

INTRODUCTION – 2CREATE

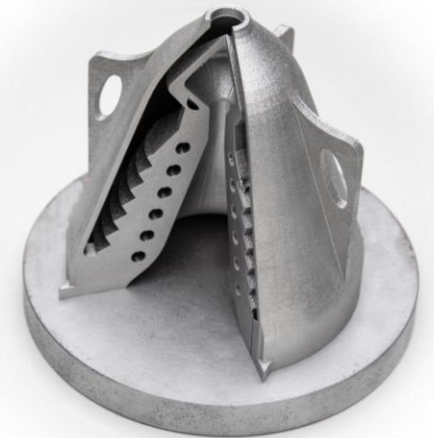


CREATE



- 250W Fiber Laser
- 40 μ m – 250 μ m Spot
- Building Platform: \varnothing 110mm x 100mm
- Reservoir: \varnothing 110mm x 200mm
- CAM Software 2Build
- Suitable for reactive and non-reactive materials

17-4PH, 315L, Titanium, Aluminium, Bronze, CoCr



INTRODUCTION – 2CREATE



CREATE

- Weight: 450 kg
- Power Supply: 230V / 1 Phase
- Inert Gas: Nitrogen, Argon
- Typical layer thickness: 20 μm – 40 μm (adjustable)



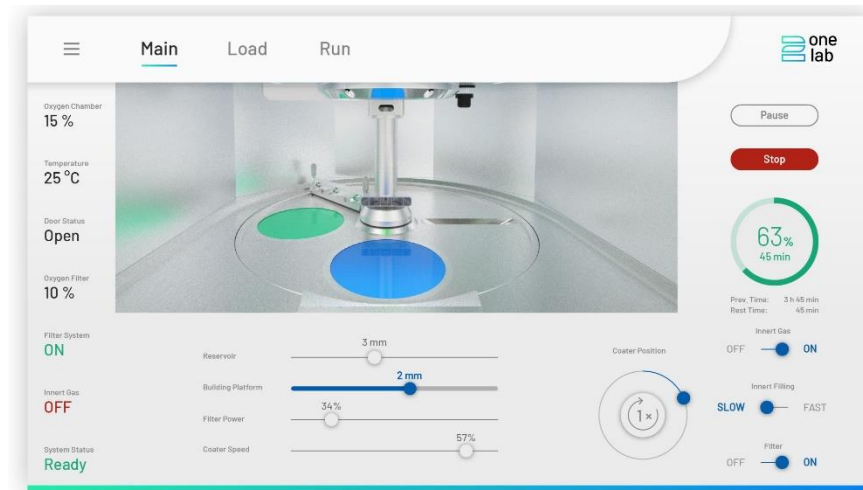
INTRODUCTION – 2CREATE



C R E A T E



- Target Markets Dental & Research and Development
- Open Concept – free choice of powder manufacturer
- Compact Design
- Unique fast circulation coater
- Compelling HMI Design



