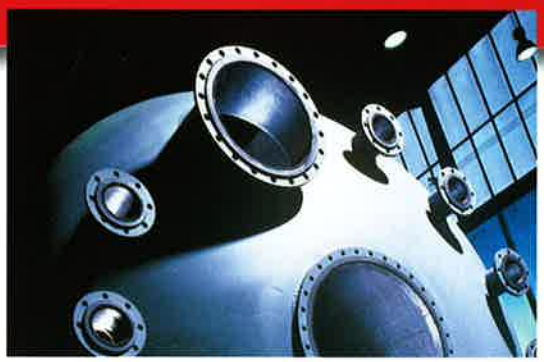
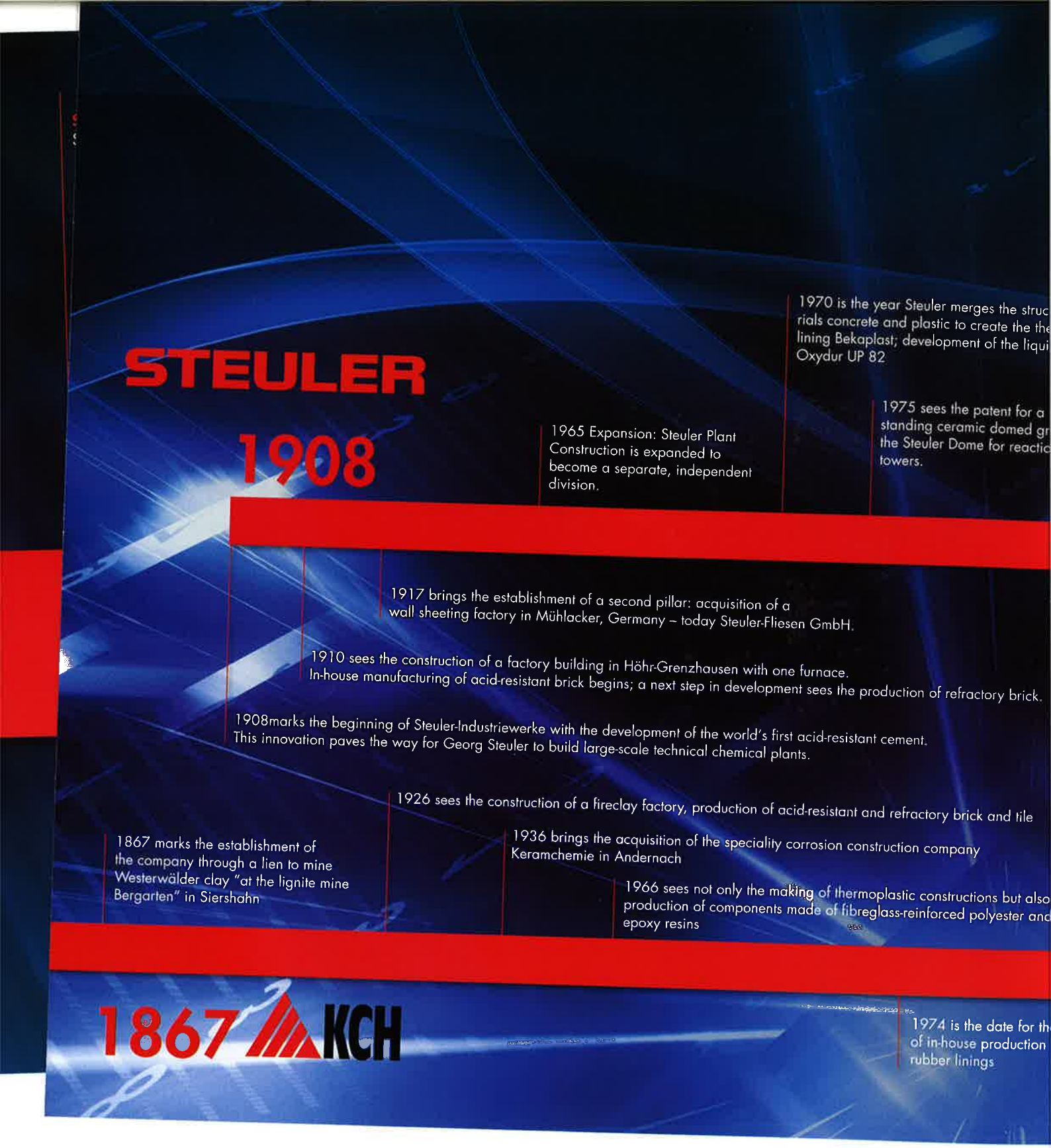
STEULER KCH

