



KARBALA CEMENT
MANUFACTURING LIMITED
شركة كربلاء لصناعة الإسمنت المحدودة

A LONG JOURNEY TO BECOME THE MOST RELIABLE SUPPLIER OF CEMENT IN THE REGION



LAFARGE
Building better cities™



A member of
LafargeHolcim



FOREWORD

I am pleased to introduce the Karbala Cement Plant booklet, a short summary of the very long and challenging rehabilitation process at the plant. Karbala Cement Plant has recently re-joined the Iraqi cement industry at its full capacity after a 6-year rehabilitation process.

We are all very proud of being part of a big team that went through this process, achieving remarkable success thanks to the positive and supportive approach of the government and Iraqi Cement State Company (ICSC).

Lafarge Iraq, a member of LafargeHolcim, the world's largest group in the cement industry, has been operating in Iraq since 2008 as the only international group in the cement business. In addition to its investments in the Kurdistan Region of Iraq, Karbala Cement Plant is a very significant operation for LafargeHolcim Group as well as for the country's development.

We are proud of being the reliable supplier of cement for the region with recognized quality of products and services for customers and construction sector. We are also proud of developing local competencies, creating jobs for local communities, improving environmental conditions, and enhancing health & safety in our facilities and in the sector.

I would like to sincerely thank all the companies and teams who made this comprehensive rehabilitation process successful. However, one person in particular deserves a special acknowledgement and that is Mike Watson. Mike, who spent 50 years in the cement industry, also guided the rehabilitation process of the Karbala Cement Plant with his unique experience in this field.

Rachid Benyakhlef
CEO – Lafarge Iraq



Naser Idris Medhi Al-Madani

Head of the Iraqi Cement Producers' Association

The cement industry plays a key role in developing countries like Iraq. It is one of the most important strategic industries. It plays a key role in establishing infrastructures and creating economic and social value for the population. Therefore, investment in this vital sector is an investment in the long-term future of Iraq.

The history of the cement industry in Iraq dates back to the early 1950s. The industry has been developing gradually to meet the cement needs of the country and has gained considerable momentum to support the process of reconstruction after the many wars in Iraq.

The Karbala Cement plant was established in 1984. It supplied the surrounding governorates with cement for many years. However, as a result of the wars and the economic blockade which was imposed on Iraq, as well as the outdated equipment, the factory's productivity decreased to less than 15% of the design capacity. Therefore, in 2010 it was decided that a partnership contract of rehabilitation and operation between the Iraqi General Cement Company and LafargeHolcim Company was the best way to move

forward, combining both public and private sector experiences. The spirit of continuous cooperation between the two companies had a very positive effect on the success of the contract and increasing the active capacity.

We congratulate both partners for their hard work to make the Karbala cement plant successful and bringing it back on line to meet the demands of the locals, especially after the issuance of the Council of Ministers' Resolution No. 409 in 2015 which banned the import of cement.

I would also like to express my sincere gratitude for the continued support of the esteemed Minister of Industry and Minerals who has played a key role in the success of the partnership between the public and private sectors.



KARBALA CEMENT PLANT

\$270 million

Rehabilitation of the plant completed with a new capacity of **2.1 million tons** of cement a year



The state-owned **Karbala Cement Plant**, was leased to **LafargeHolcim Group** and its partner **MerchantBridge** in **September 2010**. Under this lease agreement, the **LafargeHolcim Group** has completely renovated the cement plant and improved its operation capabilities. The group invested **\$270 million** in the rehabilitation process.

In addition to considerably increasing the production capacity and the health and safety conditions in the plant; as part of the rehabilitation process the plant's staff, **1229 government employees** underwent significant training and development programs.



The formula of success:
Team Work

Two major steps in the 6 years-rehabilitation period

• The first step was to give birth to a business unit by reviving cement production and uniting people to have one focus, as one family.

This was the most meaningful and difficult step to make. The production facility was badly damaged and the working culture was very different, and we were focused on executing the sequence of Engineering, Procurement and Construction (EPC) of the rehabilitation.

