



May 2013

Headquarters:



Çamlık Mah. İkbal Cad. Dinç Sk.
No:31 Ümraniye 34770
Istanbul – Turkey
Tel: +90 216 314 06 66

Branch Offices:



Riyadh – Kingdom of Saudi Arabia



Doha – Qatar



Abu Dhabi – United Arab Emirates



Minsk – Belarus



Ashgabat - Turkmenistan

KOCA GROUP

KOCA Construction Industry and Export Incorporation was established in 1981. The company became active in aggregate production by 1985 and in ready mixed concrete production by 1986 as the pioneer of the industry in Turkey. The company has established other sister companies to be active in construction works and industrial plants as well as in production and marketing of pre-cast concrete building elements and the various cement based construction materials.



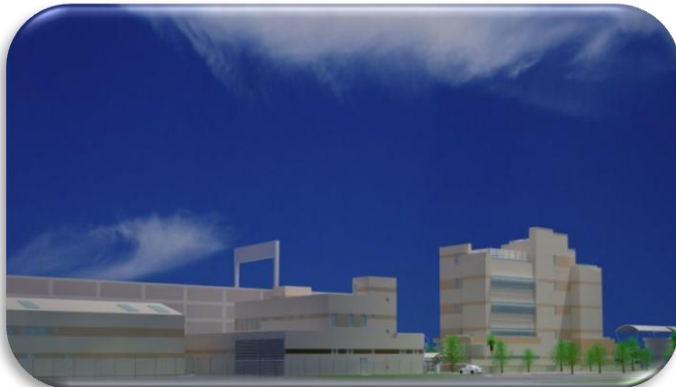
In 2005, KOCA Group expanded its operations to introduce a stronger presence in the Gulf States and other countries with the establishment of regional offices. Currently the offices have been established in Doha-Qatar, in Minsk-Belarus and Ashgabat-Turkmenistan for the ongoing projects in each of these regions.

CORPORATE STRUCTURE

Main activities of KOCA Group are construction of various sub-structural and marine works, industrial plants and commercial buildings, steel structures, production of construction materials.

KOCA Group has built and operated various Industrial Plants in Turkey and abroad since 1985. KOCA Group has realized, including conducting of Feasibility Studies, cement grinding plants, limestone quarries, ready mix concrete plants, wet mortar plants, concrete admixtures plants (wet and dry-mix plants), precast concrete plants and calcite grinding plants.

KOCA Group has also studied and conducted Feasibility Studies for Steel Mill Plants; Container Berth Terminal; Aluminum Frames and Façade Elements Factory; Gypsum and Gypsum Board Production Factory. In this respect Engineering Designs and Economic Analysis were carried out to suit the requirements of the Clients.



KOCA Group is active in various countries for design-build-operate in cement grinding plants, dry mix plants and aggregate and ready mix concrete plants.

Deep mining shafts, processing plants and storage of potassium are the current activities of the company in Turkmenistan.

Group Companies

Koca İnşaat Sanayi ve İhracat Anonim Şirketi

The company is active in sub-structural and infrastructural construction projects requiring advanced engineering solutions with special design and method of construction for sophisticated projects such as dry docks, slipways, water intake, scale pits, railway crossing vertical in-situ and precast shafts, caissons that are usually situated at the coastal line with poor soil conditions, requiring special soil improvement methods such as jet grouting, piling, dewatering, sinking caissons etc.

Subenko Altyapı Mühendislik ve İnşaat Anonim Şirketi

The company is active in engineering design works, construction of various substructures, utility works, earthworks, infrastructures, heavy foundations, marine and coastal structures, industrial structures and soil improvement works.

Birce Turizm İnşaat ve Ticaret Anonim Şirketi

The company makes investments in touristic facilities.

Affiliated Companies

KOCA Group has entered into partnership with several companies for overseas projects. Major co-operations are as follows:

Subenko Gulf Engineering and Construction Company W.L.L. – Doha / QATAR

Subenko Gulf WLL has been established in Qatar by Subenko Alt Yapı Mühendislik ve İnşaat A.Ş. which is a subsidiary of KOCA Group for infrastructural projects. Subenko Gulf has completed Infrastructure and Port Building Works of Container Terminal Berth Project in which the General Contractor was STFA Marine Company and the client was Qatar Petroleum Company.

Branches



UAE Branch

KOCA Group has established its Dubai Branch to perform operation management of the cement plant as well as other contracting works in UAE.



Belarus Branch

KOCA Group has established its Minsk Branch to perform all contracting and operation works in Belarus.



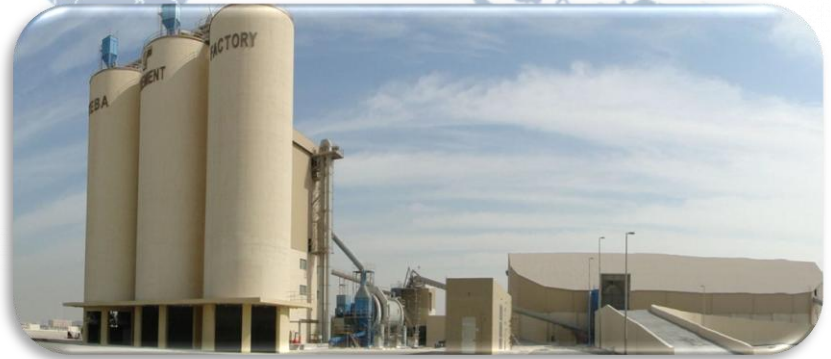
Turkmenistan Branch

Turkmenistan Branch office is established in Ashgabat to support activities of the company in the country.



Operations

Teba Cement Factory LLC Abu Dhabi – UAE is the owner of Cement Grinding Factory which was completed on turn-key basis by KOCA Group. The cement grinding production capacity is over 750,000 tons/year. KOCA Group will perform operation management of this plant under a long term agreement.



KOCA Group as a shareholder of **Al Shareq Ready Made Concrete Company Ltd. Riyadh–KSA** completed the construction of the plant on turn-key basis and completed 2 years operation contract. The concrete production capacity is over 600,000 m³ and aggregated production capacity is 1.500.000 tons yearly.

KOCA Group conducts the following services for an Industrial Operation as required:

- ✓ Investment consultancy
- ✓ Preparation of feasibility reports
- ✓ Design of different facilities and structures
- ✓ “Turn-key” construction and commissioning of different facilities
- ✓ Long term operation of the production plants
- ✓ Technical consultancy

ACTIVITIES

The mother company named as KOCA Construction Industry and Export Incorporation was established in 1981 to be active in civil works as well as in production of constructional materials. The Company became active in aggregate production by 1985; in ready mixed concrete production by 1986 (as the pioneer of the industry in Turkey) and in various grinding processes by 1994.

Koca Group is active in sub structural and infrastructural construction projects requiring advanced engineering solutions with special design and method of construction for sophisticated projects.

Koca Group is also active in complete planning, manufacturing, installations and operation of the Industrial Projects, such as aggregate, cement, precast concrete, admixtures-dry mix and concrete plants as well various grinding plants for other industrial applications.

Since 1986 more than 20 plants have been completed on turnkey basis and operated, where some of these are company owned. The prefabricated factory buildings completed so far are over 300.000 m2 floor space during the last decade.

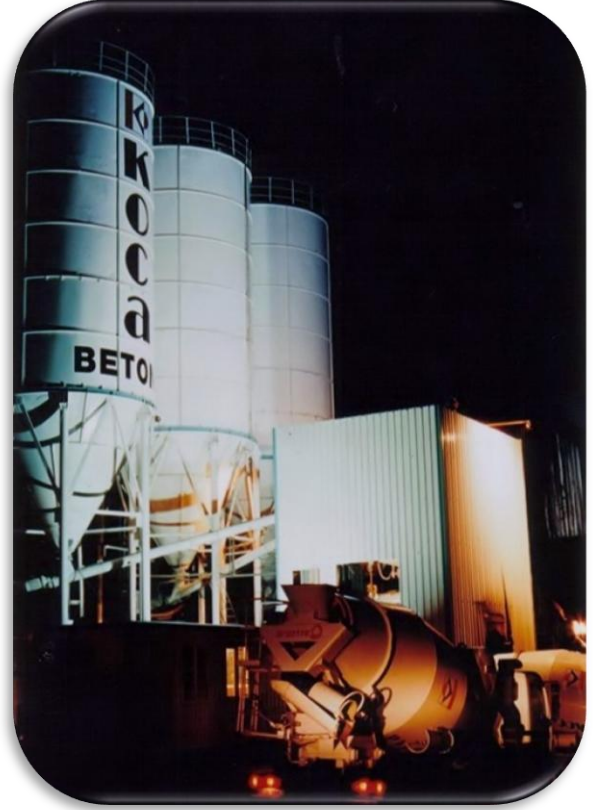
As an investor, Koca Group is, besides Turkey, active in UAE and Saudi Arabia in the sphere of cement grinding plants, concrete and precast concrete plants. Such projects are in progress and fully managed by the company at all stages such as feasibility study, design, supply, construction activities and further operation.

Core Business

Construction Activities

KOCA Group has been active in Turkey and the Middle East Region since 1981 and many construction projects have been completed successfully since 1981, especially related to the following works:

- ✓ Earth works and soil improvements;
- ✓ Heavy foundations;
- ✓ Mining and deep mine shaft constructions;



- ✓ Sub structural works;
- ✓ Marine and coastal structures;
- ✓ Precast elements production and installations;
- ✓ Industrial and commercial buildings.

KOCA Group is active in the design and construction of mining and deep mine shaft constructions. The design of the structures is simulated to see the earth quake behaviors. Concrete mix designs are made for extreme environmental conditions to provide sulfate resistance and high performance for a service life over 100 years as per European Norms using special mineral addition in concrete. Jet grouting is applied for the purpose of soil improvement as well seismic resistivity which is the patented technology. Hydraulic lifting systems are used for the combined concrete formwork and platform systems.



KOCA Group is active in marine works and substructural construction projects requiring advanced engineering solutions with special design and method of construction for sophisticated projects such as dry docks, slipways, water intake, scale pits, railway crossing, vertical precast shafts, caissons that are usually at the coastal line with poor soil conditions, requiring special soil improvement methods such as jet grouting, piling dewatering, sinking caissons, etc.

