

COBOD's Professional Training Program includes all the necessary information and training needed to operate and maintain COBOD equipment. Please note, that the training is not project specific, meaning it does not accomodate potential production schedules.

Effective training programs are key towards new customers' product use satisfaction and learning curve optimization. Ensuring our training offer is formalized through evaluation and certification cycles allows closure on service expectations.

Expedite operational readiness levels to onboard faster through the compilation of high-quality, time bound, standardized sequential training programs. Covering each module ensures: less material waste, less labor time waste and less harm to the equipment throughout the learning process and subsequent operation.

The training is structured in user friendly levels:

- L1: Beginner
- L2: Intermediate
- L3: Advanced (for distributors)
- L4: New products

L1 and L2 (covered in this training overview) is highly recommended for new customers.

Each level includes: course syllabus, personal assistance, last generation digital and physical training material, timeframe evaluation and certification.

Customer management
Customer architect
Printer operator
Material operator

LEVEL 1

To be completed prior to arrival and installation of the 3D printer and related equipment on-site.

5 sessions of 2.5 hours each
= 12.5 hours total.

LEVEL 2

WEEK 1

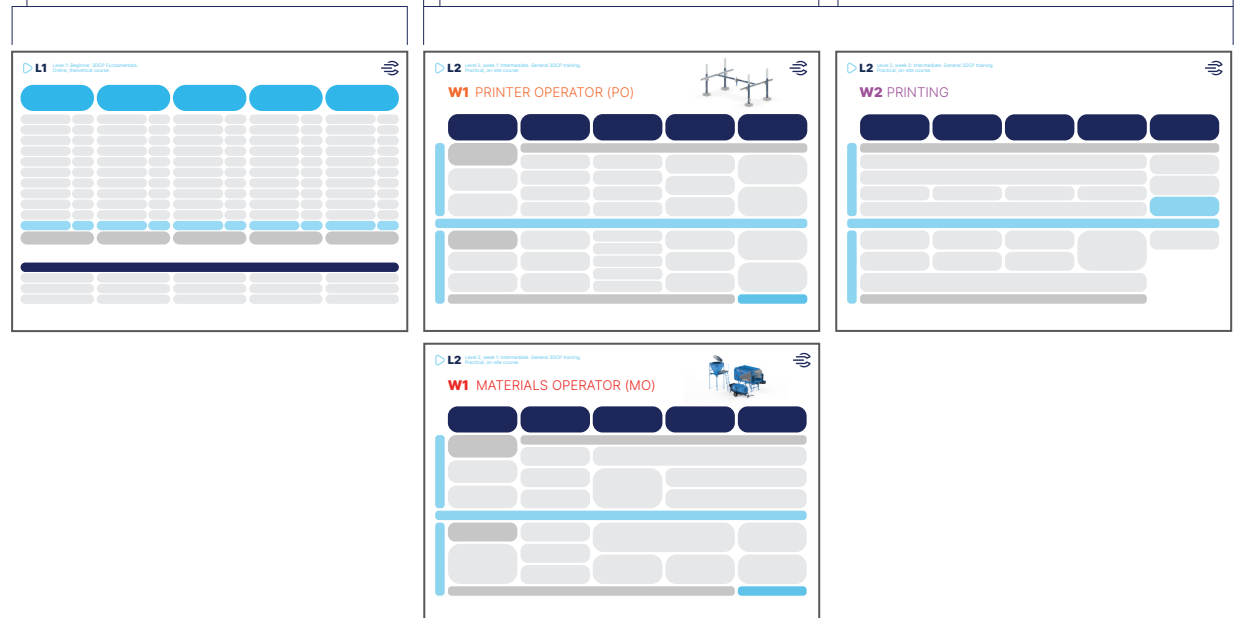
PO PRINTER OPERATOR
MO MATERIALS OPERATOR

Specialized training for both the PO and the MO concurrently.

WEEK 2

PRINTING

3D printing for four coherent days. Training printing procedures and error handling.



**L1**

Level 1: Beginner. 3DCP Fundamentals.
Online, theoretical course.

