

# ECOSMART CONCRETE

By  
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 Unibeton Ready Mix

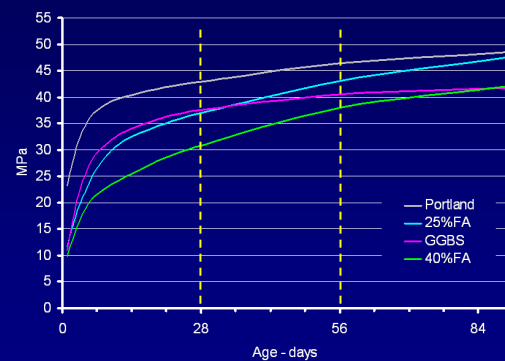
## CONTENT

- Interest from a concrete producer point of view: Problematic and solutions on the use of fly ash
- Demonstration projects
  - Ferrari experience
  - Saadiyat Island infrastructure
  - Landmark Tower

## READY MIX CONCRETE

- A concrete producer is selling strength and durability with other requirements:
  - Service
  - Cost (material + handling + storage)
  - Additional properties
    - Heat of hydration
    - Pumpability

Compression strength of various binders to 90 days

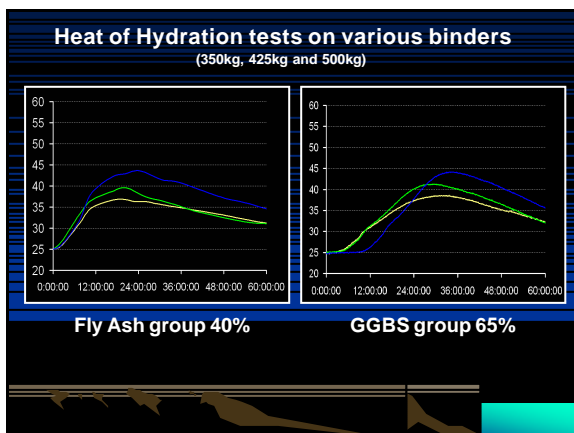
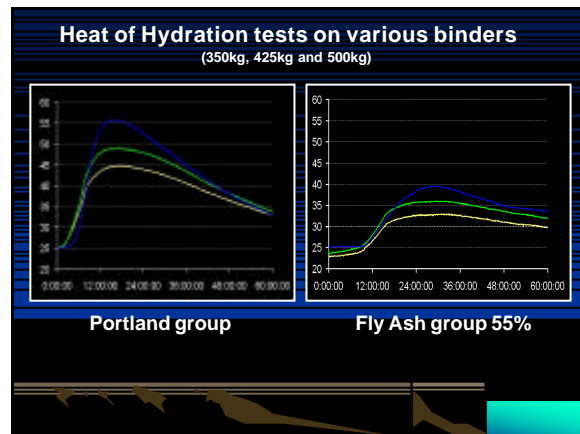
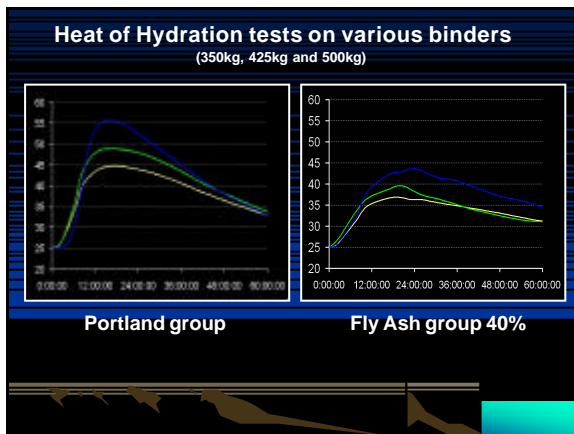
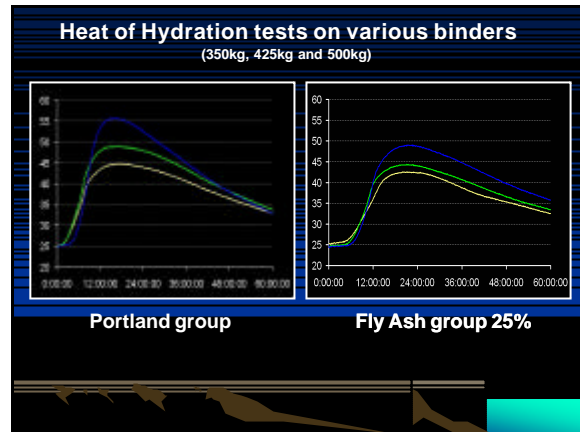
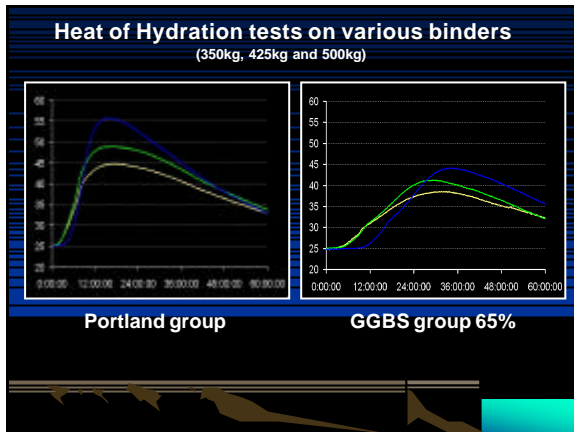