KOCA Group has interest in design and construction of infrastructures projects such as; highways, bridges, underpasses and related utilities, Power Plants, Pipe Lines, Water and Wastewater Projects.

For such projects, not only in its own management, but also through affiliates who have great experience, KOCA Group can collaborate and contract for such projects to provide high quality engineering, project consulting and a wide variety of services besides construction.

KOCA Group is ready with its capability and expertise to provide turnkey engineering-construction and supervision services to its clients.

Buildings

Having the advantage of being a producer of cement based structural construction materials; KOCA Group has completed



large number of factories and commercial buildings where required precast concrete elements were also produced by the company. In this respect, the total floor areas of such buildings with different properties which were completed within the last 25 years are over 300.000 m².



Industrial Plants

Koca Group has designed, installed and operated various plants related to construction industry such as production of cement, ready mixed concrete, aggregate, sand, dry-mix products besides various steel and precast concrete structures for different industries with complete stockyards, silos, automation for storage dispatching and control systems and mechanical and electrical works for such plants.

Koca Group performs designing, manufacturing, “turn-key” construction and commissioning of industrial facilities of different capacities according to the needs of customers.

- ✓ Cement grinding and preparation facilities
- ✓ Lime plant
- ✓ Gypsum plant
- ✓ Facilities for loading, storage of aggregate materials (aggregate, cement, lime, gypsum, etc.)
- ✓ Mining and processing plants: (feldspar, quartz) crushing, grinding, micronized classification (screening), floatation

Production of Construction Material

Ready Mix Concrete

KOCA Group is one of the pioneers of ready mixed concrete business. The company holds national record of the highest concrete strength with 190 MPA.

KOCA Group has supplied over several million cubic meter concrete and various precast concrete products and quarry products to the projects in larger Istanbul Area.

Cement

KOCA Group owned and operated grinding plants for production of normal and high performance cement. Fully computer automated plants were designed and installed with the latest available technology to respond demands of the industry for different purposes. Therefore, besides Portland cement, triple blend cements are produced using clinker, and other additions.

As a result of high performance cement technology developed by the company, production of special cement with strength value equivalent to PC 82.5 was achieved for special applications where high strength with shorter de-molding time is essential.

Aggregates and Mining

KOCA Group has operated various mine quarries located in Marmara region of Turkey. These quarries provide aggregate, truss, sand, calcite, dolomite and gypsum.

Admixtures and Dry Mixed Products

KOCA Group has been a producer of chemical and mineral admixtures as well as dry mix products. These products have been developed with the benefit of experience for many years and formulated to enhance the properties of such products. Various kinds of precast concrete elements are being produced at the factory using high performance concrete.

KOCA Group has qualified staff for production of all kinds of cement based construction material.



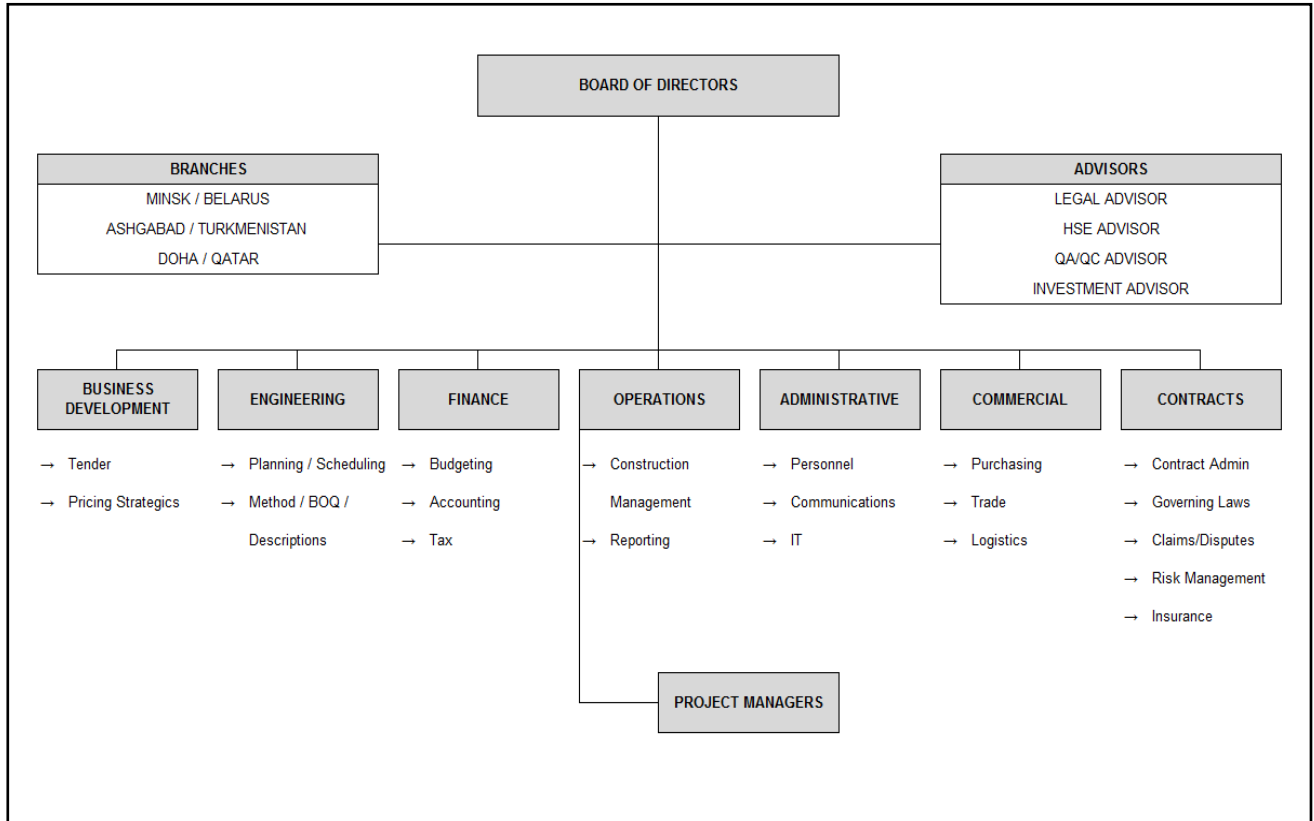
Management

KOCA Group management team is the combination of professionals and shareholders. All directors are highly qualified and have extensive overseas experience in different countries. In this respect, they have a considerable contribution and support from the main office to the projects in different countries. The overseas projects are managed by the qualified staff as per the enclosed typical organization chart based on the company policies determined by the top management

Human Resources

KOCA Group has various engineers of various disciplines and specialized labor force within its own organization. Also, it is in cooperation with specialized private firms active in the same line of businesses where joint ventures are formed for various projects.

GROUP ORGANIZATION CHART OF THE MANAGEMENT





Policies

KOCA Group has developed the health, safety and environment manual and quality management manual covering all related documentations and control activities, according to the relevant legislations and administrative requirements in any project undertaken in Turkey and abroad. The Manuals shall be referred in all projects contracted for construction and for operation.

KOCA Group has dedicated its engineering competence in completing-ongoing projects and constantly questions and re-examines innovative solutions to achieve most efficient results.

Engineering Services

KOCA Group is expanding design-build construction services to include complete “turn-key” design services for all phases of the projects in its scope including feasibility studies, planning, design, construction and operation.



Design team consists of:

- 32 Engineers (Civil, Mechanical, Electrical, Chemical, Industrial, Geological and Mining)
- 4 Architects
- 16 Draftsman and Technicians
- 26 Administrative Personnel

Koca Group extends its engineering services with following solutions partners:

- **Simtek Otomasyon Teknik Hizm. San. ve Tic. Ltd. Şti.**
Electrical and Automation Works
- **Tria Mimarlık İnş. San. İç ve Dış Tic. Ltd. Şti.**
Architectural Works
- **Nodus Müh. Müş. Ltd. Şti.**
Structural Works



Various design projects have been completed in the past for countries such as Turkey, Gulf Countries, Bulgaria, Belarus, Turkmenistan, Azerbaijan and Kazakhstan.

Social Responsibility

Koca Group considers its social responsibility awareness as an integral part of its management and is extremely committed to the health, environmental and educational aspects of its social surroundings. In this respect, the following projects have been accomplished:

BGK Health Center

Birten Gülay Koca Health Center has been constructed as a grant by Koca Group to the Gebze Municipality. Koca Group has completed all civil, electrical and mechanical works along with necessary landscaping works to provide a turn-key Health Center to the administrative authorities.



Belarus Baranovichi University Turkish Language Center

Baranovichi University Turkish Language center has been accomplished through the initiatives of our local branch in Minsk, Belarus and the Embassy of Turkey in Belarus. Koca Group has been active in financial grant to the institution, while also providing social and administrative support in the process of establishing the center.



Koca Memorial Forest

This project has been accomplished in collaboration with Ministry of Forestry and Water Affairs in Gebze to provide a Memorial Forest as a sign of Koca Group's commitment to raising environmental awareness.



University Scholarships

Koca Group is extremely committed to the support of talented and successful underprivileged youth. In this respect, scholarships are given to 50 students who attain a high GPA, and are unable to finance their education.



TECHNICAL COMPETENCE

The management of KOCA Group have experience in heavy construction projects such as marine works, tunnels, roads and various other sub-structural works in Middle East Countries over a decade. Therefore, technical competence of the company with such projects is very high.

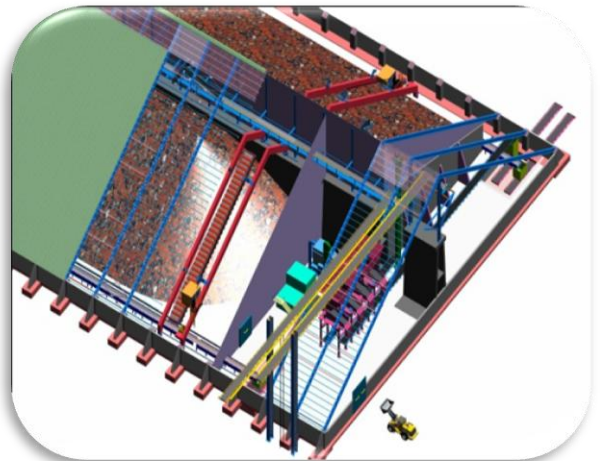


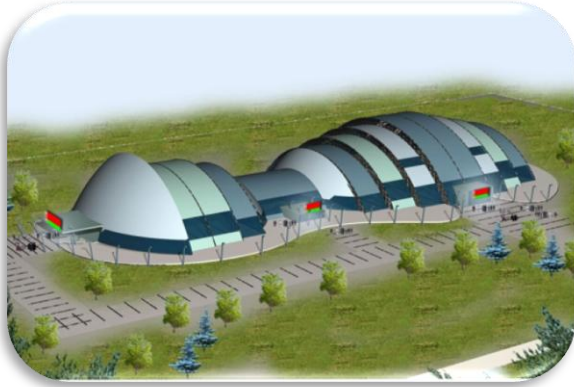
Planning, Feasibility and Design



Koca Group performs “turn-key” works on preparation, planning, feasibility studies and designing of industrial facilities related to construction industry such as producing of aggregates, concrete, precast concrete elements, cement, dry mix products. Through the experience accumulated during setting up and operation of various plants related to

construction industry (calcite etc.) and using new technologies Koca Group is capable of providing high-level services to new customers. Currently, project management of various overseas projects is in progress.





