Services & Products
The origins - Italy, Reno River Sack Gabion, 3mm wrought iron, single twist

1894

The gabion was born, box shaped double twisted mesh

1907

Reno® Mattress and PVC Coating first used for the Bristol Channel the in UK. “Heavy Duty” Galvanizing introduced

1956

River and Sea Gabions opened in Musgrave Centre in Durban as a subsidiary of River and Sea Gabions UK

1957

African Gabions (Pty) Ltd 184 Clark Road, Berea-Durban. First factory opened in Isithebe with one 8 x 10 line and PVC extrusion

1987 - 1990
INTRODUCTION

Maccaferri Africa, formerly known as African Gabions, a subsidiary of Officine Maccaferri founded in Italy in 1879, is committed to consistently meet or exceed customers’ expectations through service-orientated principles to achieve technically, environmentally sound, practical and innovative engineered solutions.

To ensure high quality products and personnel, Maccaferri Africa has an Integrated Management System (IMS) and our System is certified through ISO 9001:2015; ISO 14001:2015 and BS OHSAS 18001:2007 and specialises in providing products and solutions for the preservation of the environment. Our traditional double-twist wire mesh products are typically used for flood protection, landslide control, channel linings, embankment, soil stabilisation and erosion control worldwide. In addition, Maccaferri Africa provides a vast range of geosynthetic products used for strengthening of existing ground conditions, steepening of slopes, reinforcement of roads, platforms and asphalt. Other services offered by Maccaferri Africa include technical design assistance, design software, training and on-site assistance.

Maccaferri Africa, through the use of products in this Services & Products Brochure, offers engineered solutions from reinforced soil structures to pavement reinforcement, from rockfall mitigation to landfill applications.

Maccaferri Africa works in partnership with its’ clients, offering technical expertise to deliver versatile, cost effective and environmentally sound solutions. Officine Maccaferri and its subsidiaries’ vision is that we strive to be a technical reference, solving our clients’ problems through innovation, collaboration and best-value environmental solutions. This is by implementing a vertical integration strategy through research, design, supply and construction of solutions. With operations in 100 countries, and 30 factories across 5 continents, you are never far from Officine Maccaferri’s technical support and solution services.

For more detailed information on our products, please contact Maccaferri Africa, or visit www.maccaferri.com/za. This Services & Products Brochure should be read in conjunction with the Group’s Solutions Guide and Technical Data Sheets.
At Maccaferri Africa we do not simply sell products. We provide better solutions – identifying, addressing and responding to the specific needs of each client. Maccaferri is a partner who works alongside clients from the start of the project, maximising value for money through technical expertise and an extensive portfolio of quality products.

Our better solutions start from the design phase of the project, with the simple aim of solving a problem. We proceed through all the stages of development, in close synergy with our Clients; designing, manufacturing and providing supervision throughout Africa.

Our better solutions are always the end-result of a close-knit, multi-level integration of Maccaferri’s local knowledge and global experience.

Our service is tailor-made to the clients’ requirements, defined to three service levels:

- **Level 1:** Preliminary design stage, concept design in order to assess the viability of the project in terms of cost estimates, advantages / disadvantages and any other related factors which may influence the project cycle cost.

- **Level 2:** The fundamental object is to provide design development drawings, specifications, detailed schedule of materials in sufficient detail to enable contractors to accurately price the work based on an agreed scope of work between the client and Maccaferri.

- **Level 3:** Maccaferri acts as a consulting engineer providing professional services to the project, including professional liability within the scope of work. The fundamental object is to provide design, development drawings for construction and site supervision based on the size and complexity of the project and on a reasonable construction supervision.

Our global team of talented engineers have knowledge in the civil and mining sectors to assist you through the project from concept proposals to full design and supply turnkey.

- We design in accordance with national and international standards
- Our factories produce high quality products in accordance to local requirements
- We can support the construction team with on-site assistance or even turnkey services
SOFTWARE

Gawac Win GSC
Mass Gravity Structures

MacStars W
Soil Reinforcement Structures

MacRo Studio
Rockfall Drapery Systems

Macra Studio
Longitudinal Hydraulic Structures

MacRa 2.0
Transversal Hydraulic Structures

MacFlow
Subsoil Water Management

MacBars Studio
Basal Reinforcement Embankments

MacRead Studio
Ground Stabilisation

MacRead AASHTO
Pavement Design
Gabions are baskets manufactured to EN 10233-3 and SANS 1580 with hexagonal woven wire mesh type 80, commonly referred to as double twist wire mesh. The steel wire used in the manufacturing of Gabions is 2.7mm in diameter and is protected by heavily galvanizing or zinc alloy coating Galfan (Zn95Al5) suited for structures in dry areas and low aggressive environments. In hydraulic or highly aggressive environments, an innovative coating, Polimac®, is extruded over the galvanized wire to provide added protection to be able to reach design life of more than 120 years.

