



## INDUSTRIAL LININGS



THE LEADING  
ASSET INTEGRITY MANAGEMENT & INDUSTRIAL SOLUTIONS  
COMPANY IN AFRICA

# MISSION

DGC AFRICA's Mission is to focus on helping our industrial customers optimising their maintenance costs and improving plant performance, by providing innovative solutions together with our market leading technologies to enhance the service life of their operating assets.



# PURPOSE

We help our industrial customers optimising their maintenance costs and improving plant performance, by providing innovative solutions to enhance the service life of their operating assets.

**DGC AFRICA IS CUSTOMER CENTRIC  
WITH THE ADOPTION OF OUR GROUP-WIDE  
“ONE PERSONALISED SOLUTION”,  
UNDERPINNED BY OUR RANGE OF HIGH-QUALITY  
NICHE SERVICES, WITH OUR SUPERIOR TECHNICAL EXPERTISE,  
DELIVERY AND CUSTOMER SERVICE.**

# 110 YEARS IN BUSINESS

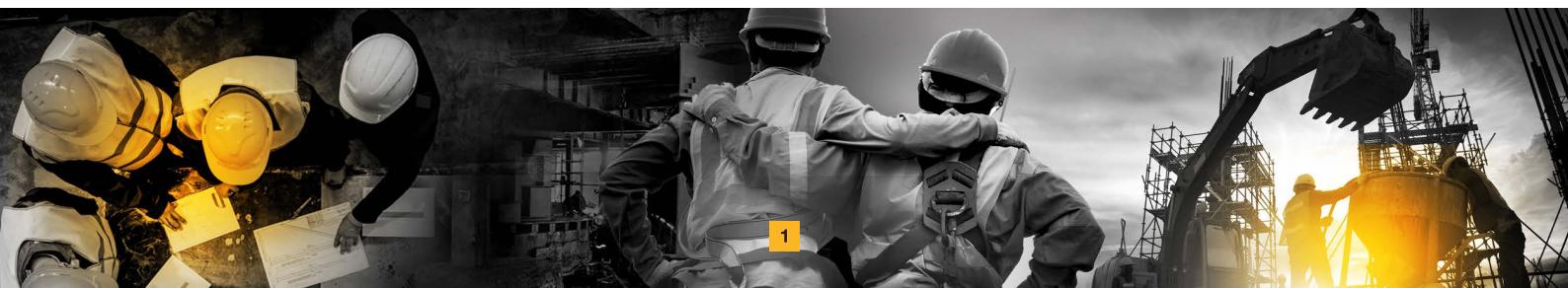


DGC AFRICA IS A MEMBER OF THE DICKINSON GROUP OF COMPANIES

2020 is a milestone for Dickinson Group of Companies, as the company celebrated its 110th anniversary having been founded in 1910.

In 1928, the company undertook the refractory installation works on one of the first blast furnaces being built in South Africa. This was the start of the company's industrial services business. Over the years the company has diversified company to provide a broad range of specialist products and services to the refractory consuming industries.

The company's vision is to be recognised as a global leading asset integrity management and industrial solutions company, based on providing innovative solutions and market leading technologies, while continuing our leadership in selected geographic regions.



## DGC AFRICA'S STRATEGIC FOCUS

**DGC AFRICA** has more than 50 years' experience in Africa; since the company was involved during the 1960s on a major project for GECAMINES Sarl. in the Democratic Republic of Congo. **DGC AFRICA's** focus is on the provision of the Group's range of specialist industrial services to the mining & minerals, metals smelting, sulphuric acid plants, mineral processing, oil & gas, chemical & petrochemical and power generation industries throughout Africa.



# STRATEGY

The company is leveraging off its dominant presence in Southern Africa in Zambia, Namibia and Democratic Republic of Congo, to expand into the other Anglophone (English), Francophone (French) and Portuguese speaking countries throughout sub-Saharan Africa.

