



it's all about innovation

TailorCrete

- Hvad er det for en fisk?

Dansk Betondag, 19. september 2013, Århus.





Johannes Greisen, Arkitekt MAA, ph.d.,
Konsulent, Teknologisk Institut

EU-projektramme
Præfabrikation af støbeforme
- Fem faser
Lidt om udviklingen


Niels Lønnow, Akademiingeniør, Bygning,
Afdelingschef, MT Højgaard A/S

Erfaringer som partner
Forskallingssystem og armeringsarbejde
Prøvestøbninger og betonen
Fullscale Site (byggeplads)








CHALMERS






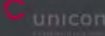

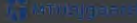
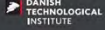
DESIGN TO PRODUCTION

Partner




- Bekaert (BL)
- Chalmers (SE)
- Czech Technical University (CZ)
- DesignToProduction (CH)
- Dragados (ES)
- El Caleyto Nuevas Tecnologias (ES)
- ETH Zürich (CH)
- Gibotech A/S (DK)
- Grace (DE)
- Paschal Danmark A/S (DK)
- Superpool (TR)
- Unicon A/S (DK)
- Syddansk Universitet (DK)
- MT Højgaard (DK)
- Teknologisk Institut (Projektleder) (DK)










Objectives:


To develop and demonstrate an industrialised process for producing unique, tailor-made concrete structures using a radically new and cost effective approach.

- Research on digital design, robot technology, self compacting concrete, formwork material and new reinforcement design and execution.
- Demonstration on prototype and full scale projects



TailorCrete



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Organisation




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The High Tech Concrete Laboratory

TailorCrete




TailorCrete will initiate a transition from the rectangular monotony of today's industrialised concrete buildings that dominate the European landscape, to new industrialised unique concrete structures without the need for expensive and labour-intensive manual construction processes. This will be achieved by developing new industrialised processes for concrete, and thus play a significant role in transforming the construction sector from a resource-based to a knowledge-based industry.


Left: Dominating geometry of today's urban landscape. Centre: A prestige unique concrete structure. Right: Handmade formwork for producing the unique concrete structure shown at the centre photo.