Gabions are modular units 0.5 and 1m high, with diaphragms spaced at metre centres ensuring higher stiffness of the structure, environmentally friendly, and used as mass gravity structures and erosion control protection in hydraulic applications, able to withstand water velocity up to 8m/s.

Reno® mattresses are manufactured to EN 10233-3 and SANS 1580 with hexagonal woven wire mesh type 60, commonly referred to as double twist wire mesh. The steel wire used in the manufacturing of Gabions is 2.2mm in diameter and is protected by heavily galvanizing or zinc alloy coating Galfan (Zn95Al5) suited for structures in dry areas and low aggressive environment. Reno® mattresses are used principally in water applications subject to abrasion by debris and corrosion by water. In order to achieve long lasting structures, Polimac® coating is always recommended.

Reno® Mattress are used in riverbank protection, channelising work, stormwater outlets and are able to withstand water velocity up to 6.5m/s and riverbanks slopes up to 45°. Reno® mattress are manufactured in compartments of 1m in the flow direction in order to reduce migration of rock and the diaphragms are formed by folding the base, ensuring a higher rigidity and reducing deformation under high flow conditions.
SACK GABIONS

Sack gabions are manufactured using the same mesh as gabions and consist of a single sheet of mesh which forms a cylinder open either at one end or at the side.

Sack gabions are filled with stones at the project site to form flexible, permeable monolithic structures used for emergency and river training works, where local conditions require fast installation, or the water does not allow got the site to be easily accessible (underwater installations).

When the founding ground is not level and access is challenging, sack gabions can be used for providing a stable foundation for gabions or any other structures.

MACMAT® R STEEL

MacMat®-R is a three-dimensional erosion control mat manufactured from entangled polypropylene mono-filaments. MacMat®-R is reinforced with Maccaferri’s double-twist wire mesh. This unique combination marries the excellent anti-erosion properties of the three-dimensional MacMat® geomat with the tensile properties of the reinforcement, and can therefore be used for long-term root reinforcement, erosion control, re-vegetation, in hydraulic applications and, when used with soil nails and shotcrete, for slope stabilisation. MacMat®-R is suitable for light hydraulic protection where the flow velocity does not exceed to 1.5m/s over a period of maximum 60 hours where vegetation is established.

MacMat®-R can also be used in combination with soil nailing for erosion control of the slope to enhance vegetation growth (especially when hydroseeded), or with shotcrete when the face is not homogenous and requires sharp contour cover, ensuring constant thickness.
BioMac® is a biodegradable short-term erosion control blanket manufactured from randomly arranged coconut husk fibres layered between photosensitive polypropylene netting to produce a coir mat. BioMac® CC45’s three-ply composite provides immediate erosion control and a stable medium to support healthy plant growth.

BioMac® is used for erosion control and revetment protection to assist in the establishment of vegetation on slopes, high rainfall areas and ditches, and water courses with low energy flows.

BioJute® 250 is a biodegradable short-term erosion control blanket manufactured from fabric woven into an open mesh from rugged, heavy jute yarn.

BioJute® 250 is used for erosion control and re-vegetation where partial protection of the river banks, streams and slopes is required.
**ECOLOGS™**

EcoLogs™ are cylindrical biodegradable sleeves manufactured from BioMac® and bound together with twine. They can, if required, be reinforced with Maccaferri’s double-twist Type 60 wire mesh.

EcoLogs™ are used to reduce sheet erosion and create a micro-climate for vegetation establishment. EcoLogs™ are available in 2m length x 0.3m diameter.

**MACMAT®**

MacMat® is a three-dimensional erosion control mat manufactured from entangled polypropylene mono-filaments. MacMat® can be applied as an erosion control mat for sloped embankments, or for channel linings.