### DGC AFRICA'S RANGE OF SPECIALIST SERVICES INCLUDE:

- Furnace & Smelter Services
- Industrial Vacuumation
- Silo Cleaning
- Catalyst Handling
- HP & UHP Water Blasting
- Sulphuric Acid Plant Services
- Corrosion Protection & Coatings
- Industrial Acid Proofing
- Fibreglass Reinforced Plastic (FRP) Systems
- Wear & Abrasion Protection Solutions
- Furnace Mechanical Projects
- Fabrication & Welding
- Rotary Kiln & Mill Services
- On-Site Machining Services
- Conveyor Maintenance Services

Over the next few years, we want to continue to implement this strategy, strengthening our "**Customer Centric**" approach, to enhance the bonds with our customers, and to continue to develop high added value solutions in collaboration with our customers, in order to anticipate their future needs.

We are at the service of our customers, which is perfectly illustrated by our rebranding, involving full integration of all our subsidiaries, and our Dickinson Group of Companies "**One Personalised Solution**" slogan.

Trevor Dickinson  
**CHAIRMAN**

# INDUSTRIAL LININGS

**DGC AFRICA provides a wide range of world-class Industrial Linings to the mining, metals smelting, mineral processing and refining industries internationally.**

The company specialises in the supply and application of an extensive range of corrosion protection, acid resistant coatings and brick lining systems, through to wear and abrasion resistant solutions; offering superior protection for our clients' assets against corrosion, chemical and wear attacks. The company aims to reduce corrosion and deterioration related downtime and maintenance by provision of stringent specifications, high quality standards, exceptional workmanship and relentless inspections.

DGC AFRICA only applies coatings, linings and wear resistant solutions that have proven successful in various application environments within the Mining, Agricultural, Chemical, Petrochemical, Pulp & Paper, Food & Beverage, Building & Construction, Marine, Waste-Water and Power Generation along with many other industries.

The company offers solutions with products that are technically supported and manufactured to ISO 9001 standards. We provide cost effective solutions to industries throughout the African continent. DGC AFRICA has the required resources, as well as the global partnerships, to offer the complete range of Corrosion, Acid, Wear & Abrasion resistant solutions to all sectors of industry, irrespective of project size or difficulty.

**The company supplies and applies a comprehensive range of products including:**

- Specialist Polyurethanes**
- Epoxies, including Novolac & Phenolic Resins**
- Organic & Inorganic Zinc Coatings**
- Glass-Flake Reinforced Coatings**
- Vinyl Ester & Polyester Resins**
- Acid Resistant Bricks, Cements, Mortars & Grouts**
- Carbon Bricks, Tiles, Shapes & Sleeves**
- Concrete Repair Epoxies and Mortars**
- Fibreglass Reinforced Plastic (FRP) Systems**
- Wear & Abrasion Protection Solutions**

**DGC AFRICA's Industrial Linings comprise of the following:**

**CORROSION PROTECTION / ACID PROOFING / INSTALLATIONS & INSPECTIONS QUALITY /  
MAINTENANCE / FIBREGLASS REINFORCED PLASTIC (FRP) SYSTEMS**

## CORROSION PROTECTION

DGC AFRICA only specifies and utilises the best suited solution, whether it be a single, duplex or triplex system. Epoxy, Polyurethane, Alkaline or Zinc-Rich coating systems are specified in accordance with ISO 12944-5 which will ensure that the required corrosion protection requirements are met, regardless of the environmental conditions. The company offers solutions covering the entire environment corrosion spectrum from C1 to CX as described in ISO 12944-5.



