



TEKNOLOGISK  
INSTITUT



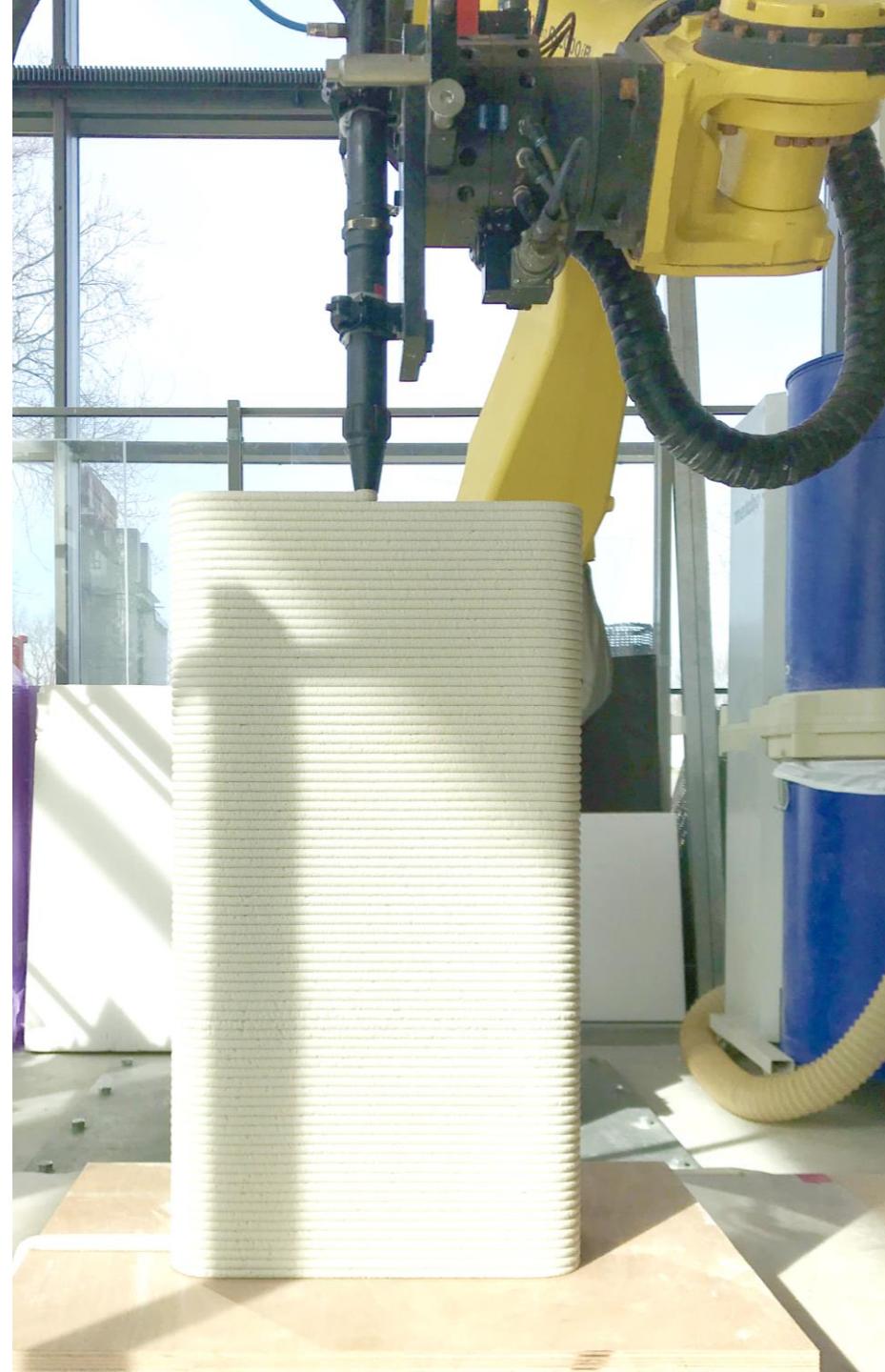
# 3D-betonprint

Nyt kapitel til  
Betonhåndbogen

IDA 18-03-2024

# Indflyvning

- Contour Crafting udviklet i Californien slut 1990'erne
- 3D Concrete Printing (3DCP) udviklet på Loughborough University 2012
- 3D-betonprint er en dansk oversættelse af 3DCP









**BYGHERRER**

AP Pension  
FB Gruppen A/S



**ARKITEKTER**

Bjarke Ingels Group A/S  
Henning Larsen Architects A/S



**PRODUCENTER**

CRH Concrete A/S  
COBOD International A/S  
Aalborg Portland A/S



**TEKNOGI-  
UDVIKLERE**

Teknologisk Institut  
Danmarks Tekniske Universitet  
Syddansk Universitet



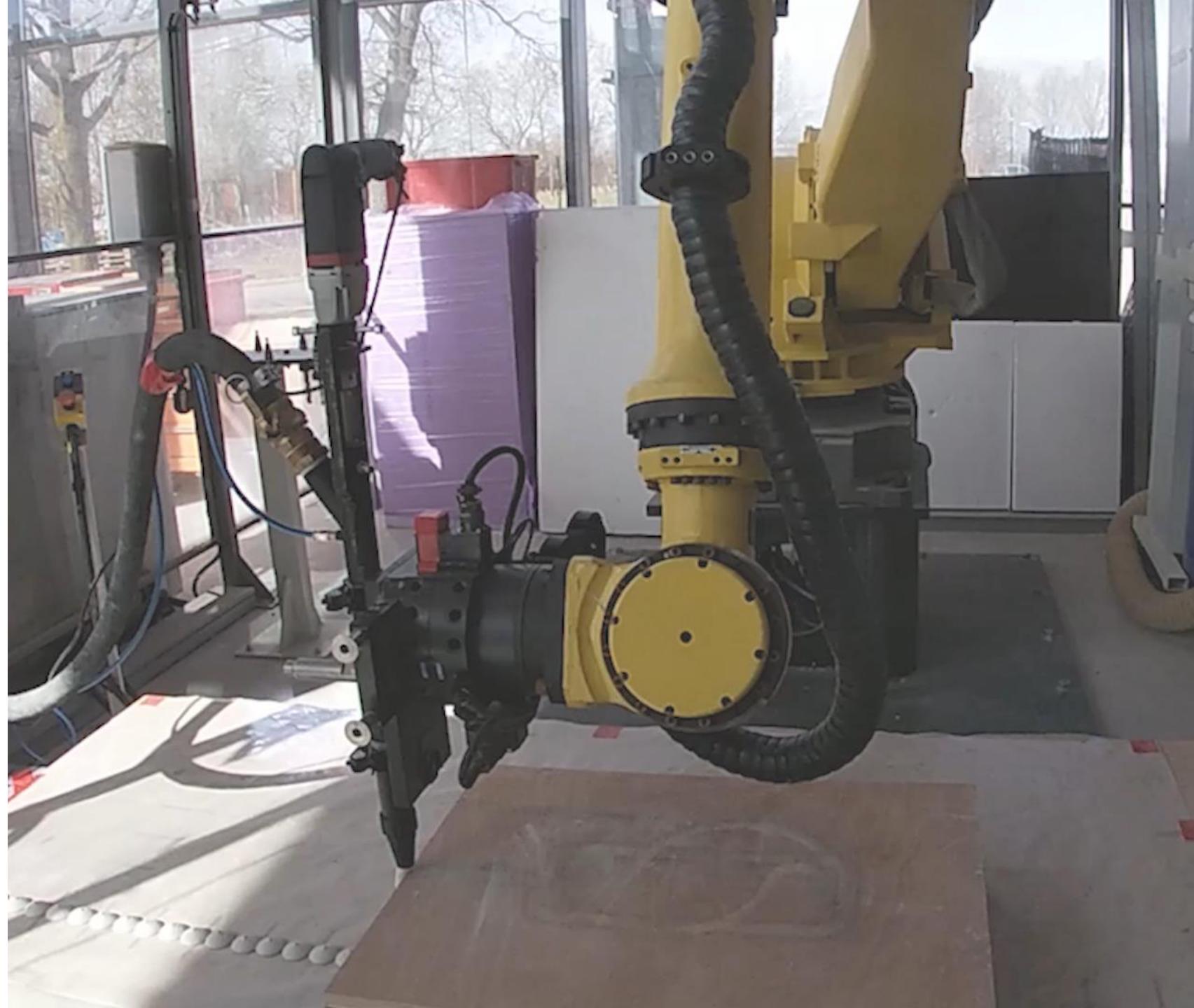
**UDFØRENDE**

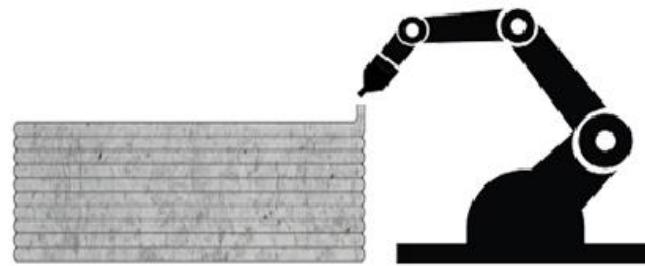
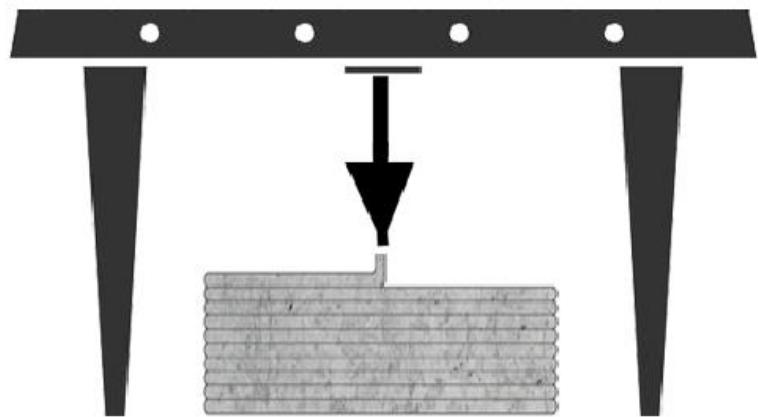
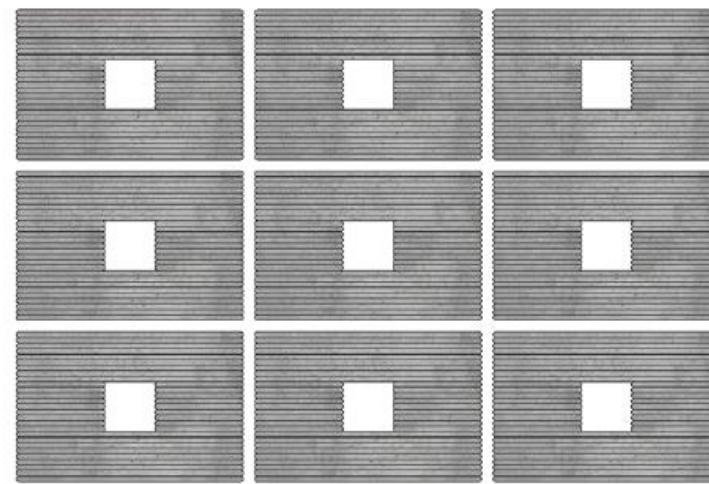
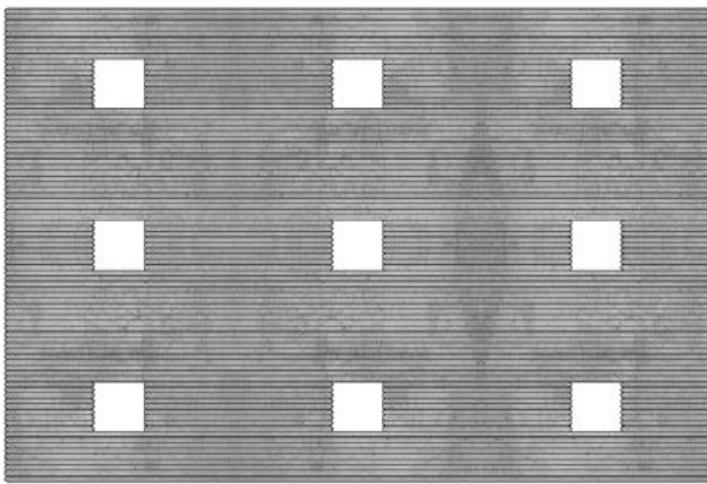
NCC Danmark A/S