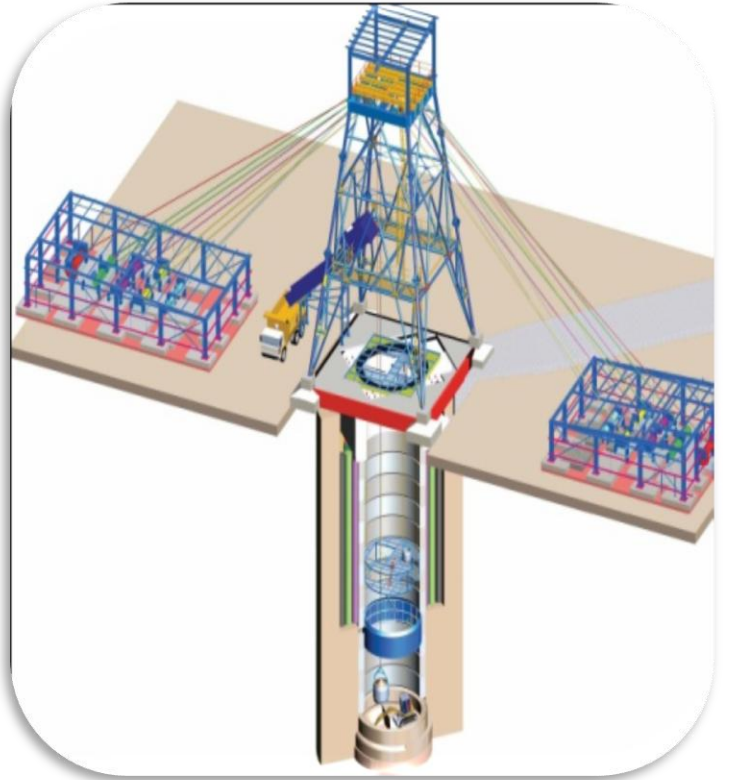
Know-How



Advance technologies, developed or initiated, related to construction materials are as follows:

- ✓ High performance concrete technology,
- ✓ Low water demand binders,
- ✓ Triple blended cement grinding system,
- ✓ Wet plaster and mortar production system,
- ✓ Microsilica slurification system,
- ✓ Light weight concrete production.

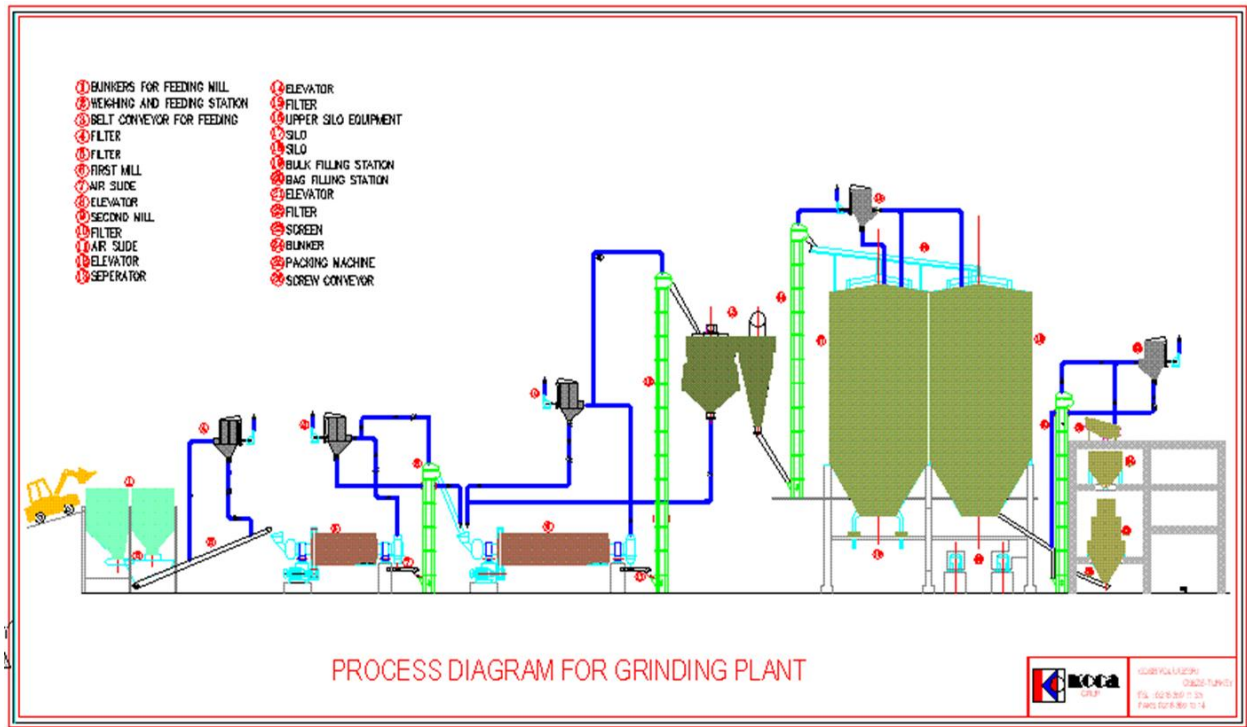
Method of Vertical Shaft Sinking (for sinking of shafts at a great depth under complex hydrogeological conditions)



Handbooks provided by Koca

KOCA Group has prepared for clients' use various handbooks for establishment and operation of Cement, RMC and Quarry Businesses.

KOCA Group offers Operation Agreement for the plants invested. KOCA Group provides Manuals for HSE and QA-QC and all related technical manuals for a successful operation.



Licences and Certificates

Subenko Altyapı Mühendislik ve İnşaat Anonim Şirketi has been granted with the Special Permit: "Authorization to Carry out Design and Construction of Buildings and Structures of Liability Levels I and II, and Engineering Surveys for these Purposes."



Permission for operation in Belarus



Design & Construction License – Belarus



Construction licenses in Turkmenistan



Certificate of State Registration – Turkmenistan

The ISO Certificate

ISO 9001:2008 Quality Management System is used as an important tool for the continuous assurance and improvement of KOCA Group's Quality Management System.

ISO 14001:2004 Environmental Protection Management is used to identify and control the environmental impact of the activities, products or services of KOCA Group and to improve its environmental performance continually, and to implement a systematic approach to setting environmental objectives and targets, to achieve these and to demonstrate that they have been achieved.

ISO 18001:2007 Occupational Health and Safety Management promotes safe and healthy working environment by providing a framework that allows KOCA Group to consistently identify and control its health and safety risks, reduce the potential for accidents, aid legislative compliance and improve overall performance.

The certification body of Alberk QA Technic Ltd (with DGA of Germany) performs periodical audits for the continuation of the validity of the said Certificates.



Patents



Patent for method of sinking of vertical shaft

Tunnel formwork patent – Belarus

High Performance Cement Patent – Turkey

HSE – QA/QC

The HSE Management

The commitment of KOCA Group for Health, Safety and Environment views the target of zero accidents as its highest priority in execution of all its projects. To achieve this goal in its Projects throughout the world, continuous support is provided during development, planning, construction, commissioning and completion phases of all the projects. All levels of the companies from top management to labor level are committed and involved to achieve this goal.



- ✓ Provides an overview of how we have to execute a project with our objectives/policies and using the guideline of the HSE management plan to achieve targets.
- ✓ Identifies our collective responsibilities and the role of the HSE departments with regard to HSE management.

- ✓ Identifies key features of HSE Management process rules which must help achieve consistent safety excellence.
- ✓ Explains how we have to correct unsafe conditions at workplace or how to assess the hazard activities to complete our job safely.
- ✓ Gives a detail how we have to keep record of our HSE management System. So that we can learn from mistakes and make improvements.
- ✓ Explains what the project related environmental hazards are and how we can control them.

Project HSE Policy

Health and Safety Policy

KOCA Group aims to achieve and maintain the standards of safety and health for all employees, subcontractors and members of the public and seeks to eliminate all injury or occupational illnesses resulting from its activities.

Environmental Policy

KOCA Group aims to minimize the environmental impact of its activities, preventing pollution and striving for continual improvement in its environmental performance whilst working.



The Quality Management

The Quality Management System is believed to be designed containing optimum documentation allowing timely decision making and implementation. The System is designed and successfully implemented at the Projects where different plans are prepared as per the nature and requirements for each Project.

The quality control plan outlined at the Projects covers the supplies, services and design, construction, test and maintenance operations within the scope of each Contract and extends to cover its subcontractors' operations as well.

The programs has the purpose of ensuring complete employer/user satisfaction by providing products or services that conform to the requirements as stated or implied in each Tender and/or Contract and their specifications.



The following basic initiatives are the key elements of the Quality Management:

- ✓ Understanding current and future needs of the Clients, to meet the requirements and do its best to exceed their expectations,
- ✓ Creating a well-balanced understanding and unity of purpose to create and maintain the internal environment that KOCA employees will be involved in achieving the company's objectives,

- ✓ The whole employees of the KOCA Group, at all levels, are the most valuable asset of the organization and their full understanding and involvements shall lead improvements in their abilities for overall quality achievement of the Group,
- ✓ Management of activities and related resources as a whole process to achieve the desired results more efficiently,
- ✓ Continuous improvement of performances as a permanent objective of the whole organization, which covers the mutual beneficial relations with all stake holders.