**L1.1****3DCP: Modelling and designing**

Introduction and Index	5 mins
Documentation Overview	5 mins
System Overview	5 mins
Modeling process overview	5 mins
3DCP Construction phases	5 mins
Key Performance Indicators (KPIs)	5 mins
3DCP Logistic	20 mins
Design considerations	30 mins
Structural considerations	30 mins
Recap	10 mins
Quiz	30 mins
Total	2.5 hrs

L1.2**COBOD Slicer: Software walkthrough**

Introduction and Index	5 mins
Documentation Overview	5 mins
System Overview	5 mins
Slicing process overview	5 mins
COBOD Slicer introduction	10 mins
COBOD Slicer UI	15 mins
Key Performance Indicators (KPIs)	5 mins
Input parameters	50 mins
Recap	20 mins
Quiz	30 mins
Total	2.5 hrs

L1.3**BOD2 3D printer: Components and installation**

Introduction and Index	5 mins
Documentation Overview	5 mins
System Overview	5 mins
BOD2 Overview	40 mins
Roles and Responsibilities	10 mins
Printer installation	20 mins
Site Acceptance Test (SAT)	10 mins
Printing Process Overview	15 mins
Training and Support	10 mins
Quiz	30 mins
Total	2.5 hrs

L1.4**3DCP: Materials and Material Delivery System**

Introduction and Index	5 mins
Documentation Overview	5 mins
System Overview	5 mins
Raw material selection and relevant guide	10 mins
Mix design and relevant guide	10 mins
Performance testing and relevant guide	5 mins
Key Performance Indicators (KPIs)	10 mins
Theory of materials	40 mins
Curing	5 mins
Safety	5 mins
Quiz	30 mins
Total	2.5 hrs

L1.5**Material Delivery System: Components and installation**

Introduction and Index	5 mins
Documentation Overview	5 mins
System Overview	5 mins
MDS System Overview	10 mins
COBOD Mini Batch Plant	20 mins
COBOD Piston Pump	20 mins
Concrete batching (logistics and cleaning)	30 mins
Hose management considerations	10 mins
Safety	10 mins
Quiz	30 mins
Total	2.5 hrs

Documentation

SOP: Modelling and slicing	SOP: Modelling and slicing	SOP: BOD2	Raw Material Selection Guidelines	Pump Technical Data Sheet
Design Manual	COBOD Slice Guide	Printer Technical Data Sheet	Mix Design Guidelines	Batch Plant Technical Data Sheet
Design Examples	COBOD Slice Examples		Mix Design Sheet	AHMS Technical Data Sheet

**L2**

Level 2, week 1: Intermediate. General 3DCP training.
Practical, on-site course.



W1 PRINTER OPERATOR (PO)

**DAY 1** L2.1_PO

L2 Introduction, BOD2
inventory and site inspection

DAY 2 L2.2_PO

BOD2 Installation
part 1

DAY 3 L2.3_PO

BOD2 Installation
part 2

DAY 4 L2.4_PO

BOD2 Software and
AHMS Specifics

DAY 5 L2.5_PO

BOD2 Troubleshooting and
Operation review

08:00 - 12:30

L2 Training opening meeting (in plenum):
Objectives, roles, tools and safety (OSHA
inspections), media footage and visitors

Printer transportation, inventory
checklists and proper printer storage

Utilities review referenced in Welcome
Letter, Printer outlets and inlets,
printhead cleaning area referenced to
drainage positioning

Daily opening meeting: Objectives, roles, tools and safety

AHMS: Remove dosage system from
printhead

Pre-assembly of Y and X axis
(if needed)

Positioning concrete feet according to
measurements and tolerances

Positioning of Z columns alignment incl.
distance checks

AHMS: Install stiffener hose in e-chains

Placement of electrical cables:
Install cables on the machine. Ensure full
connectivity and freedom of movement

Power connections, verify site power,
input power plug

Install all external cables

Omron basics: SoftNA interface and
control, DUET / Omron mode; Settings:
Hopper level, dosing system, clear errors,
set movement speed and acceleration

DUET basics: Manual movement, retrieve
coordinates, work coordinate system,
upload file, run print file

AHMS: Dosage system electronics

Printer daily checks before starting
operation (supporting documents,
extreme weather conditions, safety,
mechanical, electrical and software)

Machine operations review with PO:
mastering the movement and positioning

Lunch Time

13:00 - 16:30

Site inspection and layout zoning
(in plenum)

Printer Operator - SOP introduction and
KPIs recap

SAT document introduction

Z column and carriage positioning
verification

Installation of Y axis

Installation of X axis

Power printer on and verify axis
movement

Align Z carriages with remote

Align Y carriage using angular laser and
omron interface

Print head connection: Install printhead
and verify nozzle rotation

Master homing: Perform master homing

AHMS: Install X and Y hooks, and
concrete hoses inside e-chains

BOD2 SAT Introduction: Follow the
guidelines in SAT template

COBOD Slicer recap, license confirmation
and interface navigation

Printing (PO) KPIs review

Troubleshooting:
Learning curve, software errors,
connection, alignment and tracking
performance

Daily closure meeting

Week #1 PO Quiz

**L2**

Level 2, week 1: Intermediate. General 3DCP training.
Practical, on-site course.



