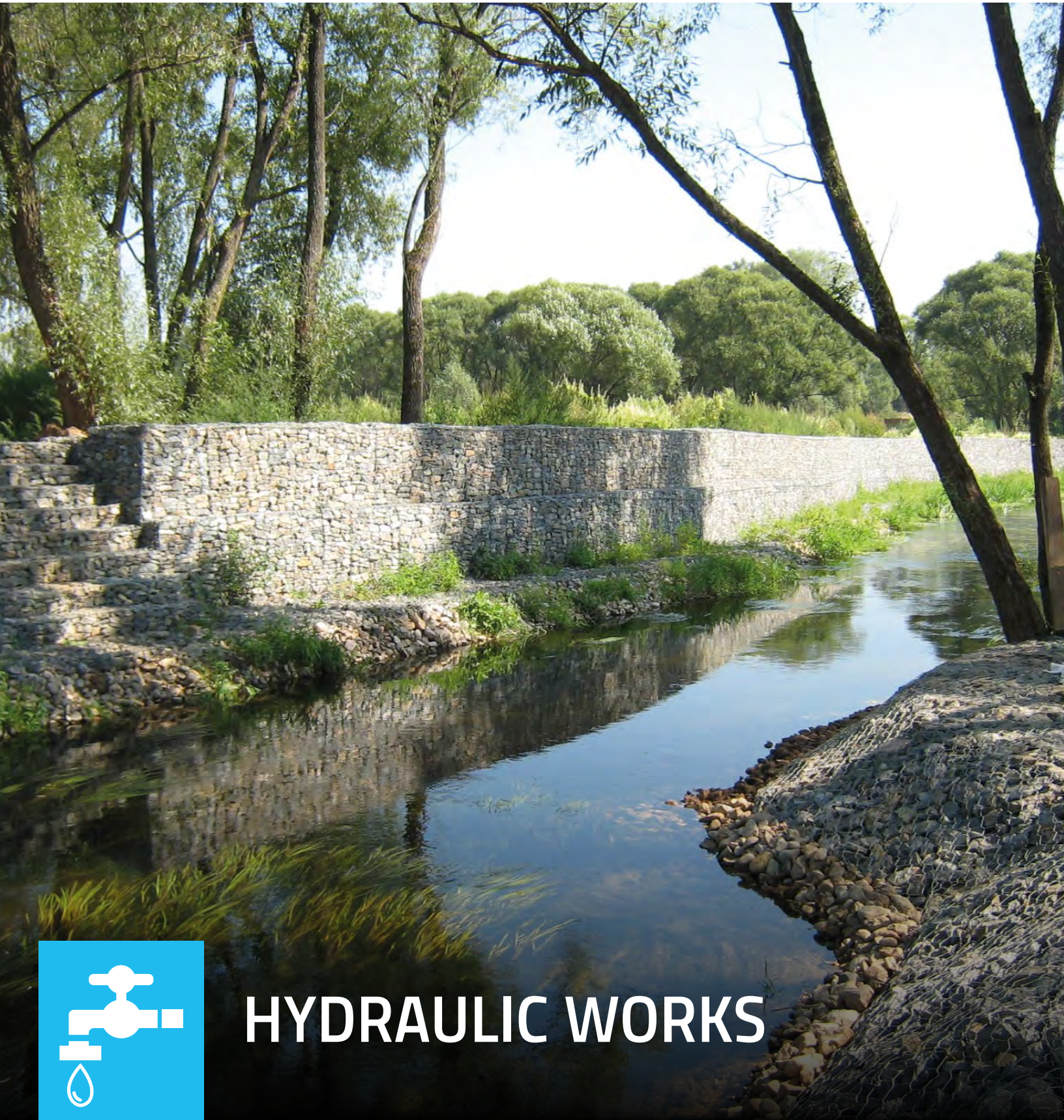


HYDRAULIC WORKS

MACRA SOFTWARE

The Macra design software supports engineers in the design of hydraulic protection within channels.

Bespoke cross-sections can be modeled in conjunction with the selected hydraulic erosion protection.

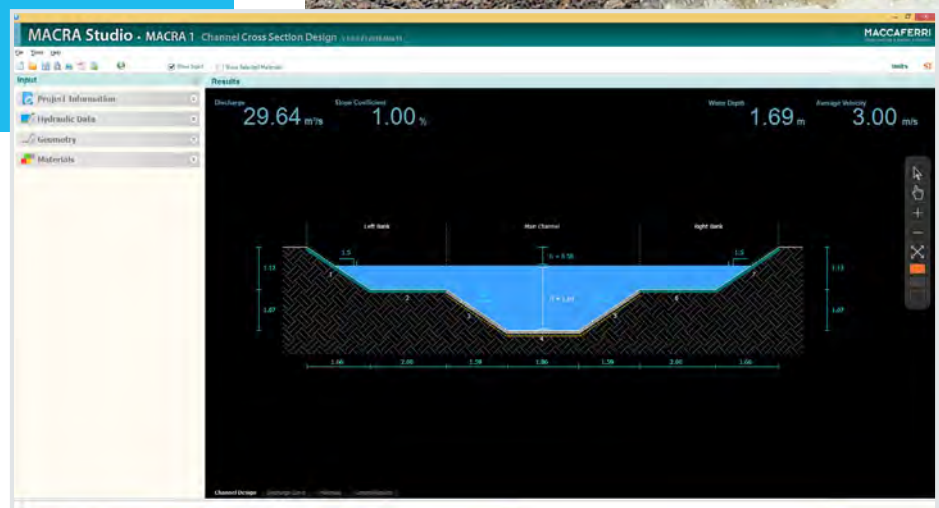
The performance of the channel can be checked for unvegetated and vegetated conditions, alerting the designer to a potential lack of conveyance capacity and overtopping.