PROJECTS

Business Outlook

- ✓ KOCA Group has already completed various projects such as housing, commercial buildings and sub structural works and industrial plants in Turkey as well as in Gulf Region, Belarus, Turkmenistan and neighboring countries within the scope of its core competence.
- ✓ KOCA Group is looking to contract infrastructural and sub structural projects for civil works and industrial plants both in Turkey and abroad.
- ✓ Design and construction of plants to produce cement, lime, aggregates and RMC both in Turkey and abroad shall remain as primary interest of KOCA Group and shall also contract for operation of such plants on long term basis.
- ✓ KOCA Group has extended its engineering and consulting services mainly in Turkey and started to expand to the Middle East and other countries. Activities shall be carried either by KOCA Group or through Affiliated Companies.

COMPLETED CONSTRUCTION PROJECT

Name of the Project	Location	Date of Completion
Construction of Koca Head office	Istanbul/TURKEY	2010
Water intake scale pits	Kocaeli/TURKEY	2010
Heavy foundation structures for steel plant	Kocaeli/TURKEY	2009
Construction of Shipbuilding Yard Slipway RMK Marina	Istanbul/TURKEY	2002
Railway Underpass Construction	Kocaeli/TURKEY	2006
Jetty construction	Istanbul/TURKEY	2003
Piling works	Kocaeli/TURKEY	2008
Soil improvement works	Kocaeli/TURKEY	2007
University Campus	Istanbul/TURKEY	2005
Housing project	Istanbul/TURKEY	2004
Health Center	Kocaeli/TURKEY	2011



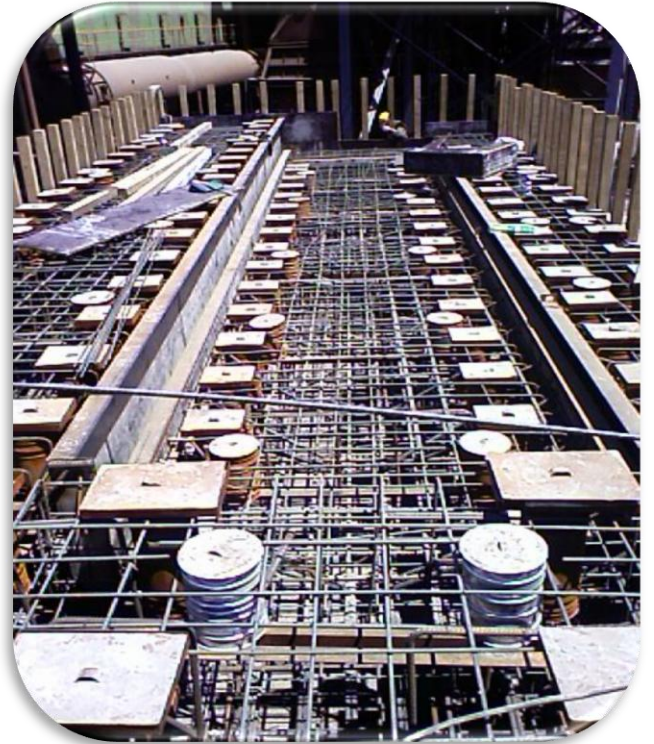
Construction of Koca Head Office



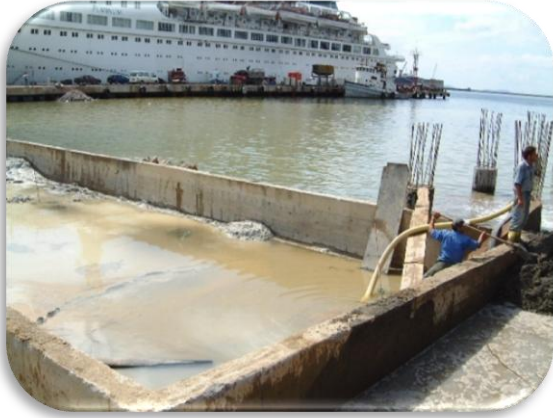
Water intake scale pits



Jetty construction



Heavy foundation structures for steel plant



Construction of Shipbuilding Yard Slipway RMK Marina



Railway Underpass Construction



Piling Works



Soil improvement works



University Campus



Housing project



Health Center

COMPLETED INDUSTRIAL PROJECT

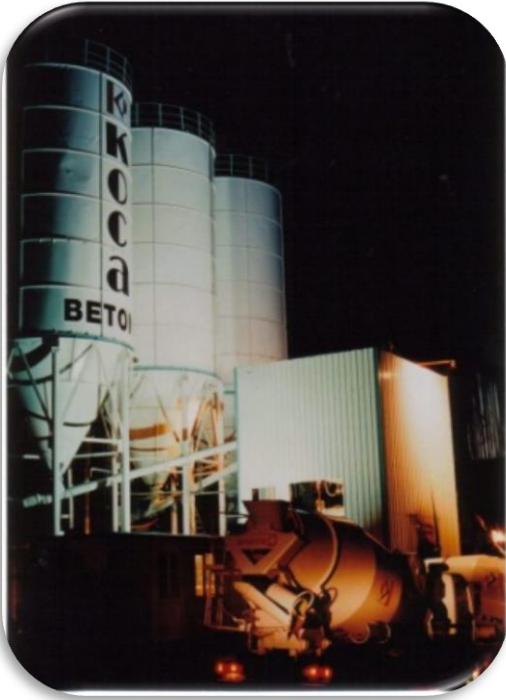
Name of the Project	Location	Date of Completion
Turnkey Supply and Installation of 3 Cement Grinding Plants	Kocaeli/TURKEY	1998
Turnkey Supply and Erection of 4 Aggregate Crushing Plants	Kocaeli/TURKEY	2002
Turnkey Supply and Operation of 12 Concrete Ready Mix Plants	Kocaeli/TURKEY	1987-2005
Turnkey Supply and Operation of Calsite Grinding Plant for Power Plant	Canakkale/TURKEY	2003
Steel Plant Extension	Kocaeli/TURKEY	2005
Various Factory Buildings	Kocaeli/TURKEY	1992-2002



Turnkey Supply and Installation of 3 Cement Grinding Plants

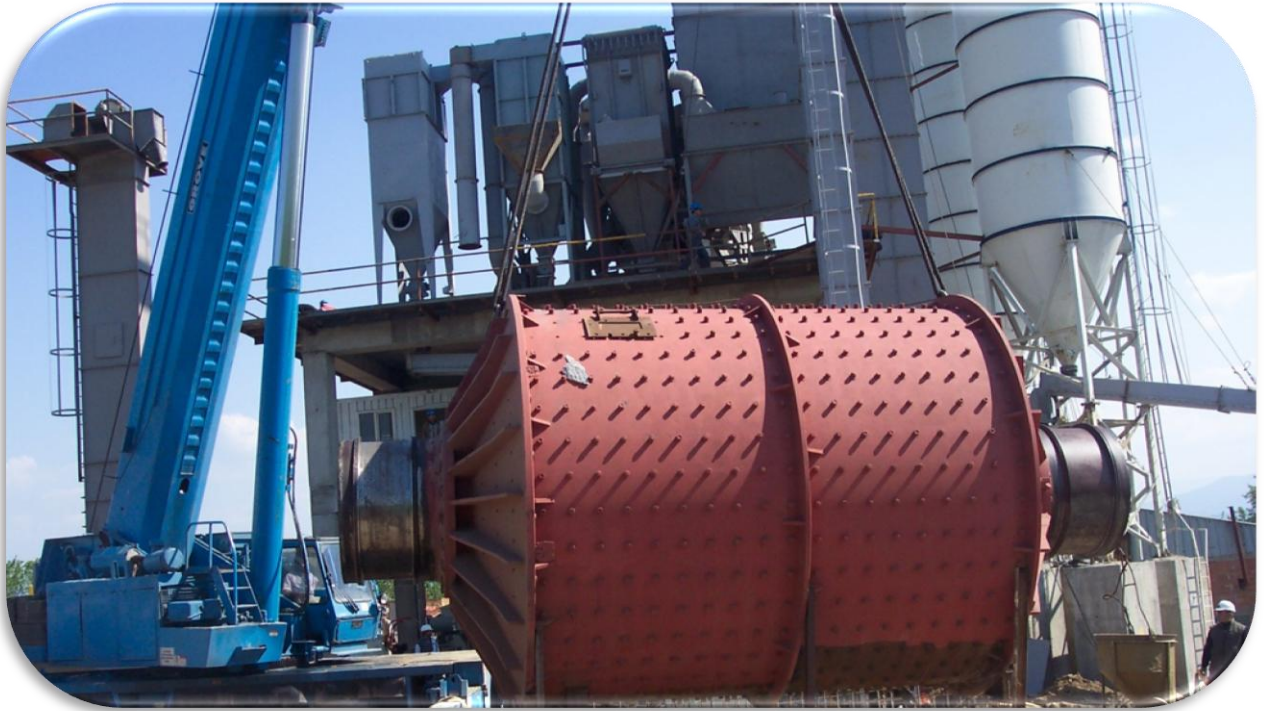


Turnkey Supply and Erection of 4 Aggregate Crushing Plants





Turnkey Supply and Operation of 12 Concrete Ready Mix Plants



Turnkey Supply and Operation of Calsite Grinding Plant for Power Plant



Steel Plant Extension





Various Factory Buildings

ONGOING PROJECTS

Name of the Project	Location	Provisional Date of Completion
Construction of Trade Center	Kocaeli/TURKEY	2012
Complex Sinking Shafts for Potassium Chloride Mining and Processing Plant	Garlyk / TURKMENISTAN	2013
Industrial Buildings and Structures for Potassium Chloride Mining Processing Plant	Garlyk / TURKMENISTAN	2013
Factory Building	Kocaeli/TURKEY	2013
Business Center	Istanbul/TURKEY	2013

➤ Construction of Trade Center

Koca Shopping Center (KSC) Project being strategically located at 300 mt away to TEM Motorways, 1000 mt to Gebze City Center, facing to D-100 highway and to İzmit Bay Crossing bridge and road; has a unique chance to serve a considerable residential and industrial population between İstanbul and Kocaeli.

Gebze is at the center of Industrial District of Marmara Region with a distance of only 40 km away from both İstanbul and Kocaeli. It has a good location and accessibility by sea, railway and highways and by airway from Sabiha Gökçen Airport.

KSC is also in a few kilometer distance from 15 different Organized Industrial Districts, like; Plastics, Marble, Chemicals, Automotive, Metal, etc. and many other light industry zones.





