

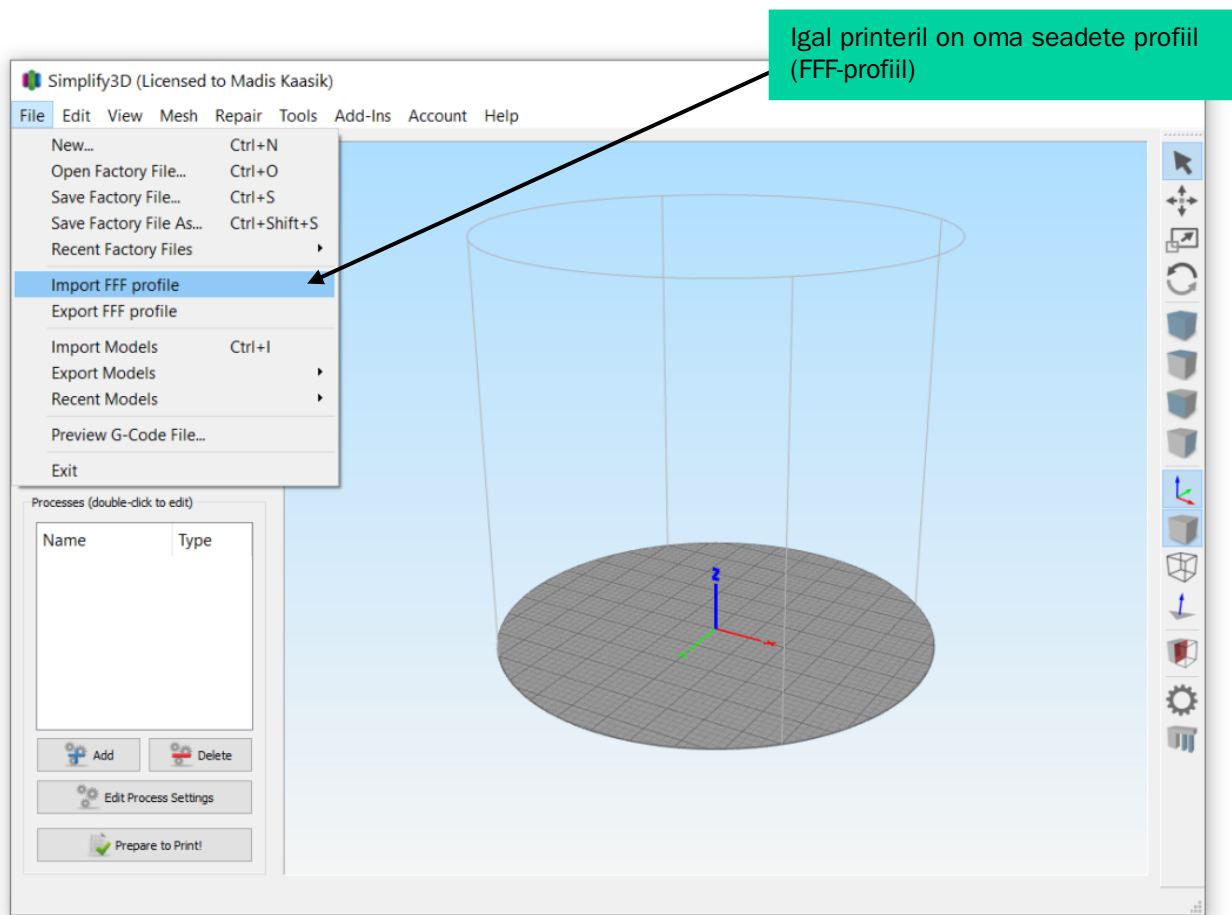
EKA

**WASP 2040 3D-printeri kasutusjuhend
Simplify3D jaoks**