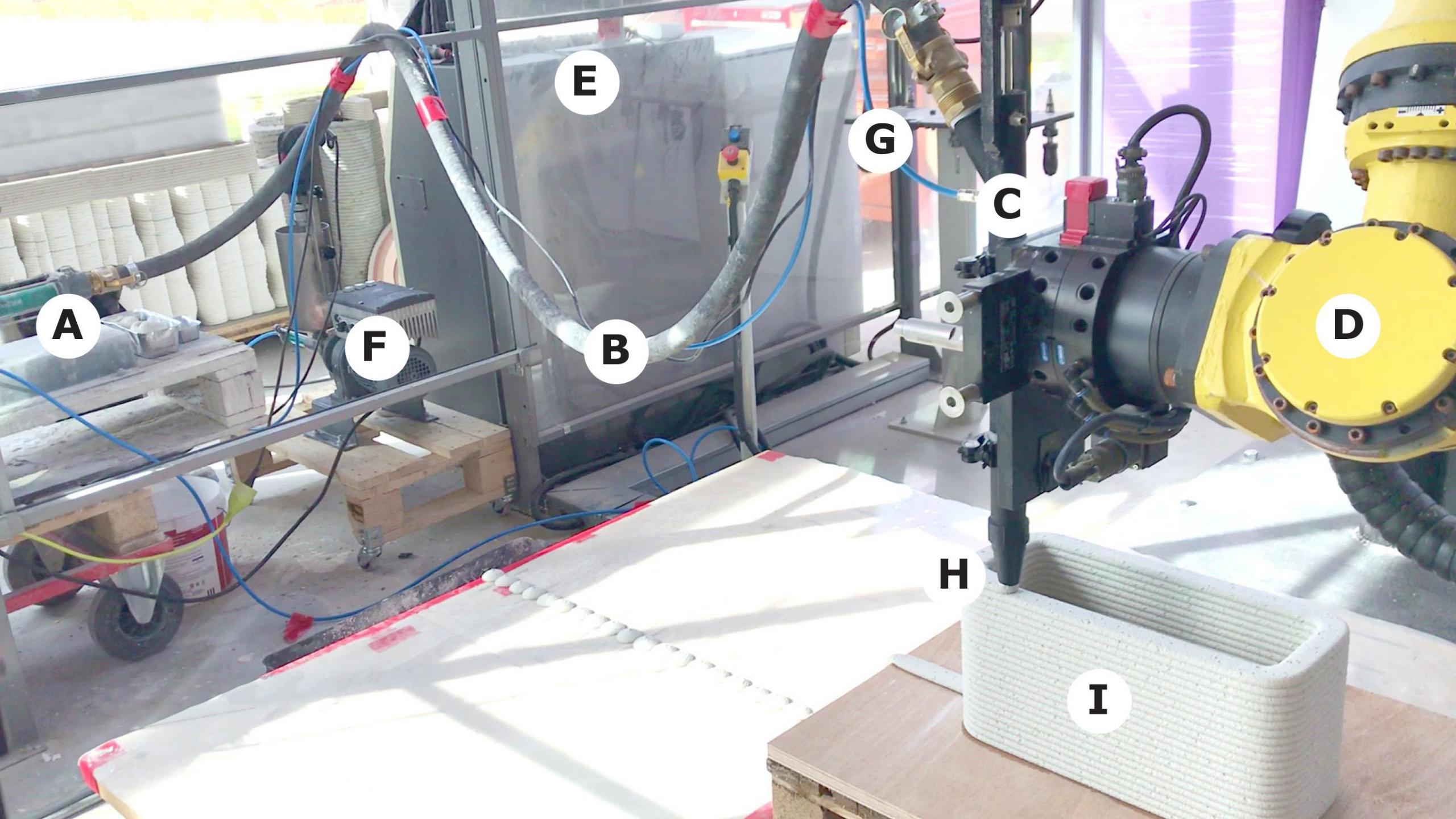
Teknologisk Institut

# Teknik

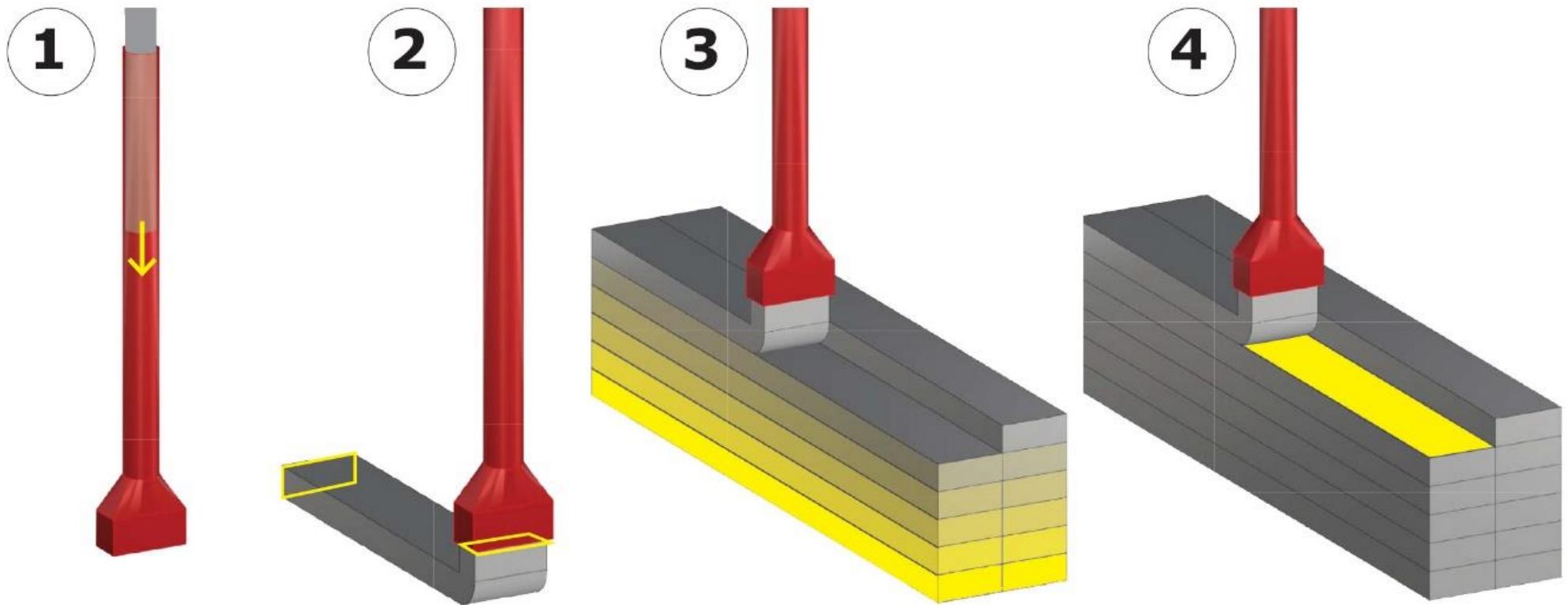
- 3D-betonprint beskriver her processen, hvor mørtel eller beton ekstruderes ud gennem en dyse monteret på en digitalt styret maskine
- Udlægning lag-på-lag