Industrial Corrosion Protection



Focus on Progress



Steuler has become large and known around the world for its Industrial Corrosion Protection unit, which includes the fields of Surface Protective Systems, Refractory Systems and Plastics Technology. Together, they create a unique combination of innovative material developments and lining technologies.

Steuler Plant Construction/Environmental Technology implements custom-tailored, turnkey plants all around the world, always with an eye to protecting the environment. A further pillar of the company is the Steuler Tile Group. Contemporary, design-based and exclusive wall, floor and décor tile is manufactured for the global market at four different sites.

The traditional company Keramchemie (KCH) has also been developing over the decades to become a successful, internationally active corrosion protection pro-

2010 acquisition of the KCH activities by Steuler

2004 comes with the development of wet electrostatic precipitator bundles with conductive interior walls

2008 and Steuler celebrates its 100th anniversary

1985 marks the development of refractory chrome-corundum brick for toxic waste incineration plants

1999 brings the acquisition of the Westerwälder Korrosionsschutz GmbH (WKS)

2000 acquisition of the HAW Linings GmbH

STEULER KCH

vider headquartered in Siershahn, Germany. With the integration of KCH, Steuler is taking a further significant step in its corporate evolution. For clients of the two brands, which have been in competition to date, excellent new prospects have opened up: The joint range of corrosion protection products and services allows even greater synergistic effects to be attained for both clients and large-scale international projects. Whether it is linings, rubber sheeting or masonry, industrial flooring, brick and tile, or mechanically anchored thermoplastic linings, STEULER-KCH develops convincing solutions for every application. Refractory lining systems and equipment, tanks or piping made of thermoplastics and duroplastics, complement and complete the portfolio. There is even an experienced project and installation team available for the safe and secure sealing of swimming pools.

ASSEMBLY / INSTALLATION

Expert installers

Monitoring of assembly by Steuler supervisors

Application technology

Quality assurance

RESEARCH AND DEVELOPMENT AS WELL AS PRODUCTION

CONSTRUCTION AND ENGINEERING

Technical consulting

Engineering

Project execution

From its vast range of materials, STEULER-KCH can select, together with its clients, the most technically effective and economically sensible lining system.

From research and development to consultancy, construction and production, installation and service, STEULER-KCH offers complete solutions from a single source.

Delivering complete solutions also means that smooth project management is always at the client's side. Technical consultancy comes from experienced STEULER-KCH specialists who advise and work out the optimal solution for each project – tested and qualified by a comprehensive, international quality assurance and management system.

Flawless interplay down to the last detail: Materials, know-how and service

SURFACE PROTECTION SYSTEMS

Lining and floor topping systems
Cements, jointing materials, masonry systems, Rubber linings

PLASTICS TECHNOLOGY

Thermoplastic lining systems
Equipment, piping and tanks made of duroplastics and thermoplastics

REFRACTORY SYSTEMS

Refractory lining systems

POOL CONSTRUCTION

From the first consultation to final execution, the client has at his disposal a partner he can come to for all application and technical issues of his often complex plant. A project team plans and coordinates skilled execution. Discussions among material suppliers and installing subcontractors, installation instructions to the installers, construction supervision on site and the proper, professional processing of the products lies with STEULER-KCH Supervising.

