
LAFARGE
Building better cities™
25th National Real Estate Convention
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Malaysia construction industry – inefficiency contributes to high cost of construction

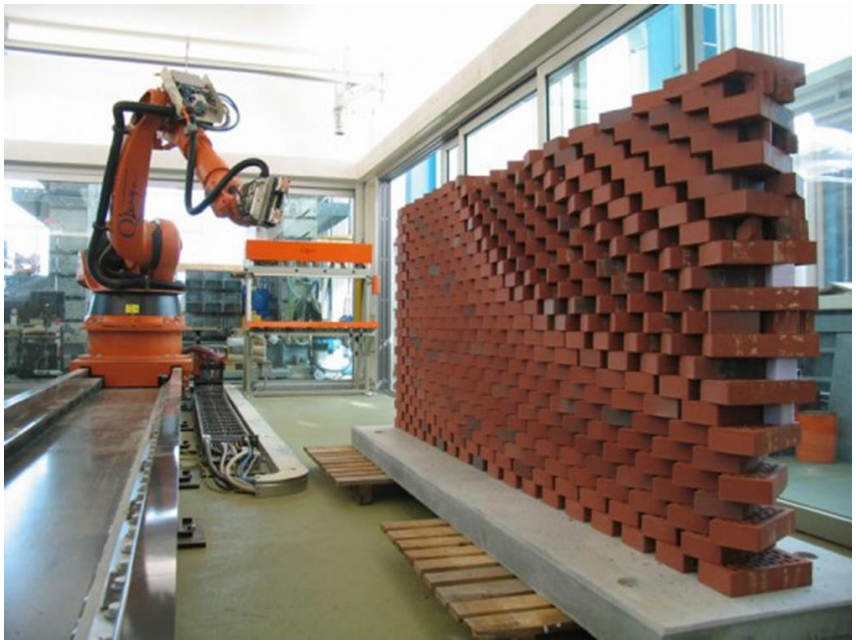
Shortage of skilled labour

Traditional practices & use of conventional materials

Inconsistent quality

Manual work

Innovative construction method has potential ability to reduce construction cost



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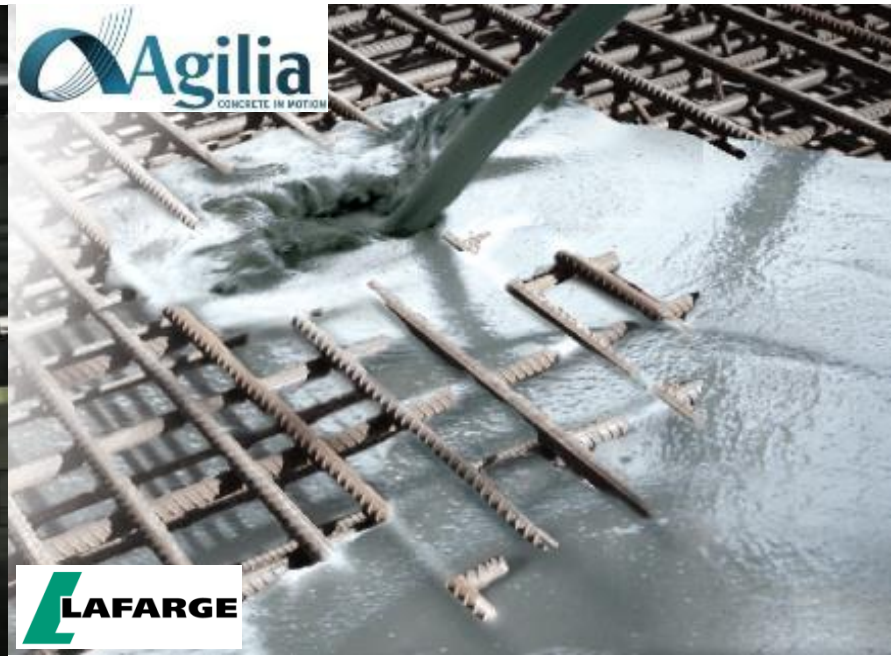
Pivotal questions

Can innovative construction method translating to cost savings?

Case study in translating innovative construction method into cost savings

FASTBUILD™
Monolithic Building System

One of the fastest cast-in-situ reinforced concrete structure construction methods in Malaysia



Lafarge solution for Current Construction challenges

Slabs & walls are formed separately

High material

High inaccuracy, expensive rework

Labour intensive

Costly & timing consuming brick laying & plastering (3-6 months)

Hacking of bricks to embed M&E

Lafarge MFE Monolithic Building System

A self-compacting and self leveling concrete that provides solutions for design & placement

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	Agilia	Normal Concrete
Spread/Slump	Spread 650mm to 750mm	Slump 50mm to 100mm
Initial setting	4-5hr	4-5hr
Compressive strength at 28days	35MPa – 50MPa	25MPa – 50MPa
Pumping discharge rate	1m3/min	0.6m3/min
Achievable compressive strength at 12hr	10MPa	10MPa
Levelling	Self levelling properties	Requires troveling
Compaction	No vibration needed	Requires vibration or external energy
Workability	High	Low
Retention period	2hr	2hr
Wall surface finish	Reduced air trapped	Requires vibration to reduce air trapped