FEATURES – Process Chamber



CREATE



FEATURES – Process Chamber



CREATE



Powder Reservoir

Coater

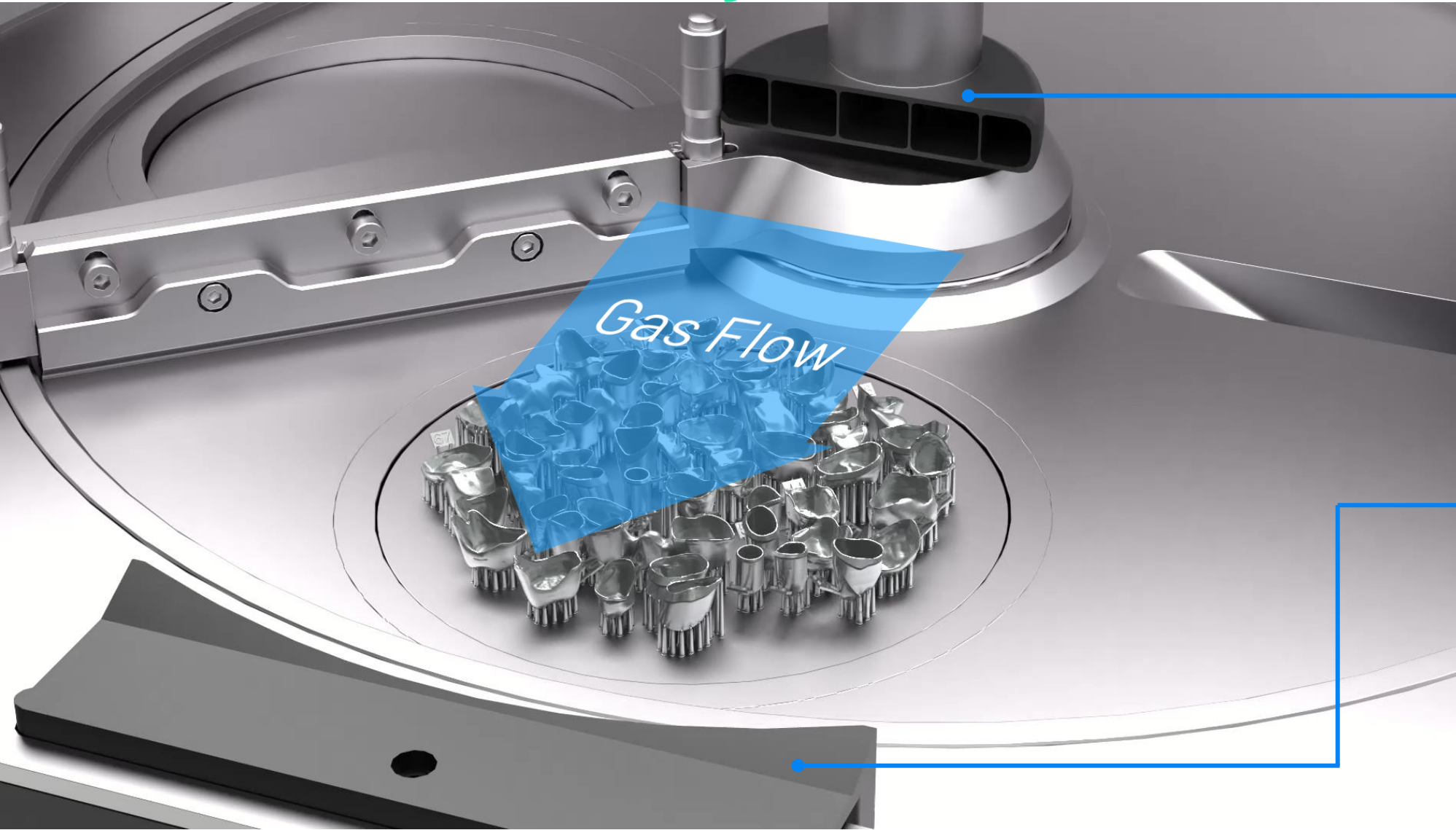
Overflow

Building Platform

FEATURES – Process gas flow

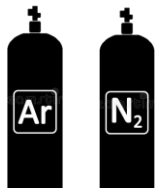


CREATE



Gas Outlet

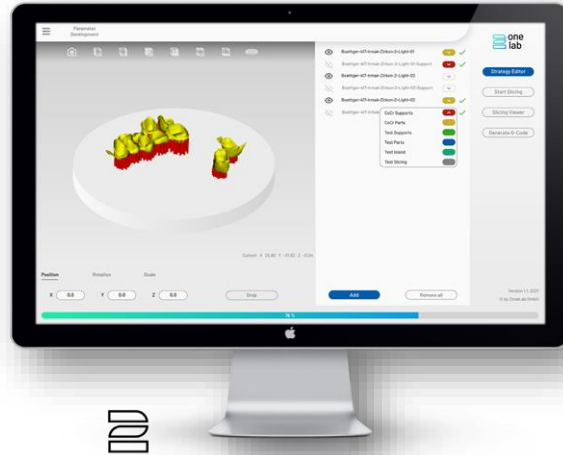
Suction Nozzle



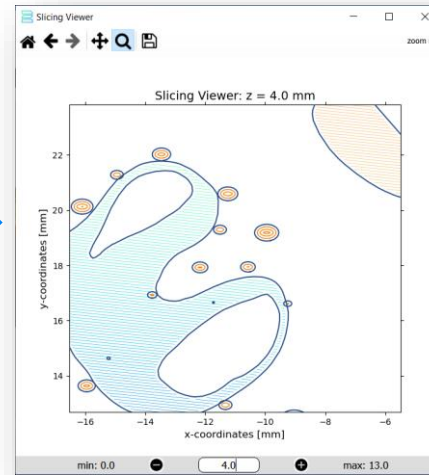
2BUILD – Software Workflow



CREATE



BUILD



Printing Strategy

```
16 SLaserPipelineDelay = 0.00
17 SMarkDelay = 0.00
18 SPolyDelay = 0.00
19 MJumpSpeed = 5000.00
20
21 (Define Global Variables END)
22
23 N1 G90
24 N2 G0 X5.000 Y5.000 Z0.000
25 N3 G600 40
26 N4 G603 1
27 N5 G605 80
28 N6 F 350
29
30 N7 M45
31 N8 G01 X-5.000
32 N9 G01 Y-5.000
33 N10 G01 X5.000
34 N11 G01 Y5.000
35 N12 M46
36
37 N13 G01 X-4.960 Y-4.960
38
```