Together with international subsidiaries and representatives, STEULER-KCH offers its clients a worldwide network that develops and deploys comprehensive corrosion protection solutions. This is also why STEULER-KCH is a permanent fixture among engineering companies worldwide and in demand for large-scale projects around the globe.

Above: Gas entry pieces and above them a free-standing Steuler Dome, a grid dome made of acid-resistant ceramic material

- Membranes based on polyurethane, epoxy resin, unsaturated polyester resin, vinylester resin, resin, rubber linings and thermoplastics
- Norm brick, shaped brick and special sizes in a variety of grades (acid-resistant ceramic/graphite and carbon brick/refractory materials)
- Artificial resin cement based on , phenol, unsaturated polyester and vinylester resin as well as a variety of of potassium water glass mortars
- A variety of artificial resins based on polyurethane, epoxy resin, vinylester resin, unsaturated polyester resin and resin are trowel-applied, poured, sprinkled and applied as laminate linings

Above: Reactors lined with ceramic wear-and-tear protection

- Coordinated layered system (primers, adhesive and levelling coats, interim layers, top and wear coats, sealants) with a variety of fillers and reinforcing materials
- Using acid-resistant ceramic brick and tile, also carbon materials in standard and special sizes in connection with bedding and jointing cements and mortars on a water glass and artificial resin base, high-quality flooring systems are created.
- Building permits for resin systems based on polyurethane, epoxy resin, vinylester resin, resin systems for all test groups in accordance with the permit guidelines of the German DIBt (German Institute of Building Technology) and other chemical tests

STEULER-KCH possesses a comprehensive product portfolio for membranes, cements and brick materials that meet all the demands for masonry. STEULER-KCH is thus your experienced partner for such masonry work as that needed for pickling plants, regeneration plants, tanks, flue gas piping, reactors, venturi scrubbers, autoclaves or absorption towers.

With our practical experience and the know-how of our innovative construction department, we can advise you on choosing the lining system that will best suit the process you are carrying out. Our vast selection of reliable materials enables you to find the system solution that fits each application. As a specialist for masonry, STEULER-KCH has acid-resistant and refractory, as well as cements from our own production, available for use at high temperatures or in special zones, such as autoclaves or pressurized tanks, and can take over complete installation.

Below: Masonry in autoclaves and flash vessels

Below: Thermoplastic channels, mechanically anchored in the foundation, with special detailed solutions to connect them up to the tiled industrial floors

Below: Floors in the pharmaceutical industry are also made to be leak-proof, and with joints

STEULER–KCH Surface Protection Systems

Above: Floor toppings in the cosmetic industry

Above: Schematic build up floor coating

Flooring and acid-resistant tile from STEULER-KCH protects the concrete substrate from corrosive destruction, prevents chemicals and toxic materials from penetrating it and contributes to maintaining the value of your plant. Solutions tried and proven in practice for expansion joints, channel connections and channel making, as well as the sealing details for foundation sockets and hall structures complete the vast array of flooring systems.

A large number of our flooring systems can be applied in a variety of RAL tones and in a high-quality look by sprinkling chips or coloured sand onto the material. Special grades for the food processing and pharmaceuticals industries are available as are electrically conductive systems for the electronics and other industries.

Linings with the general building and construction permit from the German Institute for Building Technologies, DIBt

From its vast range of materials, STEULER-KCH can select the most technically effective and most economically sensible lining system. We back you up in your project from planning, approval, material selection right through to acceptance and commissioning. And furthermore, many of our systems even meet such further demands as anti-skid surfaces, ability to support wheeled traffic or conductivity. As a specialist operation recognized in accordance with the German Water management Act, WHG, we are aware of our responsibility for the proper and professional installation by our own trained specialist installers.