www.tailorcrete.com

Paradoks eller paradigme




TailorCrete

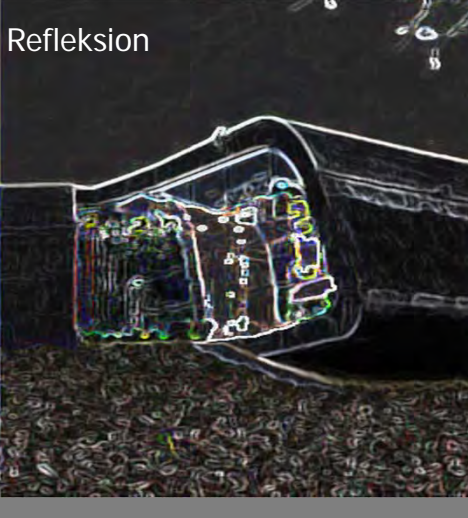


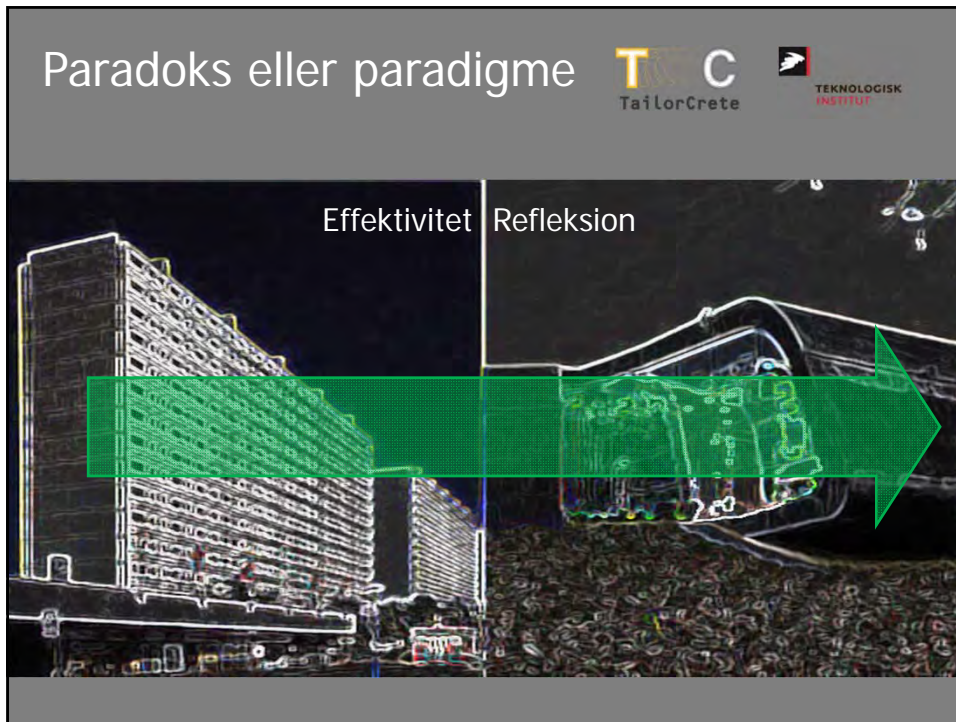
TEKNOLOGISK INSTITUTE

Effektivitet



Refleksion





Full scale demonstrator



- Lineære faser

Design	Præfabrikation	Byggeplads	Resultat
Æstetik	Forskallingsystem	Klargøring	Visuelt
Funktion	Formindlæg	Formopbygning	Klimaskærm
Holdbarhed	Armering	Armeringsarbejde	Rum
	Mixdesign	Fabriksbeton	Konstruktivt
	Støbeteknik	Støbning	
Byggeproces	...	Afforskalling	Levetid
Formfrihed		...	Patinerung

Full scale demonstrator



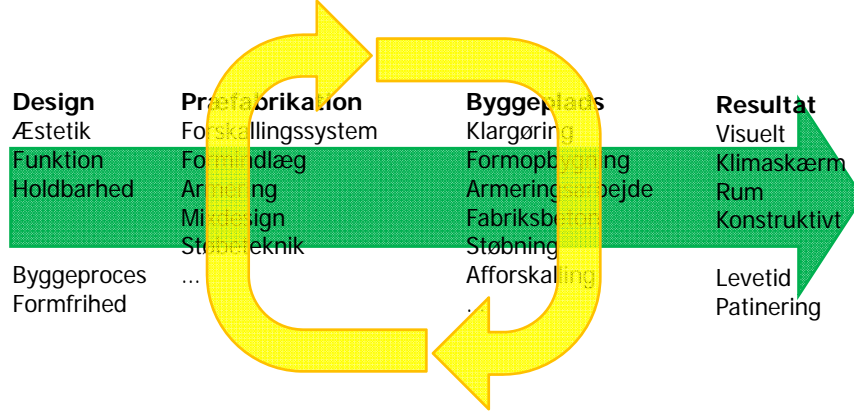
- Lineære faser

Design	Præfabrikation	Byggeplads	Resultat
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Byggeproces	...	Afforskalling	Levetid
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Full scale demonstrator



- Lineære faser
- Refleksion (iterative processer)



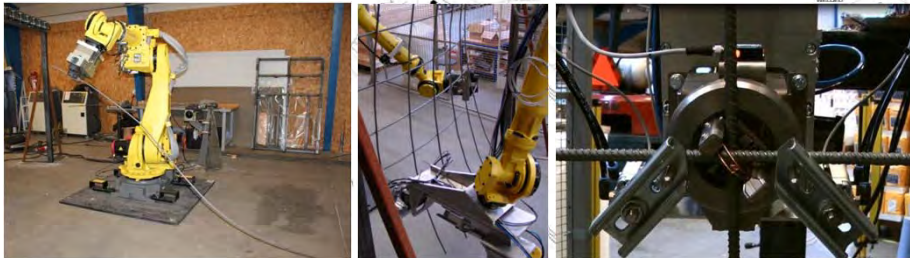
Armering



Technical drawings showing reinforcement details for a curved structure. The drawings include:

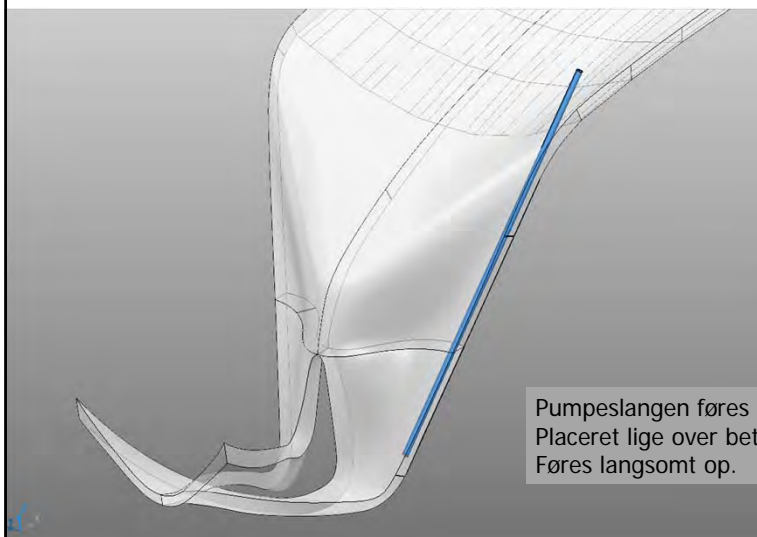
- DETAIL 1 (WELDED)
- OPTION - 1
- MIDDLE PLANE
- SECTION 1-1
- OPTION - 2
- SECTION 3-3
- DETAIL 2
- DETAIL 3
- DETAIL 7

Dimensions and specifications are provided throughout the drawings, such as 400, 4012, Ø10/200, R=200, and Ø12-Ø10/200.



https://www.youtube.com/watch?v=h_LeAbxgujo&list=PLI3zJBQ19y0FZry_ALmwHrR6pSHvNm&index=25

Støbemetode



Pumpeslangen føres ned i begge sider.
Placeret lige over betonoverfladen.
Føres langsomt op.

Flydeegenskaber og målemetoder



	Specification	Prøvestøbning
EN 206-9		
Flydemål mm	~ 650-700	
4C-Rheometer		
Flydemål mm	~ 600-650	595 før pumpe 600 efter pumpe
Flydespænding Pa (lav)	~ 20-40	34 før pumpe 40 efter pumpe
Viskositet Pa·s (høj)	~ 100-150	164 før pumpe 101 efter pumpe
V-tragt		
Udløbstid [s]	~ 8-14	9,5 før pumpe 8,4 efter pumpe