Project File

GCODE



Load in 2CREATE HMI

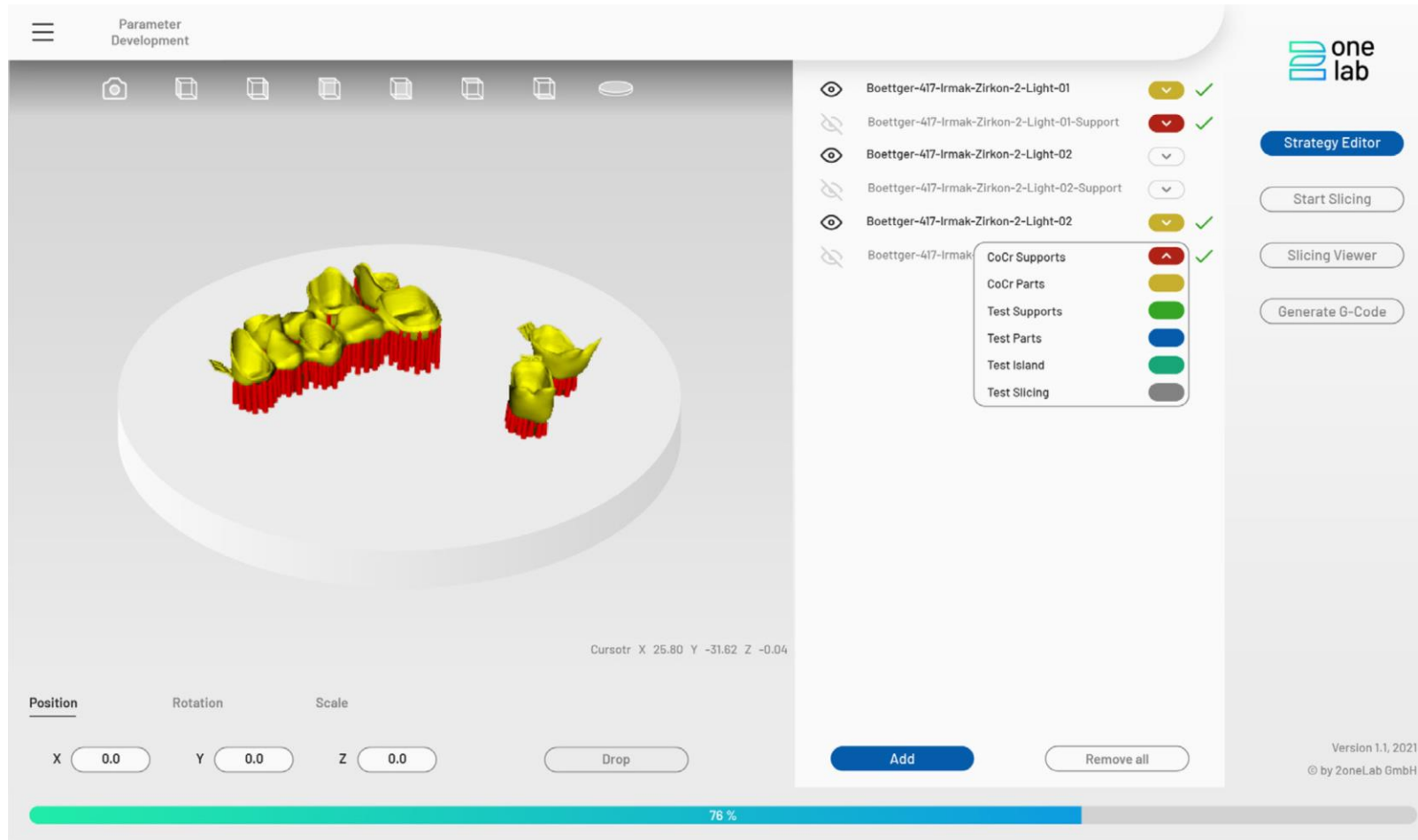


Printed Object

2BUILD – Introduction



B U I L D



3D Printing CAM Solution