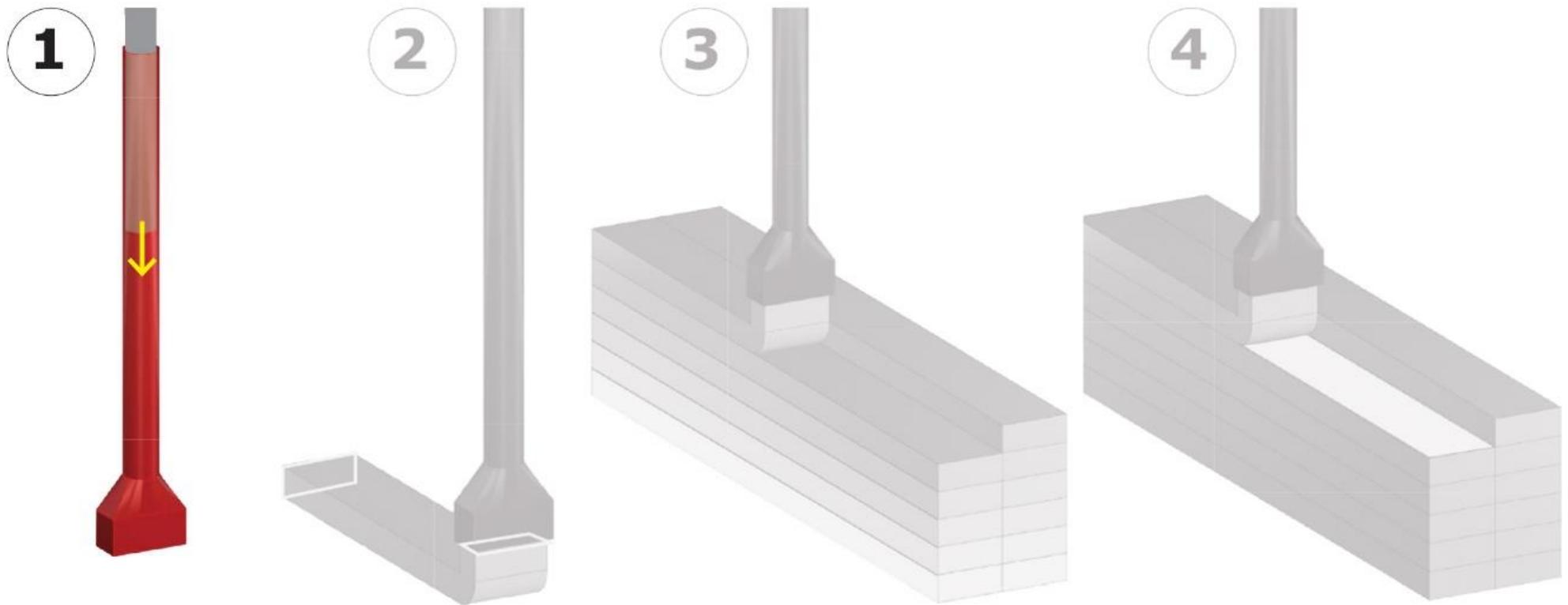


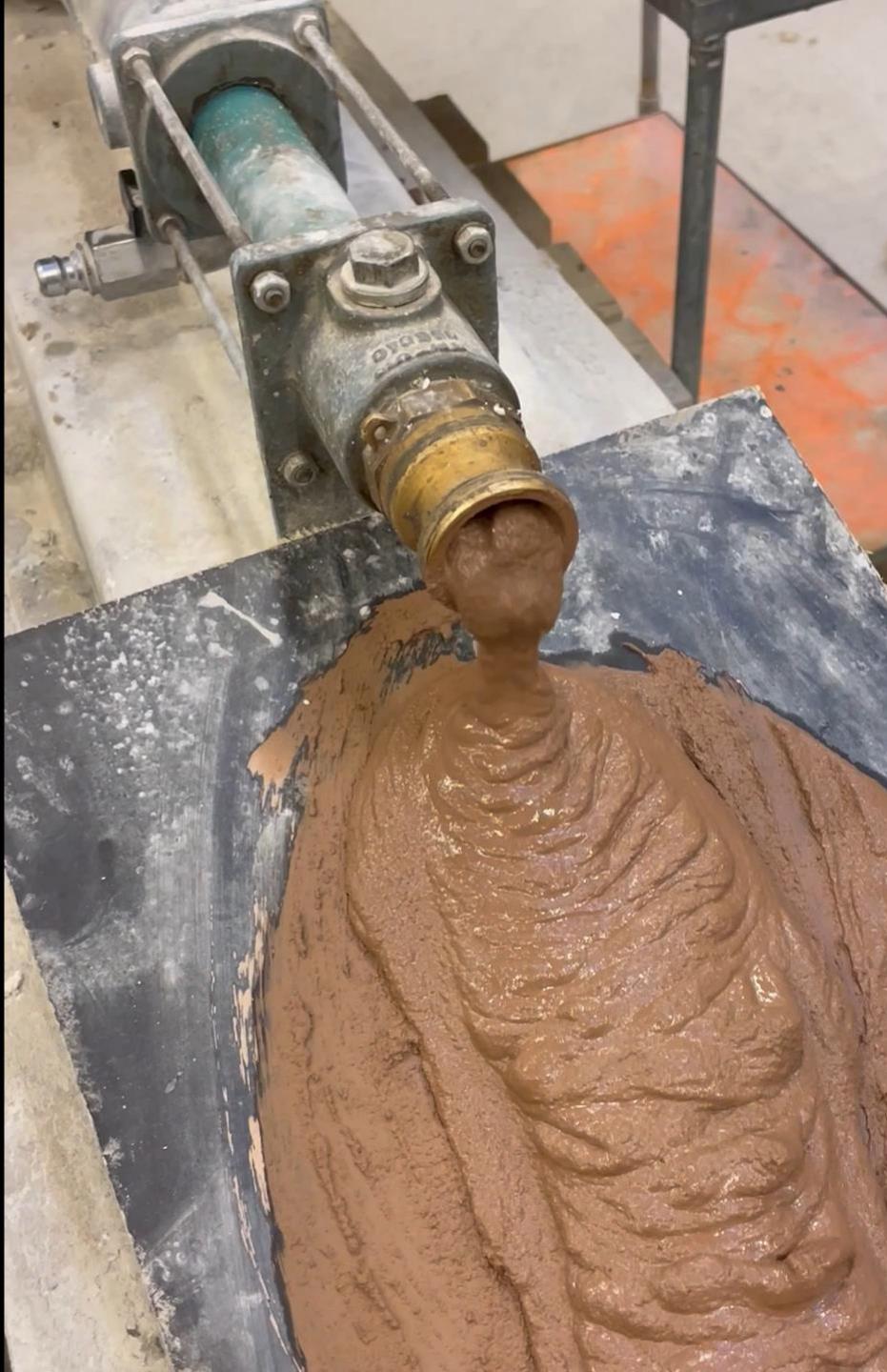


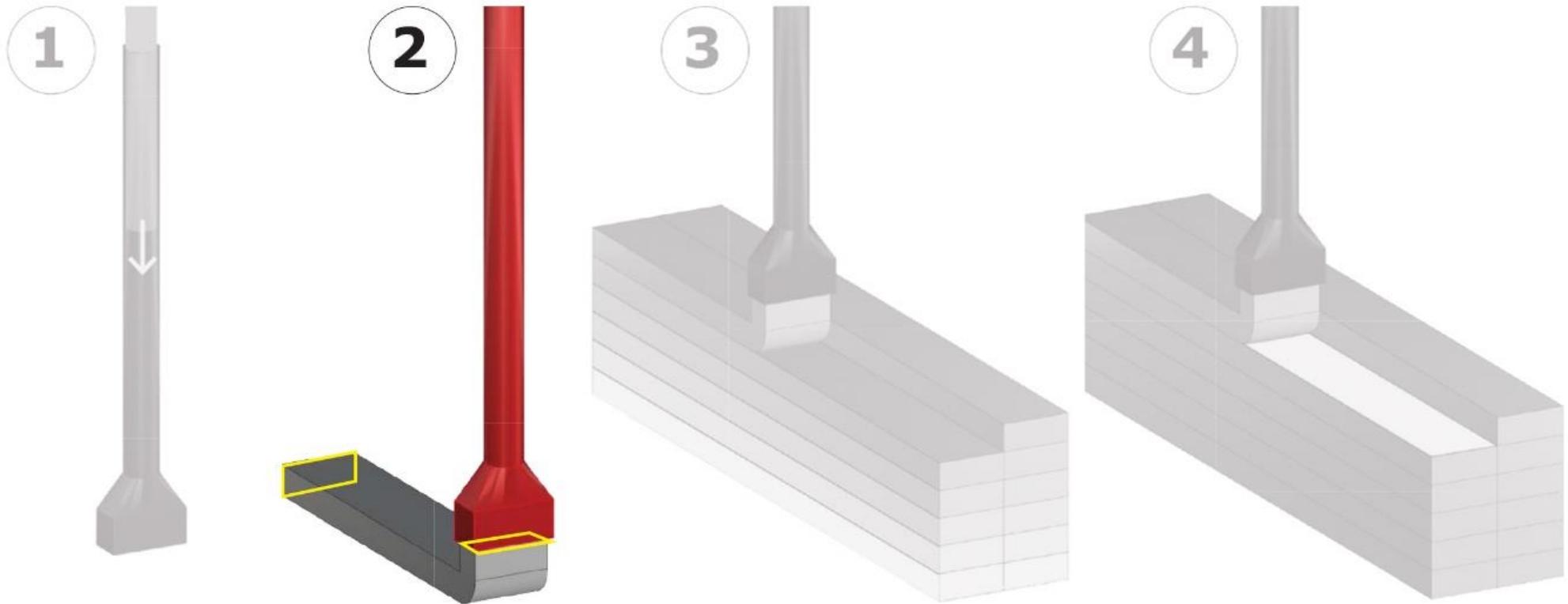


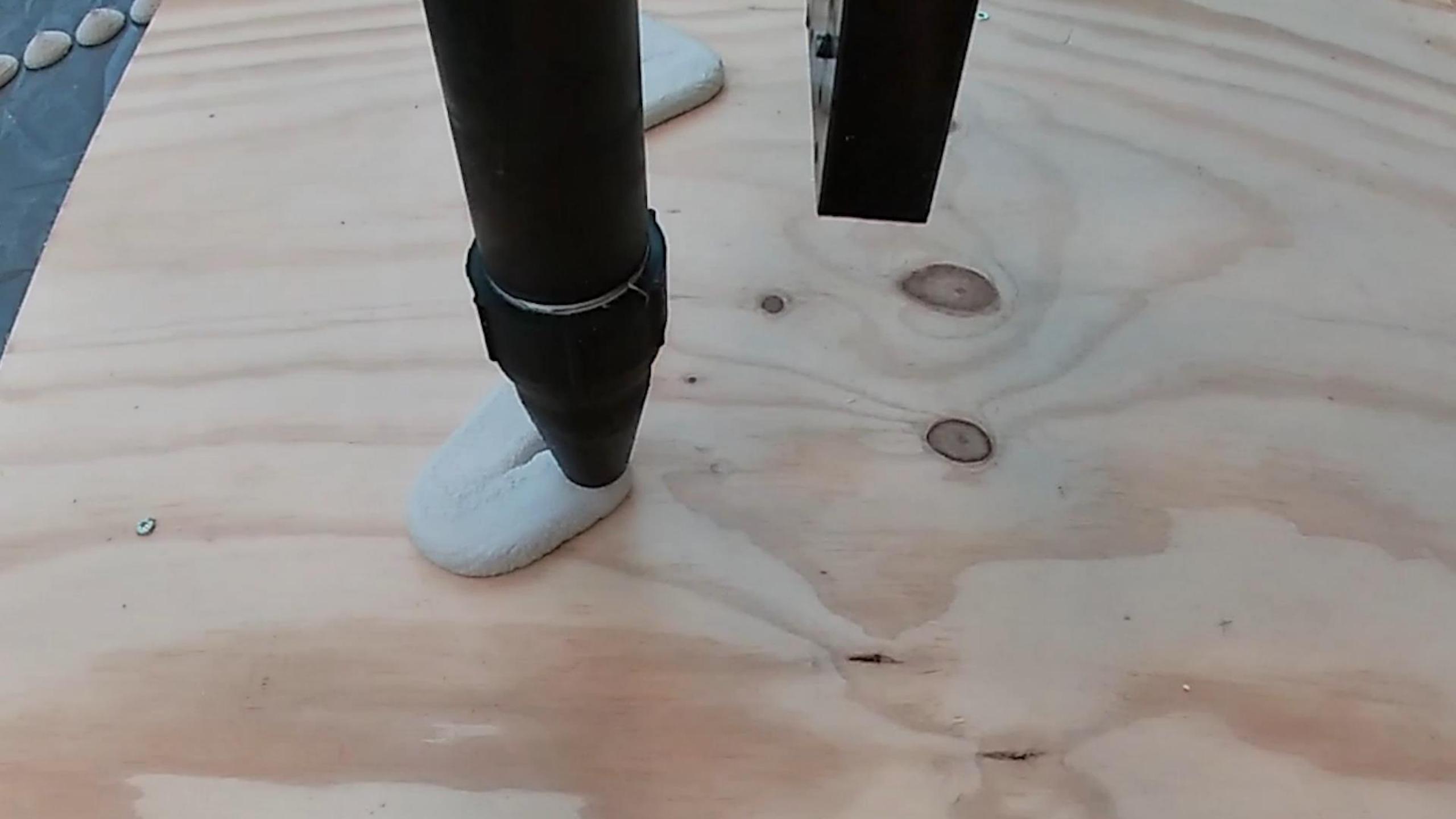