Flydeegenskaber og målemetoder

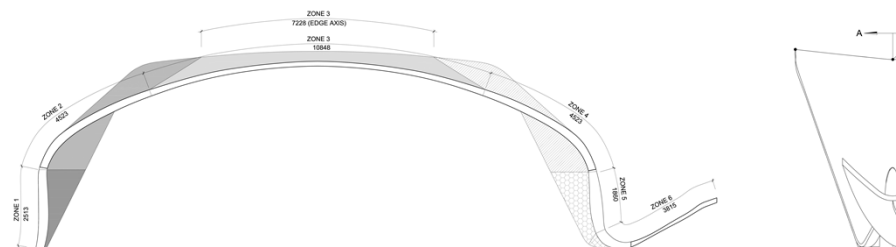


Design



SECTION B-B
SCALE: 1:100

FRONT VIEW
SCALE: 1:100



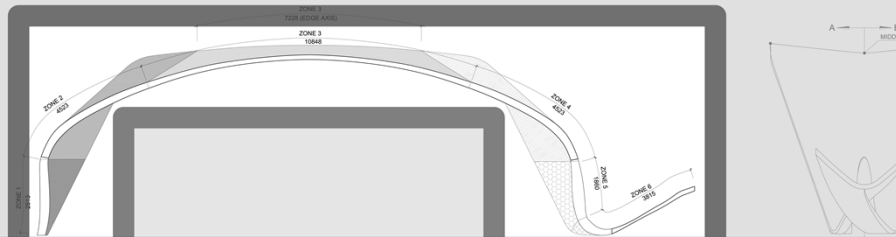
Støbeformskoncept



- Traditionelt forskallingsystem

SECTION B-B
SCALE 1:50

FRONT VIEW
SCALE 1:50