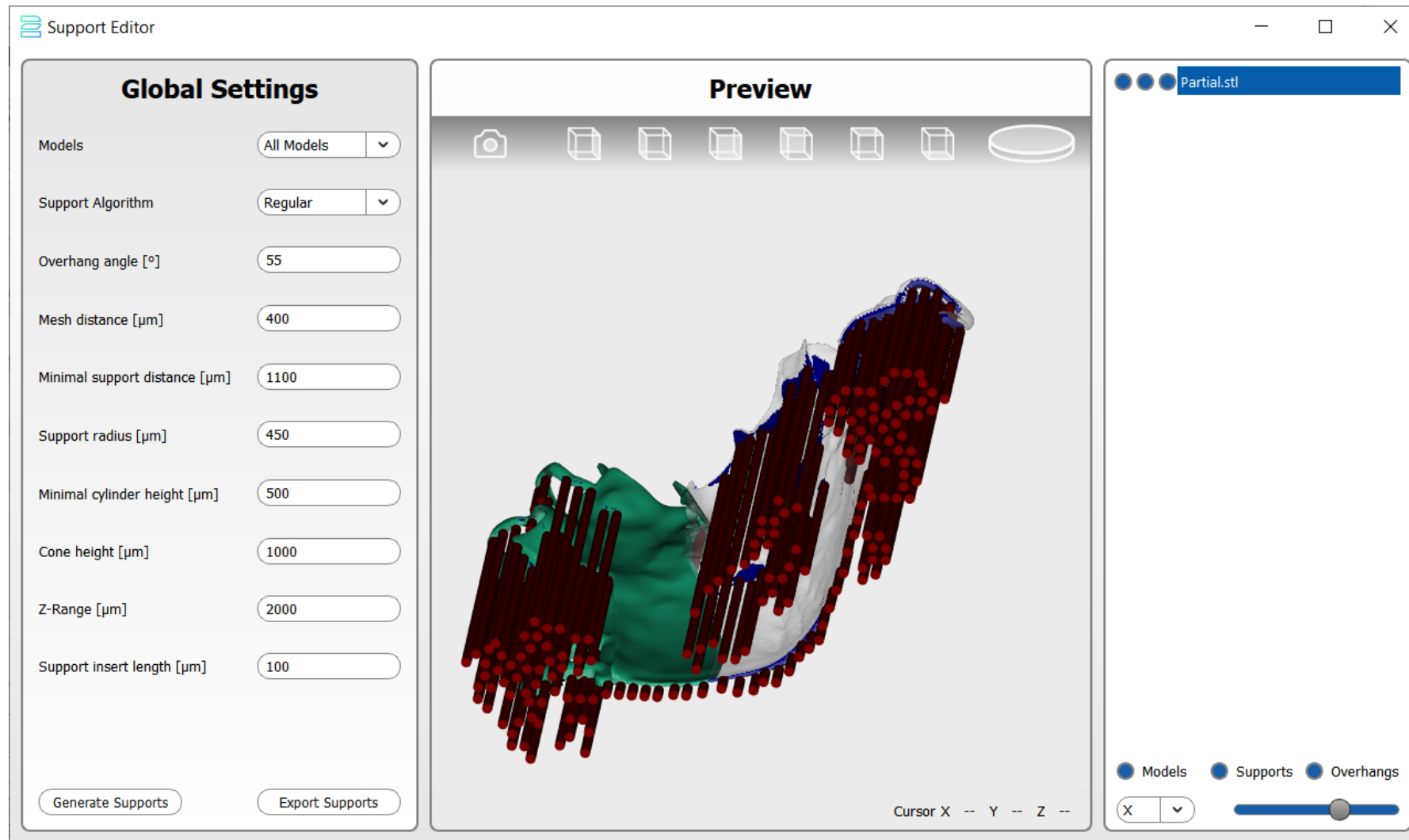
- Nesting
- Labeling
- Auto & Manual Support Generation
- Strategy Editor
- Parameter Development Feature
- Supported File Formats: STL, CLI, GCODE, 3MF*