# Materiale sammensætning

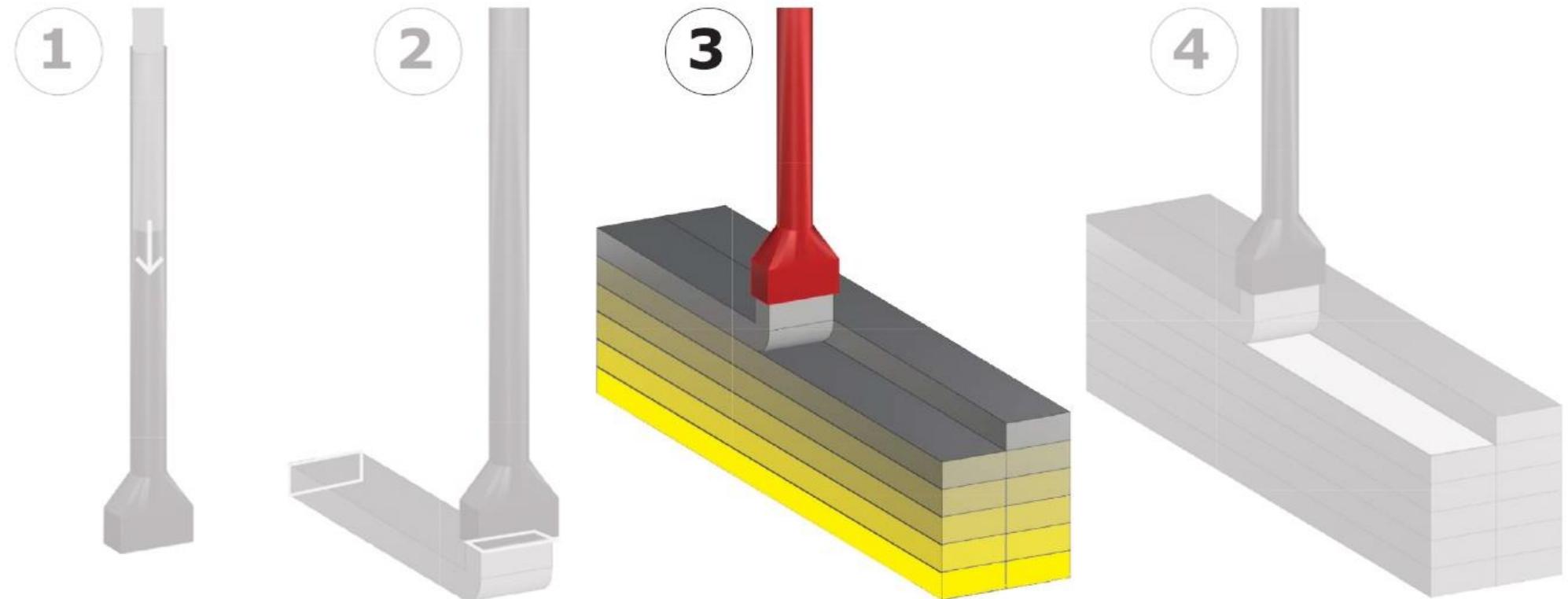




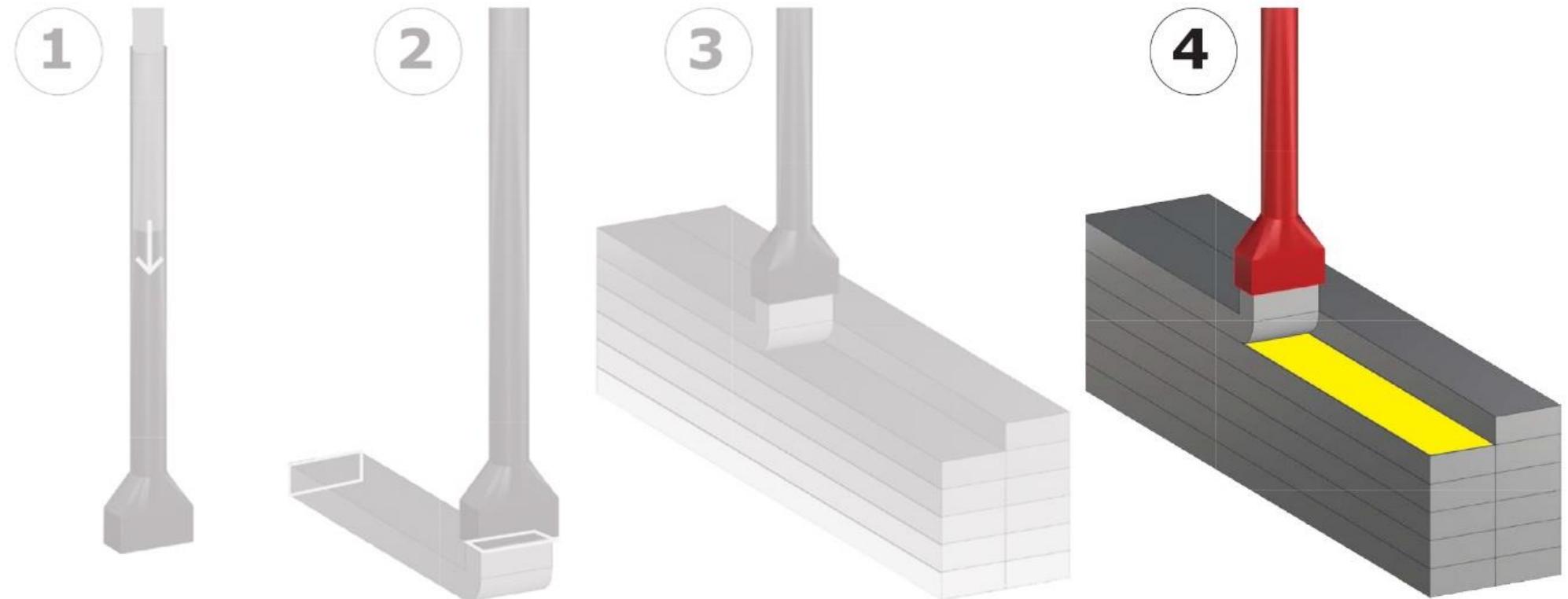


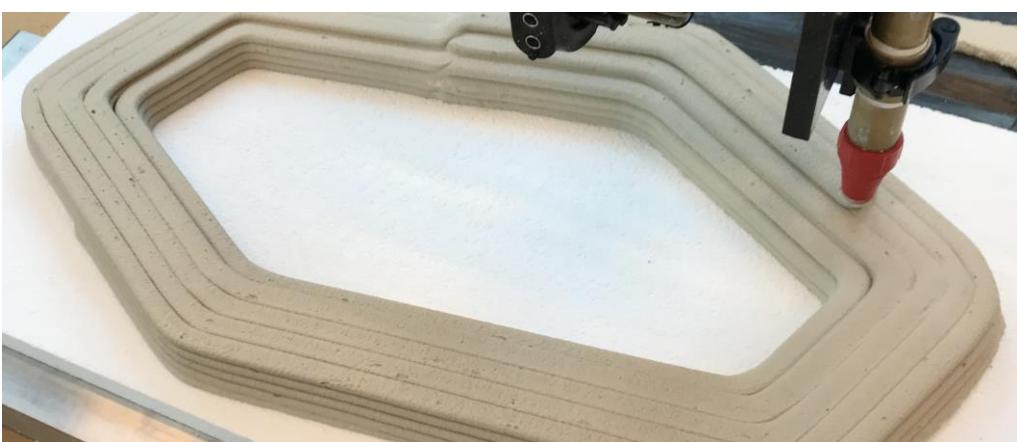
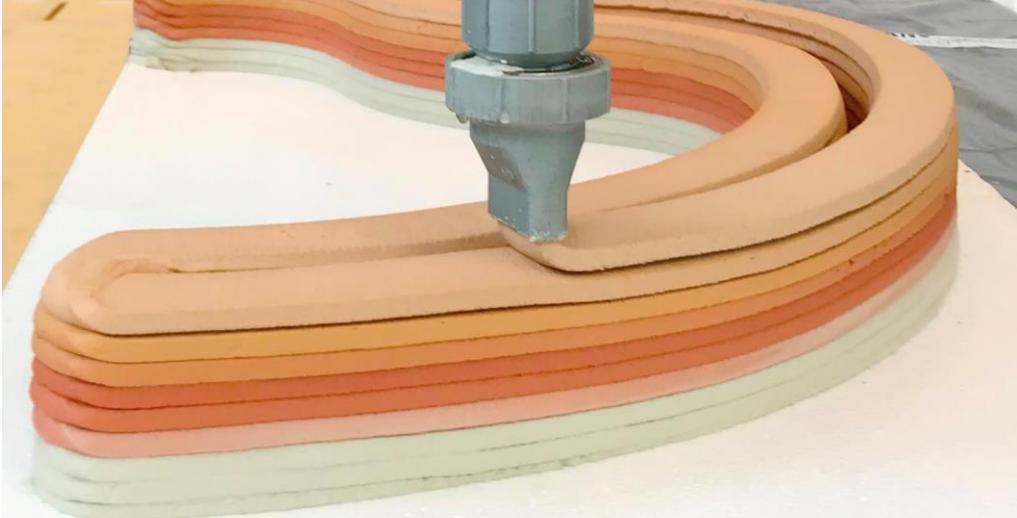