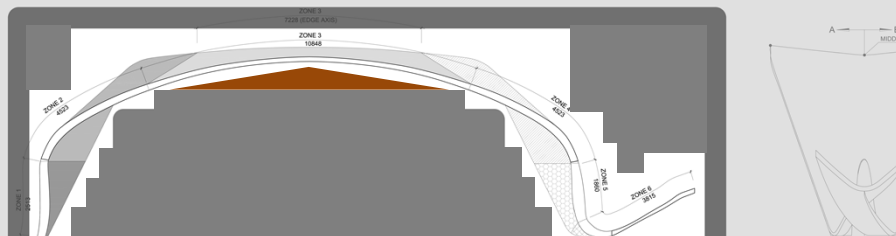


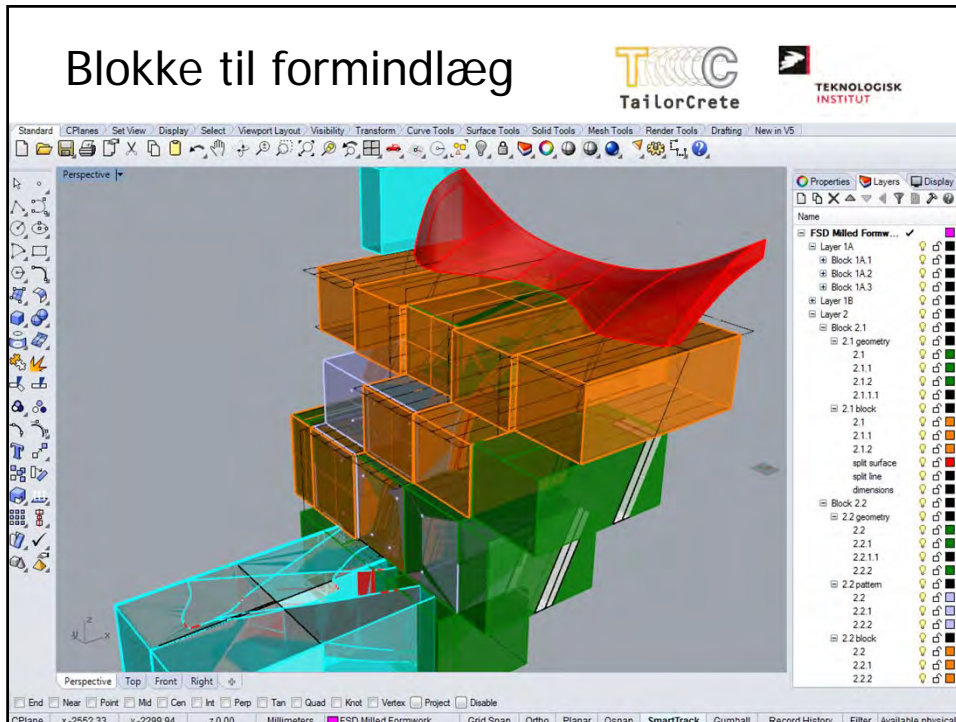
Støbeformskoncept

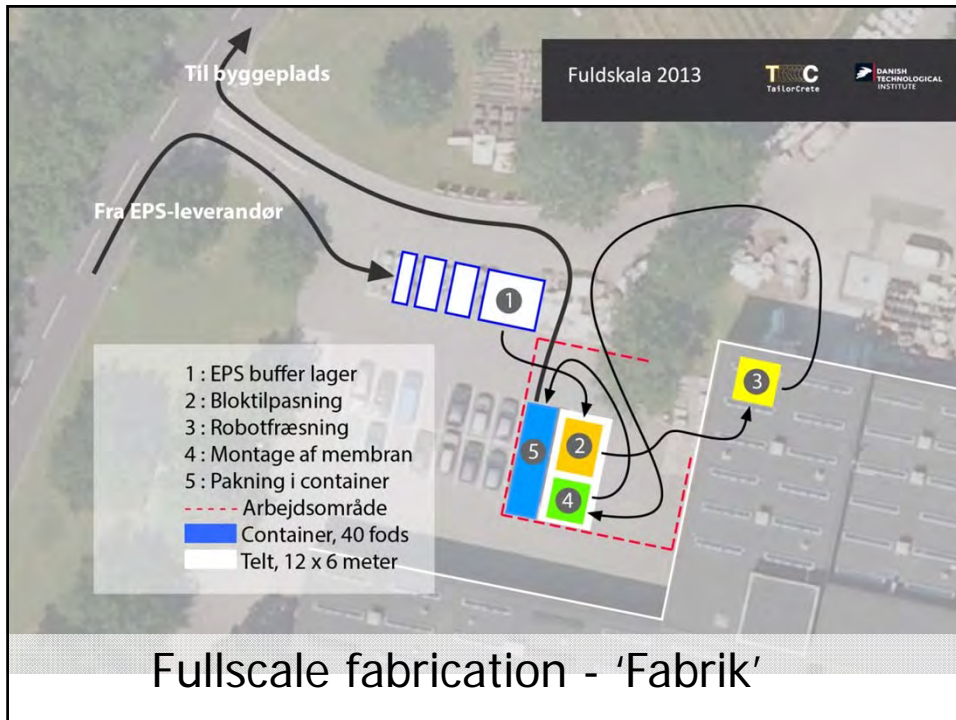
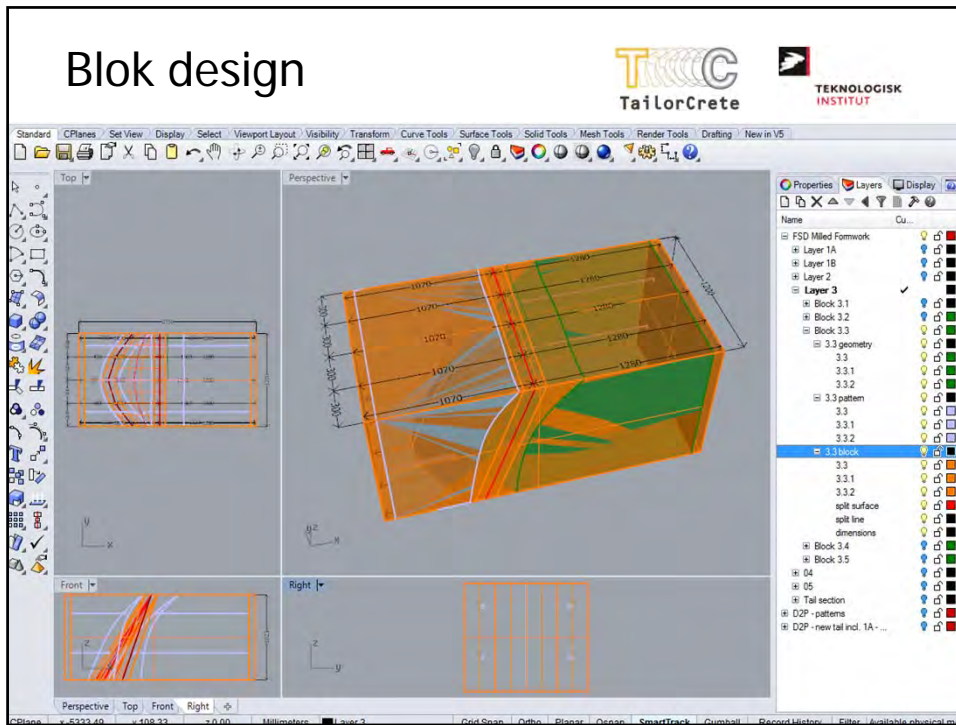


- EPS
- Multi-edge

FRONT VIEW
SCALE 1:50





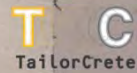


EPS buffer-lager



- Ekspanderet Polystyren.