- Grades of rubber linings for steel and concrete structures based on rubber, butyl (IIR), bromobutyl (BIIR), chlorobutyl (CIIR), chloroprene (CR), hypalon (CSM), natural rubber (NR) and special grades
- Self-vulcanising or pre-vulcanised, hot-water grades
- Bridges cracks and is an elastic, testable membrane with defined thickness
- High-performance trowel-applied coating with fillers that determine its properties, for use against harsh chemical and mechanical attacks, based on vinylester resin, epoxy resin and resin

Above: Rubber-lined area of a pure gas channel

Above: Rubber-lined tank in phosphoric acid production

STEULER-KCH rubber linings are used for reasons of corrosion technology but also as a result of efforts to keep the operational costs of a plant low. The criteria for choosing them are chemical, temperature, and abrasion resistance as well as the size and geometry of the structure to be protected. Such further demands as resistance to vacuum, ability to decontaminate, a high level of resistance to diffusion and crack-bridging capabilities in concrete structures are just as feasible to include as special chemical resistance values.

STEULER–KCH rubber linings are widely used in a variety of areas such as concrete trenches, concrete tanks, pressurised and vacuum equipment, pickling tanks, Venturi scrubbers, processing and storage tanks. Besides a variety of soft rubber linings, we also offer hard rubber linings with special resistance properties. Our rubber linings are often used as membranes under masonry. STEULER-KCH delivers and carries out the installation work.

Right: Spray-on polyurethane coating in a processing tank

STEULER–KCH Surface Protection Systems

- Spray-on coatings based on polyurethane, vinylester, unsaturated polyester resin and epoxy resin with special flake fillers to achieve high diffusion resistance, special vinylester resin coatings with resistance to high temperatures as well as epoxy resin coatings with approval for use with drinking water
- Laminate linings with glass and synthetic fibre reinforcement based on resin, vinylester resin, unsaturated polyester resin and epoxy resin

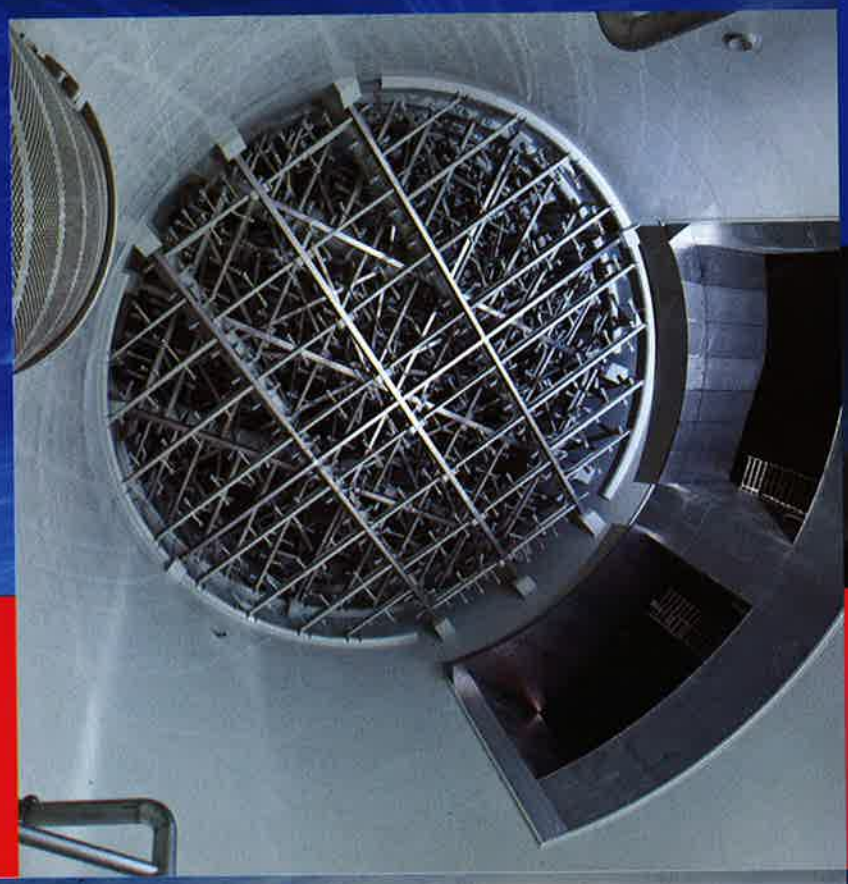
Above: Supporting structures and floor surfaces beneath the electrolysis cells are reliably protected with a polyurethane coating.