➤ **Shafts' Sinking Complex for Potassium Chloride Mining and Processing Plant**

Koca Group was awarded with construction contract for 2 complexes of shafts' sinking with 6.5 m inner diameters reaching to 364 m and 332 m depths for the large deep potassium mining project in Turkmenistan with capacity 1.4 million tons, managed by the state owned company of Belarus JSC "Belgorkhimprom".

The scope shall cover the design and construction on turnkey basis. The design of the structure shall be simulated to see the earthquake behavior. Concrete mix design shall be made for extreme environmental conditions to provide sulfate resistance and high performance for a service life over 100 years as per European Norms using special mineral addition in concrete.

The depth of water bearing zone where the Shafts shall be constructed changes from 75.0 m to 95.0 meters and deep jet grouted collar method for the purpose creating a circular water barrier around the shaft is used which is the patented technology of the company. The Proposed Method was accepted by the Client as an alternative to Freezing Method.

Due to very different ground conditions, shotcreting with and without reinforcement, face stabilization with rock anchorage, excavation in soft ground, in clay drilling and blasting, cement slurry injection, application of liquid membrane on shotcreted excavation face, dewatering and contact injection behind the reinforced concrete shaft wall will be used during shaft construction.

Permeability coefficient of concrete was very important considering the very aggressive environment to have impermeable concrete; micro silica is used in concrete mix design. Test for water penetration depths done according to DIN1048-2 with 700 Kpa pressure at the laboratory of one of the leading technical university showed that concrete could be assumed as totally impermeable.

Plant capacity

- 1.4 mln tones of standard 95% potassium chloride per annum, including:
- 0.6 mln tones per annum – granular KCl;
- 0.8 mln tones – fine-grained KCl .

Ore – the qualitative composition of ore reserves not less than 45 years.

On the working platform, a system of working outputs of pit bottom that is necessary for the compliance with the input of design capacity and further mine operation is constructed. The structure has central underground substation; garage; electric shop; fuel and lubricant, explosive materials and equipment warehouses; medical center and etc.







➤ **Industrial Buildings and Structures for Potassium Chloride Mining Processing Plant**

The scopes of the Buildings and Structures contracted are as follows:

Ore Stockpile Building

The Building will be constructed to store potassium ore the size of storage is 45.00 m wide, 234.00 m long and the height is 25.00 m. The transparent roof covers shall be placed on the wooden beams located at every 4.5 m over the side walls, where the walls are constructed on continuous foundation.

There shall be a trestle moving on rails, supporting the reclaimers for unloading the mine in each storage hall. The mine shall be transferred to the mine processing facilities by the conveyor bands placed at the floor level of each storage hall.

Technical features of the Building are:

- Loading conveyors : 234.00 m
- Reclaimers : 2 units
- Unloading conveyors : 234.00 m

Storage of Metal & Equipment with Preparation Section

The Warehouse and Workshop Building is a steel structure unit and has a length of 86.00 m and width of 36.00 m, having height of 9.50 m under the roof beam. There will be three sections; two identical sections shall be used for maintenance and repair purposes and the third section shall be used for storage purposes. There will be overhead cranes at each section of the workshop sections.

Administrative Building of Machinery & Equipment Complex

The administration building shall be a 2 story unit having dimensions of 15.00 m by 42.00 m at each floor. Total closed area shall be 1260 m². The building shall contain the personnel's locker rooms, showers, cafeteria and offices. It will be steel structure building where the foundations are reinforced concrete and the covers shall be sandwich panel claddings. The inner partition walls shall be gypsum panel walls.

Storage Building for Granulated Product and Fine-Grained Concentrated Product and Classification Department

This Potassium Chloride Storage and Handling Plant contract consists of:

- a. Designing complete granulated products storage and handling plant including civil, structural and electromechanical features of the system
- b. Implementation of civil works and construction of 14000 m² steel structure with a height of 28.00 m

- c. Procurement and manufacturing of electromechanical machinery and equipment of the plant
- d. Installation and commissioning of the plant

The plant is designed for stocking and handling of potassium mineral before dispatching. The processed fine-grained and granular mineral imported by conveyors into two adjacent stock halls in the plant. The granular material is unloaded by a 550 ton/hr. capacity reclaimer and transported to the classification department of this plant where approximately 10% fine material is separated and sent to the fine-grained material storage hall and the rest of the material is sent to the dispatching unit.

The fine grained materials coming from processing units and the classification department of this plant are carried by conveyors to the hall with a capacity of 47000 cu.m. This stocked fine grained mineral is unloaded by another 550 ton/hr. capacity reclaimer and sent to the dispatching department by a conveyor system.

This plant is designed as a single compact unit consisting of two stock halls with capacities of 35.000 cu. m and 47.000 cu. m and a classification department together with its electromechanical and automation facilities.

The process in the plant is an automatic operation working in compliance with the other process units such as separation and floatation unit and dispatching unit. This automated operation is run by a specially designed software and hardware utilizing PLC devices.





➤ **Factory Building**



➤ **Business Center**



RECENTLY COMPLETED PROJECTS

Name of the Project	Location	Date of Completion
Establishment and operation of Quarry and RMC business	Riyadh/KSA	2009
Turnkey Supply and Installation Cement Grinding Plant	Abu Dhabi/UAE	2009
Sub structural works for container terminal	Qatar/DOHA	2010
Container terminal buildings	Qatar/DOHA	2010
Infrastructural works for container terminal	Qatar/DOHA	2010

➤ **Establishment and operation of Quarry and RMC business - Riyadh / KSA**

Design, supply, erection, commissioning, and operation of Quarry (1.5 million tons/year) and RMC Operations (1.0 million m³/year) in Riyadh - Saudi Arabia.

Civil Works include grading, site preparation, site utilities, infrastructure and foundation work as well as building construction, equipment installation, and electrical & mechanical systems.



➤ **Turnkey Supply and Installation Cement Grinding Plant - Abu Dhabi / UAE**

This design & build “fast-track” project includes the supply and installation of a complete Cement Grinding Plant of 750,000 tons/year capacity. The factory has plant units and total building area of 3750 sq. m which include offices, laboratory, dormitory, warehouse, workshop, and substations. Also a closed stock yard of 3100 sq. m area is planned.

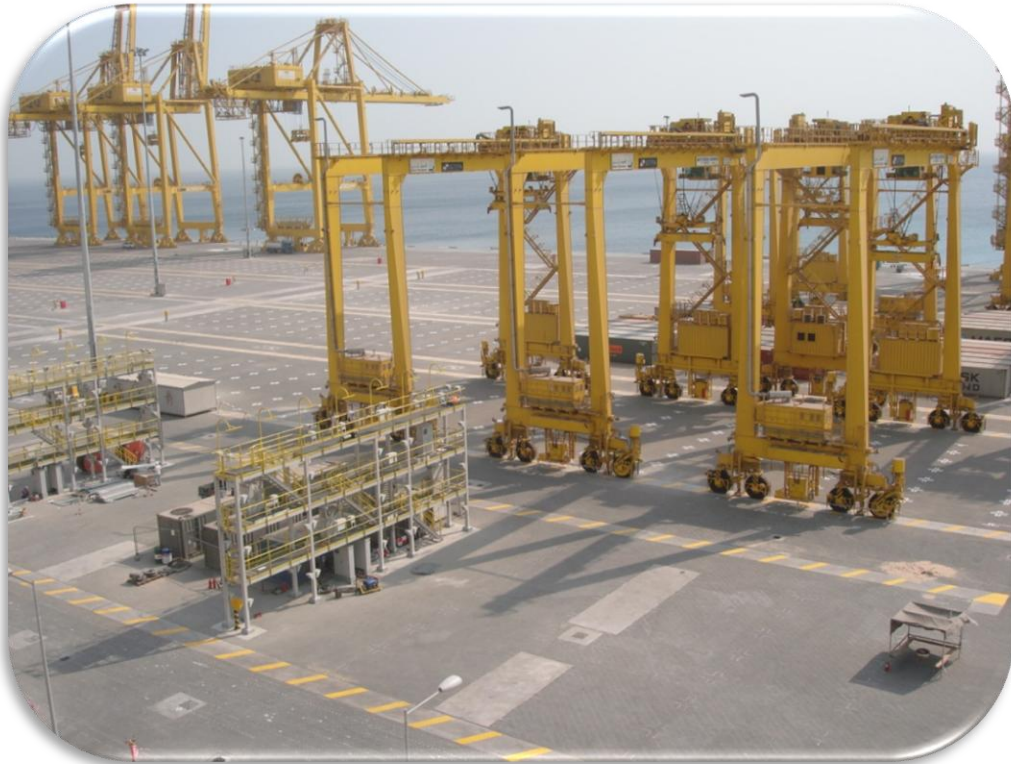
The relevance of this project to our business outlook is the ability of our Project Design Team to effectively coordinate a large scale “fast-track” design-build project which involves all major items agreed on in this contract. Due to the complexity of the mechanical and industrial systems utilized in this project, close coordination among all design disciplines was required to ensure the successful commissioning of the project.



➤ **Sub structural works for container terminal - Qatar / DOHA**

Qatar Petroleum is the largest Company of the State of Qatar. It has contracted many projects so far including marine projects, ports, berths etc. The latest marine project is the Container Terminal Berths and Gabbro Berth at Mesaieed region.

The Project scope is the construction of breakwaters to create a new port and dry dock complex by widening of existing channel to Gabbro Berths, deepening of existing basin at Gabbro Berths filling and reclamation behind the quay wall. The construction of 120,000 sq. m container store area at the Container Terminal Berth region is the main sub structural work carried out by Koca in this part of the Project.



➤ **Container terminal buildings - Qatar / DOHA**

Qatar Petroleum is the largest Company of the State of Qatar. It has contracted many projects so far including marine projects, ports, berths etc. The latest marine project is the Container Terminal Berths and Gabbro Berth at Mesaieed region.

The Works cover the construction of various buildings. Works also cover carrying out related mechanical and electrical works; located at the Container Terminal Berth Region. The scope of Koca in this Project is:

Office Building : 4 story 2550 m²
Substation : 2 story 2700 m²
Warehouse : 2 story 700 m²
Gatehouse : 1 story 55 m²
Pump House : 1 story 80 m²

Landscaping works related with the buildings area.