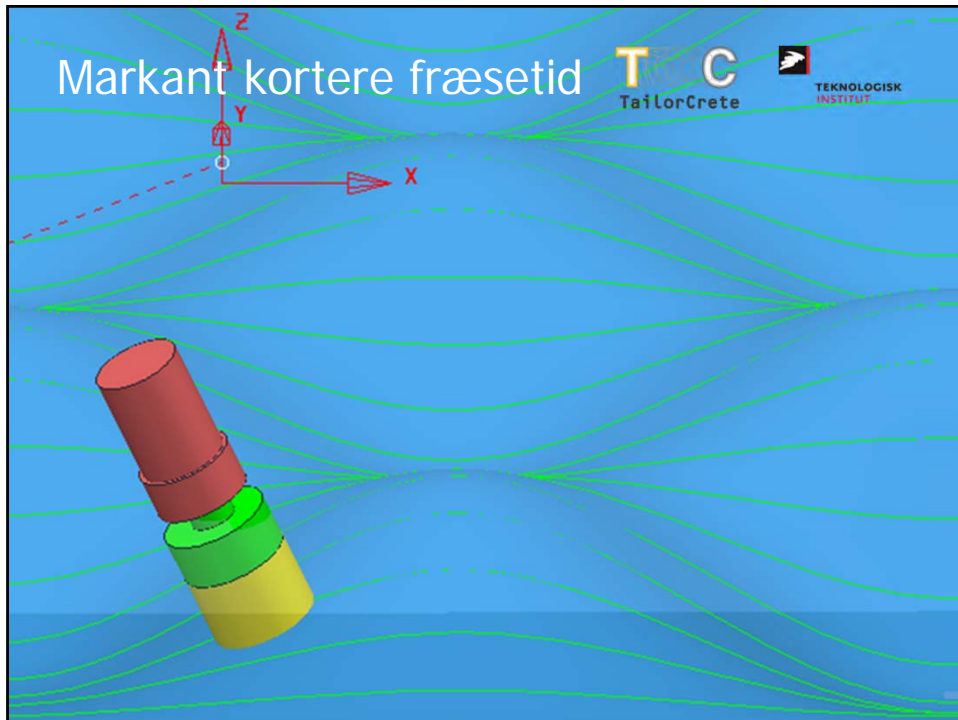
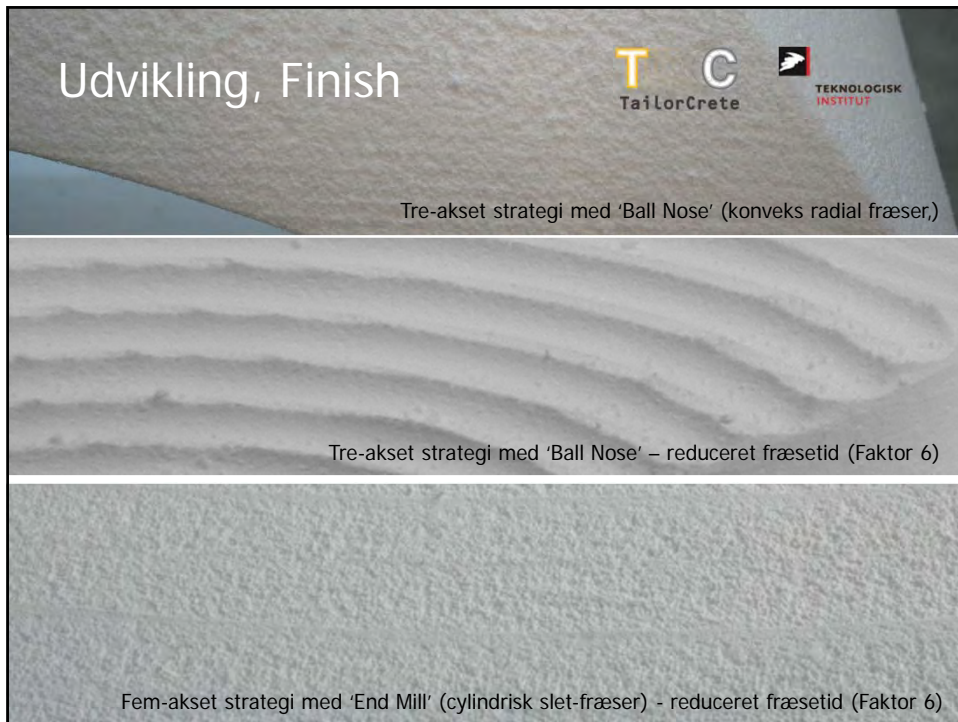
Bloktilpasning