Due to the relatively high roughness, MacMat® protects the slope from erosion and allows a more natural deposition of sediments, without altering the natural aesthetic appearance of the slope. MacMat® can be provided in different types and thicknesses to suit site requirements.
MacMat®-R is a three-dimensional erosion control mat manufactured from entangled polypropylene mono-filaments. MacMat®-R is reinforced with geogrids in order to suit the design requirements. This unique combination marries the excellent anti-erosion properties of the three-dimensional MacMat® geomat with the tensile properties of the reinforcement and can therefore be used for soil veneer applications where vegetation is required at steep angles and on long slopes.

MacMat®-R has been tested with our range of MacDrain® products to simulate a soil veneer application, deriving shear interface friction properties as required in such applications to ensure the soil is stable and the tensile strength of the MacMat® is adequate.

MacWeb is a lightweight expandable cellular confinement system, manufactured by full or perforated polyethylene sheets from 75mm to 200mm high. MacWeb is utilised in erosion applications where vegetating is prohibitive and using soilcrete filling, the slope is protected from erosion phenomena.

MacWeb can also be used in ground stabilisation applications where sand can be used to fill the cells, providing a confinement and allowing improvement to soft soil conditions, especially in temporary roads and working platforms.
**MACDRAIN®**

MacDrain® is a geocomposite for drainage, manufactured with a rigid or flexible core in polypropylene, which allows water to flow freely. The sides of the core are enclosed with a non-woven geotextile, thermally bonded to the core ensuring filtration, separation and protection of the core from any damage.

If required, a water-proof membrane can replace one geotextile side layer. Each side of the geotextile exceeds the edge of the drainage core to provide overlapping to the butt-joints of the adjacent MacDrain® sheet. MacDrain® may be applied as subsoil drainage in vertical sloped and horizontal structures.

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**MACLINE® GCL**

Macline® GCL is a geocomposite clay liner consisting of a layer of bentonite encapsulated between two geotextiles needle punched together. This integrated matrix of bentonite and needle punched fibres provides high shear strength and allows the MacLine® GCL to maintain low permeability even in presence of adverse installation conditions.

Macline® GCL can effectively replace compacted clay allowing the reduction of haulage and installation time for a more sustainable approach. It is a superior choice for a wide range of environmental applications such as landfill liners, capping, contaminated sites, ponds and lagoons.

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**MACTEX® P**

MacTex® P are nonwoven staple fibre needlepunched and thermocalendered geotextiles made from virgin polypropylene fibres. Their thickness and low dynamic penetration resistance makes them ideal for protection of liner systems.
MACGRID® EG

MacGrid® EG is a high modulus polypropylene bidirectional extruded geogrid which enhances pavement materials by restraining lateral movement of soil particles.

MacGrid® EG is ideal for ground stabilisation for working platforms, container yards, roads and warehouse foundations.

MacGrid® EG is characterised by design coefficients which can adopted in design tools to allow a reduction to the thickness of the layerworks, increasing the performance of the structures to carry more load or to able to use lower quality materials such as insitu soil rather than imported fill.

MACGRID® AR

MacGrid® AR, and the composite AR G (geogrid in combination with a non-woven geotextile), are planar structures consisting of high tensile fibre strands (glass, polyester or PVA) arranged in a grid shape with bitumen coated mesh. On request, the MacGrid® AR can be supplied with a pressure-sensitive adhesive to assist during paving operations and reducing movement of the geogrid.

MacGrid® AR is specifically suited to reduce reflective cracking in overlay application of roads, airports, as well in new wearing courses, enabling a reduction in the thickness using the same traffic, or increasing the traffic load by keeping the same thickness.
**MACTEX® H**

MacTex® H.1 are nonwoven geotextiles manufactured using staple fibre needlepunched and thermocalendered virgin polypropylene. Their high-energy absorption and resistance to de-tangling of fibres make the range ideal for functions of filtration and separation.

**MACTEX® W**

MacTex® W is a planar woven geotextile manufactured using high tenacity polyester or polypropylene yarns. The high tensile strength of MacTex® W, combined with its high installation damage resistance, allow the use in both separation and ground stabilisation applications such as improvement of soft insitu soil by reducing the thickness of the layerworks or replacing rock pioneer layers.
FLEXMESH®

FlexMesh® consists of hexagonal double twist woven mesh manufactured from mild steel wire transversely reinforced at regular intervals with steel rods and lined, on one side of the wire mesh panel, with a pre-attached geotextile for separation.

FlexMesh® is typically used for emergency roadways, temporary roadway stabilisation and permanent basal reinforcement applications such as industrial foundations on soft soils.