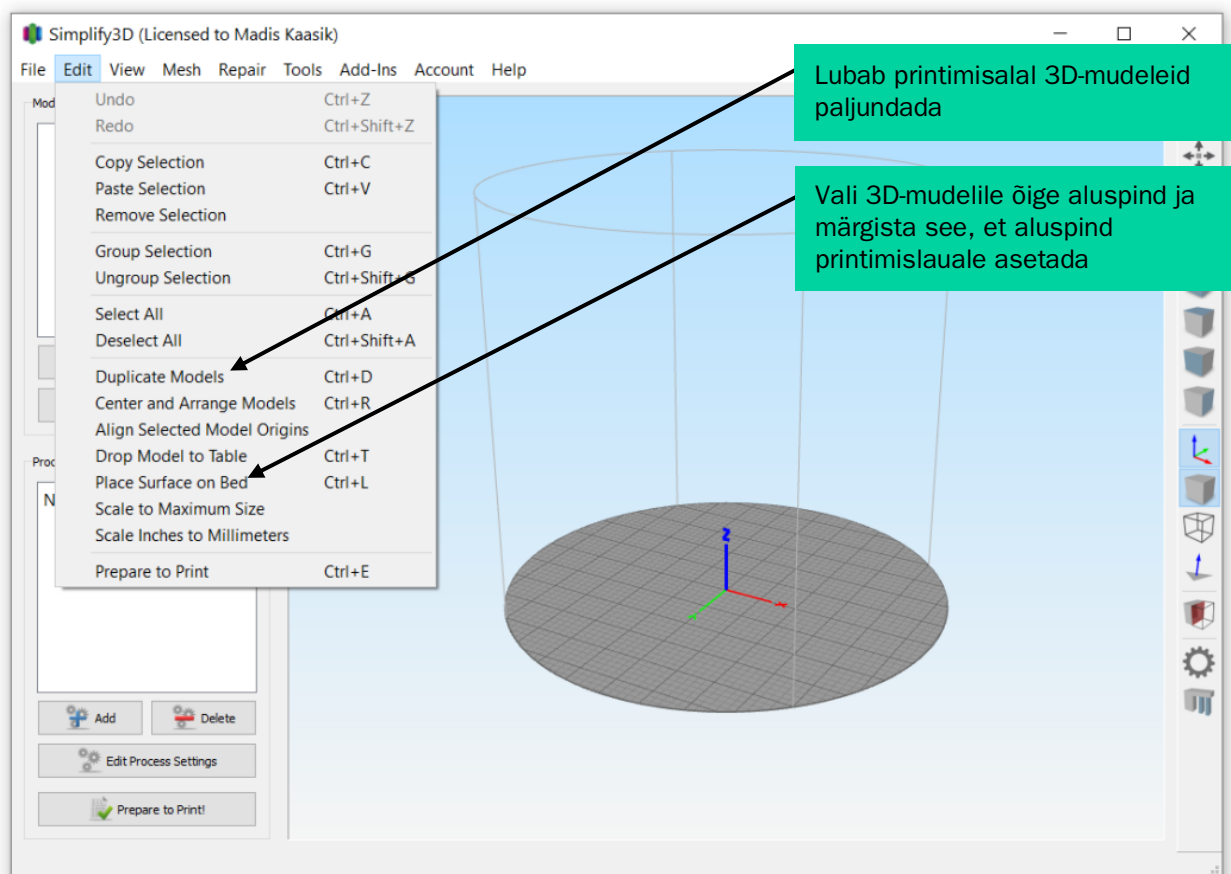
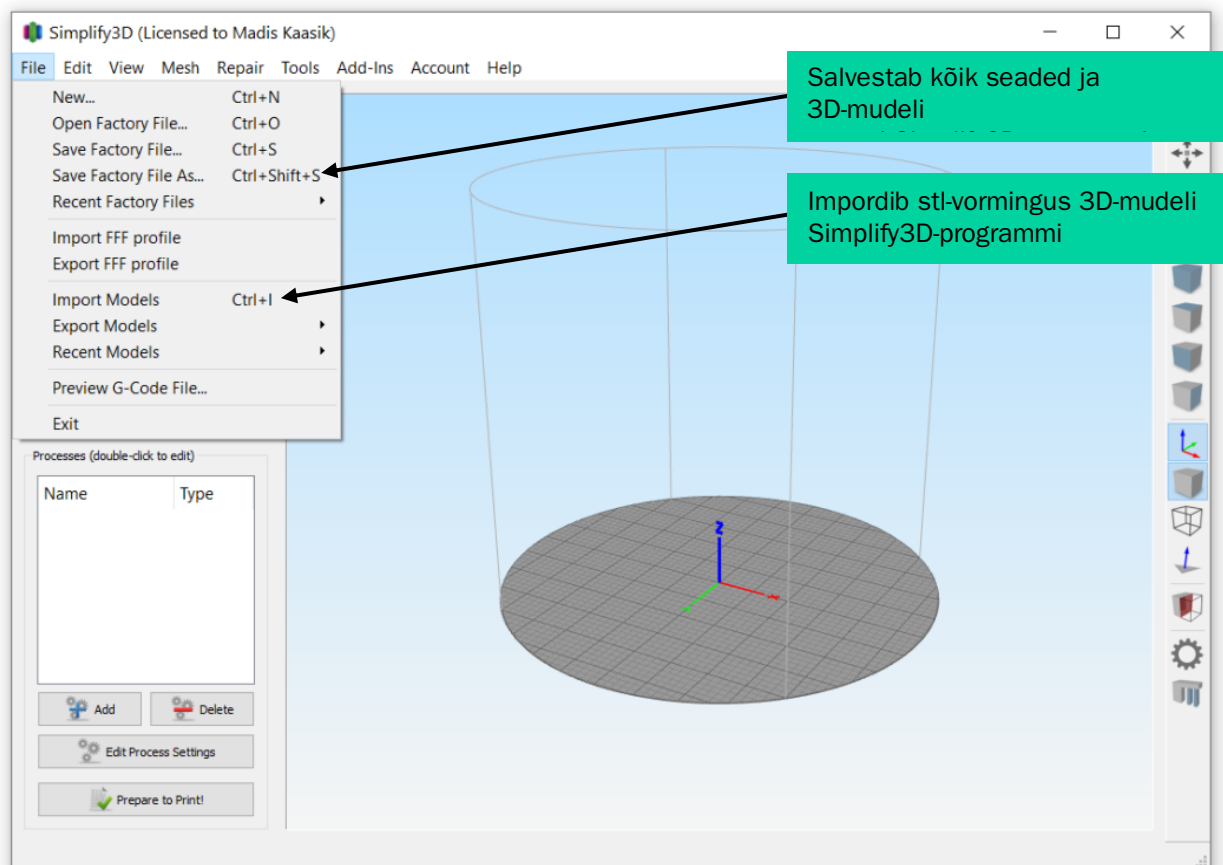
Dokumendis käsitletakse alljärgnevat:

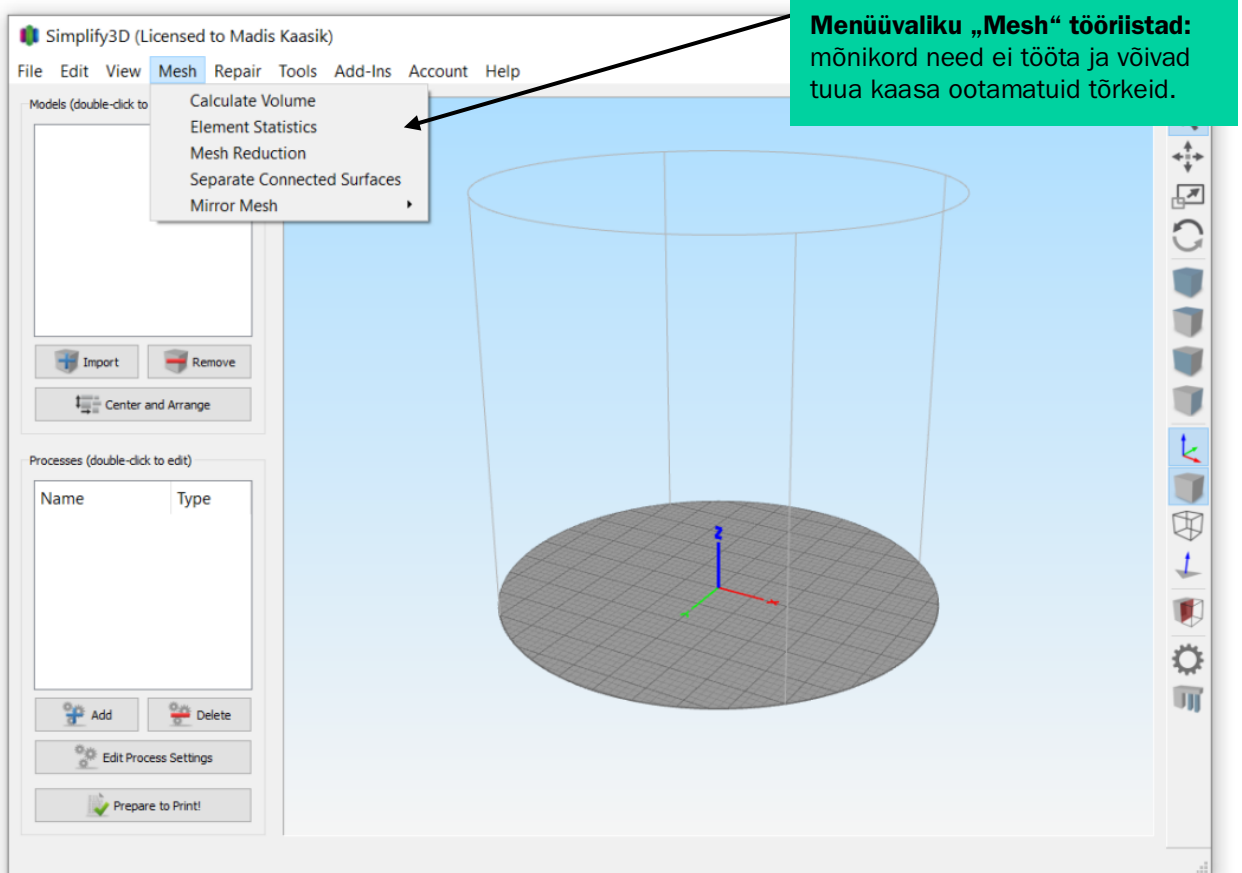
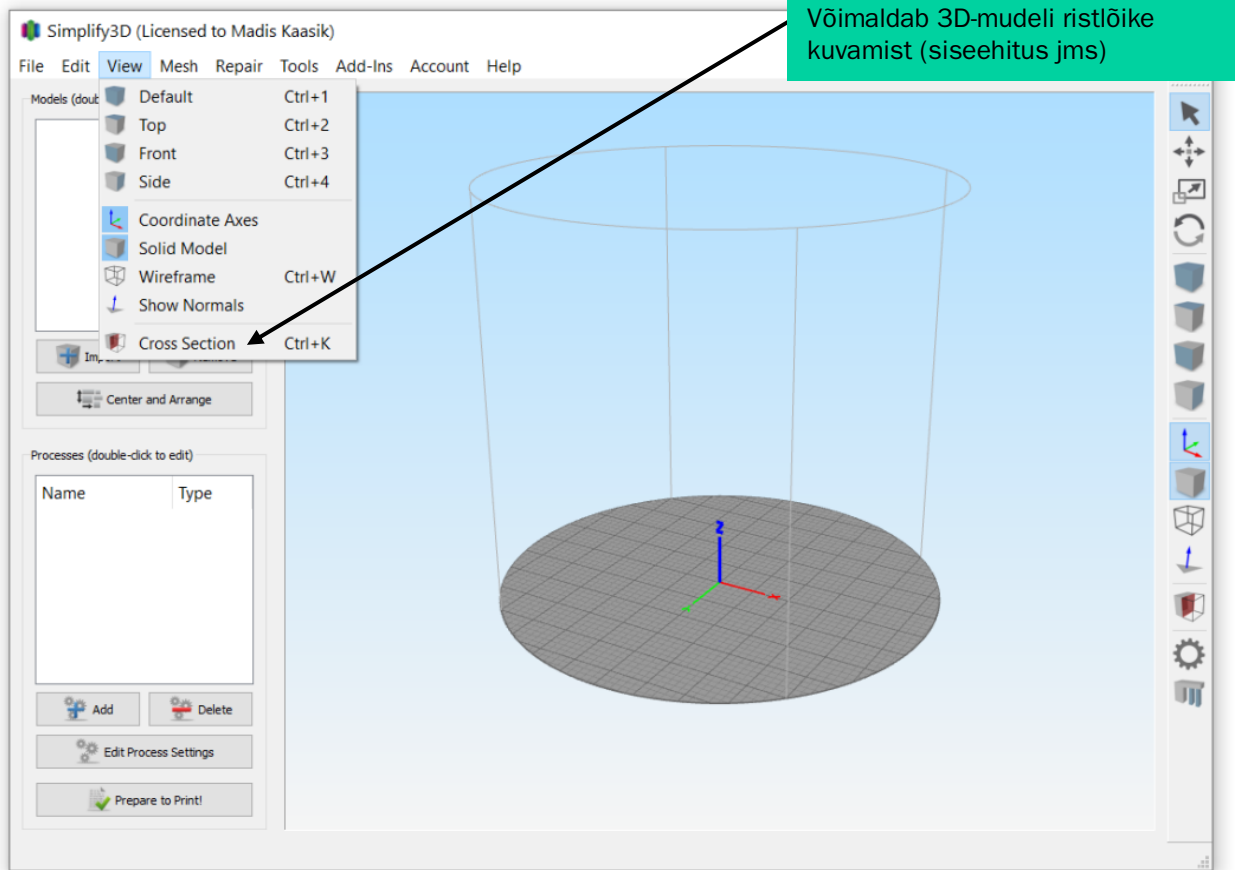
- 1.** Kuidas uut printerit esimest korda häälestada (lk 3)
- 2.** Simplify3D enim kasutatavad nupud ja sakid (lk 4–8)
- 3.** Punkthaaval printimisjuhiseid (lk 9–23);
kui prindid G-koodide importimisega, mine kohe lk-le 23)
- 4.** Seadme juhtpaneeli juhiseid (lk 24–26)