Above: Droplet separator in a coated scrubber nozzle

Whether in new construction or the renovation of existing plant and equipment, our objective is to permanently protect storage tanks, drinking water tanks, pipes, scrubbers, flue gas channels, basins and combustion equipment in order to minimize production downtimes and maintenance work. For such purposes, a huge number of tried-and-tested and innovative lining system are available to select from, all of them resistant to the most harsh chemical, mechanical and thermal conditions.

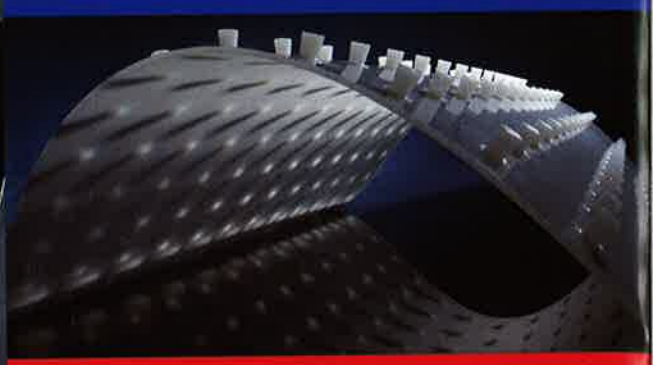
In plants with processing technology, linings are exposed to a myriad of corrosive conditions that they have to cope with in every aspect. To achieve reliable and durable corrosion protection, STEULER-KCH also develops, in co-operation with its clients, customised solutions for specific requirements and processing technologies.

Rapid installation times and brief curing times see to it that as little production time as possible is lost in plants. Our own expert installers and supervisors assure that innovative application technologies are also used, guaranteeing a quick, cost-effective and high-quality execution of your project.



Above: Nozzle arrays and linings made of polypropylene in concrete flue gas scrubbers. Here one of two flue gas desulphurisation scrubbers for the 2,200 MW RWE lignite-fired power plant Neurath BoA II/III, built for AE&E.

Below: Bekaplast™ Lining 400: The knobs on the sheets create a mechanical bond with the concrete.



- Such thermoplastic materials as polypropylene (PP), polyethylene (PE), polyvinyl chloride (PVC), polyvinylidene fluoride (PVDF) and special grades.
- Duroplastic materials, manufactured from unsaturated polyester resins or vinylester resins, reinforced with e-glass, in special cases also with carbon or synthetic fibres.
- Composite materials made of thermoplastic inner liners (PE, PP, PVC, C-PVC, PVDF, ECTFE, FEP, PFA, PTFE-M) and duroplastic reinforcement material

STEULER-KCH constructs plant and components from technical plastics. Clients are supported with competency and practical experience in accordance with their needs in plant and processing technology. From research and development through engineering and our own production using state-of-the-art manufacturing equipment to assembly and installation - STEULER-KCH offers complete plastics solutions from a single source.

Innovative materials, their skilled application and construction, as well as new material compounds are constantly expanding the opportunities for using plastics. STEULER-KCH is a specialist when it comes to using new components and fixtures to fundamentally enhance existing plant. Instead of investing in completely new plant and equipment, it is often worth integrating new developments into already existing plants to keep them state-of-the-art in technological terms.