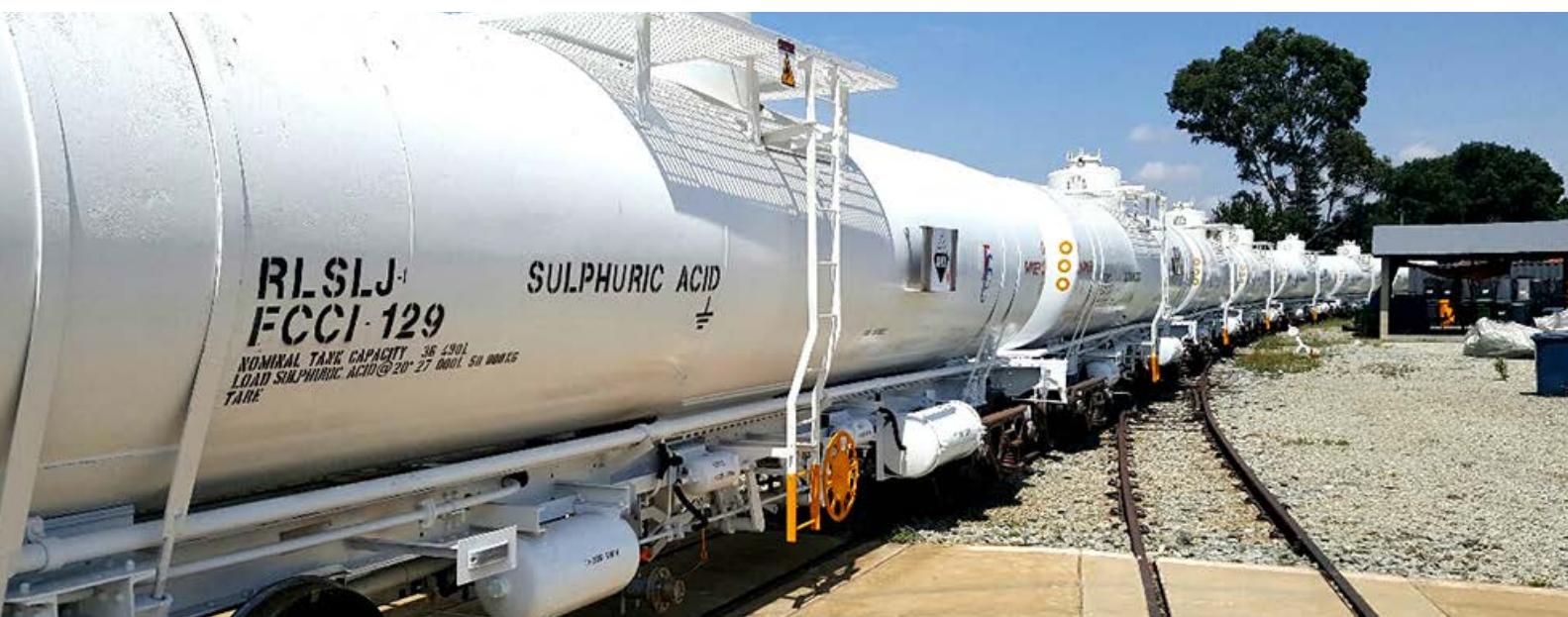


The company has a range of Acid Proofing and Corrosion Protection Lining systems from Epoxy Novolac FRP Lining systems, resin screeds up to 9mm thickness and Acid Tiles and Bricks from 15, 25, 38, 51, 65 & 76mm thick. Ensuring the concrete and steel tanks are protected against corrosion to extend the life expectancy of the structure. Suitable for Precious Metal Refineries, Fertilizer plants, Acid plants, Paper Mills, Chemical Processing Plants and any area exposed to chemicals.

We also offer various aliphatic colour options that will provide protection of the specified system when exposed to extreme UV conditions.

**DGC AFRICA** understands the importance of a well prepared and applied lining system due to the submerged conditions the lining will be exposed to. Surface preparation is vital to ensure optimum coating performance and adhesion.

The company will prepare and install the best suited lining system for corrosion protection against acidic or alkaline chemicals, effluent or just plain potable water even when exposed to elevated temperatures.



# ACID PROOFING

## ACID PROOFING

Acid corrosion can be a catastrophic type of failure. Prior to the installation of high-performance acid resistant systems, **DGC AFRICA** will ensure that the substrate is sufficiently prepared and cleaned, especially if there was previous exposure to acids; such incidents leave acid salt deposits on the substrate. **DGC AFRICA** will also undertake any concrete rehabilitation work to ensure that any damaged or spalled concrete is structurally sound prior to any acid proofing installations.

Depending on the specific requirements dictated by the site; such as chemical concentrations, temperature and exposure, **DGC AFRICA** will specify and install either a high performance chemical resistant liquid applied glass flake reinforced epoxy, vinyl ester or polyester system, or acid resistant bricks and mortar.



