Cimexpan

CONSTRUCTION Ltée

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BS EN 206-1 newest Standard for Concrete
Mauritius Standards Bureau: ultrasonic & Compressive strength
World wide licence of foam agents
Registered with UN Habitat
Department of Trade & Industry South Africa approved

Profile of Eco Béton

- Eco Béton Ltée, private company bought Cimexpan Ltd in 2005.
- Eco Béton is involved in civil works, manufacturing of structural cellular concrete and buildings.
- Construct buildings with higher environmental performance at lower costs.
- World wide licence of foam agents.
- Mauritius Standards Bureau Certificate
- Cimexpan & Eco Beton introduces manufacturing of LOW CARBON CEMENT for making GREEN CONCRETE by using the reduced carbon content from FLY ASH. Which will reduce the overall impact of Carbon that is usually embedded in the concrete.
- The presentation will outline how this cement will be produced and the benefits of using LOW CARBON CEMENT to manufacture GREEN CONCRETE for making buildings/ structures.

Objective of using LOW CARBON CEMENT

- Reduction in Carbon Content. The fly ash will be treated to reduce the carbon content through special processes which will enable the fly ash manufactured to only have 2% Carbon therefore, by adding this into cement to manufacture concrete the overall carbon content will greatly be reduced.
- Lower Cost. Construction of buildings with higher environmental performance at lower costs.
- Less Water. By using fly ash with low carbon content decreases the water demand of concrete without reducing its workability.
- Greater strength. Low carbon Fly ash increases in strength over time, continuing to combine with free lime.
- Decreased permeability. Increased density and long-term pozzolanic action of low carbon fly ash, which ties up free lime, results in fewer bleed channels and decreases permeability.
- Increased durability. The lower permeability of concrete with low carbon fly ash also helps keep aggressive compounds on the surface, where destructive action is lessened. Low carbon Fly ash concrete is also more resistant to attack by sulfate, mild acid, and soft (lime hungry) water.
- Reduced alkali silica reactivity. Low carbon Fly ash combines with alkalis from cement that might otherwise combine
- with silica from aggregates, thereby preventing destructive expansion.
- Reduced heat of hydration. The pozzolanic reaction between low carbon fly ash and lime generates less heat, resulting in reduced thermal cracking when low carbon fly ash is used to replace a percentage of Portland Cement.
- Reduced efflorescence. Low carbon Fly ash chemically binds free lime and salts that can create efflorescence. The lower permeability of concrete with fly ash can help to hold efflorescence-producing compounds inside the concrete.

PROCESS TO MANUFACTURE GREEN STRUCTURAL CONCRETE

- Flyash from power plants is treated in patented burnout separators to get low carbon fly ash. The FLY ASH manufactured from this process helps:
- Saves enough energy to provide electricity to a home for 24 days because the system produces its own energy.
- Equals 455 days of solid waste by the average citizen because the waste Fly Ash is being used for processing and further reusing the same.
- Reduces CO_2 that equals two months of emissions from an automobile. This technology will create its own power and will not need state run power to run the
- process and the plant.
- Low carbon fly ash will be added with existing cement to manufacture low carbon pozzolanic cement to manufacture GREEN CONCRETE.
- The cement that will be manufactured will be used in the following ration to manufacture
  - Green Concrete:
  - Use of Low carbon cement.
  - Water for cement.
  - Use of aggregates & cement additives.

Why use the GREEN CONCRETE manufactured from LOW CARBON CEMENT

- Reduction in Carbon Dioxide. Reduction in CO_2 as the carbon content in the light weight concrete will only be bare minimum in comparison to using regular OPC cement.
- Increased workability. Concrete is easier to place with less effort, responding better to vibration to fill forms more completely.
- Increased ease of pumping. Pumping requires less energy; longer pumping distances are possible.
- Improved finishing. Sharp, clear architectural definition is easier to achieve, with less worry about in place integrity.
- Reduced bleeding. Fewer bleed channels decreases porosity and chemical attack. Bleed streaking is reduced for architectural finishes. Improved paste to aggregate contact results in enhanced bond strengths.
- Reduced segregation. Improved cohesiveness of fly ash concrete reduces segregation that can lead to rock pockets.
- Reduced slump loss. More dependable concrete allows for greater working time, especially in hot weather.

Dynamics of Eco Béton light weight concrete

- Removal Foam work
  - -roof (décoffrage dalle) 12 hrs ;
  - -wall (4 hrs)
- Self-compacting and self-levelling
- Sound proof & anti seismic
- Weighs less than normal concrete.
- Fire-resistant (4 hrs @ 1000 °C).
- Conforms to latest Standards for Concrete, BS EN 206-1.
- Mauritius Standards Bureau: ultrasonic & Compressive strength

Competitive advantages :

ECONOMIC & ECOLOGIC

- Costs and Materials efficiency < 30% conventional construction

(18% normal cost + 10 % AFD grant + 3% green loan)

- Structural design efficiency - No Columns, beams & uses less iron bars

- Energy efficiency

Thermal (no need of air con.)& waterproof

- Water efficiency

Uses < 60% water than conventional constructions.

- Time savings

A 60m^2 store constructed in 24 h.

St Aubin- Store 60 m^2

Constructed in

24 hours

Global Direct Motors Ltd
Showroom & Workshop

- Can be seen from motorway M1 at Riche- Terre (in front of Princes Tuna)
- 6000 m^2
- 110 workers
- Engineers –Lux Consult .

Two storey houses
St- Aubin Sugar Estate

- 2 bed and 3 bed room house respectively.
- The walls are 150mm wide and Mesh all over with 8mm iron bar -250mm x 250mm.
- Mauritius Standards Bureau tested.
- Mauritius Housing Corporation supervision

Benefits of using Green Concrete…

- Lower percentage of carbon on concrete making the environment greener.
  - Costs and Materials efficiency < 30% conventional construction
  - Energy efficiency - Better Thermal efficiencies can be observed.
- Water efficiency - Uses < 30% water than conventional constructions.

Looking Ahead for our future …….

- Reduction in the carbon content which otherwise adversely effects our environment and health.
- Concrete produced with cement allows specifiers and contractors the opportunity to use a product
- that is the backbone of green building. The fly ash in the cement replaces the amount of cement needed which ultimately reduces the Co2 emissions.
- Usage of this concrete will greatly increases the efficiency in construction by reducing the lead time.
- Better thermal efficiency in the buildings made.

Two storey house @ Quatre-Bornes

- The end
- Thank you for your attention.