

Interview by Peter Edwards, Global Cement Magazine

In discussion: Innovation at Cementir

Cementir is regarded as a medium sized player in global cement capacity rankings, but is the leader in white cement, with a strong innovation culture. *Global Cement* recently spoke with Michele Di Marino from the Group to discuss Cementir's operations, its response to the coronavirus outbreak and how its focus on new concepts places it well for the future...



Above: Michele Di Marino has worked for Cementir Holding for more than 10 years, the first seven in Copenhagen, Denmark, as Commercial & Business Development Director in the Nordic & Baltic Region. In January 2017 he returned to his native Italy as Chief Sales, Marketing & Commercial Development Officer, leading the global commercial strategy for the whole range of products and driving the Group innovation platform.

Global Cement (GC): Please could you introduce Cementir to readers who may be less familiar?

Michele Di Marino (MDM): Cementir was founded as a cement producer in Italy in 1955. Since 1992 it has been owned by the Caltagirone Group, which has been prominent in Italian construction since the 1950s and is now diversified across several sectors. In 2004, Cementir acquired the Aalborg Portland Cement group from FLSmidth, bringing assets in Scandinavia, China, Malaysia, Egypt and the US. The group has since upgraded its production base and added a 1.1Mt/yr white cement plant in Egypt, the largest white cement plant in the world.

Cementir also added grey cement assets in Turkey via the acquisition of Çimentoş from 2001 onwards and Compagnie des Ciments Belges SA (CCB) in Belgium in 2016. In 2018 it took the bold step to sell its Italian assets due to the prolonged weakness in its home market, while further expanding abroad by acquiring the majority stake of Lehigh White Cement. These completed its transformation from a producer of special cements exclusively in Italy into an international Group. It has invested Euro1.7bn in its growth without any capital increase.

Today Cementir has a white cement capacity of ~3.3Mt/yr and a grey capacity of up to 10Mt/yr. Its white plants and terminals are spread

across five continents, making it a global leader in this arena. It also has more than 100 ready-mix concrete plants and 31 terminals across 18 countries in total.

Relatively small but highly dynamic and innovative...

GC: What drives innovation at Cementir?

MDM: Cementir innovates in order to differentiate itself within a very crowded cement market. Indeed, 'innovation' without differentiation is just imitation. We innovate not only to develop better versions of our existing products, but to develop entirely new solutions and even new markets, always looking at the final applications.

We also want to develop niche markets to replicate the leading position that we have in the white cement sector. When successful, this approach provides first mover advantage, greater profitability and higher brand recognition. Via both approaches, we seek to build new mutually-beneficial long-term relationships with satisfied and loyal customers. Our ambition is to continuously facilitate and inspire the entire value chain, from architects, engineers and producers to the end users, by offering customer-oriented sustainable innovation.

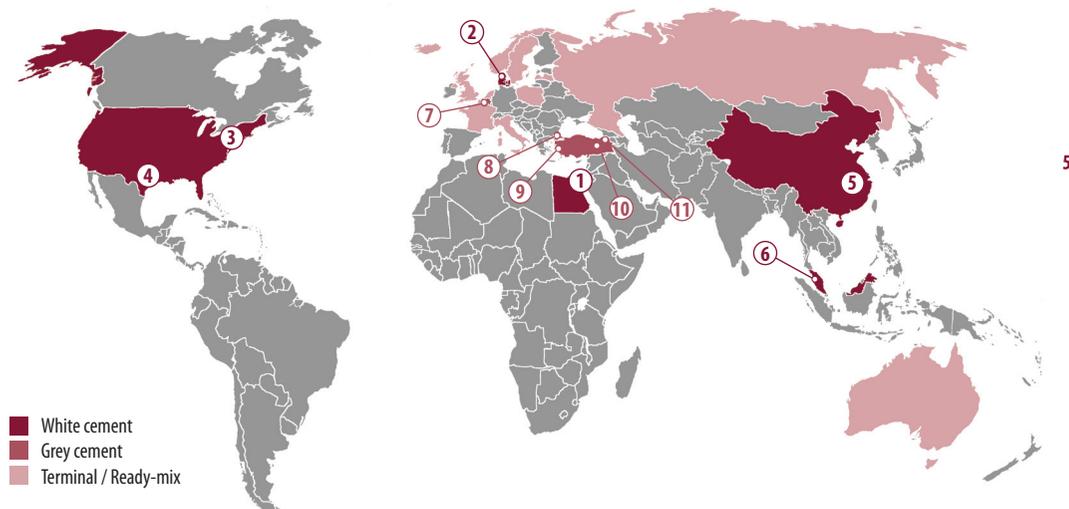
I must also mention that sustainability is a key ingredient in our innovation mix. It is a constant target to lower the environmental impact of our products, some of which I will introduce later, and sustainability increasingly drives our customers too.