ROADMESH®

Road Mesh® is a unique bi-directional heavy duty bound layer reinforcement used in pavement structures. Road Mesh® has a three-dimensional structure, allowing the bound layer material to envelope each continuous wire strand, ensuring interlock occurs, allowing optimum and immediate load transfer from the aggregate to the reinforcing.

Road Mesh® is typically used in road maintenance and new road construction where conditions are less favourable and therefore traditional remedial or design solutions are no longer viable. Road Mesh® is more commonly installed at the base of bound layers, typically where the layer’s tensile stresses are higher. The Road Mesh® absorbs and ultimately reduces the peak tensile stresses caused by the presence of reflected cracks and/or traffic.
**PARALINK®**

ParaLink® is a unique, high performance geogrid for demanding geotechnical, mining and civil engineering applications, where high loads, seismic events or aggressive ground conditions are encountered. ParaLink® delivers long-term structural reinforcement of soils where the performance of the geogrid is required throughout the design-life of the structure with a unidirectional strength between 200 to 1,600kN/m. BBA Certified up to 120-year design life with CE Mark and EPD Certified.

ParaLink® is manufactured using soil reinforcing low-creep polymer yarns protected by the toughest geogrid sheathing in the market, providing unparalleled resistance to installation damage and chemical/biological degradation. Tried and tested throughout the world, Maccaferri ParaLink® is a versatile geogrid. Its unique robust structure gives ParaLink® great resilience and reliability, reducing client risk and enabling efficient construction of embankments over soft soils, over piles and over voids and old mine-works.

**MACRES®**

MacRes® is the square shaped concrete panel mechanically stabilised earth wall (MSEW) that forms part of the soil reinforced systems offered by Maccaferri Africa. This technology provides a retaining wall solution, based on soil reinforced materials that obey friction criteria to develop a gravity structure.

Though it is suitable for use in industrial, mining and marine applications, its versatility and higher vertical flexibility is even more suited for complex geometry structures such as road embankments and more aesthetically demanding retaining structures in public areas like shopping centres and office parks. It has proved itself well able to perform under high loads and in robust situations, and for critical structures where durability and reliability are a major requirement.
The Terramesh® System is a versatile modular system used in soil reinforcement applications such as mechanically stabilised earth walls. Manufactured using preassembled units fabricated with double twisted wire steel mesh wire with Galfan and Polimac coating it satisfies a design life of more than 120 years with no creep strain deformation.

Terramesh® System combines the rapid installation of a modular system with the flexibility of soil reinforcement, and the aesthetic of a gabion wall face with the benefit of a reduced volume of gabion rock and engineering backfill to provide internal stability of the soil mass. After more than 30 years on the market, the Terramesh® System has been successfully used in major projects around the world, effectively solving clients’ challenges in both civil and mining works up to 30m high vertically.

Green Terramesh® is manufactured using double twisted wire steel mesh wire Galfan and Polimac® coated to satisfy a design life of more than 120 years with no creep strain deformation. The preassembled unit allows for rapid installation as the face includes a welded mesh panel and erosion control blanket. The units are installed using preformed triangles to fix the facing slope angle up to 70°. The front face requires topsoil to enhance the growth of vegetation, while engineering backfill shall be placed to ensure internal stability is of the soil mass.

Green Terramesh® installation is fast, and the vegetated face allows an environmentally friendly retaining structures which can be blend in with the surroundings. After more than 30 years on the market, Green Terramesh® has been successfully used in major projects around the world, effectively solving clients’ challenges in both civil and mining works up to a 100m sloped.
MACGRID® WG

MacGrid® WG is a coated geogrid manufactured from high-molecular weight, high-tenacity, polyester multifilament yarn monodirectional woven geogrid developed for soil reinforcement applications providing long term design strength.

MacGrid® WG is effective in block retaining walls, soil reinforced slopes and reinforcement of light embankments.

PARAGRID®

ParaGrid® is a bonded geogrid manufactured from high tenacity polyester yarns, coated in polyethylene to provide best performance in aggressive environments with high resistance to installation damage with a tensile strength up to 200 KN/m.

ParaGrid® is certified by the BBA (British Board Agreement) in soil reinforcement applications, walls and slopes with a design life of 120 years and soil ph up to 11.

PARADRAIN®

ParaDrain® is a new generation of geosynthetic materials, combining reinforcement and drainage functions in one product. It has been specially developed for the reinforcement of slopes constructed from poorly draining backfill.