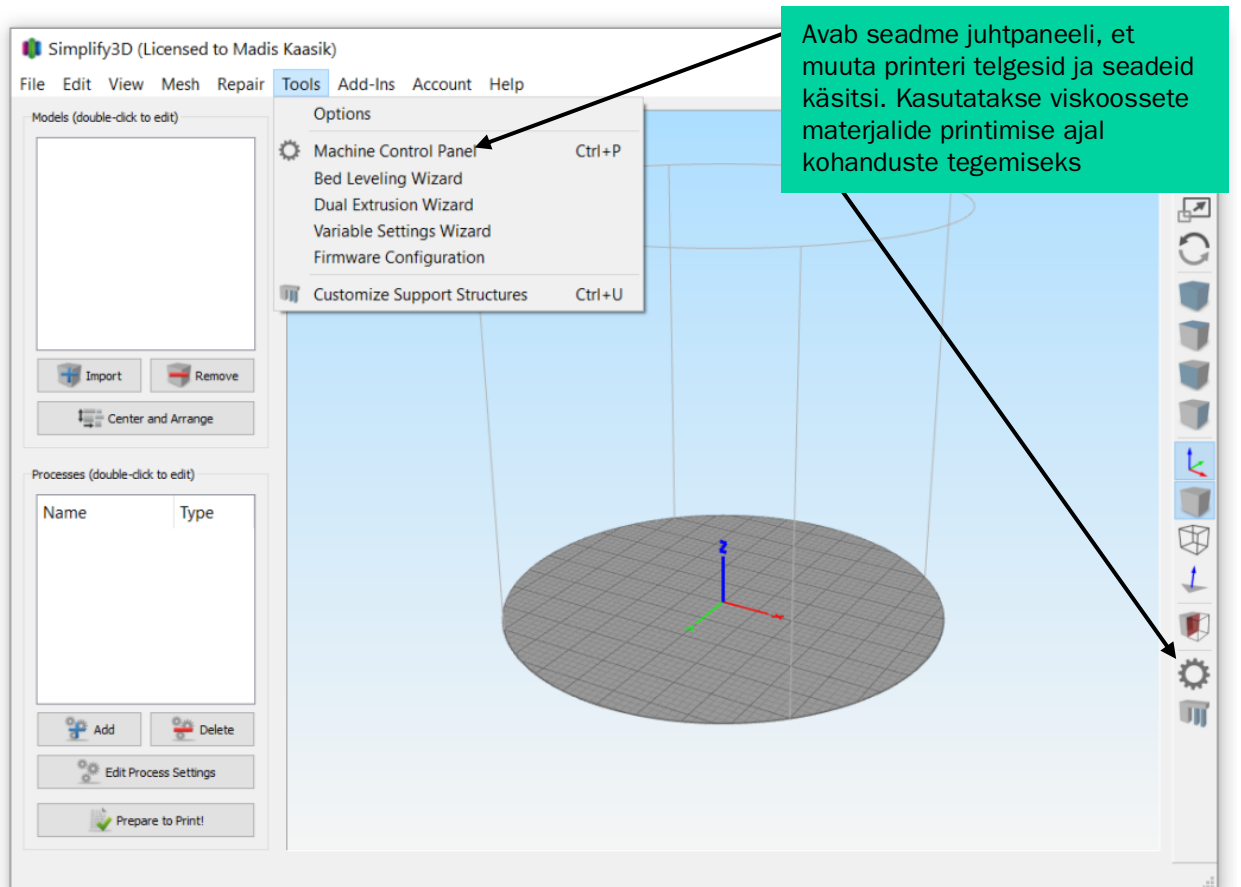
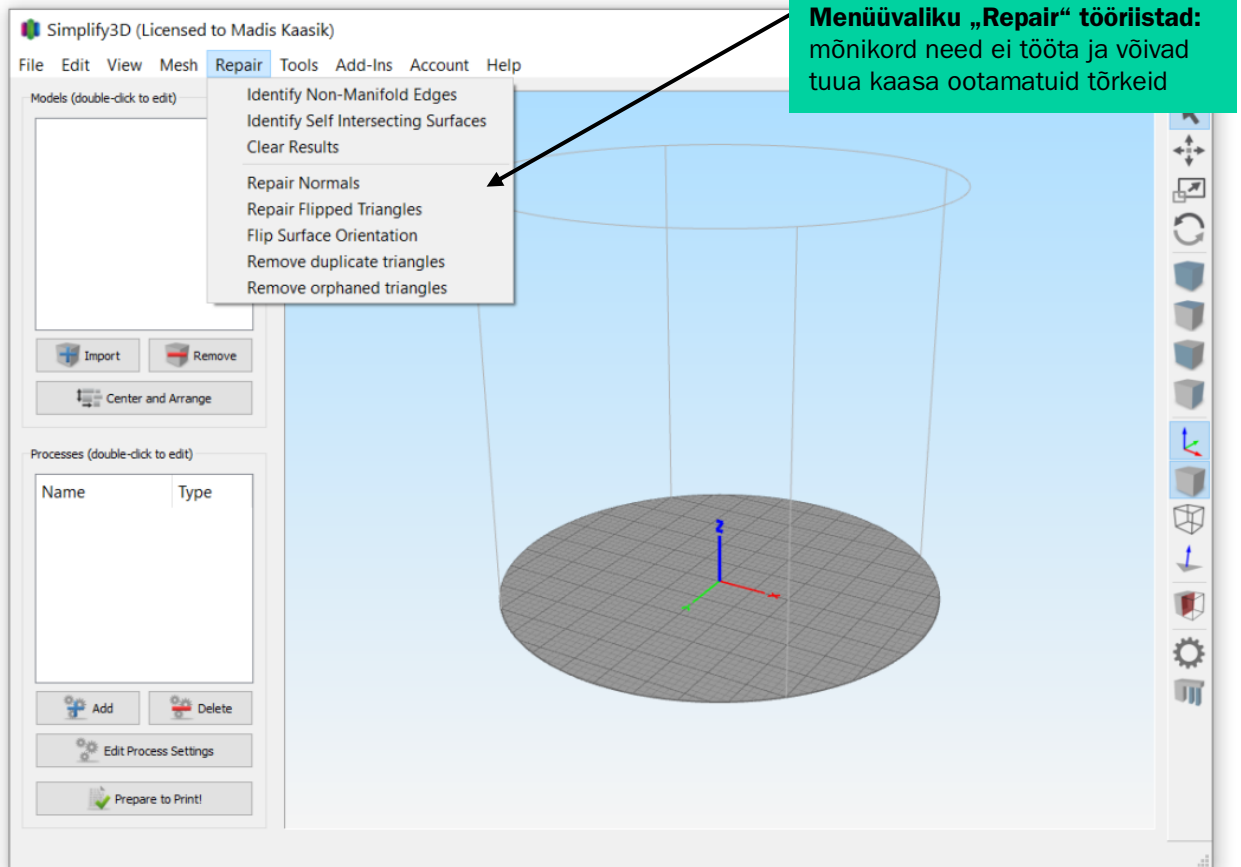
1. Kuidas uut printerit esimest korda häälestada