* Release of this Feature Q1/2022

2CREATE – Supports



BUILD



Support Editor

Automatic support generation based on part orientation

Wide range of setting options for supports

Option: Manual support generation or removal

2BUILD – Strategy Editor



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Strategy Editor

Global Settings

Strategy Template: CoCr Supports

Strategy Name: Teststrategie

Process priority: 1

User: ZoneLab

Color:

Layer Height [µm]: 25

Shift Angle [°]: 66.7

Apply Cancel

Created: 10-15-2021 14:24:03 by ZoneLab
Last edit: 10-15-2021 14:24:03 by ZoneLab

Apply Strategy Close

Contour Settings

Boundary Offset [µm]: 0

Number of inner contours: 5

Offset inner contours [µm]: 90

Starting point shift [µm]: 200

Order: 1-2-3 2-1-3 3-1-2

Beam Expander Diameter: 40

Laser Power [W]: 120

Mark Speed [mm/s]: 1000

Hatching Settings

Base Angle [°]: 90

Boundary Offset [µm]: 90

Hatching Distance [µm]: 100

Hatching Strategy: Line Stripes Island

Stripe width [µm]: 5000

Stripe overlap [µm]: 100

Stripe offset [µm]: 500

Style: Line Stripes Island

Beam Expander Diameter: 40

Laser Power [W]: 120

Mark Speed [mm/s]: 630

Strategy Editor

flexibility thanks to multiple strategy options

Independent Strategies for Hatching and Contours

Line, Stripes and Island Hatching Strategies

2CREATE – Parameter Development



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Parameters Development

Design of Experience → Image processing → Parameters forecast

Machine Parameters

- Laser power [W] min 80 max 230
- Marking speed [mm/s] min 500 max 3000
- Hatching distance [µm] min 20 max 150
- Beam expander [µm] min 40 max 120

Design of Experience

Central composite design (cci) Stages 2

Metal powder: hh

Strategy Template: CoCr Parts Island

Model Template: inversePyramid_10mm.stl

Create DoE

Number	Laser power [W]	Marking speed [mm/s]	Hatching distance [µm]
1	110.0	1007.0	46.0
2	200.0	1007.0	46.0
3	110.0	2493.0	46.0
4	200.0	2493.0	46.0
5	110.0	1007.0	124.0
6	200.0	1007.0	124.0
7	110.0	2493.0	124.0
8	200.0	2493.0	124.0
9	155.0	1750.0	85.0
10	155.0	1750.0	85.0
11	155.0	1750.0	85.0
12	80.0	1750.0	85.0
13	230.0	1750.0	85.0
14	155.0	500.0	85.0
15	155.0	3000.0	85.0
16	155.0	1750.0	20.0
17	155.0	1750.0	150.0
18	155.0	1750.0	85.0
19	155.0	1750.0	85.0
20	155.0	1750.0	85.0

Show DoE

Load DoE

Export DoE

Export to 2Build

Number of plates: 1

Design of Experience

Choose from different statistical design types (ccc, ccf, cci and many others)!