Although very costly because of high expenses and low income from the erratic production of only one line during 5 years , this step allowed us to prepare for the future.

- Integration with the community and with the Iraqi government institutions.
- The reshaping of work practices, organisation, induction and implementation of safety standards, quality control, IT infrastructure and systems, as well as internal controls.
- Personnel development by encouraging Iraqi nationals to hold leadership roles.
- Creating a better workplace to alleviate the harshness of living in a remote desert area, which includes a clinic with 2 doctors and paramedic staff 24/7, security measures, fiber optic Internet, restaurants, camps and mosques.

The second step was the execution of the project, which was delayed due to multiple factors, most notably the forced evacuation during the country's security crisis in June 2014, and also earlier by local administrative routines, setting up the Company and financing the project. The effective start date was in February 2013.

“Making sure the equipment was supplied to the location was a daily challenge, as were the fluctuating roles and regulations pertaining to bringing foreign employees to the location.”

The negotiation of the lease contract with the government was a crucial step to ensure the economic viability of the business. Drastic changes in business environment, such as a continuous price decrease – over a 45% drop between 2010 and 2016 – and higher energy costs because of non-compliance of the government on contractual fuel prices all drove the plant lease cost to proportions that didn't fit with the original business plan. Even with

substantial cost reductions, the business could not be brought back on track without a revision of the lease contract in 2015 that was achieved thanks to the understanding of the Federal Government and its willingness to make this agreement successful.

- Other notable achievements include installing a world-class 52-MGW Power Plant, water wells and an exclusive water network for the site, fire protection tools and systems, an efficient supply chain, and the latest technologies in automation, all of which contributed to our ability to achieve autonomy and better working conditions, all while serving our customers.

Karbala Cement Plant is proof that investment and investors could benefit and succeed in Iraq



What is the final cost of the rehabilitation project?

Despite more than a two year delay, the project is completed within the original budget of \$270 million, with additions in design capacity of 300,000 tons of cement per year, an automatic control of the mix quality and an emissions control system of international standards.

What were the major challenges faced during the 6 year rehabilitation?

- Compliance with Safety rules was very difficult in the beginning, although it has significantly improved but will never be a won battle.
- Timing of funds was also a hindrance, which delayed the project and jeopardized operations.
- **Convincing contractors and specialists to come and work on site was challenging because of the security image of the country.** It delayed the set-up of the power plant and the return of most foreign contractors to site after evacuation.
- Logistics was difficult because of the ever-changing regulations in customs and security check-points. Road closures due to military operations or religious holidays (more than 50 days per year) did not help either.

What products are being produced in the plant?

Since the plant began operating in 1985 it has always produced Sulfate Resistant Cement (SRC) because of the high quality of limestone and clay quarries. Karasta, Lafarge Iraq's special cement product will also be produced to give customers a wider choice. ISO certifications (9001 and 14001) have also recently been obtained.

What is the importance of the Karbala Cement Plant re-joining the sector for the country and for the LafargeHolcim Group?

For the cement sector, the Karbala Cement plant will add additional capacity of national supply and high quality cement. It will also increase the quality of workmanship and technical qualifications in general for people. The Karbala plant is a major employer after the government and Al Ataba in the province of Karbala.

For LafargeHolcim, the importance is in the plant location for sales and market share. It should be an anchor cement source to cover the needs of some of the provinces farther to the South of the country.

And most of all, it will be the showcase, as a model of operations and of people's trust in the Group.



Mike Watson

Testimony of Mike Watson, the legendary expat of Lafarge Iraq who spent 50 years in the cement industry

The Long Journey to Karbala Cement Plant





The Journey began in 2010. Contacts were made with the Iraq Government for Lafarge to lease the Karbala Cement Plant for a period of 25 years. Contracts were signed, a new company was set up, and the journey started with a series of visits to establish a secure base for the visitors and external workers who would be required to rehabilitate the plant and get it into full operation by 2012. The plant is ready for full production and there have been many challenges along the long road to final success.

