

# COBOD International

Global leader in 3D Construction Printers

Company presentation, Sep 2021





# COBOD is leading the 3D Construction Printing industry



## COBOD at a glance

**Founded in 2017** after 3 years of initial research of the "State of the Art" of 3D construction printing

**Based in Copenhagen**, Denmark


**60+ employees** (>50% international): engineers, architects, MBA's, manufacturers, etc.

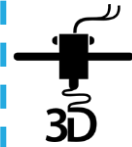
**~30 printer projects sold worldwide in 6 continents** from USD 300k-600k

**Partnership with minority shareholder PERI Group** (German-based global leader in form works equipment)

Note: Illustrations are courtesy of flaticon.com

## Key activities

 Focus of presentation



### **Development, manufacturing, and sales of 3D Construction Printers** and related equipment (batch-plants, mixers, pumps, etc.) worldwide



**Global cooperation with world-class developers and companies** (e.g., GE, EMAAR, Larsen & Toubro, etc.) to set up 3DCP in multiple countries



### **Research in 3DCP**

- Materials recipe research: Co-operation with multiple Universities and the biggest cement plants (CEMEX, LafargeHolcim, Heidelberg, Ultratech, etc.)
- 3D construction principles research; reinforcement solutions, floor separations, etc.

# 3DCP comes with several benefits enhanced by COBOD

Emerging benefits of 3D construction printing



## Automation

- Lower labor cost (worker volume and need for scarce skilled workforce)
- Reduced risk of accidents
- More precision