GC: Who generally suggests new ideas: Cementir or its customers?

MDM: We have a mixture of Cementir- and customer-led projects and we are lucky to have a number of international customers that are highly innovative. They bring a lot of insights and suggestions. In turn, we observe how our products are used within the market by our clients, both large and small, which inspires us to try new mixes, approaches and projects.

Below: The Aalborg Portland Cement plant in Denmark, part of Cementir since 2003.





WHITE CEMENT • 3.28Mt/yr

1. El Arish, Egypt, 1.1Mt/yr.
2. Aalborg, Denmark, 0.85Mt/yr.
3. York, Pennsylvania US, 0.13Mt/yr.
4. Waco, Texas, US, 0.13Mt/yr.
5. Anqing, Anhui Province, China, 0.72Mt/yr.
6. Ipoh, Perak, Malaysia, 0.35Mt/yr.

GREY CEMENT • 9.8Mt/yr

2. Aalborg, Denmark, 2.1Mt/yr.
7. Tournai, Belgium, 2.3Mt/yr.
8. Trakya, Turkey, 0.7Mt/yr.
9. Izmir, Turkey, 3.2Mt/yr.
10. Elazığ, Turkey, 1.1Mt/yr.
11. Kars, Turkey, 0.4Mt/yr.

GC: What developments can you tell us about?

MDM: The biggest recent development has been our **FUTURECEM™** technology, which has actually been developed over the past 20 years. It relies on the synergies between clinker, calcined clay and limestone. This allows for more than 40% clinker substitution while keeping the performance of a pure Portland cement and a 30% reduction in CO₂ emissions. **FUTURECEM™** has now been tested at full-scale in infrastructure projects as well as in indoor floors and walls. The technology can be implemented in standard concrete applications and offers high resistance in the most aggressive environmental exposure classes, which is fundamental for concrete durability. Lifecycle analyses show a ~20% CO₂ reduction compared to conventional concrete and an estimated 6% CO₂ emission reduction for a standard building. This chain of CO₂ emission reduction is aligned with CEMBUREAU's 5C approach, covering cement, concrete and construction.

In the past couple of years we have developed the InWhite® Solutions innovation platform, with the purpose of generating the most sustainable, cost-effective solutions in construction and building materials. InWhite™ brought in a number of ultra-high performance concrete premixes, both for aesthetic appearance and for more structural applications (Aalborg Extreme™ and Aalborg Excel™) based on **FUTURECEM™** technology. We are looking at a 3D printing application (Aalborg Explore™), which takes advantage of the strength, durability and aesthetics of white cement. We are also researching a range of binders that our customers can build on to make new products, with 'InWhite® inside.'

Another very interesting project is with a German start-up that is looking into contactless charging for electric vehicles. Our role is to develop the cement mix and magnetic concrete for the charging points. The vehicle is then parked over the charging point to be charged. The project is currently looking at static charging, but dynamic, 'Scalextric-style' propulsion

is a serious consideration. This is an example of how Cementir and its partners could disrupt other markets that are not related directly to building materials. Some car, scooter and forklift manufacturers are already taking an interest. It is a high-risk but potentially high-reward project.

GC: What about innovation in the production of cement?

MDM: We looking at how our **FUTURECEM™** technology can be used to produce white cement products and special premixes and binders, in addition to grey cement. Also on the white side, we are constantly on the hunt for alternative fuels that don't affect the colour of white cement. All this comes together with process-related innovations, some related to making the process leaner and more efficient, some linked to sustainability.

GC: Is innovation at Cementir led from the 'top-down' or does it rise from the 'bottom up'?