## INSTALLATION & INSPECTIONS QUALITY ASSURANCE

After the manufacturing of high-quality coating systems, the final variable in the product's usefulness is the application. Careful and proper application is key to the success of any coating. There are three vital elements to effective coating protections, the material, surface preparation and the application. The purpose of coating application is to develop a highly adherent continuous protective layer of material over the substrate in a relatively constant and even thickness.

**DGC AFRICA** utilises the best possible method of application to achieve not only the best finish, but also the most accurate and consistent film formation based on the selected material and accessibility. The company also monitors environmental conditions before and during all applications to ensure that no external climatic conditions can influence the curing or performance of the coating system being applied.

## MAINTENANCE

Coating systems are the first line of defence in the protection of structures and tanks. The upkeep of coating and lining systems are therefore vitally important to ensure adequate protection over their intended life span. Effective inspection during the life of a coating can extend its useful life numerous times by introducing coating maintenance and repair before major coating failures occur.

**DGC AFRICA** offers a complete preventative maintenance program, consisting of the following key strategies:

- Site inspection and evaluation
- Condition monitoring
- Compile report and recommendations
- Generating maintenance works procedure
- Conduct pre-qualification tests to prove methodology & compatibility with existing coating systems
- Carry out necessary repair work to reinstate the protective coating layer
- Quality assurance measurements

## FIBREGLASS REINFORCED PLASTIC (FRP) SYSTEMS

**DGC AFRICA** manufacturers the complete range of FRP products including; piping & spooling, tanks & vessels, ducting, scrubbers, stacks & chimney liners as well as specialty and customer engineered products. Industries served include – mining & metals, chemical & petrochemical, oil & gas, pulp & paper, power & flue gas desulphurization.

Fibreglass Reinforced Plastic (FRP) is a composite material made of a polymer matrix reinforced with fibres, usually glass fibres.

The polymer provides excellent chemical resistance while the fibres provide the structural integrity. Depending of the resin type and the glass to resin type and the glass to resin ratio the material properties for individual structural layer can be optimised for corrosion resistance and physical strength.



## APPLICATIONS

**PIPING & SPOOLING** - Fibreglass Reinforced Plastic (FRP) piping systems for corrosive applications have been used widespread within industry for more than 50 years. FRP piping has superior corrosion resistance when compared to metallic piping and can be more economical than the stainless, titanium and high nickel alloy alternatives. That is why industries such as Pulp & Paper, Mining, Chemical Processing, Water, Power & FGD have successfully chosen to utilise FRP piping in their process systems.

**TANKS & VESSELS** - Fibreglass reinforced plastic (FRP) tanks and vessels, including the auxiliary components can be fabricated in virtually any shape or configuration, demonstrating the flexibility inherent with FRP composites. FRP tanks are your environmentally safe answer to processing and storing corrosive gases and liquids, whether below or above ground. Tanks, vessels and scrubbers can be designed to handle a wide variety of dynamic, hydrostatic loads and chemical environments. Such processing systems also find use as absorbers, de-misters, air strippers and bleach towers.

**DUCTING** - Fiberglass Reinforced Plastic (FRP) Ductwork is your answer to conveying critical fumes within your facility. FRP duct systems have a long history in industries such as Power, FGD, Metals and Mining, Pulp & Paper, Chemical Processing and Odour Control.

**SCRUBBERS** - Industrial scrubbers/absorbers, shells and vessel internals have been manufactured using FRP for many years due to the corrosion resistance and dependability of Fiberglass Reinforced Plastic. FRP scrubbers and scrubber components have been used in a wide range of industries to include Power & FGD, Metals & Mining, Chemical Processing, Cement, Water Remediation and Odour Control. With proper material selection, FRP can provide long term corrosion resistance and low maintenance costs in applications where carbon steel, stainless steel, duplex stainless steel, coatings, linings are simply not a long-term solution. FRP material is also a more economical solution to high-nickel content alloys in scrubber environments containing elevated chloride concentrations or wet acids.