➤ **Infrastructural works for container terminal - Qatar / DOHA**

Qatar Petroleum is the largest Company of the State of Qatar. It has contracted many projects so far including marine projects, ports, berths etc. The latest marine project is the Container Terminal Berths and Gabbro Berth at Mesaieed region.

The Project scope is the construction of breakwaters to create a new port and dry dock complex by widening of existing channel to Gabbro Berths dredging of new basin for new Gabbro Berth, construction of the 400 m long new quay wall for Gabbro Berth, filling and reclamation behind the quay wall. The construction of 30,000 sq. m Berth Area is the main sub structural work carried out by Koca in this part of the Project.



JOB COMPLETE CERTIFICATES AND REFERENCE LETTERS**WORK COMPLETION CERTIFICATE**

This is to Certify that, **KOCA Group** a corporation duly organized under the laws of Turkey having its headquarters at Çamlık Mah. İkbal Cad. Dinç Sk.No:2 Ümraniye İstanbul / Turkey, registered at the Gebze Chamber of Commerce has successfully completed through its subsidiaries the works under the Agreements signed on 25.05.2009 and 28.09.2009.

The scope of the Agreements and description of completed works are as follows: *“Various Construction Works for the Berth No’s 3 and 7 at the Mesaieed Container Terminal Port at Qatar, for the Qatar Petroleum Inc.”*

1. Infrastructure works for container storage area of 155,000 m2 consisting of all infrastructure works at the land side of 400 m long container terminal quay wall such as; earth works, backfilling, soil improvement, roads, net works for drainage, water, sewage, electrical and fire fighting, reinforced concrete RTG beams, manholes, various precast concrete structures, interlock pavement. Amount of works carried out including all related material is USD 53,475,800.-
2. Terminal Buildings consisting of office building, steel structure workshop with overhead crane, substation building, pump house and gate house together with all infrastructures works. Amount of works carried out including all related material is USD 31,943,000.-

The Total Price of the Agreements is US Dollars 85,418,800.- (eighty five million four hundred eighteen thousand eight hundred US Dollars)

This Certificate is issued on 30.07.2010.

H. Tahsin Bağcı
Construction Group
President





ÇOLAKOĞLU METALURJİ A.Ş.

TİCARET SİCİL NO. 99002/44840

ISO 9001
BUREAU VERITAS
Certification



COMPLETION CERTIFICATE FOR THE WORKS BY KOCA GROUP

This is to certify that, **KOCA Group** companies, a corporation organized under the laws of Turkey having its headquarters at Çamlık Mah. İkbal Cad. Dinç Sk.No:2 Ümraniye İstanbul / Turkey, registered at the Gebze Chamber of Commerce has successfully completed various infrastructure works during the time period of 4 years from 2006 to 2010 under the agreements signed on various dates.

The scope of the completed works are as follows: " Various construction works at the sea side of our plant for the extension of Steel Factory by 3 Million tons per year capacity at Dilovası - Turkey"

1. Construction of deep caissons with dimensions of 52m x 26m reaching to a depth of 27 m.
2. Railway underpasses, instue forged reinforced concrete piles of 14.000 m, production of precast concrete piles over 45.000 m, steel structures with a total weight of 3.800 tons.
3. Soil imrovment works at various depths under water table, jet grouting works over 65.000 m.
4. Over 3,6 Million tons of stone fill at the sea side from 0 to 32 m depth at an area of 100.000 m2 and various reclamation works.
5. Heavy foundations for various steel structures and buildings.
6. Pipe works, concrete walls surrounding the factory area. Various civil works related to oxygen plant, rod mill plant, main switch house, etc.

The total amount of the works including engineering, design, material, workmanship during this period with the currency rates of the said dates of the works performed is over USD 62,7 Millions where some of steel related material for such works were supplied by us.

This Certificate is issued on 12.06.2010.

ÇOLAKOĞLU METALURJİ
ANONİM ŞİRKETİ
DİLOVASI - KOCAELİ

Calet Akem
Board Member
[Signature]

BÜRO : KEMERLİTI CADDESİ NO: 24 KAT: 6
KARAKÖY TİCARET MERKEZİ 34425 KARAKÖY - İSTANBUL
TEL: (0212) 252 00 00 (PBX)
TELEFAX : (0212) 249 55 88 - 293 26 76

FABRİKA ADRES : GEBZE, DİLİSKELESİ
TELEFON : GEBZE, (0262) 676 75 00 (PBX)
FAX : (0262) 754 84 20



Dated: 30.07.2010

LETTER OF RECOMMENDATION

This letter is intended to serve as a recommendation for Koca İnşaat Sanayi ve İhracat A.Ş. We have been acquainted with the Company for many years and recently had a chance to work together.

We had been awarded by Qatar Petroleum Inc, the largest establishment in Qatar, for construction of various marine structures since 2001. So far, we had completed contracts with a total amount over two billions US Dollars. Koca had joined us to execute infrastrucute works for Mesaeed Container Port Project in 2009.

Koca has started its works in mid 2009 and worked day and night with full force. They were very active in all construction works for infrastructure and buildings with high quality to meet the expected standardts of Qatar Petroleum.

The Company was very keen in complying to health and safty regulations and recorded no fatal accident nor any major safty incidence by completing its duties with utmost care.

Contract management system, engineering capabilities and comunication skills of their team were highly meeting our expectations. In this respect; we appreciate their reputation in should be highly we consider the compay as our solution partner in various future projects.

Their capability of the company performing works at diffent parts of the world is worth recognizing and we recommend Koca Group to any clients as a strong and reliable construction company to work with in the international field.

STFA MARINE CONSTRUCTION COMPANY

İstanbul, Turkey

H. Tahsin Bağcı
Construction Group
President



STFA DENİZ İNŞAATI İNŞAAT SANAYİ VE TİCARET A.Ş.

STFA İş Merkezi Yeşil Vadi Sokak No 3 Kat 7 Bostancı 34744 İstanbul Türkiye T +90 216 578 96 60 F +90 216 578 96 61 marine@stfa.com www.stfa.com



ÇOLAKOĞLU METALURJİ A.Ş.

TİCARET SİCİL NO. 99002/44840

ISO 9001
BUREAU VERITAS
Certification



REFERENCE LETTER FOR KOCA GROUP

TO WHOM IT MAY CONCERN

This letter of recommendation is given upon request of Koca İnşaat Sanayi ve İhracat A.Ş.

Çolakoğlu is one of the leading steel manufacturers in Turkey. Recently, we have completed the largest electric arc furnace of 300 tons/hr for our new steel plant as an extension to our existing factory that has been in operation for over 35 years. This extension was recently completed with total value over one Billion USD.

We have worked with Koca for many years on this particular project where we have benefited from their engineering skills, especially for solutions to extreme soil conditions at marine environment.

We are completely satisfied with the quality of works carried by Koca and their success in technical solutions for the underground works.

Their cooperation with other contractors for mechanical and electrical installation works had proceeded successfully as well.

Koca is highly capable of performing sophisticated engineering works and we recommend Koca to investors, project developers as a construction company that can deliver what they undertake.

ÇOLAKOĞLU METALURJİ
ANONİM ŞİRKETİ
DİLOVASI - KOCAELİ

Caat Akın
Board Member
[Signature]

BÜRO : KEMERALTI CADDESİ NO: 24 KAT: 6
KARAKÖY TİCARET MERKEZİ 34425 KARAKÖY - İSTANBUL
TEL: (0212) 252 00 00 (PBX)
TELEFAX : (0212) 249 55 88 - 293 26 76

FABRİKA :ADRES : GEBZE, DİLİSKELESİ
TELEFON : GEBZE, (0262) 676 75 00 (PBX)
FAX : (0262) 754 84 20



CERTIFICATE OF COMPLETION OF WORKS

This Certificate of Completion of Works is issued on the day 22nd of April, 2009 by TEBA Cement Factory LLC, P.O. Box: 38108 - Abu Dhabi, UAE as being the Employer for the Agreement, whereas the Contractor is Koca İnşaat Sanayi ve İhracat Anonim Şirketi a corporation duly organized under the laws of Turkey having its headquarters at Sultan Orhan Mah. 1180/1 Sokak, No:1 Gebze / Turkey, registered at the Gebze Commerce Register with No. 938/5276.

The Scope of the Agreement which was signed on 28.05.2007 and as amended on 25.10.2008 is as follows:

"Design, Procurement and Erection of Complete Cement Grinding Plant of 110-120 tons/hour capacity at Musaffah Industrial Zone, Abu Dhabi – UAE."

1. Complete design of Factory Layout; structural designs of Mill, Separator, Raw Material Storage Hall, Feeding Systems, Cement Storage Silos; and the Pile designs of the structures.
2. Mechanical, electrical and automation designs of the complete Cement Grinding Plant of 110-120 tons/hr capacity.
3. Manufacturing, transportation and erection of the complete Cement Grinding Plant of 110-120 tons/hr capacity.

This is to Certify as of 22nd of April, 2009 that Koca İnşaat Sanayi ve İhracat Anonim Şirketi has successfully completed the Works under the Agreement.

The Total Price of the Works Completed for Agreement including variation orders as Final Agreement Price is Euro 15,686,061.- (fifteen million six hundred eighty six thousand and sixty one Euros)



TEBA CEMENT FACTORY LLC,
P.O. Box: 38108 - Abu Dhabi, UAE




Undertaking by the Contractor: *Koça İnşaat Sanayi ve İhracat Anonim Şirketi*

We undertake to maintain any work which may be required during the Maintenance Period and continue the Training of the staff for operation during this period.

Signed for and on behalf of the Contractor:

KOCA INSAAT SANAYI VE IHRACAT
ANONIM SİRKETİ (DUBAI BR.)
P. O. Box : 6076. Dubai, U.A.E.

Cengiz Koça

Dated: 22.04.2009

Certificate of the Engineer:

Pursuant to article 6 of the Agreement and the amendment made on 25.10.2008 I hereby verify that the Works, described herein, were in my opinion, substantially completed on 22.04.2009

Signed for and on behalf of the Client: Teba Cement Factory LLC




Mohammed Ismaeel Al Fahim

Dated: 22.04.2009

NOMINATED VENDOR FOR QATAR PETROLEUM INC.