MDM: I think we have a good combination of both at Cementir. In recent years maybe the 'top' has sparked the flame of innovation. It then spread fairly fast to all levels of the organisation and now the 'middle' and 'bottom' are fully and proactively involved. For instance InWhite™ is a good example on how we wanted to pursue an innovation mindset, embedded and institutionalised in the organisation and in the business process. We have been building good internal communication and bringing in people from different disciplines to cross-fertilise. This is leading to a collaborative culture that can quickly identify and develop relevant concepts.

Indeed, the Group has developed an approach to innovation that includes, among others, rapid prototyping, 'ideas factories' and business model design. This allows us to tailor our innovations to the market needs, to the customer's 'jobs to be done.' Also, it is important when an idea is developed to bring in

Above: Cementir's global presence, with white and grey cement plants shown. Countries with terminals and / or ready-mix concrete plants are also indicated.



functions usually out of the innovation process, like the legal and finance departments. Depending on the business model, if there's an agreement with a third party in the pipeline or new business proposal from within the Group, we need to include these departments in the project from the start.

At the same time, we invest in people, which helps to develop the sense of engagement in the projects we are running. I think this important pillar is often overlooked.

GC: How does digitisation fit in with Cementir's innovation plans?

MDM: We are part way through a major digitisation drive: Cementir 4.0. Over the next three years, this Euro20-25m digital drive will look at digital optimisation in three areas: production, maintenance and the supply chain.

The production element will look at digitisation in terms of automation of the cement production process and enhanced quality control. The smart maintenance element will develop and optimise our approach to predictive / preventative maintenance and diagnostics. The supply chain element will optimise material sourcing and ordering, tracking products and deliveries and ensuring best use of our fleets. Which in the end means improved value delivered to our customers.

GC: Which of these three elements will be the easiest and most difficult to implement?

MDM: I feel that digitisation within the plants will be the least difficult of the three. There are now many suppliers of monitoring diagnostics equipment and artificial intelligence (AI) systems. Without being too crude, we can increase the use of them at our sites.

Most difficult will be digitally optimising our complex supply chain. For instance, our white cement plants supply material over tremendous distances to a large number of destinations. The Aalborg plant supplies more than 70 countries directly and indirectly, all under Cementir's direction. It is not a

case of just loading the customer's ship and taking the cash.

GC: How can white cement production be made more sustainable?

MDM: Digitisation aside, enhanced sustainability in white cement production is more difficult than for grey cement due to the higher quality requirements regarding its colour. Most problematically, this restricts for instance the types of alternative fuels. They must have zero effect on the colour, because the colour is one of the attributes you are selling with white cement.

However, the colour is only one of the differences between grey cement and white cement from Cementir. Due to the higher quality requirements placed on the process, the surface area is very high, leading to high strength and durability. This brings sustainability to infrastructure projects because it is possible to use less cement in the concrete mix.

Coronavirus effects

GC: How has the coronavirus outbreak affected Cementir's global operations?

MDM: After a strong 2019, we lost about four weeks of production at our Chinese white cement plant due to the government-mandated shutdown. The Malaysian plant was also closed for a short time, again due to government restrictions. However, both plants were able to supply clients from their inventories and our bottom line was not affected too much.

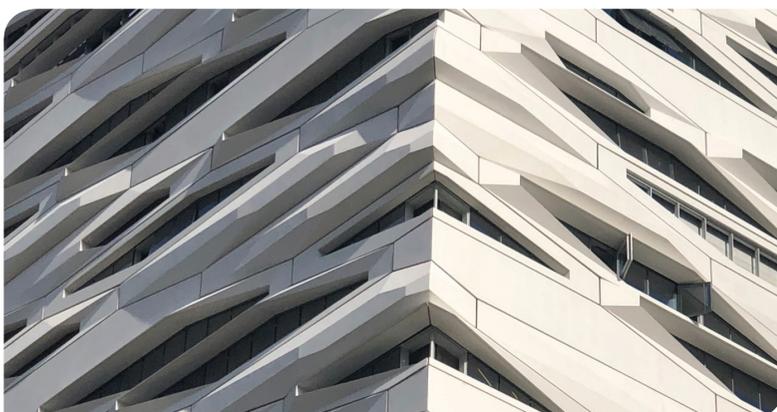
In the second quarter a lack of demand forced the closure of one kiln at our Belgian grey cement plant. Production continued in Denmark, Turkey, Egypt and the US without too much disruption, other than adapting to social distancing, split teams and enhanced hygiene and cleaning measures. Our Turkish operations saw a reduction in demand at home but were able to continue to raise exports substantially.