With a tensile strength of up to 200 kN/m, ParaDrain® is manufactured using high tenacity polyester (PET) yarns encased in a durable and robust polyethylene (PE) coating to both protect the multi-filaments from any installation damage. The drainage component consist of a nonwoven geotextile which acts as a filter to allow the pore water to escape into the channel while retaining the marginal fill.
**ROCKFALL NETTING**

Rockfall Netting consists of hexagonal double twist woven mesh manufactured from mild steel wire, which is installed on rock slopes to contain loose and falling rock debris and allow it to fall to the foot of the rock slope in a controlled manner.

Steel wire double twist mesh is ideal as it is flexible in all directions and it conforms easily to the rock slope. Double twist mesh does not unravel in the event of accidental breakage of the wires, unlike single twist meshes, irrespective of the strength and type of wire used.

**STEELGRID® HR**

The SteelGrid® HR mesh, is a new woven steel geocomposite mesh for geotechnical, rockfall mitigation and slope stabilisation applications.

SteelGrid® HR is manufactured by interweaving high tensile steel wire ropes longitudinally into high resistance double twist steel mesh during the manufacturing process to form a single “geocomposite” product. The ropes lie straight within the finished mesh providing exceptional strength and stiffness (high strength at low strain).

SteelGrid® HR is a geocomposite product, based on “Double Twist” mesh technology. The double twist construction of the mesh prevents it unravelling (unlike single twist or ‘chain link style’ meshes) in the event of accidental wire breakage or damage during use.
HEA PANELS™

The HEA (High Energy Absorption) Panel™ is a rectangular panel made of square meshes manufactured from a single continuous high strength rope. HEA steel cable panels are more suited to surface stabilisation applications than simple woven mesh as they possess greater stiffness.

They provide high resistance with minimal deflection in order to limit or prevent the displacement of the unstable surface rock mass, therefore reducing the deterioration of the slope and increasing the level of security. These robust systems are available with a variety of protective coatings for an enhanced design life. In certain applications, the panel can be further strengthened by inserting a perimeter rope.

ROCKFALL BARRIERS

In certain rockfall hazard situations, due to technical, topographic or access issues, flexible rockfall catch fences are an ideal solution. These barriers are positioned to intercept and stop falling rocks.

The fences are made of a complete kit of components consisting of a catch net downhill of the barrier posts. The fences vary in height and length, and are capable of absorbing impacts of high kinetic energy. The posts act independently from the net. If a post is hit by a falling rock and damaged, the remaining posts take the additional forces, ensuring that the system’s performance is not compromised. During impact, the system ensures that the energy of the falling rock is dissipated and the rock is prevented from moving any further.
Engineering a Better Solution

Maccferri’s motto is ‘Engineering a Better Solution’; we do not 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 with clients through the quality of our service and solutions.

OFFICINE MACCAFERRI GROUP PROFILE

Founded in 1879, Officine Maccaferri soon became a technical reference in the design and development of solutions for hydraulic works and retaining structures.

Since then, through technological innovation, geographical expansion and focussed diversification, Maccaferri now offers solutions at a global level for a wide range of civil, geotechnical and environmental engineering applications.

ORGANISATIONAL STRUCTURE

Officine Maccaferri is at the heart of the Maccaferri Industrial Group, a corporation with revenues of €1.2B, operating in mechanical engineering, real estate & construction, energy, food & agro-industry and tobacco.

Officine Maccaferri’s vision is to become a leading international provider of advanced solutions to the civil engineering and construction market. With nearly 3000 employees, over 30 manufacturing facilities and local operations in 100 countries around the world, Maccaferri can truly claim to have a global presence with local focus.

MACCAFERRI APPLICATIONS

- RETAINING WALLS & SOIL REINFORCEMENT
- SOIL STABILISATION & PAVEMENTS
- HYDRAULIC WORKS
- BASAL REINFORCEMENT
- ROCKFALL PROTECTION & SNOW BARRIERS
- COASTAL PROTECTION, MARINE STRUCTURES & PIPELINE PROTECTION
- EROSION CONTROL
- ENVIRONMENT, DEWATERING & LANDFILLS
- DRAINAGE OF STRUCTURES
- TUNNELLING
- LANDSCAPE & ARCHITECTURE
- CONCRETE FLOORING, PRECAST & OTHER USES
- FENCING & WIRE
- AQUACULTURE NETS/CAGES
- SAFETY & NOISE BARRIERS
- CONCRETE FLOORING, PRECAST & OTHER USES