DOC. ISSUED

Vendor RFQ



SUBENKO GULF-ENGINEERING &
CONSTRUCTION
COMPANY W.L.L
PO Box 21780
DOHA
QATAR
Tel no.: +97444368818
Fax no.: +97444367717
Email.:hakan@koca.com

Master RFQ No.	:GT10107400
RFQ No.	:GT10107431
RFQ Date	:12.08.2010
Closing Date	:26.09.2010
Closing Time	:12.00 Hrs

TITLE OF WORK : CONSTRUCTION OF PROJECT OFFICE & LIBRARY

Please find attached the Documents / CDs / DVDs for the above Request for Quotation. Submit your offer in sealed envelope(s) as specified in the Instructions to Tenderer at,

The Secretary, General Tenders Committee
Qatar Petroleum
PO Box 3212
WEST BAY, DOHA, QATAR
QATAR

before 12.00 Hrs on 26.09.2010.

The envelope shall bear on it the Master RFQ No., RFQ No., Title of Work and the Closing Date.

Please keep your company details including Commercial Registration up to date with QP by submitting "Vendor Master File Update Form" as and when required to ensure processing of Tender and Contract related matters in time without any delay. The Form is available in QP Website www.qp.com.qa-->Supply Management-->Vendor Registration-->Contracts Dept

Encl: As above.

Note: This is a system generated document and does not require a signature of any type.

COMPLETED INDUSTRIAL BUILDINGS



Co Generation Plant – KOCAELI/TURKEY



Metal Fabrication Factory – KOCAELI/TURKEY



Cooling Tower – DILOVASI/TURKEY



Power Generating Structures – DILOVASI /TURKEY



Oxygen Plant– GEBZE/TURKEY



Cooling Tower – GEBZE/TURKEY

COMPLETED INDUSTRIAL PLANT WORKS



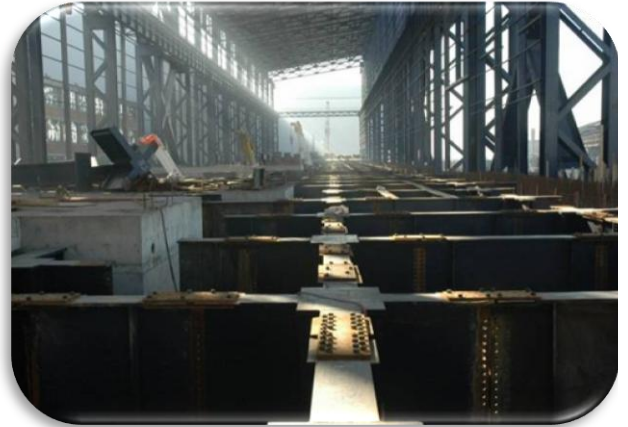
Steel Mill Structures – DİLOVASI /TURKEY



Steel Mill Structures – DİLOVASI /TURKEY



Steel Mill Structures – DİLOVASI /TURKEY



Mill Hall – DİLOVASI /TURKEY



Steel Plant Structures – DİLOVASI /TURKEY

COMPLETED INFRASTRUCTURE WORKS



Shipyard Construction – TUZLA/TURKEY



Caissons Construction – DİLOVASI/TURKEY



Under Railway Pass Construction – DİLOVASI/TURKEY



Under Railway Pass Construction – DİLOVASI/TURKEY



Various Pile Works - Foundations



Pile Works for under ground railway pass

COMPLETED INFRASTRUCTURE WORKS



Slipway Construction – RMK TUZLA/TURKEY



Marine Works – RMK TUZLA/TURKEY



Jetty Piling Works- ISTANBUL/TURKEY



Pile Cap & Slabs Placement – TUZLA/TURKEY



Crane railway construction – ISTANBUL/TURKEY



Caisson Works for Steel Plant – DİLOVASI/TURKEY

COMPLETED INFRASTRUCTURE WORKS



Steel Plant Structures - DİLOVASI/TURKEY



Harbor Repairing Works – LIBYA



Caisson Works – DİLOVASI/TURKEY



Caisson Works – DİLOVASI/TURKEY



Steel Plant Foundation Structures – DİLOVASI/TURKEY



Soil Improvement at Steel Plant – DİLOVASI/TURKEY

COMPLETED INFRASTRUCTURE WORKS



*Infrastructures of Housing Complex –
ISTANBUL/TURKEY*



*Infrastructures of University Campus -
ISTANBUL/TURKEY*

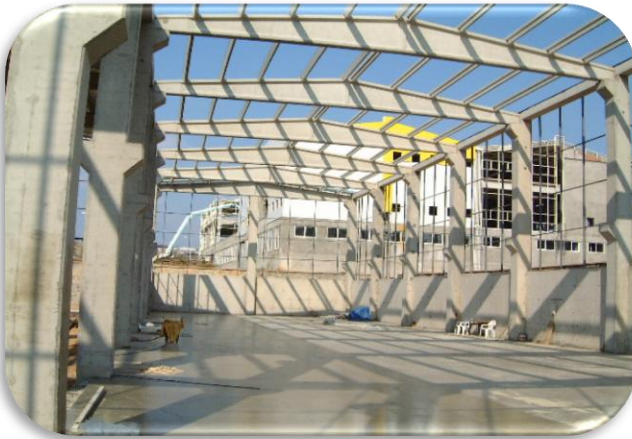
COMPLETED WORKS – PREFABRICATED ELEMENTS



Prefabricated Factory Building – Gebze / TURKEY



Prefabricated Factory Building – Gebze / TURKEY



Prefabricated Factory Building – Kocaeli / TURKEY



Prefabricated Factory Building – Gebze / TURKEY



Prefabricated Factory Building – Gebze / TURKEY



Prefabricated Building Shopping Mall – Gebze / TURKEY

COMPLETED WORKS - PREFABRICATED ELEMENTS



Precast Concrete Piles - Gebze / TURKEY



Precast elements building a factory – KOCAELI/TURKEY



Precast Slabs for a Mall – TURKEY



Precast Railway Walls - TURKEY



Installations of Prefabricated Elements - TURKEY



Prefabricated Manhole and trenches - Doha / QATAR

COMPLETED WORKS - PREFABRICATED ELEMENTS



Manufacturing of Prefabricated Elements - Koca Turkey



Mould for Prefabricated Elements – Koca TURKEY



Prefabricated Piles – Steel Plant / TURKEY



Prefabricated Slabs for Railway underpass / TURKEY

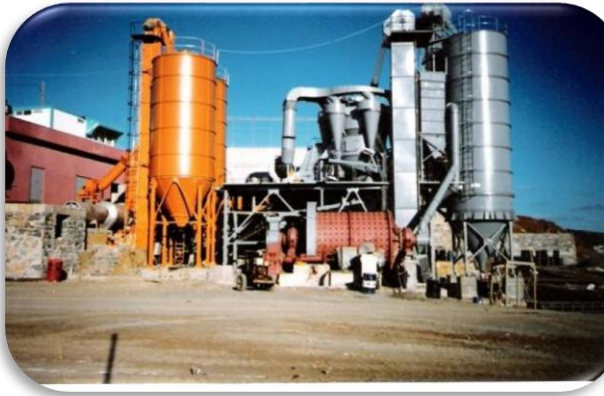
PLANTS, BUILD & OPERATED BY KOCA



Calcite Grinding Plant for Power Plant – ÇAN/TURKEY



Cement Grinding Plant – GEBZE/TURKEY



Installation of Cement Grinding Plant – IKON



Installation of Grinding Mill – ÇAN/TURKEY



Ready Mix Concrete Production – GEBZE/TURKEY



Ready Mix Concrete Plant – TUZLA/TURKEY

PLANTS, BUILD & OPERATED BY KOCA



Quarry Plant – GEBZE/TURKEY



Quarry Plant– GEBZE/TURKEY



Construction Chemicals Plant – GEBZE/TURKEY



Construction Chemicals Plant – GEBZE/TURKEY



Cement Plant – GEBZE/TURKEY



RMC Operation – GEBZE/TURKEY

COMPLETED INDUSTRIAL PROJECTS
“Teba Cement Factory LLC Abu Dhabi – UAE”



Cement Plant Installations – UAE



Cement Plant Installations - UAE



Cement factory – UAE



Raw Material Hall for Cement Plant - UAE



Cement Grinding Plant Construction Stages - UAE



Cement Grinding Plant Construction Stages - UAE

COMPLETED INDUSTRIAL PROJECTS
“Teba Cement Factory LLC Abu Dhabi – UAE”



Cement Grinding Plant Construction Stages - UAE



Cement Grinding Plant Construction Stages – UAE



Completion of Cement Plant – UAE



Completion of Cement Plant – UAE



COMPLETED INDUSTRIAL PROJECTS
“Teba Cement Factory LLC Abu Dhabi – UAE”



Cement Grinding Plant Construction Stages - UAE



Cement Grinding Plant Construction Stages - UAE



COMPLETED INDUSTRIAL PROJECTS

“Al Shareg Ready Made Concrete Company Ltd. – Riyadh /KSA”



Ready Mix Concrete Plant – RIYADH/KSA



Ready Mix Concrete Plant – RIYADH/KSA



Ready Mix Concrete Plant – RIYADH/KSA



Aggregate Plant – RIYADH/KSA

COMPLETED CONSTRUCTION PROJECTS

“Qatar Petroleum – Mesaieed Container Terminal Berth Buildings Mesaieed – QATAR”



Berth 7 Office Building STFA/QP – DOHA/QATAR



Berth 7 Office Building STFA/QP – DOHA/QATAR



Berth 7 Substation Building STFA/QP – DOHA/QATAR



Berth 7 Substation Building STFA/QP – DOHA/QATAR



Berth 7 Paving works STFA/QP – DOHA/QATAR



Berth 7 Paving works STFA/QP – DOHA/QATAR

COMPLETED CONSTRUCTION PROJECTS

“Qatar Petroleum – Mesaieed Container Terminal Berth Buildings Mesaieed – QATAR”



Berth 7 Office Building STFA/QP – DOHA/QATAR



Berth 7 Office Building STFA/QP – DOHA/QATAR



Berth 7 Office Building STFA/QP – DOHA/QATAR



Berth 7 Office Building STFA/QP – DOHA/QATAR



Berth 7 Substation Building STFA/QP – DOHA/QATAR



Berth 7 Substation Building STFA/QP – DOHA/QATAR

COMPLETED CONSTRUCTION PROJECTS

“Qatar Petroleum – Mesaieed Container Terminal Berth Buildings Mesaieed – QATAR”