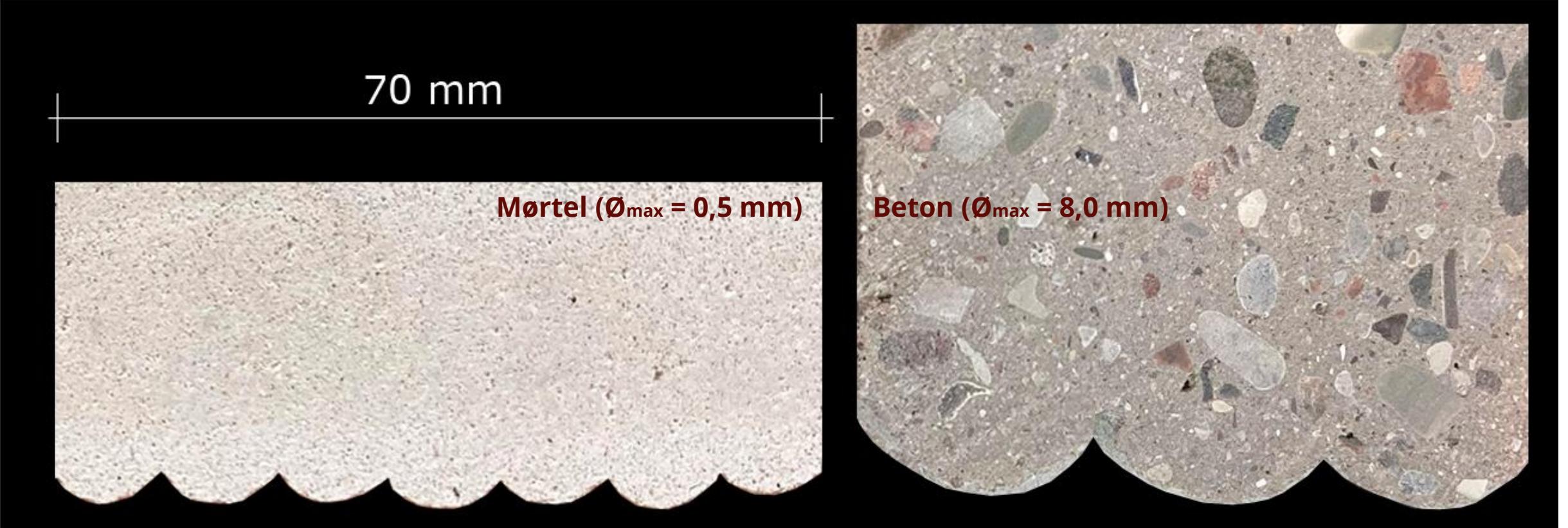








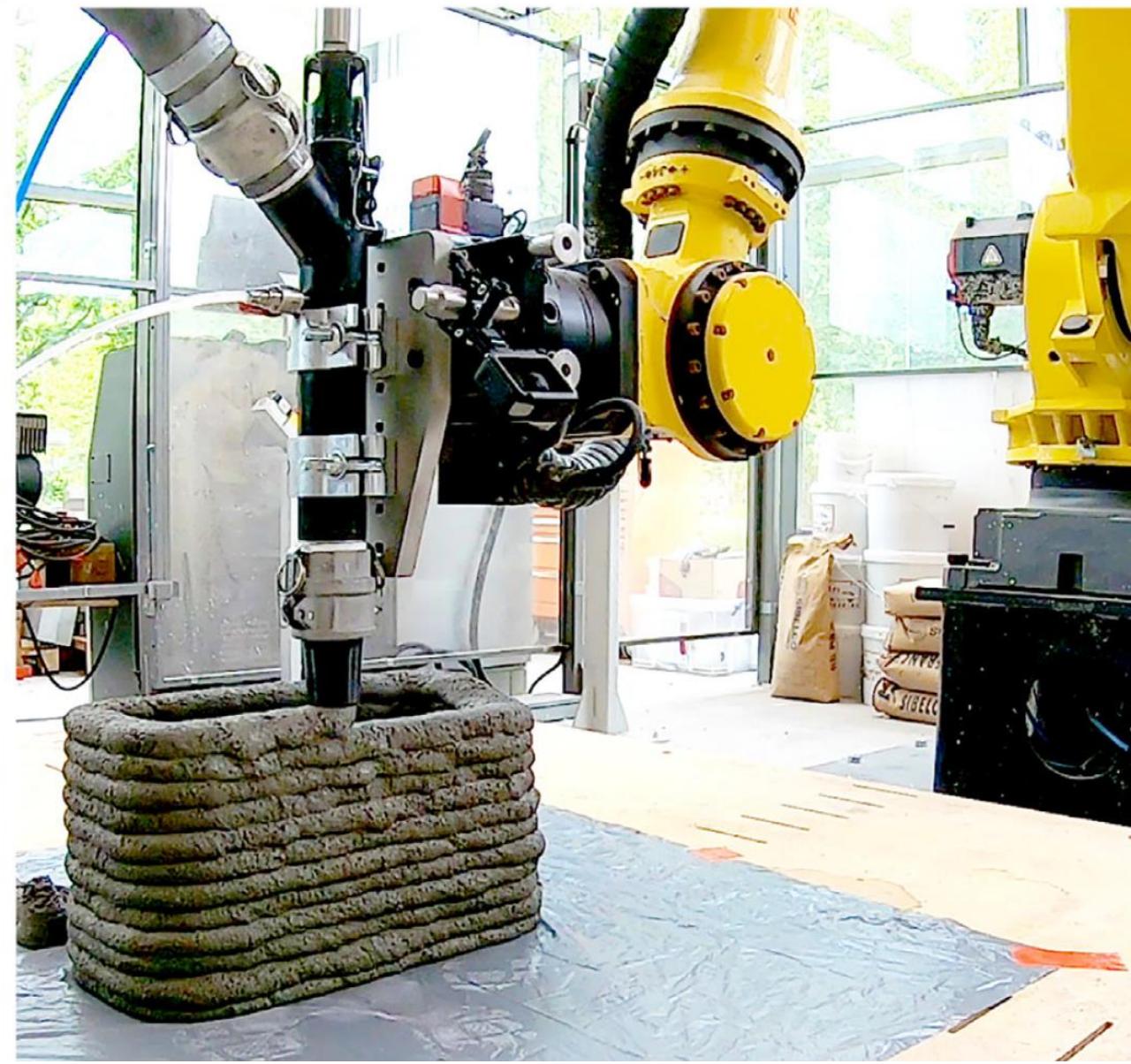
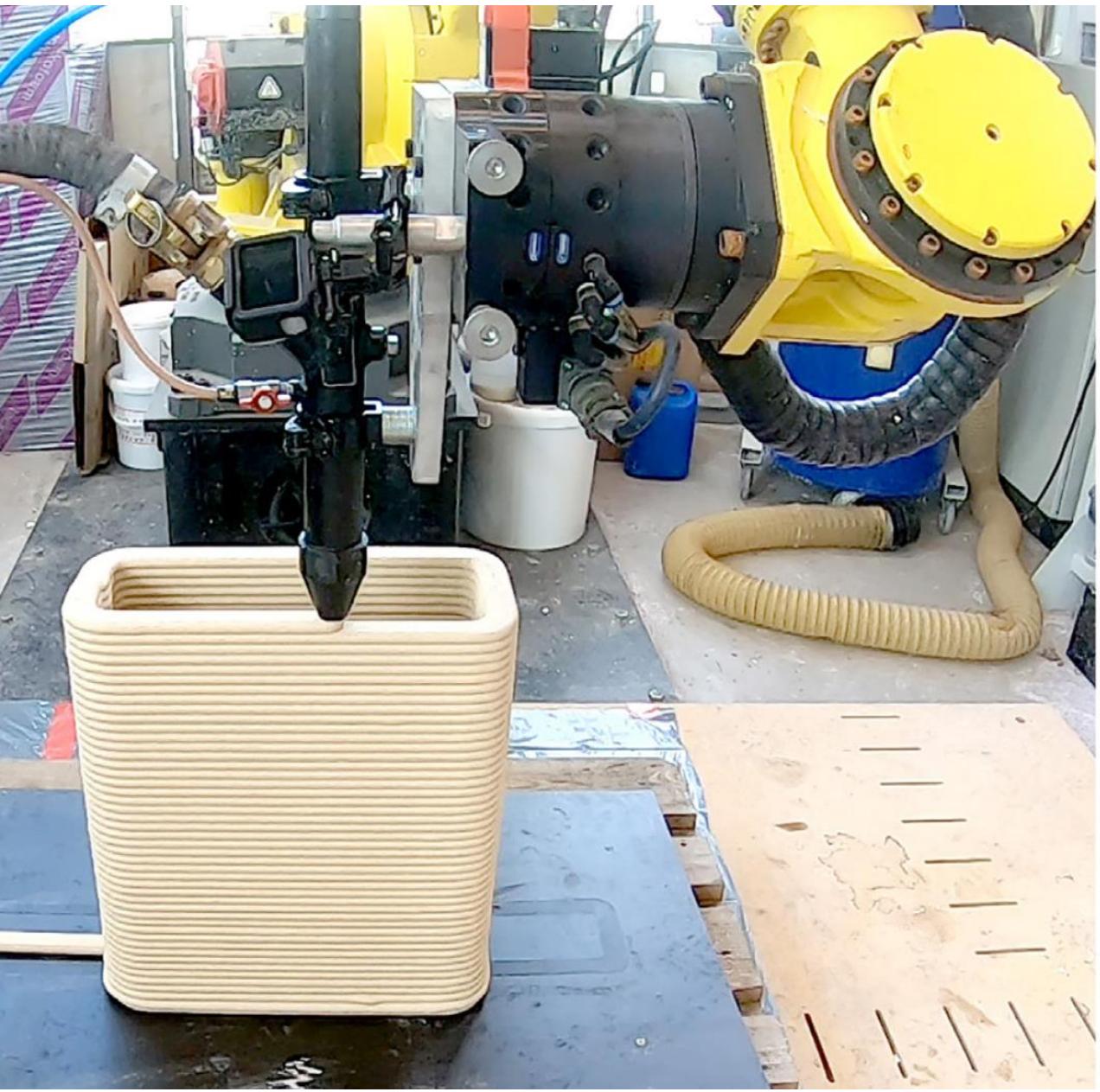




70 mm

Mørtel ( $\varnothing_{\text{max}} = 0,5 \text{ mm}$ )

Beton ( $\varnothing_{\text{max}} = 8,0 \text{ mm}$ )