The construction sector generally held up well over the first half, with white cement demand particularly resilient. The fact that we sell white cement to so many markets has smoothed out the worst of the geographical effects of the lockdown for Cementir.

GC: Has the outbreak had an impact on the group's capital expenditure projects?

MDM: There have been a few delays and postponements, but we have carefully prioritised the projects. Nothing has been cancelled, just put on hold. The capital expenditure planned for 2020 will take place either later in 2020 or in 2021. According to the Industrial Plan 2020-2022, the Group is still committed to invest Euro100m in sustainability on top of the already budgeted capital expenditure for these years.

Below: MBridge in South Korea by Nanjing Beilida was made using Cementir's white cement.





GC: How were office workers affected?

MDM: Everyone that could work from home did so and many remain at home, with a switch to remote working. Some staff in Belgium and France were placed on government-supported job retention schemes. In the main, the transition to remote working has been successful. For example, my global team has an annual workshop on Innovation and commercial development but this year we experimented the virtual way. We actually found that engagement in the various workshops was higher online than in 'real life.' Our post event survey showed that people enjoyed it more and were more effective. Of course, it is still great to see everyone 'in the flesh' but we have learned that we don't need to fly to a physical location to still collaborate effectively.

We have even been able to undertake some complex activities, including the development of new products with customers. Senior management has begun to travel regionally once more. It is good to see customers again!

GC: How will the virus affect Cementir's working practices going forward?

MDM: Of course home working isn't for everyone, but I think that the future for Cementir's office staff could be more flexible, if needed. A few colleagues benefitted from not having their commute and actually have more energy and focus for the task at hand.

Looking to the future

GC: How will demand develop through the rest of 2020 and the start of 2021?

MDM: The coronavirus downturn, certainly for the cement sector, is very anomalous in that the economy has essentially been 'paused.' There will be some bad consequences in many sectors, particularly the hospitality and leisure sector, but construction is particularly well placed to both benefit from and contribute to the rebound. We already see steady improvement.

Of course there are risks. Aside from a potential second virus wave, there is the risk that stimulus packages may not yet be ready by 2021, which may hamper the recovery. National governments may also wind down their job retention schemes, which may contribute to unemployment and weaken confidence.

GC: What other threats are out there for cement producers in the post-coronavirus world?

MDM: A major threat is the uncertainty regarding sustainability regulations, most pertinently for us the EU Emissions Trading Scheme (ETS). We need to know how it will develop but are currently in a kind of limbo-land where we can't confidently in-



Above: A FUTURECEM™ road bridge in Lolland, Denmark.
Source: Torben Eskerod.

vest. Also a threat to many producers is continued consolidation. We must also look out for new players innovating into and disrupting our market.

GC: What opportunities are there in the post-coronavirus world?

MM: For both Cementir and the wider industry, I think there are massive opportunities to look beyond the immediate horizon. If we are serious about making sustainable buildings, we must look at the entire package. This includes bringing in glaziers, HVAC contractors, architects, energy companies and many others in an ideal ecosystem. Those that look beyond just cement and concrete will detect and benefit from wider trends.

GC: How will the cement sector of 2021 differ from that of 2019?

MDM: At the risk of contradicting my previous answer, I think that many players will be much more focused on their core business of making cement over the next 12 months. They will have to restructure and divest non-core assets, with opportunities for well-placed smaller players.

There will also be a much bigger push towards digitalisation in 2021 than in 2019. The virus has really focused minds in this regard and shows us what is possible. Of course, digitalisation leads to greater process efficiency, which leads to lower emissions and greater sustainability. Everything is connected. Our job is to keep innovating to ensure that Cementir remains at the forefront of the changes that the rest of the 2020s will bring.

Financially the group is on a strong footing. Our net debt relative to EBITDA is one of the lowest among our competitors. By 2022 we anticipate that we will have a net positive financial position, which should provide a lot of freedom if others are looking to divest. The decision to sell our Italian assets speaks to the decisiveness of Cementir. It was not 'romantic,' but it was the right call. The owners have transformed the group before and will continue to review our position at this challenging yet exciting time.

GC: Thank you for your very interesting insights.

MDM: It has been a pleasure to speak with you.