Below: Equipment internals made of Kera-Duroplast

Below: Glass-fibre reinforced ring pipe with layer of protection from chemicals

STEULER-KCH Plastics Technology

Above: Throttle valve with actuator

Above: Assembly of a completely prefabricated steel band pickling plant

Above: Tube bundle for wet electric filter made of flame retardant polypropylene

Bekaplast thermoplastic linings for steel and concrete structures

Steuler already realised 40 years ago the potential of corrosion-resistant plastic linings and has been targeting their use ever since. Bonding an extremely corrosion and chemical resistant thermoplastic lining with concrete, which has high static solidity, leads to an ideal combination of stability, safety and durability. Whether in the chemical industry or in public sewage systems – our qualifications underscore the versatile areas for using plastic-lined concrete and steel structures.

Kera-Duroplast

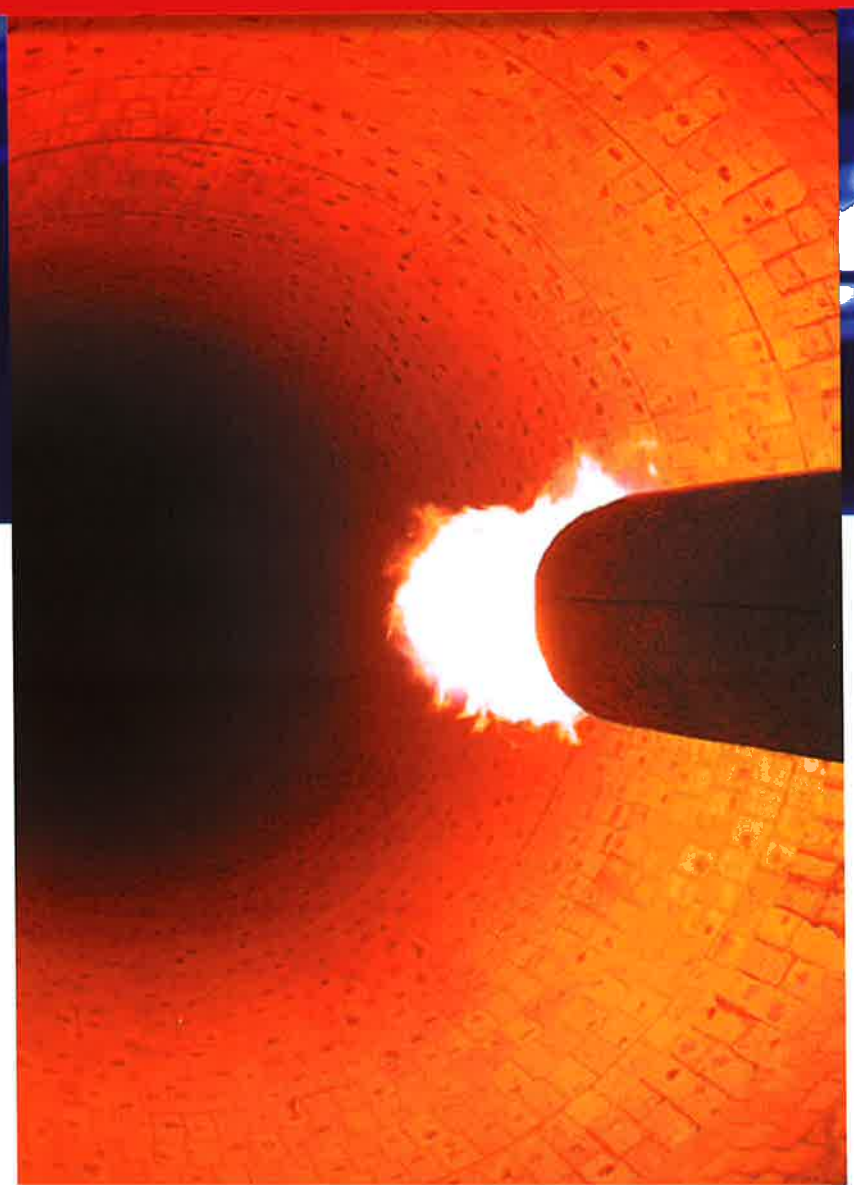
Kera-Duroplast is a chemical and temperature resistant material based on phenol resins reinforced with glass or carbon fibres. By combining fibres and fillers, you receive the properties required for technical applications. STEULER-KCH builds tanks, equipment, pipes, chimneys and special structures from Kera-Duroplast.