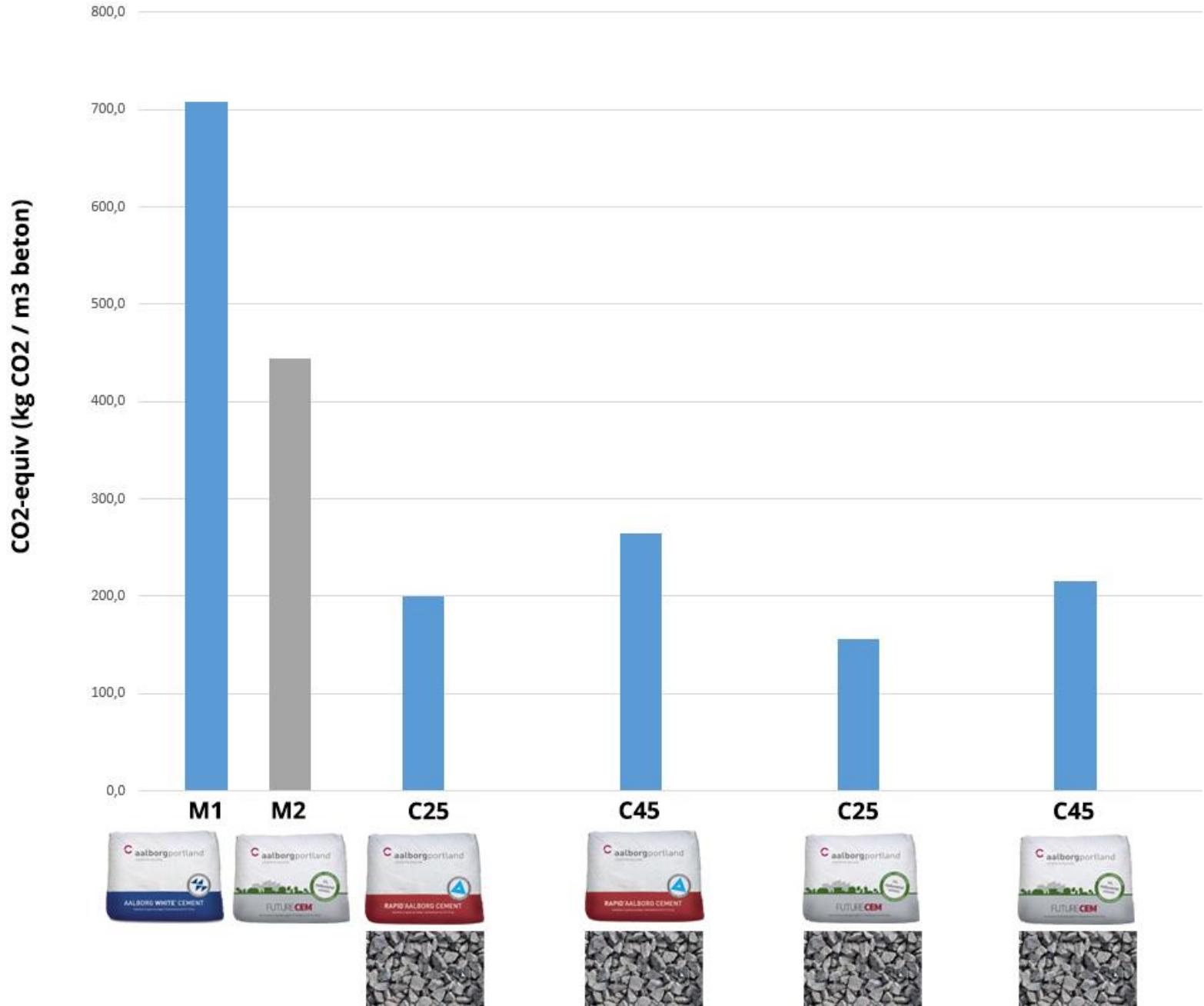


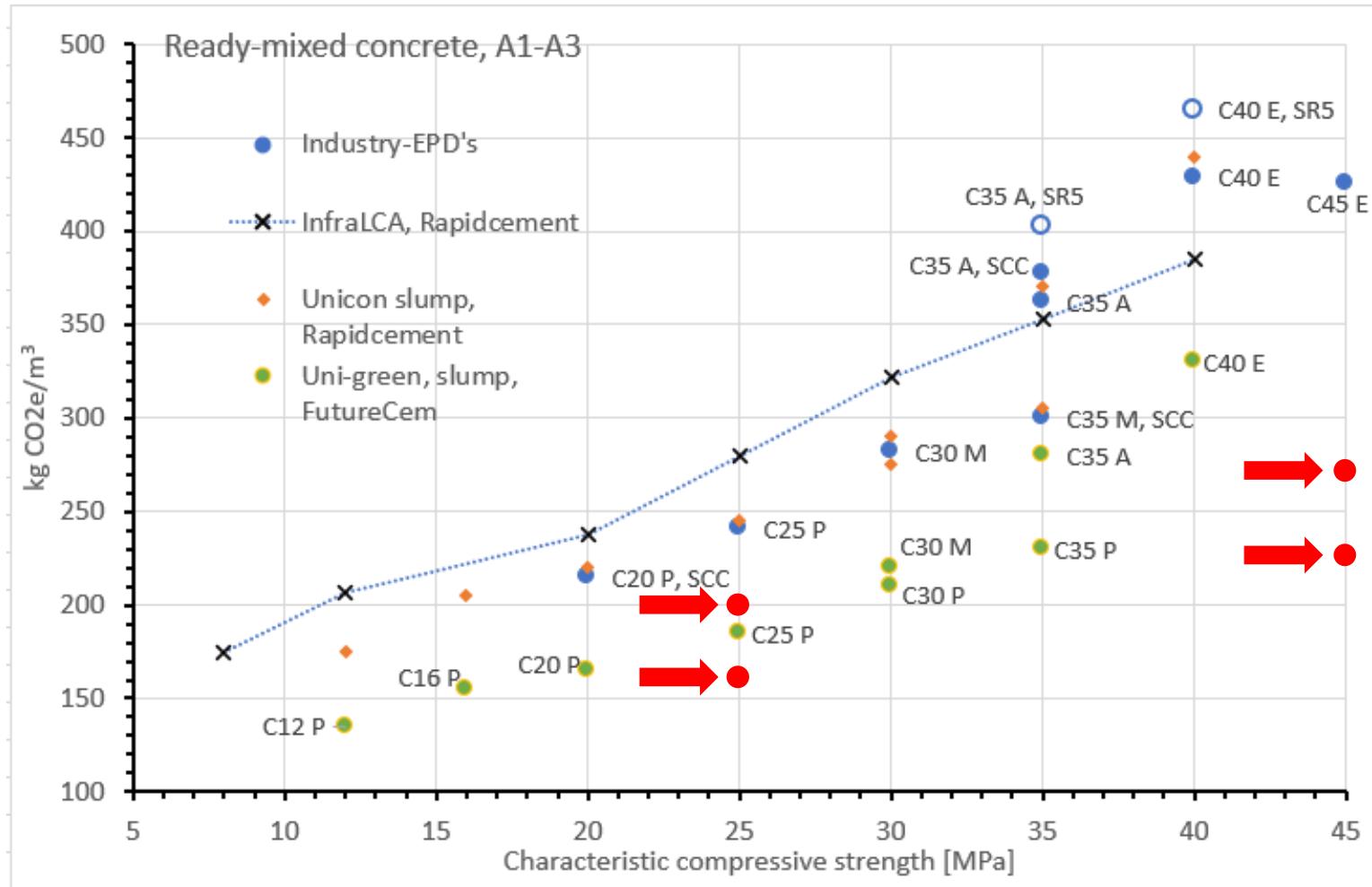
Tilslag



Bindersystem



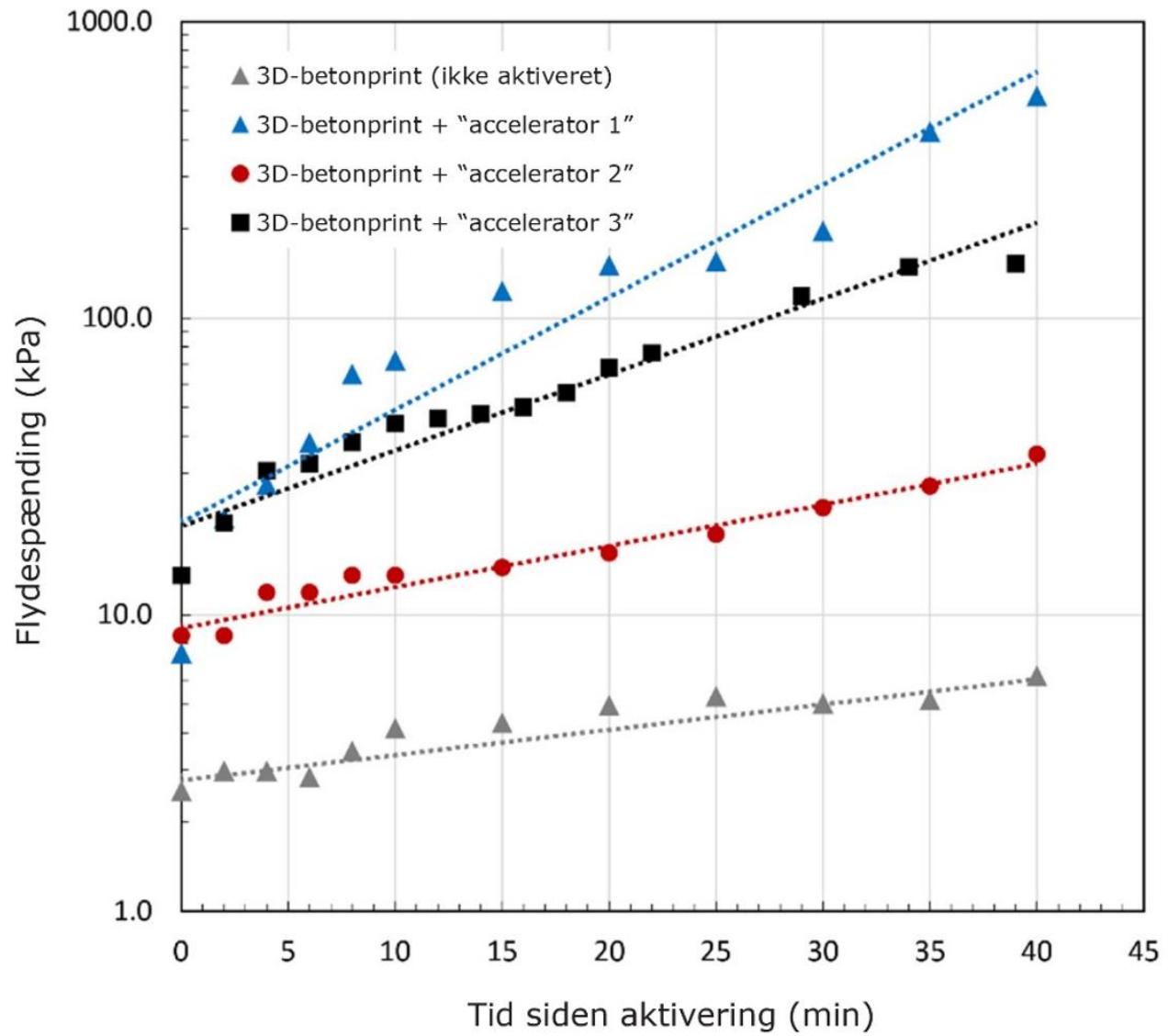


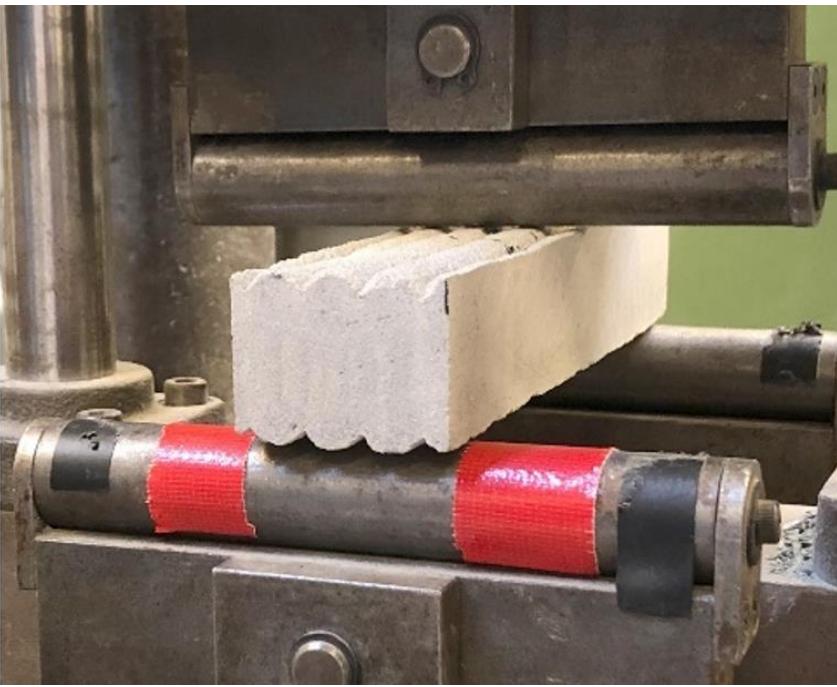


# Materialekarakterisering



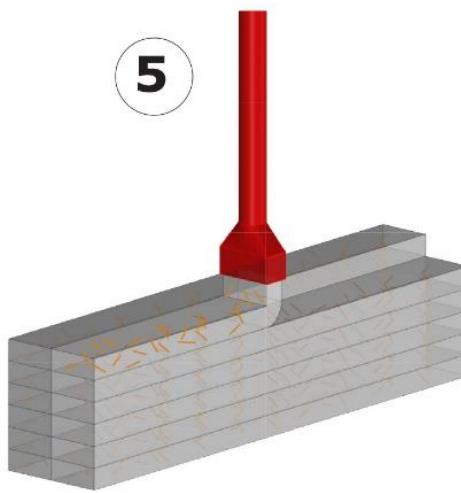
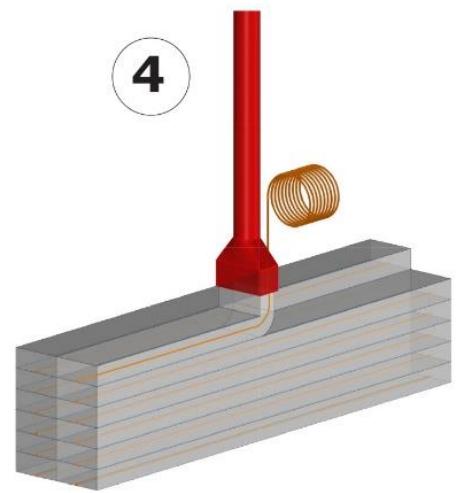
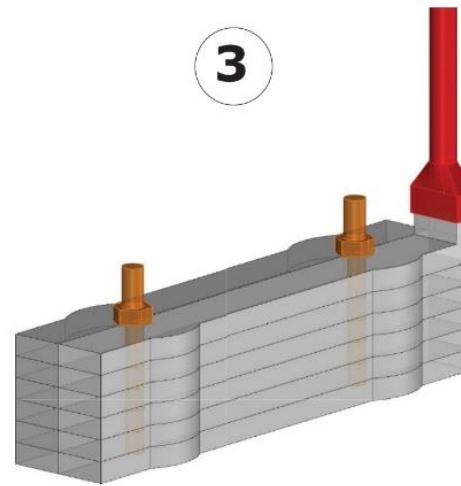
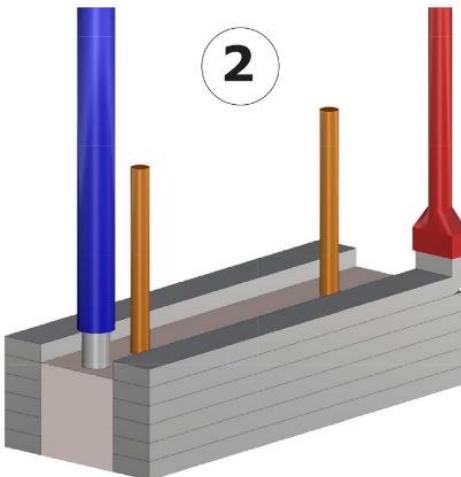
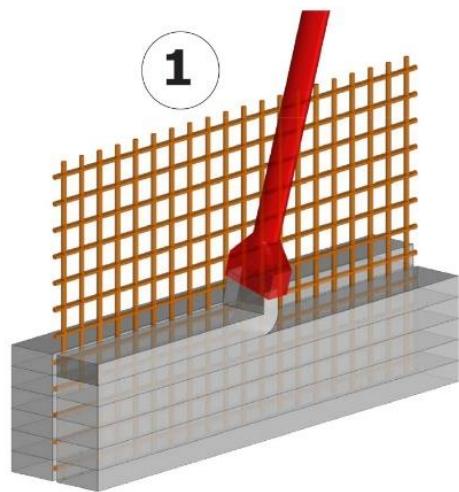