Comparing two building systems

CONVENTIONAL		FASTBUILD
Beam and column system using G30 concrete. Non-load bearing cement-sand bricks as structural envelope and partition walls. Flat roof (concrete)		Monolithic system (in-situ single cast) . All using reinforced concrete (envelope structure including partition walls). Flat roof (concrete)
1. Construction of foundation (Reinforcement bars + concrete) 2. Casting of floor slab (Reinforcement bars + concrete) 3. In-situ/precast column construction (Reinforcement bars + concrete) 4. In-situ/precast beam construction (Reinforcement bars + concrete) 5. Brick laying & plastering	**VS**	1. Installation of vertical rebar & wall formwork 2. Installation of horizontal rebar & deck formwork 3. Formwork alignment and Agilia concreting 4. Removal of formwork

4 days to build a house structure

Day 1 – Installation of vertical rebar & wall formwork

Day 2 – Installation of horizontal rebar & deck formwork

Day 3 - M & E, formwork alignment and Agilia concreting

Day 4 - Removal of formwork
- **Wall at 12 hours (concrete strength 2 MPa)**
- **Deck at 24 hours (concrete strength 20 MPa)**

Watch video

1

2

3

4

We built 2 houses to compare the speed & cost

The results

36% savings in cost

84% savings in time

Conventional formwork (timber)

FastBuild

The save 36% of total construction cost (structure only)

FASTBUILD™ Monolithic Building System	Conventional System	Percentage of saving **(based on 100 repetition)**
		• Based on project at CDL platform • Comparison on structure only which involved our products • Checked and verified by chartered Quantity Surveyor
RM 35,209.00	RM 55,746.00	36 %
1. Formwork 2. Reinforcement bars 3. Concrete	1. Formwork (beam & column) 2. Reinforcement bars 3. Concrete 4. Bricklaying 5. Plastering	Additional works in bricklaying and plastering. Not material to material comparison – include labour

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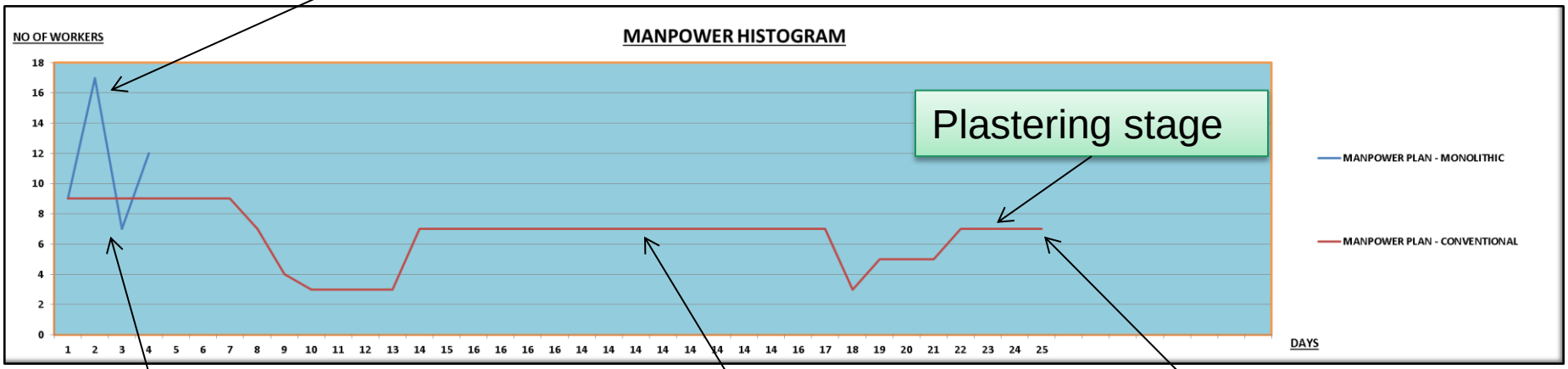
Our system save 84% of total construction duration (structure) – reducing site risk

FASTBUILD™ Monolithic Building System	Conventional System	Percentage of saving (Based on 100 repetition)
		
4 days (until the point of skim coat)	25 working days (until the point of skim coat)	84 %
Involved installation of reinforcement bars, formwork and concreting only	Involved all wet trades – brick laying, plastering and hacking to install electrical conduit	

Eliminate plastering and bricklaying

Electrical conduit was installed during formwork formation



Plastering stage

Construction completed much earlier at Day 4

Bricklaying stage & wall hacking to install electrical conduit

Construction completed at Day 25

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In summary…

- **Innovative construction method → potential to reduce construction cost:**
  - Use less workers
  - Eliminate / skip certain process

- **The rip the benefit of cost savings – further action:**
  - Design – need to be decided
  - Industrialisation philosophy – repetition
  - Interaction between trades on site
  - Sequence of process

Thank you for your attention