The first challenge: Security

How to ensure the security and safety of those travelling to the plant from Paris, Cairo and Iraqi Federal Region of Kurdistan? The local government employees running the plant in 2010 commuted every day from Karbala or Ain Tama in buses – a long journey indeed starting at 6 in the morning and returning home at 6 in the evening. Hot bumpy trips every day for most of the workforce. There was one area close to the plant where employees could live in the famous German camp, which was only 500 meters away from the work area, with over 100 houses built for the Polysius people back in 1984 when the plant was built using German technology and in the first few years run by a Chinese workforce.

The security challenge was overcome by employing a local Iraqi security company, involving government employees in security, and receiving real support from the Iraqi army. Three layers of security were created surrounding the plant, the army security company, and KCML employees. The next challenge was transport. How would we get employees from Kurdistan to KCML, located 80 kilometers west of the holy city of Karbala, bordering the famous Anbar region? Security arrangements were really tight in 2010 and remain so today for good reason. With no advance travel warning, employees would fly into Baghdad Airport – an unforgettable experience in and of itself! After being transferred to a security convoy, they donned the same heavy “flat jacket” worn by soldiers going to war and began the long journey to the plant, driving for over three hours without a single rest stop. It seemed that the plant would never be reached, the only signs of life were the security checkpoints, the few sheep and occasional camel, and high-voltage electricity pylons running alongside the road.

Eventually we were told “you can see the plant now” and yes there it was in the far distance. A silhouette of a cement plant finally appeared in the distance. After three hours, we had arrived to a plant in the middle of a vast desert – far from both Baghdad and Sulaymaniyah.

In 2010 there was a restaurant inside the plant and ten rooms with twin beds in a carefully constructed compound within the German camp. Now of course the well-established camp next to the Main Office provides excellent food and accommodation for the many weary travellers who had travelled overnight from their homes to meet up with the convoy and onward transfer to the plant.

Getting people to the plant safely was the first challenge facing the KCML Management.

The next step was much more complex. How to rehabilitate the plant and get it to full production in the shortest possible time was going to be a real test of resolve.

Karbala Cement Plant built by Polysius in 1984 for the Iraqi Government started production in 1985 managed by Chinese contractors.

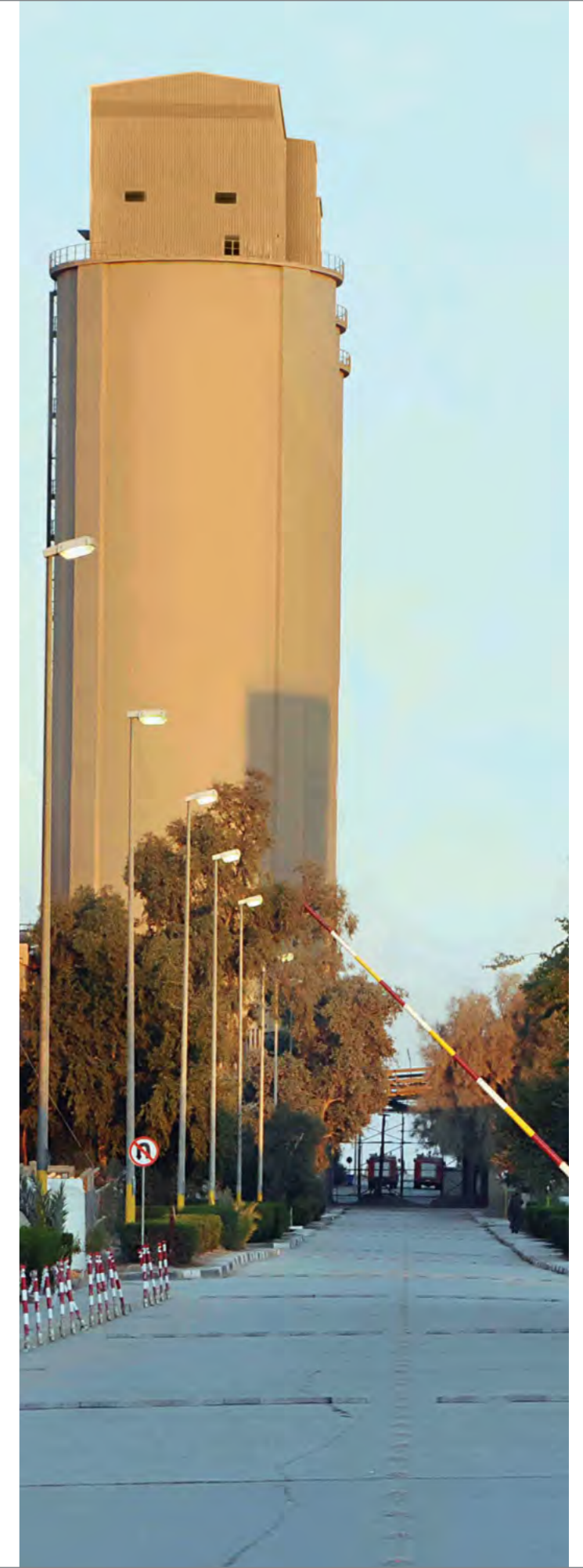
The plant was quite successful from 1985 until 1991 but then came the Gulf War, and the Chinese people fled back to China, leaving limited numbers of local Government employees left to look after the plant.