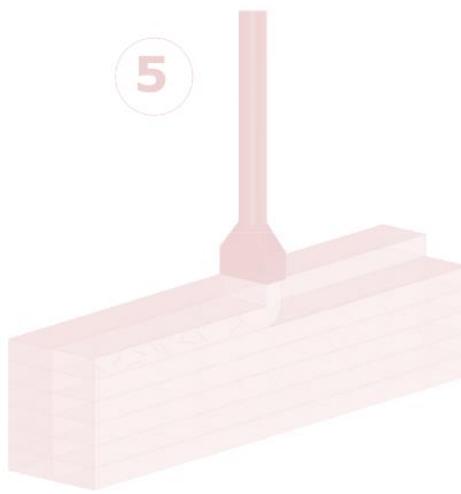
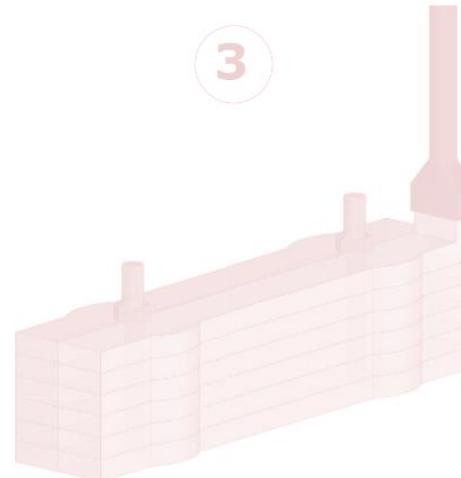
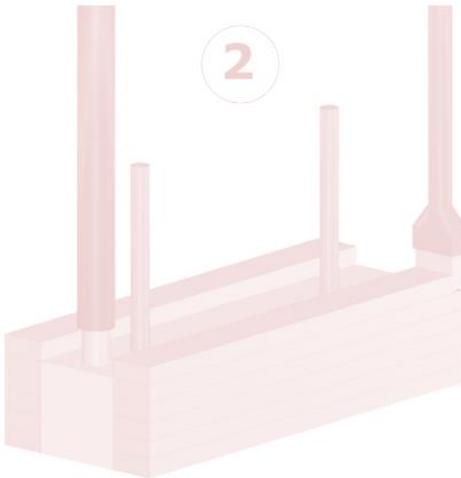
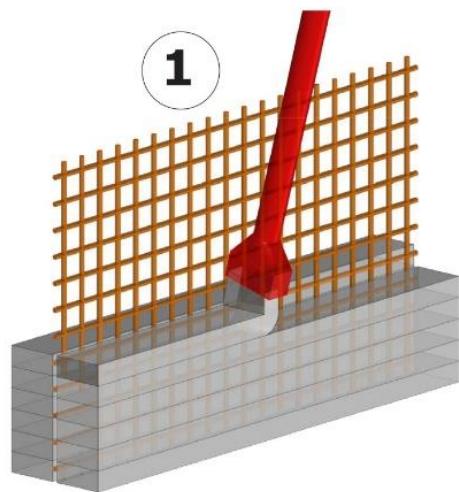


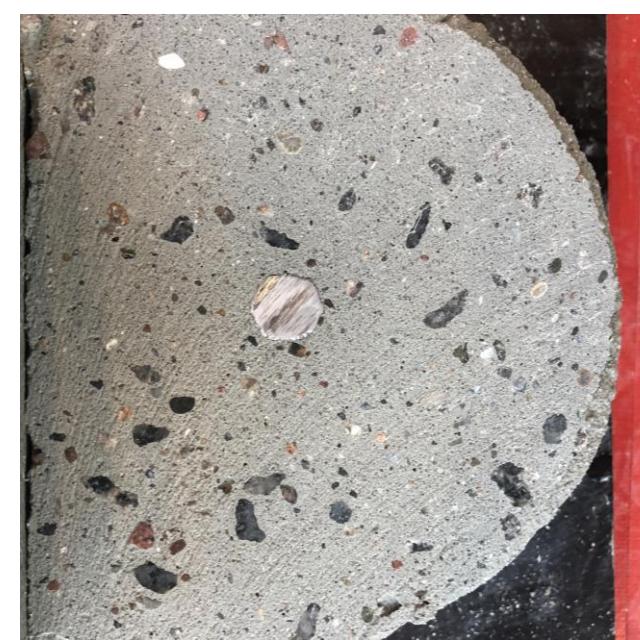


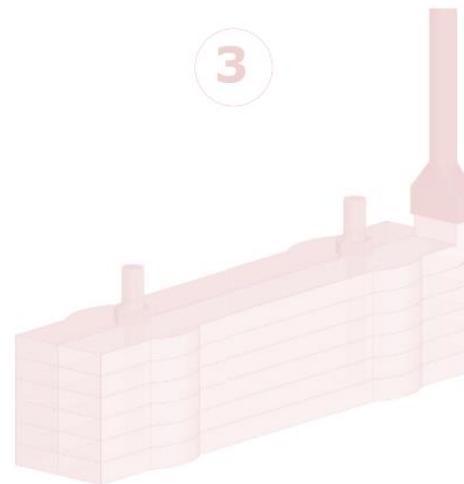
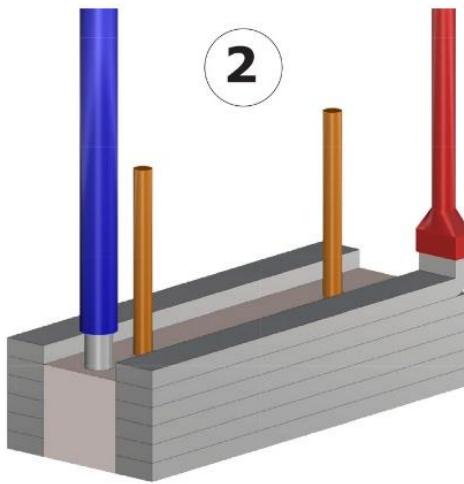
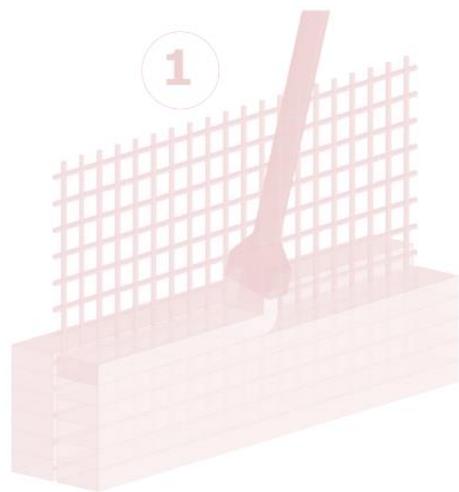


# Armering

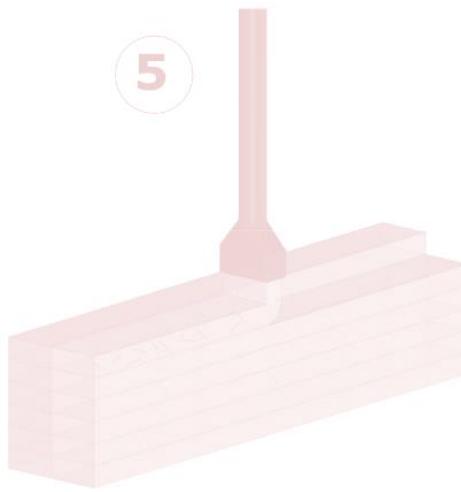
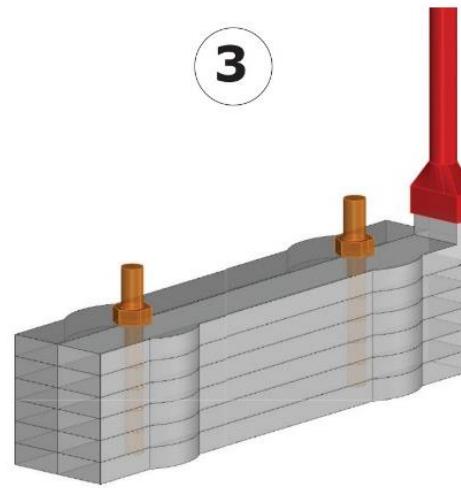
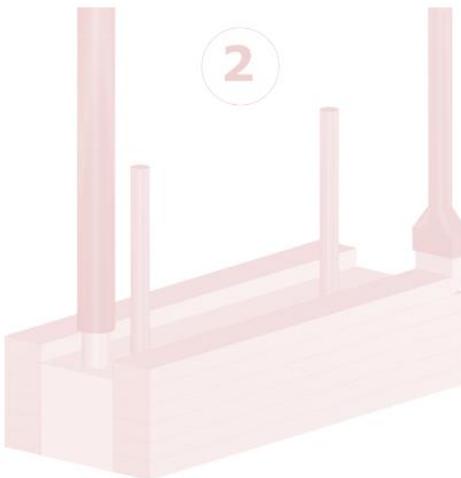
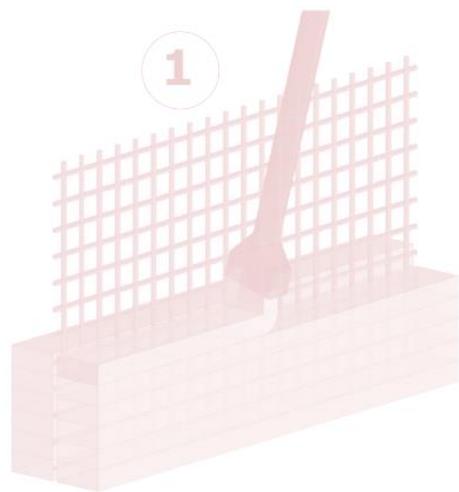




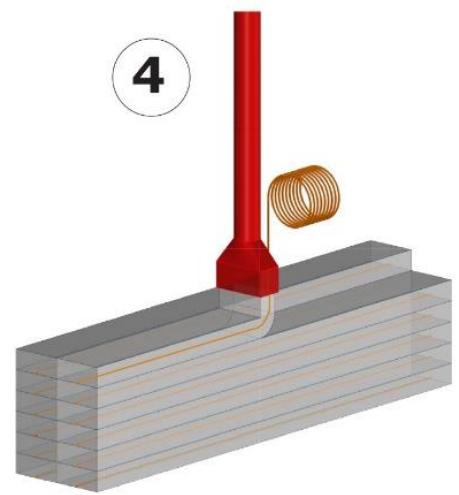
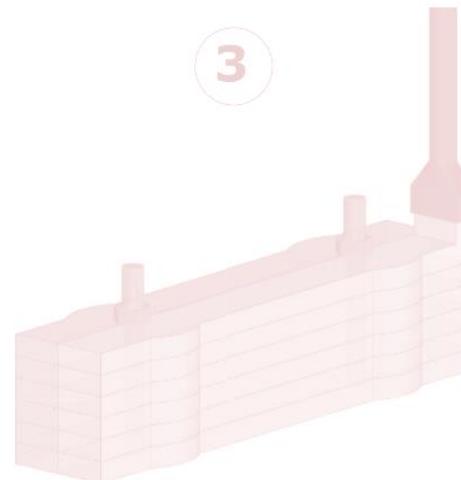
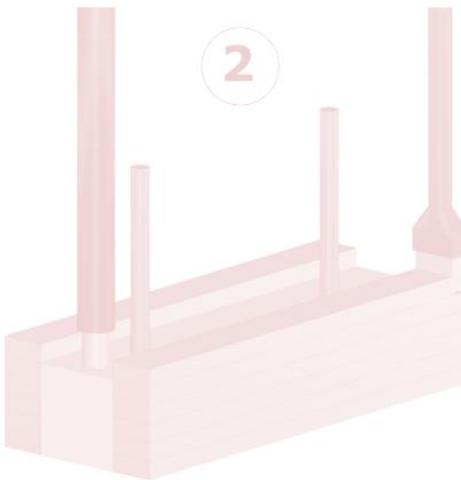
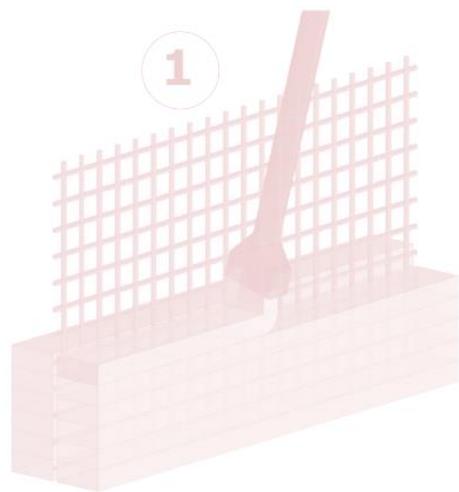