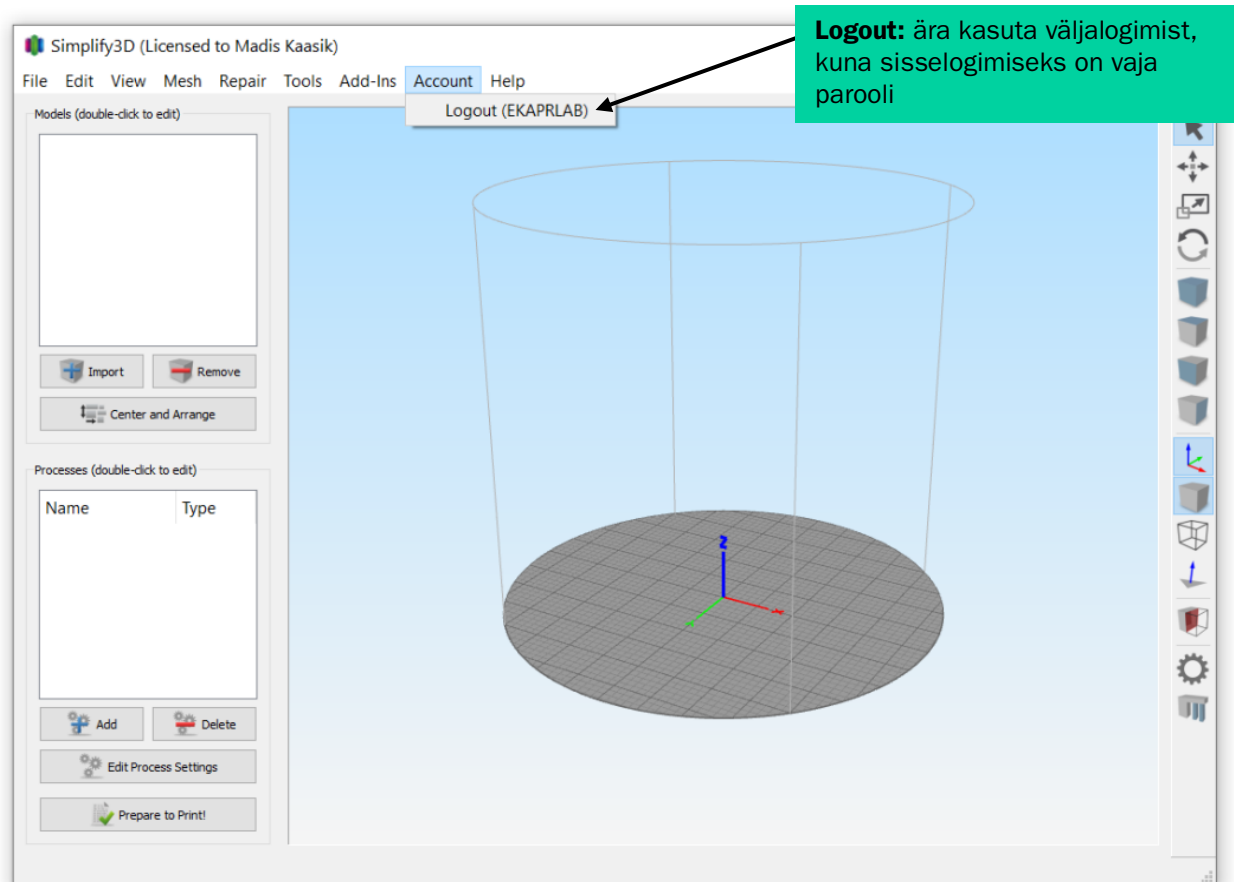
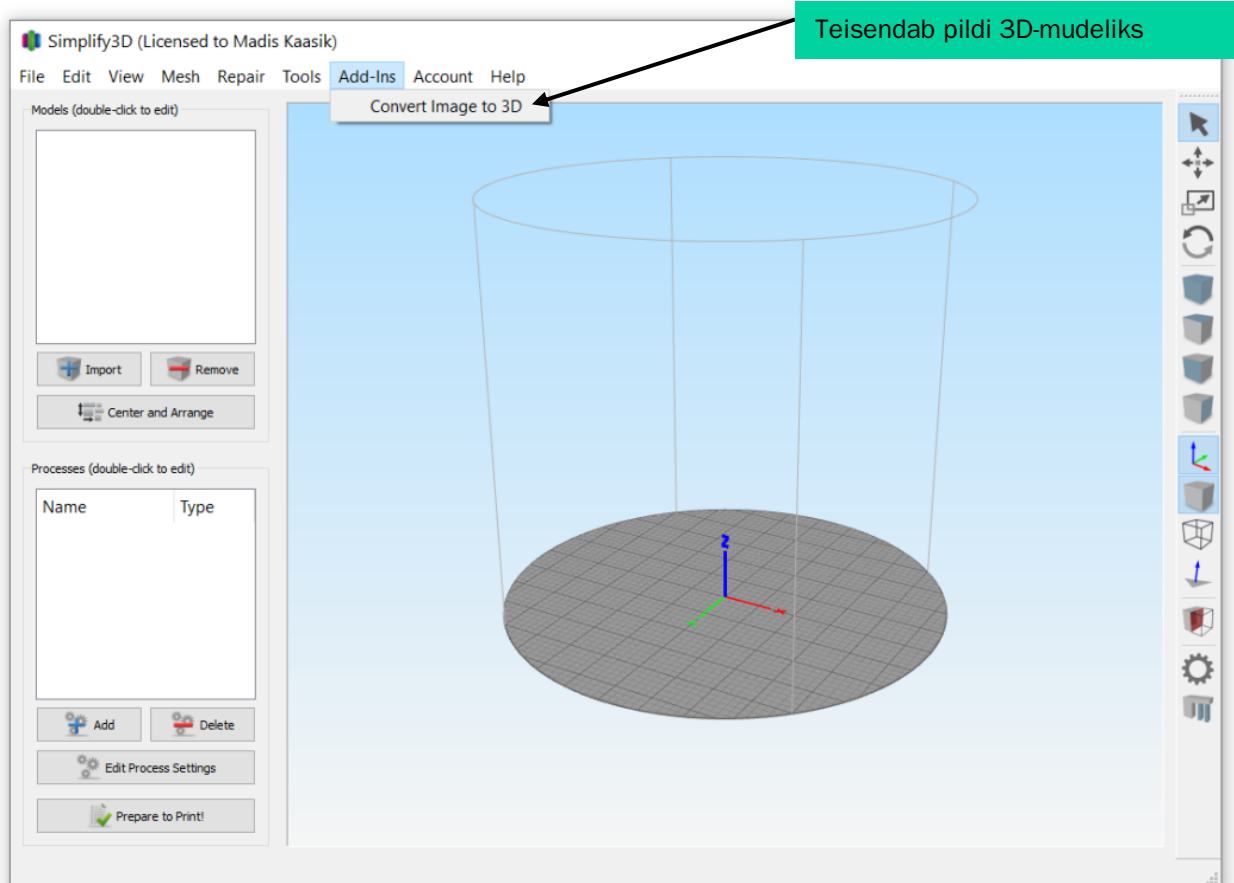