**STACKS & CHIMNEY LINERS** - Industries such as Pulp & Paper, Metals & Mining, Chemical Processing and Power & FGD successfully utilise FRP Stacks in process systems in which FRP has superior corrosion resistance. Compared to metallic stacks or where FRP is more economical than the stainless, titanium and high nickel alloy alternatives.

**Speciality & Custom Engineered Products** - Fiberglass Reinforced Plastic composites naturally lend itself to unique customer requirements which do not lend themselves to standard designs, existing tooling or standard manufacturing practices.

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## WEAR AND ABRASION PROTECTION SOLUTIONS

DGC AFRICA's comprehensive range of industrial linings includes international leaders, Kalenborn International's wear protection solutions. Kalenborn established 100 years ago, provides protection for the environmental and heavy industries with wear-resistant linings which have excellent abrasion and impact resistance.

Kalenborn has a global network of subsidiaries around the world - Germany, USA, Canada, Brazil, France, Poland, Hungry, Singapore, Philippines, Vietnam and exclusive representation throughout sub-Saharan Africa by **DGC AFRICA**.

The company provides custom design, manufacture, delivery, and installation of its materials to meet customers' specific abrasion, impact and corrosion problems. This applies in particular to industrial plants handling raw material processing as well as, transport, storage including the processing of ores, sand, slag, coal, or recycled materials.

Kalenborn has a rich tradition characterized by competence and experience as well as durable, quality products. Our wear protection solutions protect industrial plants and equipment reliably against wear due to abrasion and impact. In steelworks and cement plants, in coal-fired power plants and recycling plants, in mining, and in environmental technology, our solutions keep production operations running.

### EFFECTIVE WEAR PROTECTION IN A COMPLETE PACKAGE

From the development of our materials to the lining of pipes, plants, and equipment, we offer a complete range of products and services, all from a single source. In so doing, the quality and durability of our products stand above all else. As experts, we begin with the production of our materials. We know the raw materials and the manufacturing processes. That comprehensive expertise enables us to ensure the quality characteristics of our products at all times.

### MINERAL FROM NATURAL BASALT TO FUSED CAST BASALT

In the early 1920s, Kalenborn's fused cast basalt works successfully produced a wear-resistant material made of basalt for the first time ever – a material now known the world over under the brand name ABRESIST. Today modern furnaces, in which the rock is smelted at 1,250 °C, are the heart of the production operations. The liquid basalt is cast in moulds and subsequently heat treated in a special process in order to give the material its crystalline structure. That makes the rock especially hard and strong. Along with very good protection against wear, ABRESIST also provides an anti-friction surface.



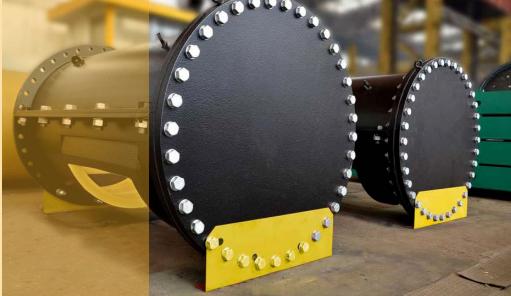
### CERAMIC FROM MINERAL TO CERAMICS KALOCER



Is a high-alumina ceramic compressed in a mould and fired at high temperatures. It is suitable for applications subject to extreme wear and temperatures of up to 1,000°C. KALCOR zirconium corundum is particularly well-suited for use in castings. In the form of plates, mosaics, moulded parts, and hollow cylinders, our ceramic materials are installed in a wide range of plant components such as pipelines, cyclones, sifters, and chutes. This ensures the reliable production of energy, raw materials, and other important products we all use in our everyday life.

### METALLIC FROM SCRAP TO HARD METAL

For especially harsh operating conditions, we have developed special hard casting alloys – such as KALCAST, for example. Alloy components such as chromium and carbon ensure especially high hardness and abrasion resistance, whilst manganese provides impact strength. In our foundry, we produce cylinders, pipe bends and moulded parts weighing from 30 to 3,000 kg. Our KALMETALL material, from which we manufacture components that can weigh as much as several tons, consists of steel plates armoured with special hard metal alloys. It exceeds the service life of common steel several times over.