W1 MATERIALS OPERATOR (MO)

**DAY 1** L2.1_MO

L2 Introduction, MDS
inventory and site inspection

DAY 2 L2.2_MO

MDS: Installation
and operation

DAY 3 L2.3_MO

Materials input and
quality control

DAY 4 L2.4_MO

Materials operation and
maintenance

DAY 5 L2.5_MO

Materials operation and
troubleshooting

08:00 - 12:30

L2 Training opening meeting (in plenum):
Objectives, roles, tools and safety (OSHA
inspections), media footage and visitors

MDS transportation, inventory checklists
review and proper material storage

Utilities review referenced in welcom
letter, MDS: outlets and inlets and
drainage

Daily opening meeting: Objectives, roles, tools and safety

Batchplant SOP and set up:
Leg installation, utility connections, check
operation, admixture pumps

Silo SOP and set up:
Leg installation, utility connections, check
operation

Batchplant SAT and operation

Materials preparations:
Load materials in silos, moisture content
test, operational checks

Printing preparations:
Slurry, hose system, pump movement

Fine-tune mix:
Pump concrete and adjust mix

D.fab SOP and mix fine-tune:
Prepare several 100 liter batches
Determent water quantity

Lunch Time

13:00 - 16:30

Site inspection and layout zoning
(in plenum)

Materials Operator - SOPs introduction
and KPIs recap

Pump SOP and set up:
Move in place, connect to power, check
operation

Pump SAT and operation
Safety reminders on pump operation

Hose setup and guidelines

Material open time in D.fab SOP

Material buildability test in D.fab SOP

MDS cleaning and maintenance generals

Troubleshooting:
Learning curve, hose clogging and
unclogging, extreme weather conditions,
common mistakes, drainage and tracking
performance

Materials (MO) KPIs review

Daily closure meeting

Week #1 MO Quiz

**L2**

Level 2, week 2: Intermediate. General 3DCP training.
Practical, on-site course.



W2 PRINTING

DAY 6 L2.6

Printing training:
Essentials

DAY 7 L2.7

Printing training:
Practice 1

DAY 8 L2.8

Printing training:
Practice 2

DAY 9 L2.9

Printing training:
Practice 3

DAY 10 L2.10

Training review and
round-off

Opening meeting: Objectives, roles, tools and safety

Materials preparations: Load materials in silos, moisture content test, operational checks

General Q&A Session
Additional materials and support

Pre-printing preparations: Slurry, assemble hose system, move pump in place, stiffener priming

Printer & MDS Maintenance
as a construction tool
(Preventive, collective and predictive)

Slicing preparations: Verify model, layer
height, print speed, seams, retraction,
slicer statistics

Slicing preparations: Verify model, endpoint
control, toolpath orientation, toolpath order,
start position, reslice from specific position

Slicing preparations: Verify and correct
model, window height, window details,
door details, foundation details

Slicing preparations:
Slicing range, partial gcode

Pre-print procedure: Assembly of PH, dry-run, alignment, hopper level

Week #2 PO & MO Quiz

Lunch Time

Printing preparation: Extrusion and speed
live adjustments, visual validation, layer
time, rewind function

Printing preparation: Resume after
U-misalignment, resume after Estop,
Resume after printhead collision, data
logs, Lintils

Printing preparation: Console (Gcode
commands), reslice from specific position,
Utilities outlets

Printing & materials preparation:
Continuous printing, Verify independence,
Verify KPI data collection

Quiz reviews in plenum

Materials preparation: Stiffener system,
shape retention, surface finish,
buildability, failure, printing

Materials preparation:
PSC, IBS samples, buildability,
cubes/cylinders

Materials preparation:
Continuous printing, KPI data collection

Cleaning and shutting down

Daily closure meeting

08:00 - 12:30

13:00 - 16:30