## Speed

- Faster execution
- Faster return
- Reduced interest



## Sustainability

- Material efficient design
- Reduced waste
- Possibility to do new materials



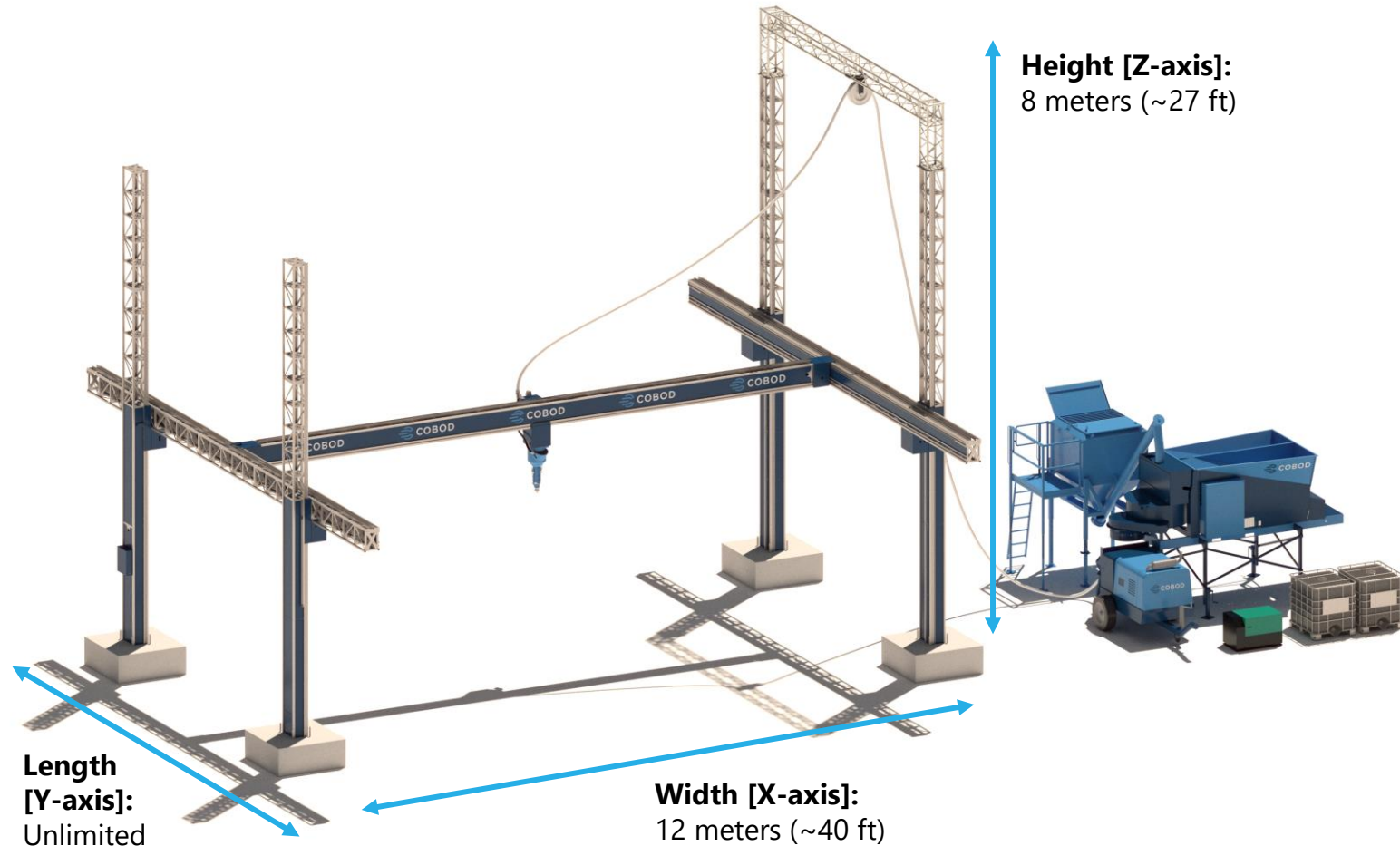
## Design freedom

- Architectural / design advantages
- New solutions possible not previously available

# BOD2 overview: our modular technology allows for printing vertical and horizontal components of building structures



## Printer and concrete batch plant overview, printable area (meters/ft)



## Example printer and nozzle



# Enhancing the benefits of 3DCP has made the BOD2 the world's best-selling 3D Construction Printer

7 reasons for the BOD2's success

- 1 **The world's first 2nd-generation 3D construction printer**
- 2 **Open-source materials**
- 3 **Modular Printer:** Order the printer-size you need!
- 4 **Unprecedented print-speed:** up to 1 meter (~3 ft) per second
- 5 **CE & IP66 certified:** manufactured for outdoor usage
- 6 **Only 2 operators needed**
- 7 **Easy change of print nozzles and comes with flaps combined with tangential control for smooth walls**





# Example output from a BOD2: residential construction

Beckum, Germany – by PERI Group (2021)

## Project overview



**160 m<sup>2</sup>** (~1,700 sq ft)  
**in 2 floors**



**Print time: 36 days**

- Ground floor: 28d
- Top floor: 8d
- Includes load-bearing and non-load-bearing walls



**Fully permitted - buyers ready to move in by Q3 2021**

## Output



# Example output from a BOD2: residential construction

Wallenhausen, Germany – by PERI Group (2021)

## Project overview



**380 m<sup>2</sup> (~4,090 sq ft)  
in 3 floors**



**Print time: 21 days**

- 7 days per story
- Includes load-bearing and non-load-bearing walls



**Fully permitted -  
buyers moved in Q2  
2021**

## Output





# Example output from a BOD2: wind turbine tower base

Copenhagen, Denmark – with GE Renewable Energy (2019)