Right:
A cathode shaft furnace lined with SiC materials

Refractory lining systems for:

- Iron and steel industry
- Non-ferrous metallurgy
- Thermal waster disposal
- Chemical and petrochemical industry
- Cement and lime industry
- Ceiling and wall construction with ceramic anchoring systems
- Moulded brick/special applications
- Kiln furniture for the ceramics industry and powder metallurgy

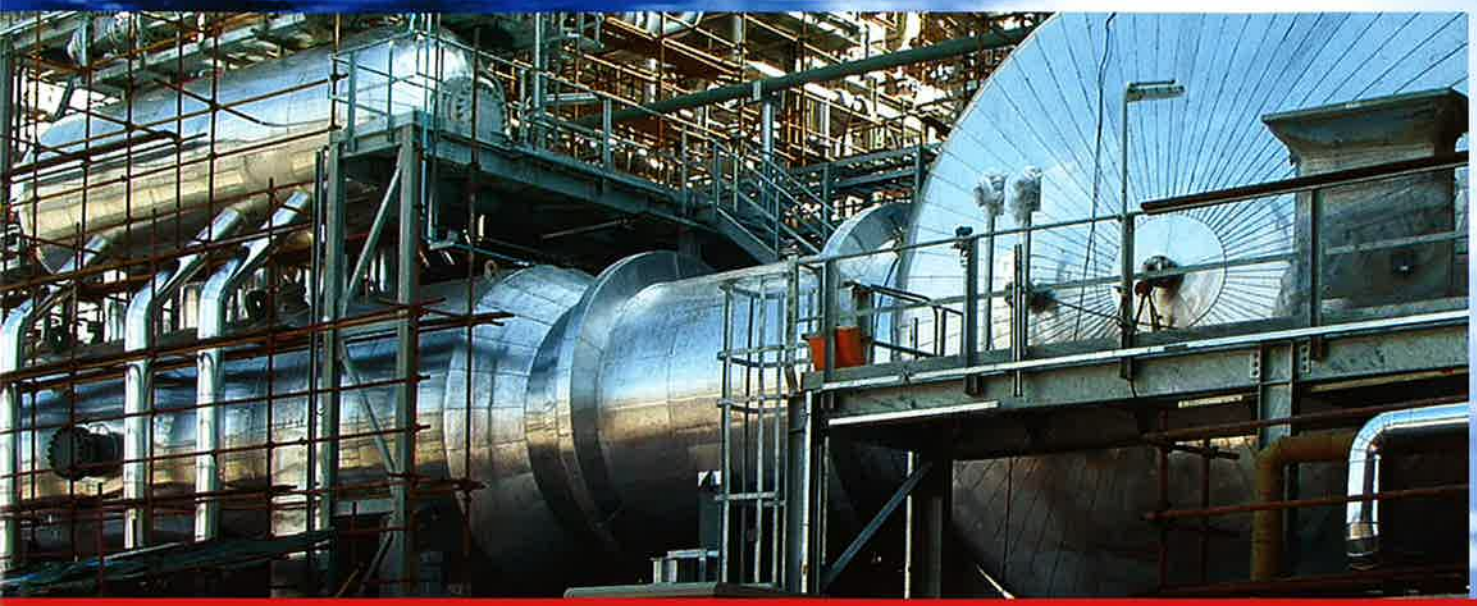
Steuler-KCH Refractory Systems



Left: Rotary kiln in a zinc recovery plant, lined with chemically bonded andalusite brick

Innovative material developments and grades also make STEULER-KCH a competent provider for refractory linings. Our products and know-how are in use around the globe by well-known companies in virtually every industrial sector. The manufacturing programme encompasses moulded and monolithic products. The range of raw materials begins with dry, pressed fireclay for inlet zones and backing masonry and finishes up with corundum materials. A wide selection of zirconium, silicon carbide and andalusite materials assure that clients are supplied with exactly what they need.