## COMPOUND FROM HARD MATERIAL TO COMPOUND



Our hard compounds combine excellent wear protection properties with ease of use. KALCRET has especially wear-resistant hard materials such as bauxite or corundum permanently embedded in it. Its special advantage lies in its versatility. Our employees apply the material with a trowel or spray it on to create an extremely wide variety of precise components. KALPOXY is an epoxy resin-bonded compound, which can be used quickly and effectively in the seamless lining of plant and equipment components and for repairs. The material can be used in chemically aggressive environments.

## PLASTIC FROM POLYMER TO ENGINEERING PLASTIC

Plates made from thermoplastic form the basis of our material KALEN. They offer corrosion-free, anti-friction wear protection in bunkers, silos, chutes, and troughs. With its especially low weight and operating temperature of up to 80°C, KALEN has proven effective all over the world for decades. It is installed on concrete or steel by means of a mounting system, which we developed specifically for this purpose. KALEA is a high-performance thermoset and is applied extremely rapidly in a thin, seamless layer by means of Kalenborn spray technology. The material features outstanding wear resistance under very high impact loading and an operating temperature of up to 120°C.



## WEAR-RESISTANT MATERIALS

We produce our wear-resistant materials in our own plants and ensure their quality through material testing in our laboratories in order to find just the right solution for each customer requirement.

One of the prerequisites for effective wear protection is also a professional installation, which our employees carry out with special adhesives and fasteners.



ABRESIST fused cast basalt reliably prevents abrasive wear in plant components such as scale flumes, marl hoppers, fly ash pipelines in coal-fired power plants, and coke bunkers in the iron and steel industry. The cast ceramic material KALCOR has proven effective for lining plant components that are subject not only to extremely harsh abrasion but also to high temperatures, for example in chutes for hot sinter or clinker, in asphalt mixers and hot gas pipelines. KALOCER high-alumina ceramics are available in thin, smooth molded elements and are particularly well-suited for lining conveyor belt transfer points, concrete mixers, or cyclones in the food industry.

For the high impact wear typically found in components such as bunker inlets, spiral chutes, and crushers, we recommend metallic materials such as the armoured plates made of KALMETALL and KALCAST hard casting. The hard compound KALCRET combines easy handling with excellent wear protection properties under high-temperature loading. To line large surfaces – such as those of separators on a cement mill or of blast furnace dust catchers in an integrated steel mill – the material can be applied without joints using a trowel or sprayed on. Within 48 hours, the plant is ready for operation again.

Very different requirements arise under operating conditions that demand especially good anti-friction properties, e.g., in silos and bunkers. Such applications use not only KALEN, as a thermoplastic material with ideal anti-friction properties, but also the mineral material KALCERAM. They prevent the material which is being conveyed from building up, thereby ensuring uninterrupted material flow. For rapidly applying a thin, jointless coating to large surfaces or pipes, Kalenborn offers KALEA, a sprayable material with its own application technology.

## WEAR-RESISTANT PIPE SYSTEMS

Pipes, elbows, or pipe fittings are lined with materials to make them wear-resistant. Hydraulic and pneumatic pipe systems often have to withstand extremely harsh conditions. Conveying abrasive materials such as ash, sand, or sinter dust pipelines to acute levels of stress. The right wear protection ensures the continuity of the production process.

To protect pipelines against wear, we have developed a standard that uses strong linings to extend the service life of the stressed components. The smooth surfaces of the materials promote good flow characteristics. This reduces pressure losses and lowers energy costs. In pneumatic pipelines, lining the most heavily stressed points, such as elbows, branches, or transitions, is often enough to achieve the required protection.

Moreover, we offer an intelligent system for monitoring wear protection. It reports the end of the material's service life in advance and warns the operator early about the impending failure of a pipeline. That prevents environmental pollution and hazardous operating conditions.



# THE LEADING ASSET INTEGRITY MANAGEMENT & INDUSTRIAL SOLUTIONS COMPANY IN AFRICA

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