## Project



**Height: 10 meters**  
(~33 ft)



**Print time: 3 weeks**  
(repeated a year later  
in just 3 days)



**~100t concrete used**



**Major productivity  
gains to be unlocked  
from concept**

## Output





# COBOD's partner- and customer base is broad and with a global presence



## Partners and customers

Construction companies

Windmill manufacturers

Precast plants

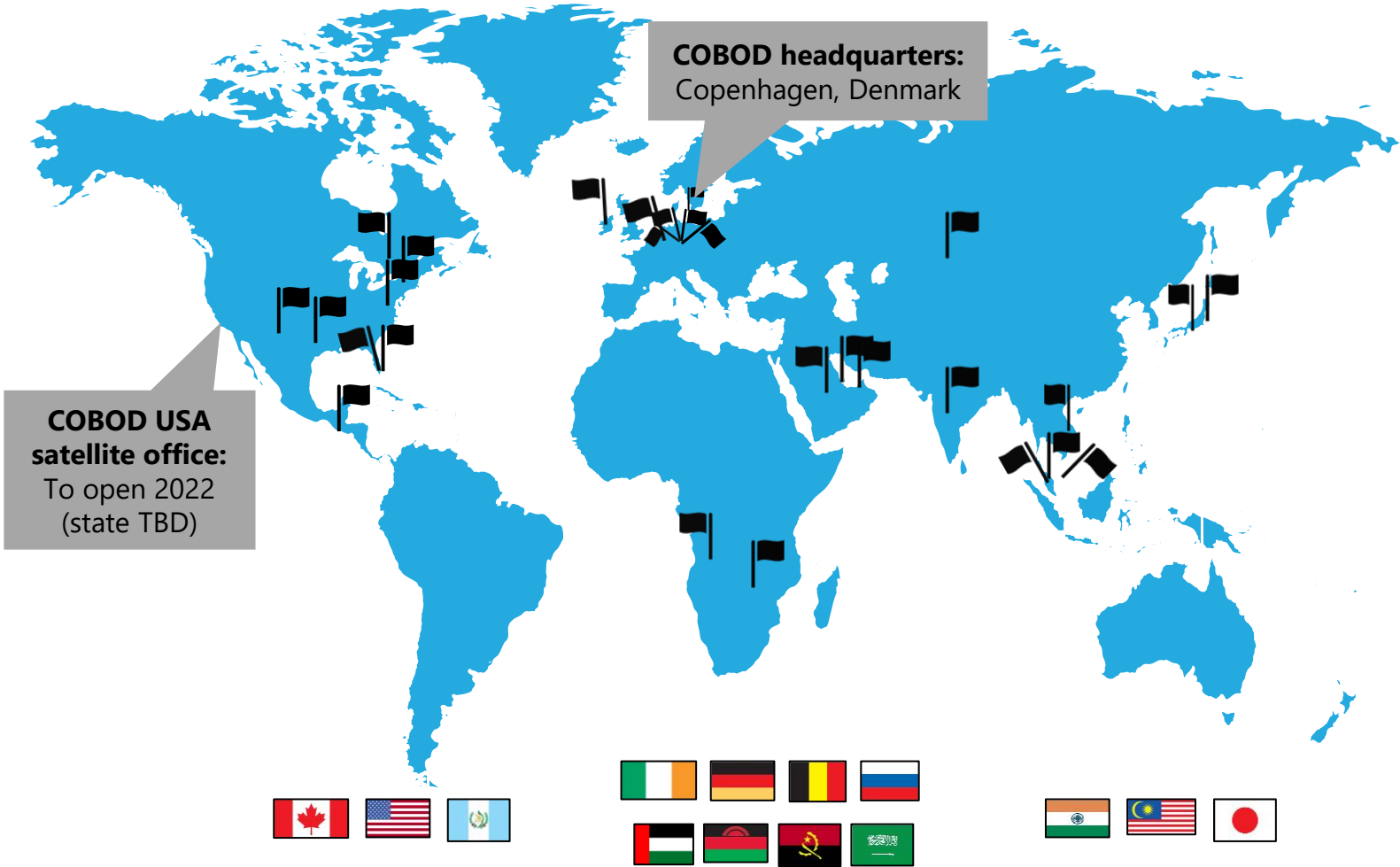
EPC's (Engineering, Procurement, Contracting Companies)

Real estate developers





R&D institutions

## Our global presence

Deployed COBOD printers (through distributor or direct)



# COBOD's clients and partners use our tech to change the world of construction in multiple areas worldwide

Company	Location	Year	Project: The first 3D Printed...
 COBOD	Copenhagen, Denmark	 2017	...Building in Europe
 KAMP C	Antwerp, Belgium	 2019	...2-story building in Europe
-	UAE	 2019	...Villa in UAE
 COBOD 	Copenhagen, Denmark	 2019	...Wind turbine tower base (10-meter height)
 PERI	Wallenhausen, Germany	 2020	...3-story building in Europe
 PERI	Beckum, Germany	 2020	...Residential building in Germany
 14 TREES  HOLCIM	Lilongwe, Malawi	 2020	...Buildings in Africa
 Larsen & Toubro	Kanchipuram, India	 2020	...2-story building in India
 PRINTED FARMS	Florida, USA	 2021	...Building in Florida





# COBOD will continue to drive the 3DCP transformation

Key on-going activities and options being explored

## Establishing 3 international offices in 2022

- Opening sales offices in USA, Dubai, and Malaysia
- Initially sales and project implementation, and subsequently manufacturing

## Upgrading existing printer and building new

- Updated printer to include rails (Y-axis) and robotics arm add-on (e.g., for plastering, painting, insulation, etc.)
- Larger printer for very large constructions up to 20-25m (6-7 stories)

**Exploring new 3DCP use cases** (e.g., underground printing, garages, warehouses etc.)

**Continuing research and cooperation:** COBOD has earned yet another grant in cooperation with Danish universities and BIG Architects, collaborations with General Electric, etc.





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