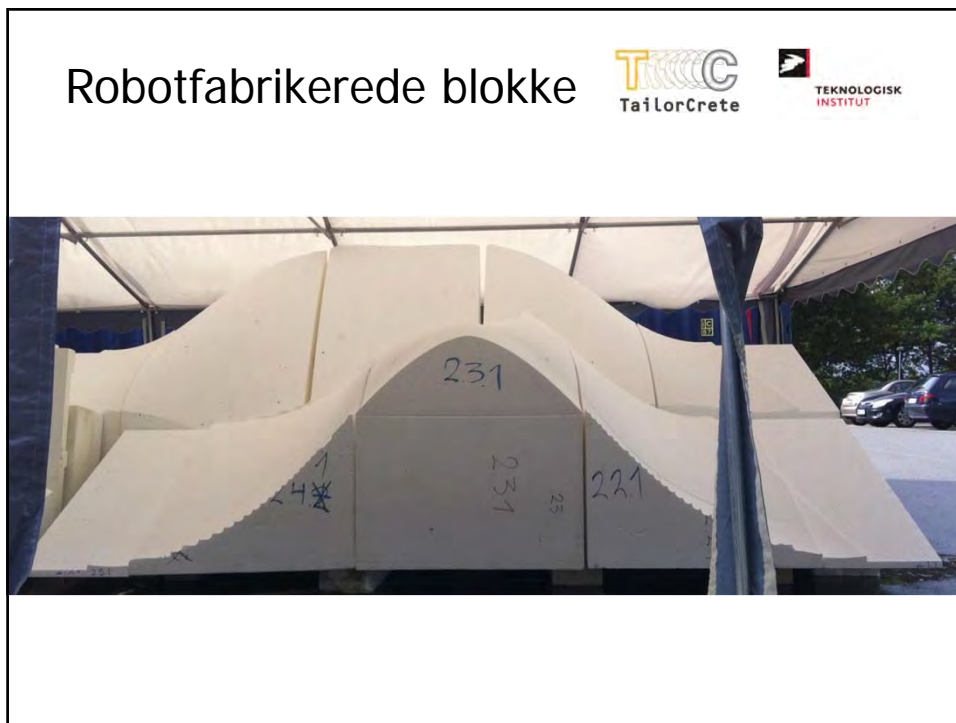
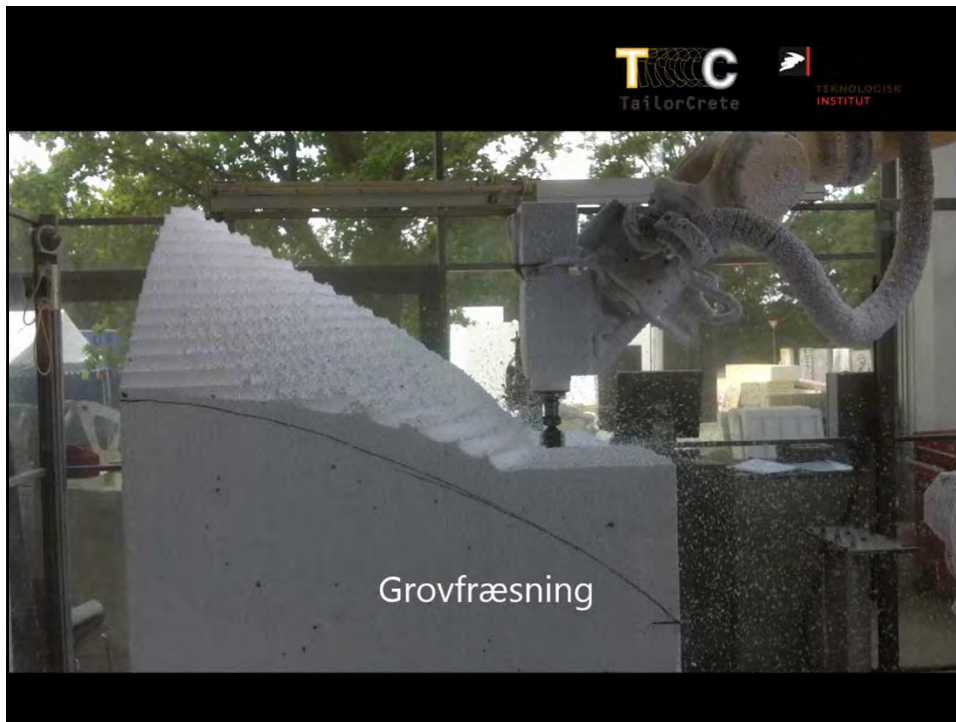