Below: Sulphuric acid incineration furnace



Above: View into a lined toxic waste incineration furnace

Above: Refractories for the hot blast tuyere of the blast furnace

Depending on the requirements profile, STEULER-KCH uses such additives as chrome oxide or those on a zirconium base. A special impregnation process has been developed for extreme alkali conditions. Materials for backing masonry, such as lightweight and insulation materials, ceramic fibres, refractory concrete and masses round out our delivery portfolio.

Engineering, execution of furnace construction services and complete assemblies are also part of our range of services. Demanding refractory solutions require our own research and development departments. In our laboratories, we develop new materials and test them on the basis of internationally recognised norms. To assure the reliable development of refractory materials, we carry out all the required tests in advance, such as extensive raw material selections and analysis of wear and slagging. Based on the available steel construction drawings and processing data, Steuler develops the complete refractory layout for each plant and piece of equipment.

Assembly drawings, also heat transfer calculations and recommendations for heating up the equipment also belong to the scope of services supplied. Trained supervisors monitor the entire sequence of work at the site and accompany the installation. This qualified work assures execution of complete refractory solutions.

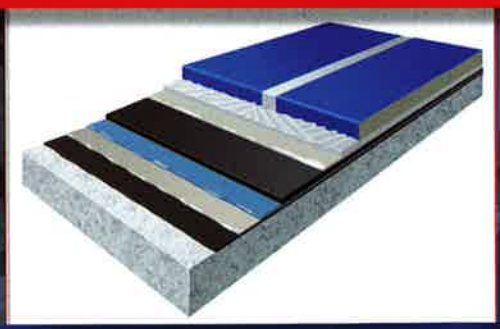
- Perfect planning with demanding detail solutions
- Experience with the widest variety of materials(besides traditional ceramic, also glass mosaic and natural stone) in swimming pool construction
- Swimming pool sealing system with general building and construction test permit (No. P-121-06-03-600002676-1)

TÜV SÜD

Industrie Service

Anyone who wants to master complex swimming pool technology needs solid experience. Add to this materials that have proved themselves in practice and excellent craftsmanship in execution. A personal partner accompanies planners and operators through each phase of the project. This means: the best in project certainty and the best in care. Reliable STEULER-KCH swimming pool technology is used in a vast array of different pool facilities. Besides hotel and wellness spas, we especially excel in thermal, brine, mineral and sea water pools. Steuler swimming pool sealing systems fulfil the highest demands.

STEULER-KCH Pool Construction



Swimming pool sealing systems from Steuler feature a special construction and materials with years of application experience behind them. The heart of the swimming pool seal – the rubber sheet under the tile or mosaic topping an elongation at tear of 400% – creates permanent security that can already be tested for tightness as early as the installation phase.

As top layer, both the traditional ceramic as well as glass mosaic and natural stone are used. The resin cement used to joint these materials meets all the physiological demands of pool construction. We also meet the extraordinary demands of planners or operators. State-of-the-art CAD technology helps us turn creative ideas into tangible plans – from detailed plans to the design of the tile.

STEULER Q7 SYSTEM

STEULER Tecnica S.L.
Spain

STEULER France S.A.R.L.
France

Ditescor S. A.
Mexico

STEULER Maroc S.A.R.L.
Marocco

STEULER do Brasil LTDA.
Brasil

STEULER NORDIC AB
Sverige

Shanghai STEULER-KCH
China

CIMA S.r.l.
Italy

KCT Sp. z o.o.
Polska

STEULER ICP Pty
Australia

STEULER Industrieller Korrosionsschutz
Branch Saudi Arabia

Together with our international subsidiaries and representatives, Steuler-KCH offers its clients a global network that develops and implements comprehensive plant construction solutions.

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Focus on Progress