## FACTS

- FA (and GGBS) are not winning on the strength issue (better at 56 days)
- Why use it if not specified?
- Sometime it is needed for durability issue
- What to use?
  - Specification
  - Producer habit
  - Performance vs cost

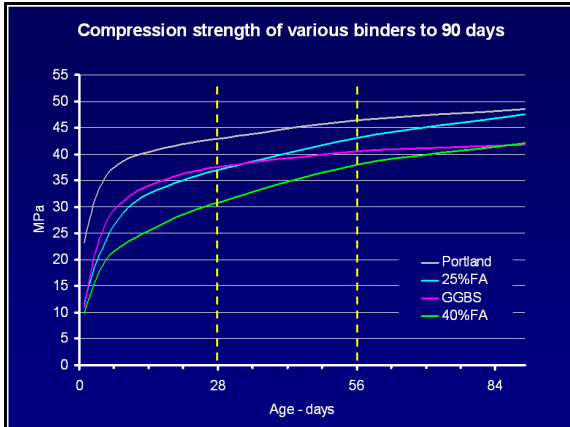
## Why Fly Ash

- Lots of GGBS is specified: not much choice
- When choice is possible, producer will go for "business as usual"
- What was Unibeton motivation to look into FA
  - Possible shortage of GGBS
  - Possible increase in GGBS price
  - Lower dosage of FA



**FACTS**

- 40% FA seems equivalent to 65% GGBS in term of lowering the heat of hydration
- 65% GGBS is also more difficult to pump
- Since cost of FA is now less than GGBS, there seems to be all beneficial
- But...



- ### Demonstration projects
- The decision to change from GGBS to FA need careful analysis
  - Specification plays a big part in the possibility
  - Consultant attitude is as important
  - Luckily, there is some open minded person who are ready to listen or at least to try



- ### Ferrari Experience
- Driving forces:
    - Supply of raw material
    - Cost control
    - Durability requirement
    - Heat of hydration
  - Main problems
    - None: the idea is accepted



- ### Saadiyat Infrastructure
- Driving forces:
    - Supply of raw material
    - Cost control
    - Durability requirement
    - Workability
  - Main problems
    - Specification & consultant (trial proposed)

### Landmark Tower

- Driving forces:
  - 80N concrete with low heat of hydration
  - 80N concrete to be pump to high floor
- Main problems
  - Apparent contradiction
  - Cost increase
  - Trial done but still discussing to get 56 day approved

**Thank you!**