- Skæretråd
- Koordinater



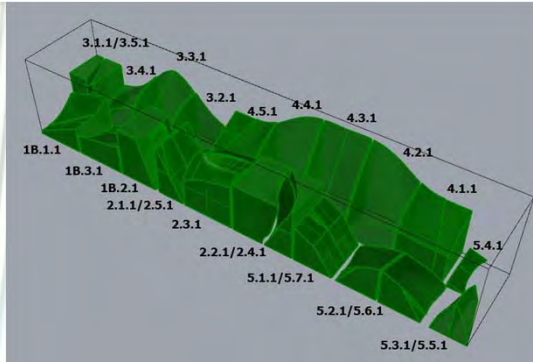








Pakning og Transport



What's new in the box?



- Markant reduktion af fræsetid
- Effektive membransystemer
- Forbedrede detaljer og overflade
- Optimeret fabrikations-flow og logistik



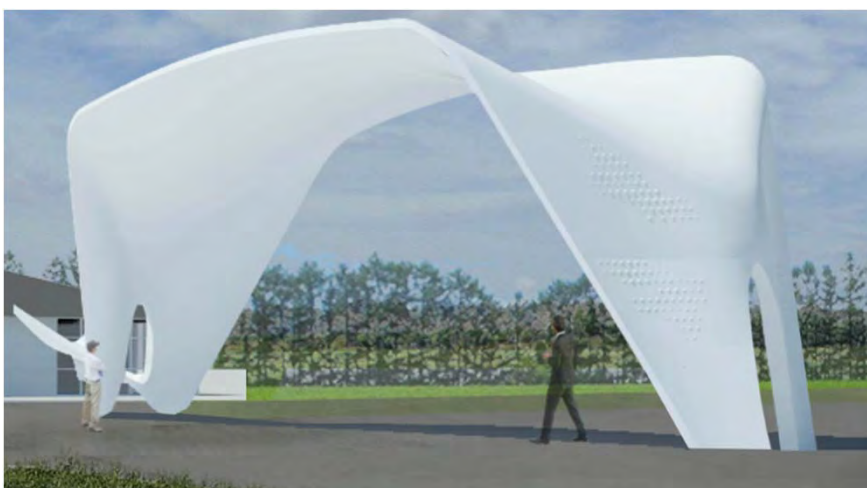


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