A library of channel soil types, natural materials, soil bioengineering techniques and erosion protection materials are included within the software database.

The design criteria are based on scale and full-size model tests.



*Click here to
download our
software*



ENDURING HISTORY

Our experience in hydraulic works started in the 1890's when Maccaferri provided the emergency repairs to a breach in the dam at Casalecchio di Reno; the dam controlled the water supply which powered the industries of Bologna, Italy.

With our specialist knowledge and comprehensive product range, we offer clients a graded, logical range of hydraulic erosion protection techniques from soil bioengineering solutions through robust high-energy capacity structures.



MACCAFERRI'S HYDRAULIC SOLUTIONS

M STRENGTH: our double twist wire mesh has protected generations of people worldwide from hydraulic related disasters; some of our oldest structures are still standing today, over 100 years later.

M PERFORMANCE: our double twist wire mesh solutions are naturally free-draining, ideal for hydraulic solutions. A build-up of water pressure beneath a revetment or behind a structure is dissipated rapidly through the Reno Mattresses and Gabions; vital in tidal rivers or within flood prone areas.

M DURABILITY: our hydraulic solutions feature **PoliMac**, our most advanced and durable coating capable of withstanding highly aggressive environments including long-term UV, chemical exposure, and low temperatures.

M PROVEN: our products are independently tested and certified in accordance with the strictest international standards.

M QUALITY: our solutions use the highest quality raw materials and provide world-class engineering with custom design and manufacturing capabilities.



Channeling Works

These river training works protect the channel banks and bed to limit the effect of hydraulic shear forces, preventing erosion, scour, land-loss and sedimentation. This is particularly important in urban areas, adjacent to communities and infrastructure. Incorporating soil bioengineering techniques within these solutions rapidly promotes vegetation of the banks.

Longitudinal Structures

Revetments are suitable where the slope has localized shallow surface failures that do not affect the global stability. Solutions, including **Reno Mattresses**, **MacMat R** and soil bioengineering, provide immediate erosion protection and the ability to revegetate. Where the river bank is structurally unstable and require retaining, a variety of structures are suitable such as **Gabions**, **Terramesh** and **Green Terramesh**.

Transverse Structures

These structures prevent erosion and contribute to the stabilization of river beds and water quality by dissipating energy of the flow. **Gabions and Reno Mattresses** are perfect for weirs, drop structures, dams, and culverts. They are flexible and simple to install in poor soils and mountainous regions for flood control.



Bridge Protection

Our modular double twist wire mesh **Gabions, Reno Mattresses and Sack Gabions** offer ideal scour protection as they are flexible, permeable and long-lasting. Where the contractor is not able to work in the dry, these units can also be pre-filled and conveniently lifted and placed into the works.



Waterproofing of Reservoirs, Lakes & Channels

Our package of geosynthetics includes **MacLine**, impermeable membranes and geosynthetic clay liners, **MacTex** woven and non-woven geotextiles for protection, filtration and separation, and **MacDrain** drainage geocomposites, which are used in conjunction with our traditional materials to create protected lining systems for hydraulic works.



Soil Bioengineering

Naturalization of our engineering structures is a positive environmental benefit. This additional ecological value can be achieved with the careful selection of solutions to support vegetation either naturally, e.g. siltation of the void volume within Gabions and **Reno Mattress**, or during installation, e.g. **GeoMac**, live-staking and planting.



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Engineering a Better Solution

Maccaferri's motto is 'Engineering a Better Solution'; we don't merely supply products, but work in partnership with our clients, offering technical expertise to deliver versatile, cost effective and environmentally sound solutions. We aim to build mutually beneficial relationships through the quality of our service and solutions.

GLOBAL ENGINEERS

In the second half of the 19th century we invented Gabions and dramatically changed civil engineering landscape. We are still changing today. We work every day to find better solutions for our clients at every degree of latitude and longitude. Our worldwide network grows through innovation and diversification of sectors of activity and through an increasing range of high quality and environmentally friendly products and applications.

OFFICINE MACCAFERRI GROUP PROFILE

Founded in 1879, our Group soon became a worldwide reference in the design and development of advanced solutions, with offices in over 70 countries and 30 factories worldwide.

Our mission is to pursue excellence through continuous improvement, while delivering to customers engineered solutions that are innovative, advanced and environmentally friendly. We are committed to outstanding safety, quality and sustainability, to create value for all stakeholders as well as our communities.

MACCAFERRI APPLICATIONS



**RETAINING WALLS
& SOIL REINFORCEMENT**



HYDRAULIC WORKS



**ROCKFALL PROTECTION
& SNOW BARRIERS**



EROSION CONTROL



**SOIL STABILIZATION
& PAVEMENTS**



BASAL REINFORCEMENT



**COASTAL PROTECTION,
MARINE STRUCTURES
& PIPELINE PROTECTION**



**ENVIRONMENT,
DEWATERING & LANDFILLS**



DRAINAGE OF STRUCTURES



TUNNELLING*



**LANDSCAPE
& ARCHITECTURE**



SAFETY & NOISE BARRIERS



FENCING & WIRE



**AQUACULTURE
NETS/CAGES**



**CONCRETE FLOORING,
PRECAST & OTHER USES***



**INDUSTRIAL
MANUFACTURING**