Automatic generation of test objects & strategy

Direct GCODE Export of the DoE Pattern

2CREATE – Parameter Development



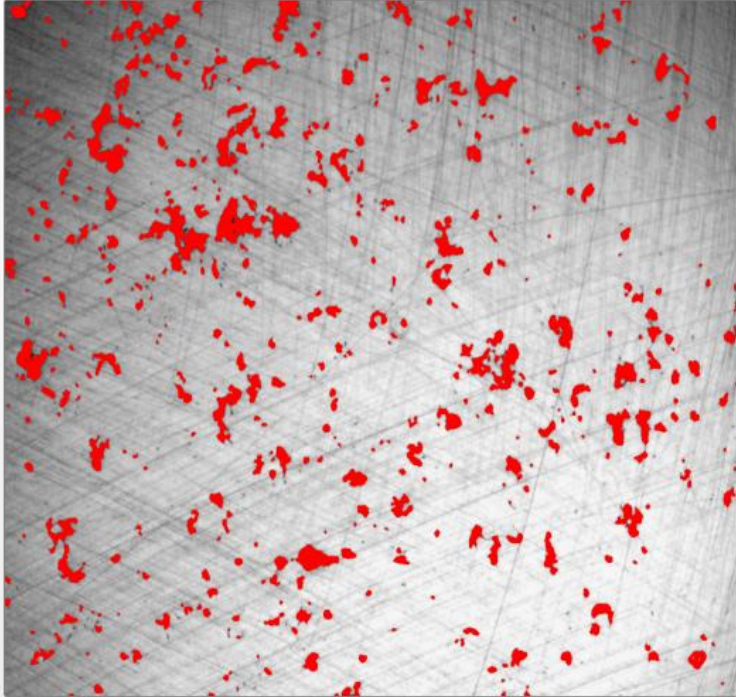

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Parameters Development

Design of Experience → Image processing → Parameters forecast

01.bmp
02.bmp
03.bmp
04.bmp
05.bmp
06.bmp
07.bmp
08.bmp
09.bmp
10.bmp
11.bmp
12.bmp
13.bmp
14.bmp
15.bmp
16.bmp
17.bmp
18.bmp
19.bmp
20.bmp

Add RoI Update



Material density: 92.98%

	min. pore diameter [μm]	<input type="text" value="18"/>		X1	<input type="text" value="0"/>		k-Parameter (Sauvola)	<input type="text" value="0,20"/>		Invert image	<input type="checkbox"/>
	max. pore diameter [μm]	<input type="text" value="1000"/>		X2	<input type="text" value="1280"/>		Window size of binarization	<input type="text" value="35"/>		Fill holes	<input type="checkbox"/>
	Resolution [μm/px]	<input type="text" value="5.93"/>		Y1	<input type="text" value="0"/>		Radius Opening [px]	<input type="text" value="2"/>		Otsu binarization	<input type="checkbox"/>
	Minimal density [%]	<input type="text" value="98"/>		Y2	<input type="text" value="1024"/>		Radius Closing [px]	<input type="text" value="0"/>		Median filter	<input type="checkbox"/>