2. Simplify3D enim kasutatavad nupud ja sakid

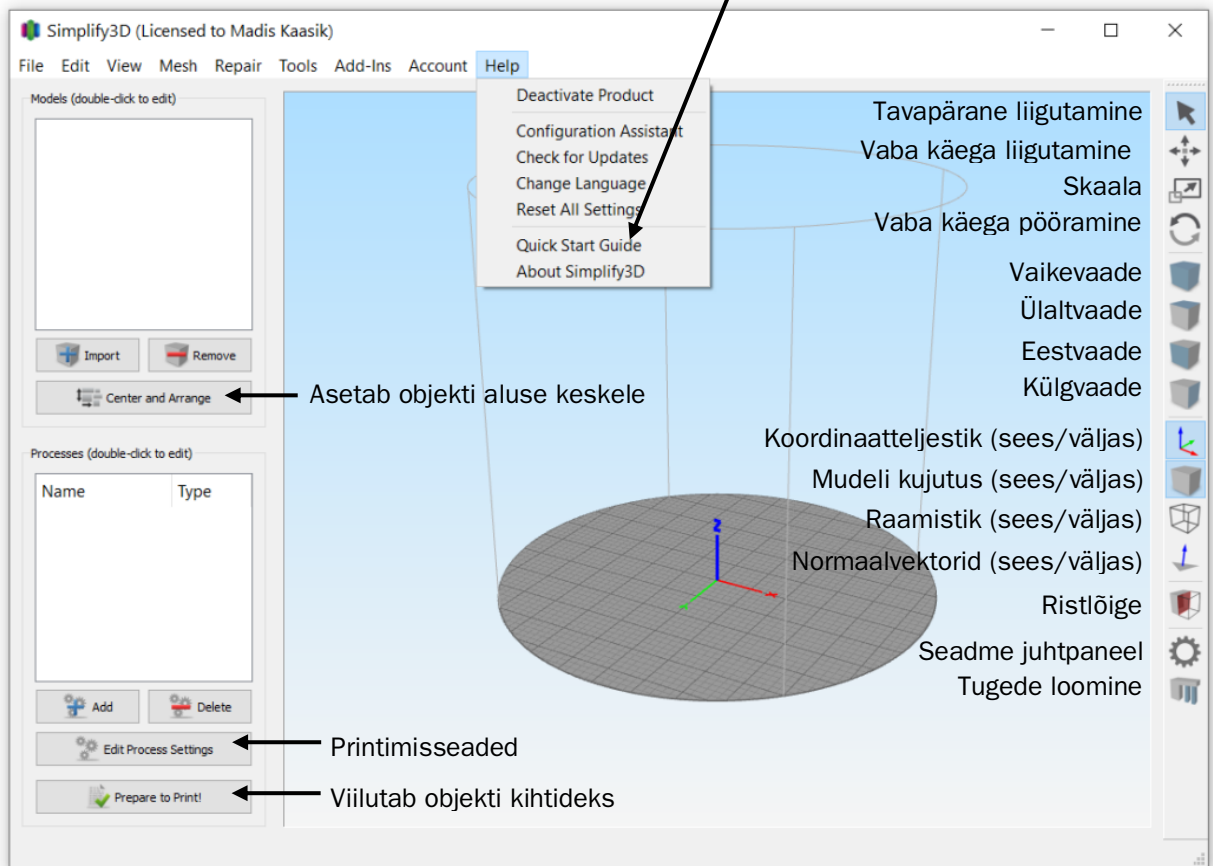








Kiirjuhend, kust leiab lisainfot



Asetab objekti aluse keskele

Printimisseaded

Viilutab objekti kihtideks

3. Punkthaaval printimisjuhised (kui prindid G-koodide importimisega, jäta vahele ja liigu kohe lk-le 24)

Punkt 01: impordi stl-vormingus fail

Punkt 02: tee mudeli peal topeltklõps, et avada seadete paneel (saad muuta orientatsiooni, skaalat ja asukohta)

Punkt 03: ava printimisseaded

The screenshot shows the Simplify3D software interface. On the left, the 'Models' panel contains a list with 'Sample - Vase - STL...' and buttons for 'Import', 'Remove', and 'Center and Arrange'. Below it is the 'Processes' panel with a table for 'Name' and 'Type', and buttons for 'Add', 'Delete', 'Edit Process Settings', and 'Prepare to Print!'. The central 3D view shows a yellow vase model on a grey grid. On the right, a settings panel is open, showing options for 'Change Position', 'Change Scaling', and 'Change Rotation'. A red dashed box highlights this settings panel. Arrows from the callout boxes point to the 'Import' button, the 'Sample - Vase - STL...' model, and the 'Edit Process Settings' button.

Punkt 04: vali rippmenüüst õige printer

Algne (**original**) tähendab, et see printeriprofiil töötab printeriseadetega kõige paremini

Punkt 05: salvesta uus „algne“ printeriprofiil enda ja oma projekti nimega

The screenshot shows the FFF Settings window with the following elements:

- Process Name:** Process 1
- Select Profile:** EKA delta 700 - original - 05082020
- Auto-Configure:** EKA delta 700 - original - 05082020
- Material:** PLA
- Print Quality:** Medium
- General Settings:** Infill Percentage: [slider]
- Primary Extruder Toolhead:** Overview, Extruder Toolhead Index: Tool 0, Nozzle Diameter: 6,00 mm, Extrusion Multiplier: 0,90, Extrusion Width: Auto/Manual (0,40 mm), Ooze Control (Retraction checked, Retraction Distance: 1,00 mm, etc.)

