

Shaping the future InWhite

Representing a niche in global cement consumption and production, white cement offers several benefits to its users. To extend the scope of these and bring them in line with society's need to create sustainable built environments going forward, Cementir has launched InWhite, its white cement innovation engine.

■ *by Michele Di Marino and Erik Pram Nielsen, Cementir Holding, Italy*

Serving customers in more than 70 countries, Cementir Group is a major global player in the white cement market with more than 3Mta of production capacity, installed in white cement plants strategically located on four continents. Under the global AALBORG WHITE® brand, its products are manufactured at cement facilities in Denmark, Egypt, Malaysia and China as well as in partnership with other companies in the US.

All production sites benefit from large resources of high-purity limestone and other key raw materials needed to produce high-quality white cement with consistent chemical features, uniform white colour and high strengths.

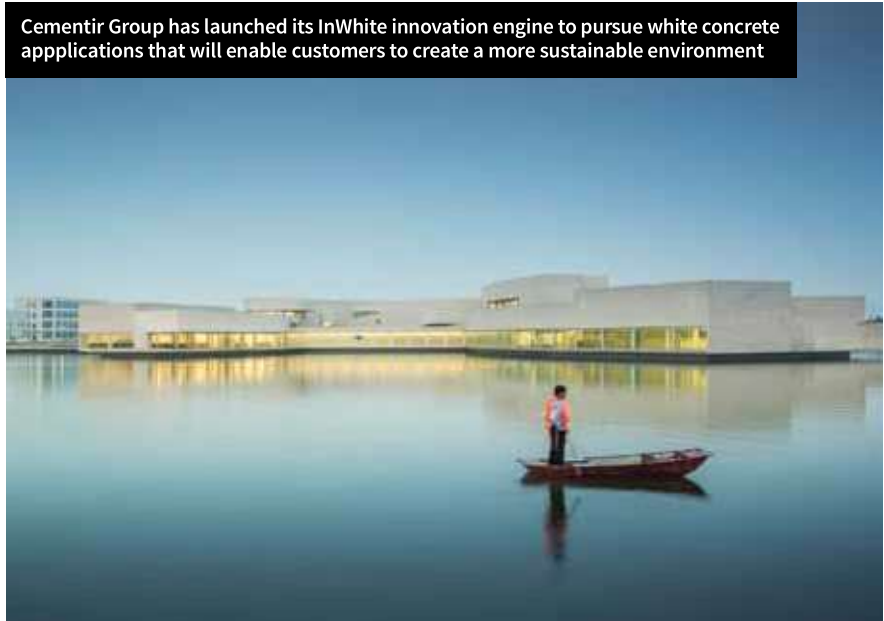
“The group has a unique position with its global spread in white cement, reaching an extensively diversified customer base in terms of size, business, culture, tradition and technological levels. We have until now not fully exploited this position. The group aims to enhance its value proposition on white cement globally, by re-defining and developing key focus areas that will support the growth of our clients' business through customised services, know-how sharing, advisory and strategic partnering,” says Cementir's White Cement Commercial Development and Marketing Director, Michele Di Marino.

InWhite: Cementir Group's white innovation engine

Over the last few decades, Cementir has focussed on understanding the needs of its customers and supplying a white cement with properties best suited for their applications. Extending this work, the group will pursue a new strategic focus that places it at the forefront of developing innovative solutions to challenge existing products and fully exploit the true potential of white cement.

Since mid-2016 Cementir Group has established a global innovation engine

Cementir Group has launched its InWhite innovation engine to pursue white concrete applications that will enable customers to create a more sustainable environment



for white cement to generate a pipeline of high potential value proposition initiatives. InWhite includes the development of new solutions for well-known applications, or completely new applications for white cement-based products.

The company's extensive global knowledge on well-established and emerging applications for white cement and technological know-how are key to this development. InWhite not only benefits from Cementir's R&D centre, it is also aligned to important megatrends in society such as customisation, the circular economy and highly energy-efficient solutions.

The InWhite team will select the most suitable concrete technologies for the applications identified. To date new solutions based on high-value and fast-developing technologies such as ultra-high performance concrete (UHPC) and glass fibre-reinforced concrete (GRC) have been identified for further development. To support this, Cementir has joined various organisations such as the International GRC Association. Such memberships are

coherent with the strategic intent to focus on developing market/customer-driven technologies and applications for AALBORG WHITE.

Sustainable white concrete applications

Some emerging, but rapidly growing applications for AALBORG WHITE cement are related to the chemistry and purity of the cement and the superior mechanical properties that can be achieved in concrete through advanced production technologies. Very high strength and outstanding durability can be achieved by manufacturing very thin panels and elements based on AALBORG WHITE cement. As an example, this principle can be applied to façade elements to achieve compact, high-insulation panels featuring, among other benefits:

- low weight per m²
- significantly reduced total wall thickness to allow for a more efficient use of the inside area of the building
- surfaces finished in one process to avoid further treatments

Glass fibre-reinforced concrete is just one innovative use of white cement supported by Cementir



- modular and build-up for reuse of materials.

White cement also plays an important part in building a more sustainable environment. For example, white concrete products can contribute to saving energy and improving the thermal comfort of dwellings. This results from the fact that light colours reflect sunlight much more effectively than dark ones.

Providing more reflective surfaces such as light-coloured roofs, walls and pavements, will result in more energy reflected and consequently create a cooler temperature. The substitution of dark roofs, walls and pavements with white significantly lowers the 'heat island effect', reducing the need for power-hungry artificial cooling in buildings. White cement plaster or panels reduce the need for artificial lighting in tunnels, resulting in power savings.

The light-reflecting property of white concrete is particularly useful as a practical function in the manufacture of kerbs, road markings, tunnel ramps, paving stones, and road and sound barriers. When used in such applications, it is playing an increasingly important role in contributing to safety by reducing the rate of traffic accidents through enhanced awareness of road boundaries.

In fact, its white colour increases visibility and improves safety compared to barriers made of steel or painted grey concrete because these white barriers not only physically separate vehicles from hazards but also maintain their bright colour under wet and/or dark conditions. As an example, the total average society costs of a traffic accident in Denmark amounts to around €80,000 and given an annual accident rate of 4000, this translates into annual costs of €320m.

Megatrends in society are global, but the challenges are formulated differently in varying regions, and solved accordingly. A thorough study of the local value chains is required to address the challenges properly. Solutions are rarely global, but parts of existing solutions can be applied to develop new ones. ■