The Americans dropped bombs on the plant during this time and damaged some of the infrastructure and internal power cables. Eventually after the War the difficult task of getting the plant back to operation began. Spare parts were difficult to obtain, fuel and power also a challenge. Then the second Gulf war in 2003 stopped the operation again. At the end of the second War it was even more challenging to get the plant running. Line 2 kiln was mothballed and spares for Line 1 were taken from Line 2. However, output of cement was poor and it led to the decision by the New Iraqi Government to lease out the plant to Lafarge. A similar successful project was completed in Tasluja in the North, which sought to replicate the Kurdistan project, get Karbala to start production, and build a new green field plant in the South.

The Long Road to Karbala and its remoteness added to the challenge

A Task force was set up to partially rehabilitate Line 1 kiln and to get it back into operation while contracting out the full rehabilitation of the plant. A new camp for the Lafarge teams needed to do the work was set up.

Power supply from the Government power lines was restricted to 8 Mw and then to 5 Mw and eventually cut totally. Fortunately KCML had hired diesel generators from Aggreko – 16 Mwh enough to at least get production going.



Finance was a challenge too

The lease contract itself was a challenge. Supply of heavy fuel oil (HFO) as fuel for the plant was difficult. After many meetings with all stakeholders, eventually a contract to buy the spares from Polysius, and the return of a Chinese company to Karbala through Sinoma to facilitate the project. A project team was set up and after long discussions work started in 2013 on rehabilitating Line 2 while keeping line 1 running, and on producing cement to re-establish significant sales in the South where oil was the main driver of the economy. Then came the Iran imports – in 2010 cement prices were \$120 per tonne but the Iranian imports created such competition that prices dropped 40%. Another real challenge for KCML.



