Automatic Manufacturing of Unique Concrete Structures

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Industrial concrete architecture
Unique architecture is not a new invention
..it can even "Brand" a whole continent
Unique masonry architecture in new shapes
Unique concrete architecture in new shapes
The vision

Direct line from CAD model to finished building
Why not?

Industrialized construction identical with Low architectural quality
First step

- Identify and demonstrate new methods to produce unique concrete structures at a good quality at a reasonable price
New possibilities

- Self compacting concrete (SCC) is available
New possibilities
The robot cell at DTI
The robot cell at DTI
The mixing plant at DTI
The mixing plant at DTI
The mixing plant at DTI
The process
The "Unikabeton" project

Unique Concrete Constructions

www.unikabeton.dk

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Partly finances by the Danish National Advanced Technology Foundation
(www.hoejteknologifonden.dk)
Project partners

- Arkitektskolen Aarhus (Concrete Architecture)
- Syddansk Universitet (Robotics)
- Giben Scandinavia (Robotics)
- Spæncom (Concrete prefab manufacturer)
- Unicon (Readymix manufacturer)
- MT Højgaard (Contractor)
- Paschaldanmark (Moulding systems)
- Teknologisk Institut (Concrete technology, moulding materials, robotics)
Project purpose: proof of concept

To be able to make unique concrete constructions in an industrial automatic process, where moulds are processed with a robot and filled with self-compacting concrete

- New formwork materials and systems
- New industrialised possesing techniques by robots
- New automation software
- Formfilling with SCC
Coating tests to achieve smooth surfaces and better release from the polystyrene
Next step:
FP7 project TailorCrete

- Upscale to EU industrial level
- Partners from
  - Denmark
  - Sweden
  - Poland
  - Spain
  - France
  - Switzerland
  - The Netherlands
  - Germany
  - Turkey
- 4 RSO´s, 6 SME’s and 7 IC’s