Image Processing

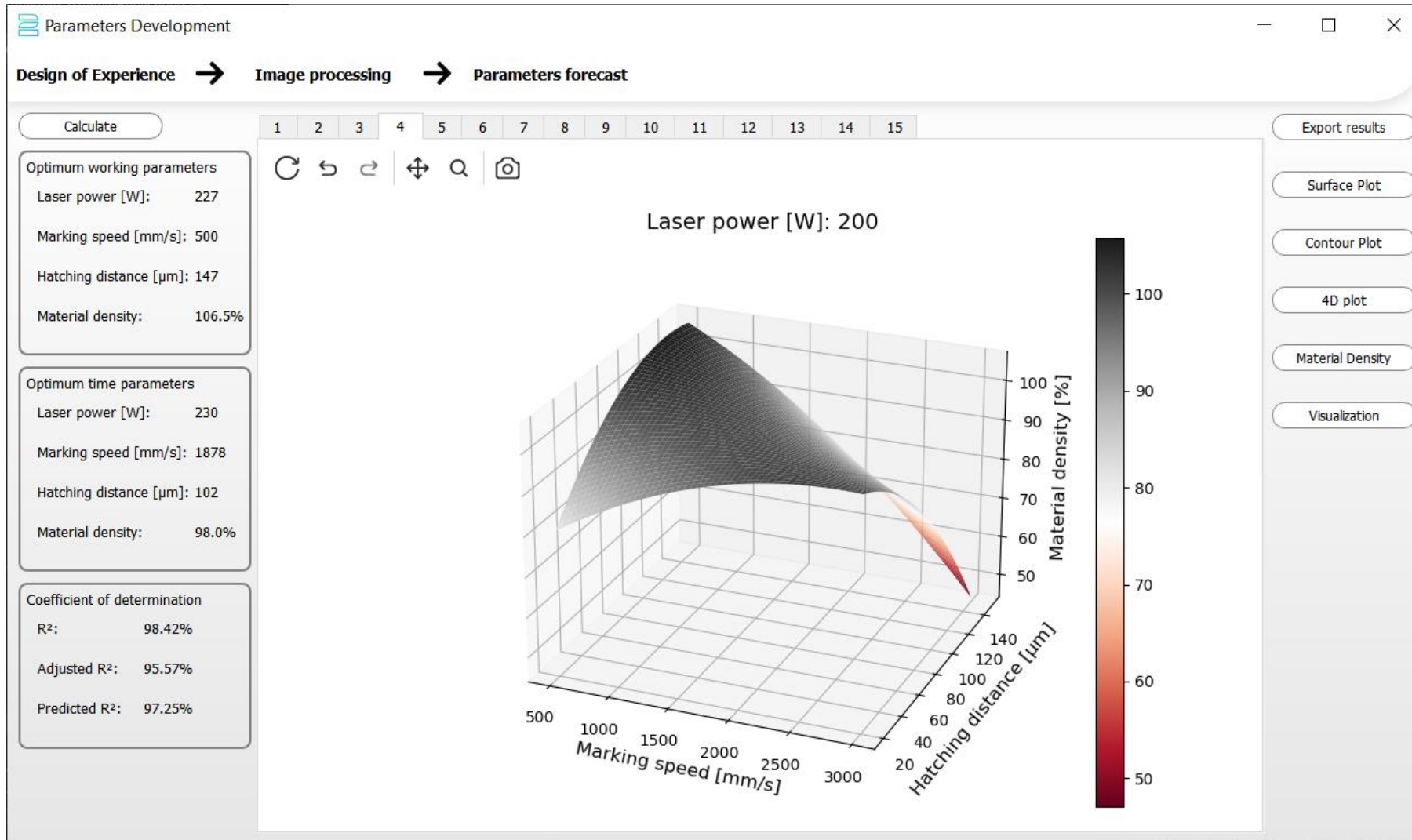
Automatic calculation of object density

Best accuracy thanks to multiple modifications options of the image processing

2CREATE – Parameter Development



BUILD



Parameter Forecast

Automatic calculation of the optimal process field/parameters.

Various visualizations help to estimate and improve the results.

2CREATE – Why is the 2CREATE the best solution for you?

- Open parameter selection / multiple strategy settings possible
- No commitment to one powder type and manufacturer
- GCode for project file generation
- "On the fly" change of spot size & laser power during printing
- Attractively priced product
- High laser power & energy density
- Extremely compact system
- Innovative and fast coating concept