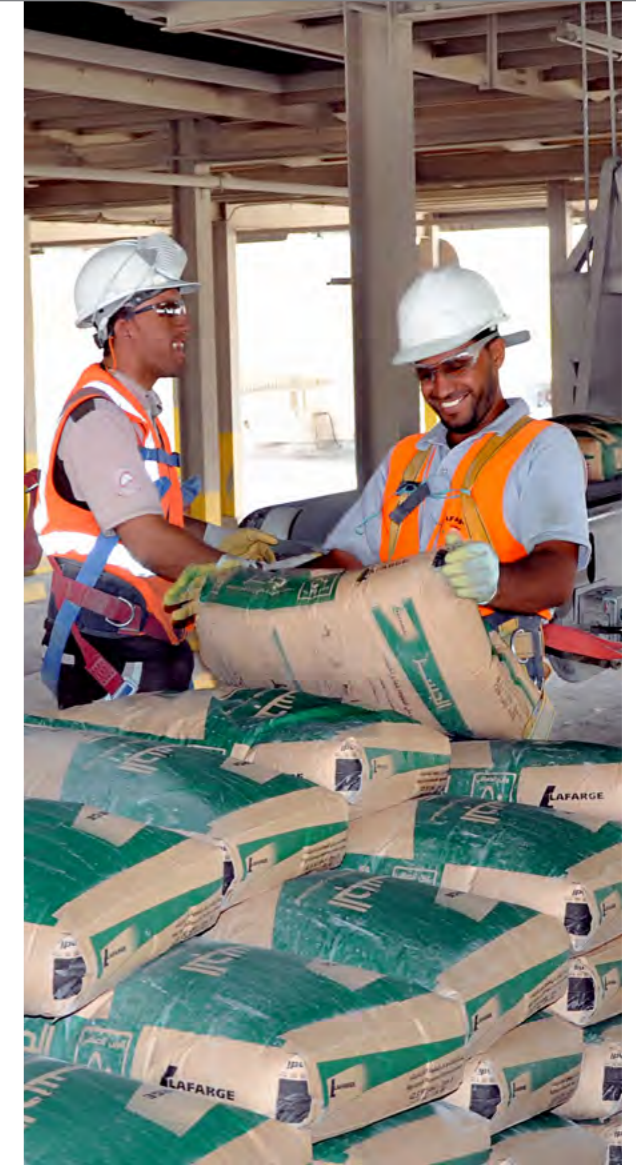
Nevertheless the Karbala Project continued and Sinoma mobilised almost 300 workers. Polysius supplied technical expertise and Lafarge the project team. At last the project was moving and the expected date of completion was 18 months away from the start. With over 350 foreign workers employed and living in the desert well away from civilisation, it seemed most challenges were being managed. Then in 2014, ISIS seized significant territory in Iraq. Moving quickly, cement and gypsum operations in Anbar were soon under their control. Even the Local workforce were getting nervous. What to do? Well, people's safety and security had to be the number 1 priority – hence the difficult decision to evacuate all expatriates through both Najaf and Baghdad Airports.

A logistics nightmare in itself. The threat of ISIS getting to Karbala reduced and within 10 days we were going back down the long road to KCML and with a team to run the power plant – For 10 days the security team had remained resolute and defended the plant and its equipment from any possible intruders. With power restored, we now faced the challenge of restarting production and returning the Sinoma workforce. A real setback to the project but at least local and foreign employees were safe. It was really the end of 2014 before everything was back to “normal”, with six months lost on the project and even more financial challenges for KCML. Production and sales increased because Karbala Cement has a good reputation for quality in the local area. Alongside extensive discussions with the government and banks, the project was able to continue. **Finally, one day in November 2015 the first Clinker was produced on Kiln 2** and Kiln 1 was later stopped for its turn of rehabilitation.

With better living conditions in the camp, exceptional food, and a gym and coffee shop that provided some relief after a hard day at the plant, we were finally on the right track. Then on February 6, 2016, we faced another unexpected challenge when an electric fire broke out in the kiln of the new line 2. However everyone pulled out all the stops and the plant was back and running in less than 20 days. The second kiln is now ready for operation, and more cement than ever before is available for sale in the South of Iraq, thus keeping Karbala cement in the heart of the country and reducing Iranian imports.

All that cement has to be transported down the long road to the South of the country but it is a much shorter journey than bringing it all from the North. KCML has had a rough ride but the future now looks much better thanks to the dedication of all those involved – the long journey is coming to an end and the road is getting better – one day a motorway or even high speed rail link may take the cement to the booming market in the South of Iraq.

“After almost 6 years the long road has reached a milestone and the plant is now fully operational. Everyone involved should feel proud to have achieved such an outcome in this very challenging part of the world.”



The Plant will provide employment for local people, support local communities and provide substantial cement supply for many years to come, which will be the cornerstone for rebuilding and developing Iraq in the future. Well done to the Karbala Teams and Best of luck for the future. It was great being part of the project.



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