Berth 7 Substation Building STFA/QP – DOHA/QATAR



Berth 7 Substation Building STFA/QP – DOHA/QATAR

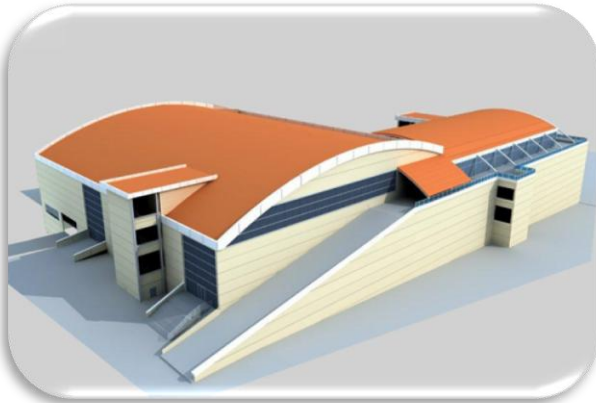


Berth 7 Paving works STFA/QP – DOHA/QATAR

ONGOING PROJECTS



Commercial Center – GEBZE/TURKEY



Equipment – ASHGABAD/TURKMENISTAN



Camp Mobilization – ASHGABAD/TURKMENISTAN

DETAILS OF TECHNICAL COMPETENCE

1. HIGH PERFORMANCE CEMENT

a. INTRODUCTION

HPC 62.5R is a high performance and early high strength cement that has been produced with a special grinding method using complex chemical & mineral admixture with clinker and gypsum. HPC 62.5R cement is based on low water demand binder technology, reducing water demand of cement and consequently raising the early compressive strength and overall performance. In numerous lab tests it has been proved that strength values around 100 MPa could be reached very easily. On the other hand, HPC 62.5 due to its non-shrinking features is very suitable for special applications like grouting and joint fillers. The mortars produced with HPC 62.5R provide impermeability and excellent freezing and thawing resistance. While it could be used in the field which requires such features, it is very advantageous in precast applications since it shortens demolding time as a result of early strength development in ambient temperatures.

b. COMPOSITION, CHEMICAL AND PHYSICAL PROPERTIES

The HPC 62.5 Technology is based on activation of Portland clinker by means of chemical and physical procedures in a special grinding process. Its content by weight is as follows (TABLE1):

TABLE-1

HPC 62.5R content by weight

Clinker C3S>60	Gypsum	Admixtures
%94	%5	%1

MORTAR & CONCRETE STRENGTH

The test results of strength development of HPC 62.5 and PC 42.5 cements are summarized as follows in graph1 (TABLE 2):

TABLE-2

Compressive strength values

Description	2 Days	7 Days	28 Days
HPC 62.5R	33	56	73
PC 42.5	21	37	54

These test figures are the results of lab experiments based on 44% w/c, which is found as the best ratio. In the flow table test 185-190 mm consistence is suitable.

On the other hand, tests aimed to measure early age compressive strength values, made with concrete samples of HPC 62.5R and PC 42.5 having same mix design and 360kg/m³ dosage, have shown that the mixes with HPC 62.5R have much higher compressive strength values. Further increase of these values is also possible using a special concrete admixtures.(Graph2,

TABLE 3)

TABLE 3**Early ages compressive strength values**

Description	12 Hours	18 Hours	24 Hours
HPC 62.5RA*	6	12	18
HPC 62.5R	5	11	17
PC 42.5	3	6	7

* HPC 62.5RA with special concrete admixture

These test results allow HPC 62.5R to be classified as a rapid hardening cement beside its long term strength and durability.

c. COMPATIBILITY

Like other Ordinary Portland cements HPC 62.5R is compatible with all normal building materials. Due to its adherence and impermeability, HPC 62.5R will prevent corrosion of reinforcing steel and it will not have harmful effect on any other part of structure with which it comes in contact.

d. APPLICATION

While using HPC 62.5R in concrete, w/c should be less than 45 % and there should be no concrete admixtures. During winter time antifreeze agents can be used. HPC 62.5R has built in characteristics which improves workability, early and final compressive strengths, reduces shrinkage and permeability of concrete. Therefore, no other admixtures are needed in order to give these properties to concrete and mortars. This feature not only prevents possible operator's dosage mistakes but also allows time saving due to additional admixture applications. In order to obtain high strength, mix designs with 30-40% w/c ratios which give 80-120 mm slump are advised.

e. CONCRETE PROPERTIES

Early strength up to 30 MPa in 24 hours and 50 MPa in 48 hours.
 High compressive strength up to 120 MPa in 28 days.
 Durability of structures as a result of higher performance.
 Early demolding generally without steam curing application.
 High workability and ability to fill moulds with complicated shapes.
 High resistance to abrasion.
 High adherence and impermeability.

2. POLYMIX READY PLASTER

a. INTRODUCTION

Polymix® and Polymix® MS Ready Plasters are ready to application lime – free mortars produced in accordance with technology of ISOLA BAUCHEMIE GmbH (Germany).

Polymix® requires no additional mixing on construction site. Due to use of special retarding admixtures it will remain completely usable for the specified period of 48 hours. Polymix® is consistent in composition, strength, workability and color.

b. COMPOSITION

Polymix® Ready Plaster is composed of cement, fine and coarse natural sands together with specially selected polymer admixtures, surface-active air entraining and retarding agents. Polymix® MS Ready Plaster in addition contains high reactive micro silica.

TABLE-1

Nominal Proportions by Weight					
Products	Cement	Micro silica	Fine Sand	Coarse Sand	Admixtures % Cement
Polymix®	1	-	1,4	2,7	1
Polymix® MS	1	0,1	1,4	2,7	1

c. MANUFACTURE

Polymix® Ready Plaster is manufactured using computerized ready mix mortar unit to ensure that all constituent materials are thoroughly mixed under precisely monitored conditions. Where micro silica based Polymix® MS Ready Plaster is specified the control and accuracy of the preparation and pre-mixing of the micro silica slurry provides required properties of the mix.



d. PERFORMANCE ANALYSIS

Fresh Properties

Polymix® and Polymix® MS Ready Plaster have better acoustic and thermal insulation properties due to low density and selected composition. Furthermore, as result of high internal cohesion it sticks well even to ceiling surfaces without rebound losses.

Therefore, it is easy to apply Polymix® even manually in any construction project. Polymix® Ready Plaster delivered to the site will possess the following properties:

TABLE-2

Products	Temperature			Air	
	Age	Air	Plaster	Flow	Content
	hours	°C	°C	cm	%
Polymix®	0	20	21	18	26
	24	20	21	17	3
	48	20	21	15	20
Polymix® MS	0	20	21	18	24
	24	20	21	16	21
	48	20	21	14	18

Strength Properties

The compressive and flexural strength properties Polymix® Ready Plaster are illustrated in Table 3. application of high reactive micro silica for Polymix® MS composition allows significant improvement of the adhesion to base structure as well as increasing of the strength properties of the final product.

TABLE-3

Products	Flexural Strength		Compressive Strength		Water
	7 days	28 days	7 days	28 days	Absorption
	MPa	MPa	MPa	MPa	%
Polymix®	1,2	1,5	2,5	3,5	18
Polymix® MS	1,5	1,8	3,5	4,5	15

Durability

Polymix® and Polymix® MS Ready Plaster are designed for extreme durability due to controlled method of manufacture and quality of the constituent materials used.

e. STANDARDS

Ready-Mixed Mortar complies with BS 4721, Specification for Ready Mixed Building Mortars when tested in accordance with BS 4551, Methods for Testing Mortars, Plasters and Screeds. All materials applied for Ready-Mixed Mortar manufacturing complies with relevant Turkish and International Standards.

f. COMPATIBILITY

Polymix® Ready Plaster is compatible with all normal building materials. The admixtures present in Polymix® will not cause corrosion of metal nor will they have a deleterious effect on any other part of the structure with which they come in contact.

g. APPLICATION

Polymix® and Polymix® MS Ready Plasters are designed for use as plaster for base and finish coating, insulation, renovation and decorative purposes. Polymix® can be employed for both interior and exterior work. The following plaster thickness is recommended in accordance with BS 5492, unless greater thickness is required to enhance acoustic insulation or fire protection.

Plastering Thickness

TABLE-4

Type of Background Solid	Plaster Thickness mm.
Two coat work	13
Three coat work	19
Metal Lathing	13

Consumption of the mortar will depend on the type of the work, however, as a rule, 1 m³ of Polymix® will be sufficient for covering of 40-70 m² of brick walls. Plastering walls should be clean and dry with any dust or efflorescence brushed away. Undercoats should be scratched prior to application of subsequent coats and allowed to dry out and stabilize for as long as possible.

h. STORING AT SITE

Stored or unused Polymix® should be kept covered by plastic film to reduce drying and to avoid contamination. Polymix® should never be remixed with water after setting, but it is possible to mix by hand a small quantity of water to replace that lost by evaporation.



i. DELIVERY

Polymix® Ready Plaster is delivered to site by mixer trucks in required volumes. Delivery programs can be arranged to meet individual project requirements and to ensure uninterrupted work schedules. Site containers are provided against deposit payments.

j. RELEVANT STANDARDS

- 1-BS 4721 : Specification for Ready Mixed Building Mortars
2-BS 4551 : Methods for Testing Mortars, Plasters and Screeds
3-ASTM C 389 : Standard Specification for Packaged, Dry, Combined Materials For Mortar and Concrete
4-TS 2848 : Mortar for Masonry
5-TS 1262 : Internal Plastering
6-TS 1481 : External Rendering
7-TS 11747 : Rules for Mixing, Application and Curing of Shotcrete
8-TS 19 : Cement – Portland Cement
9-TS 12143 : Cement – Portland Composite
10-TS 1214 : Cement – Portland Silica Fume
12-TS 706 : Aggregates for Concrete
12-TS 3456 : Air Entraining Admixtures for Concrete
13-TS 3452 : Chemical Admixtures for Concrete
14-TS 2941 : Determination of Unit Weight and Air Content of Fresh Concrete By Weighting Procedure
15-TS 3114 : Determination of Compressive Strength of Concrete Test Specimens
16-TS 3287 : Standard Method of Test for Compressive Strength of Concrete Using Portions of Beams Broken in Flexure
176-TS 3284 : Flexure Strength of Concrete (Using Simple Beam with Third Point Loading)