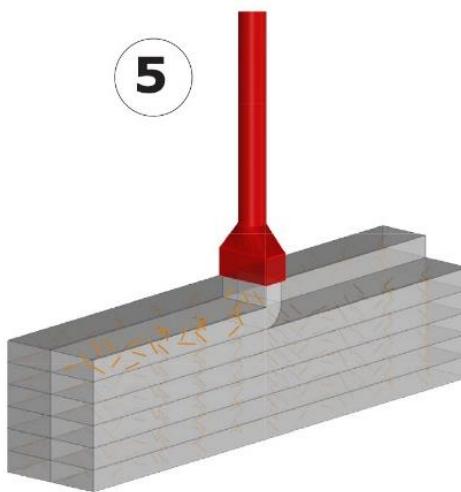
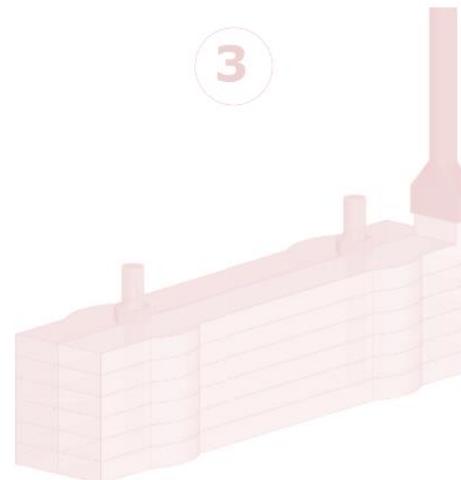
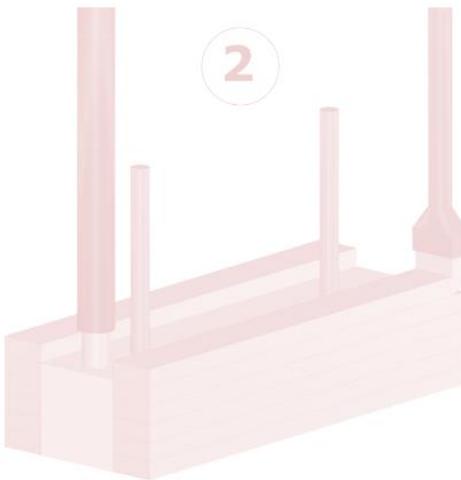
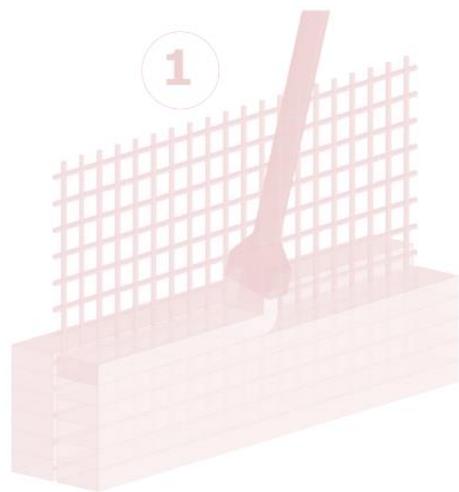








Salet T.A., Ahmed Z.Y., Bos F.P.,  
Laagland H.L.. Design of a 3D  
printed concrete bridge by  
testing. Virtual and Physical  
Prototyping, 13: 222-236, 2018

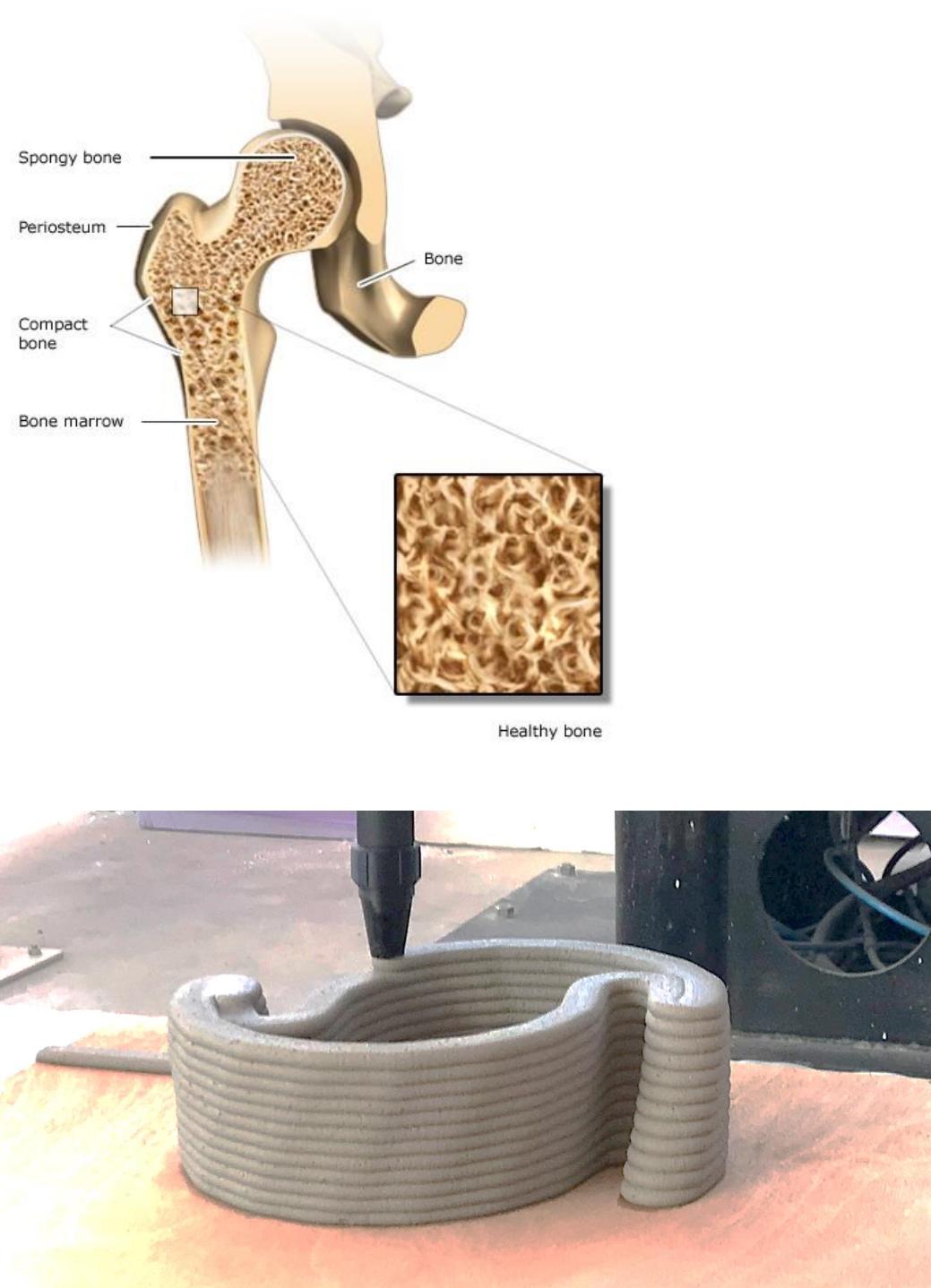
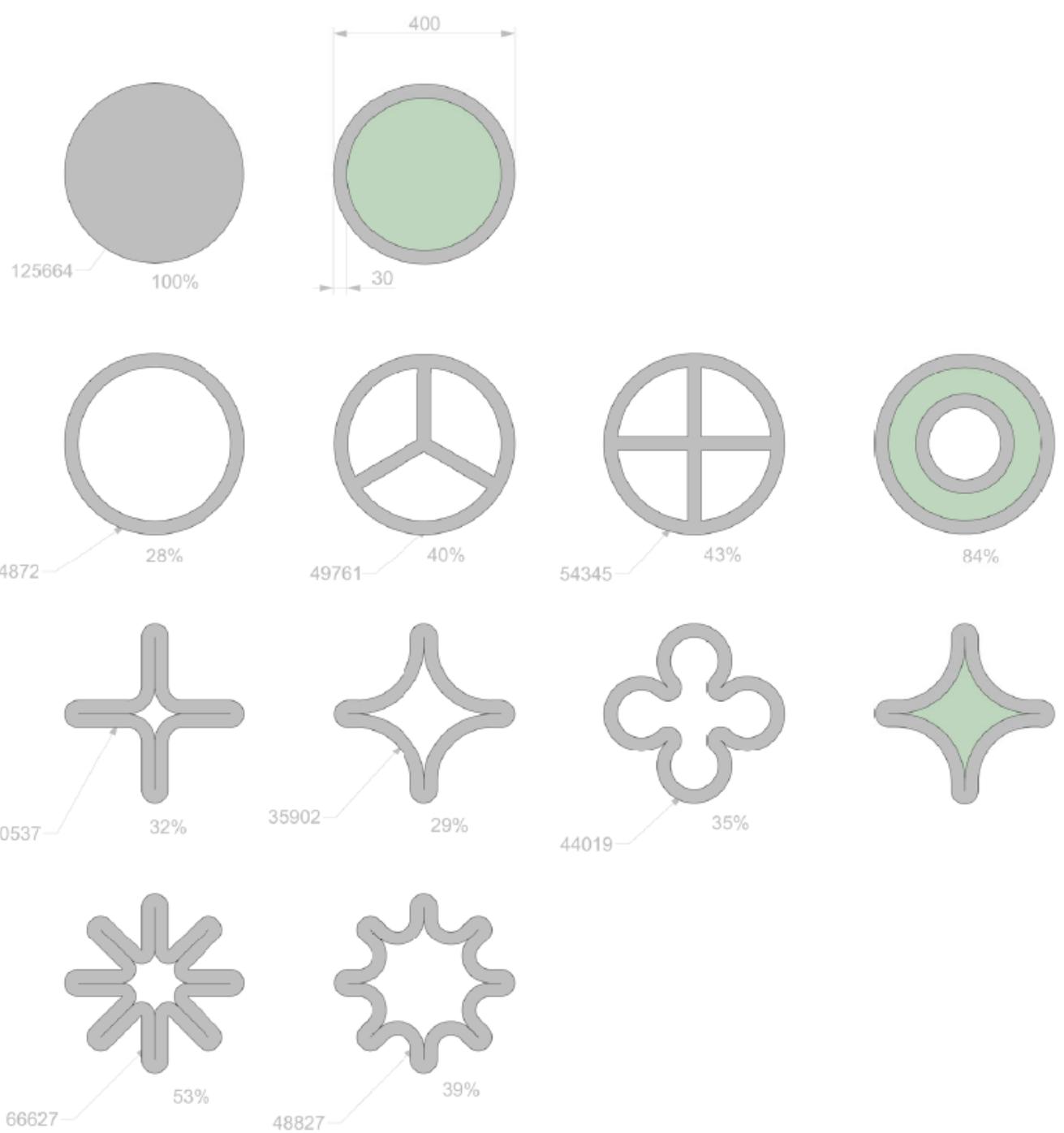


# Anvendelse og potentiale





Fig. 1. a-h. Case study projects. (a) Dermis project elements, (b) Reception Centre Nanjing, (c) Holstebro House (credit: COBOD International), (d) Dubai Office (credit: Apis Cor), (e) Beckum House, (f) B-Hut, (g) Milestone House (photo: Bart van Overbeeke), (h) Striatus Bridge.



# Tak for opmærksomheden

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