Annotations and dialog boxes:

- An arrow points from the text "Punkt 04" to the "Select Profile" dropdown menu.
- An arrow points from the text "Punkt 05" to the "Save as New" button.
- A dialog box titled "Profile Name" is shown with the text "Enter a name for the new profile." and the input field containing "EKA delta 700 - original - 05082020". An orange box next to it says "Kustuta see osa" (Delete this part).
- A second dialog box titled "Profile Name" is shown with the text "Enter a name for the new profile." and the input field containing "EKA delta 700 - Anna Aken - Vaas". An orange box next to it says "Lisa enda nimi ja projekti nimi" (Add your name and project name).

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas Update Profile Save as New Remove

Auto-Configure for Material: PLA + - Auto-Configure for Print Quality: Medium + -

General Settings: Infill Percentage: 10% Include Raft Generate Support

Extruder List (click item to edit settings): Primary Extruder

Add Extruder Remove Extruder

Primary Extruder Toolhead

Overview

Extruder Toolhead Index: Tool 0

Nozzle Diameter: 2,00 mm **Punkt 07: määra düüsi diameeter**

Extrusion Multiplier: 0,90

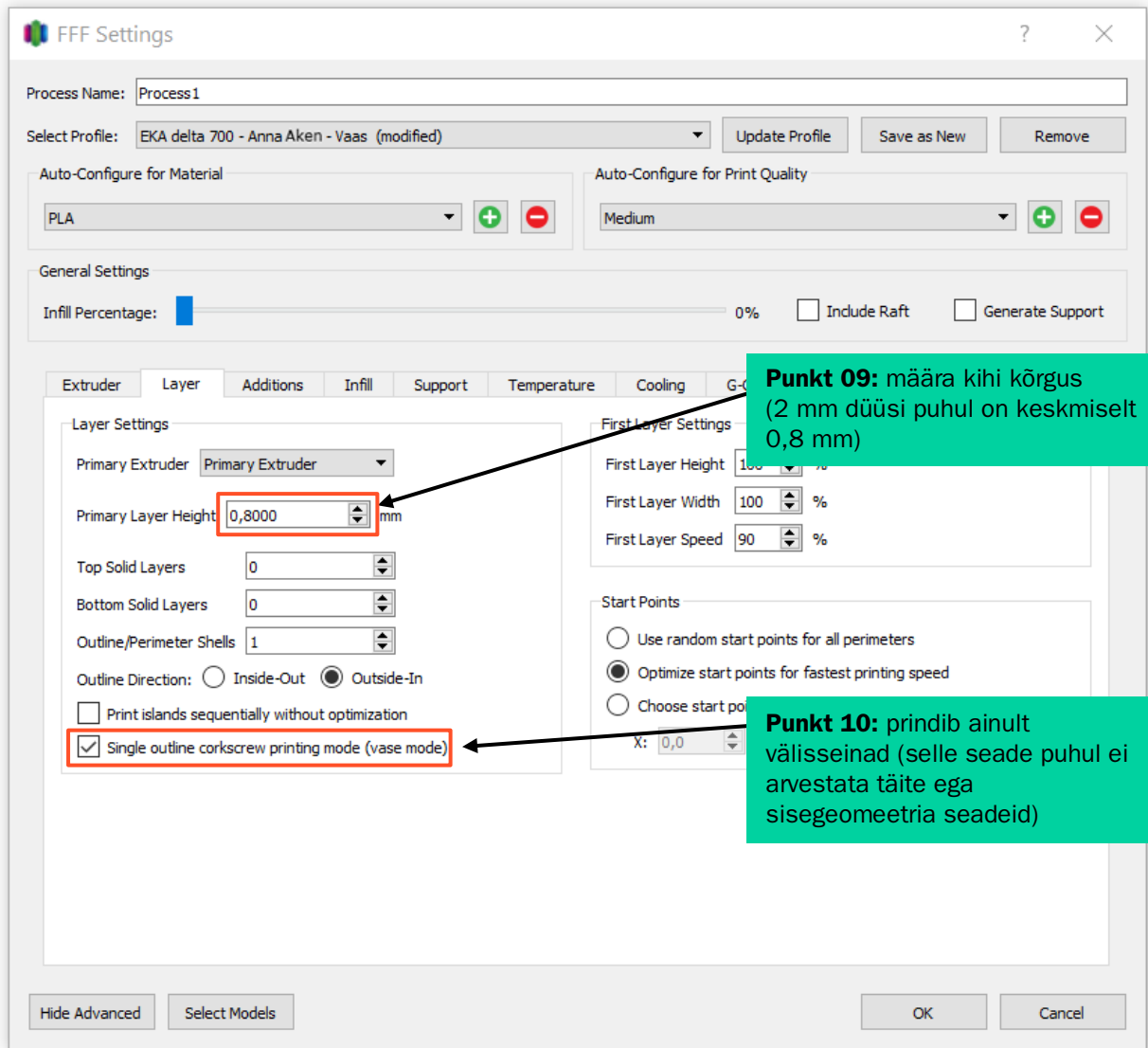
Extrusion Width: Auto Manual 2,40 mm **Punkt 08: automaatne laius ehk „Auto“ (käsitsi tuleb määrata puutuvate printimise joonte puhul)**

Ooze Control

<input type="checkbox"/> Retraction	Retraction Distance	1,00
	Extra Restart Distance	0,00
	Retraction Vertical Lift	0,00 mm
	Retraction Speed	1800,0 mm/min
<input type="checkbox"/> Coast at End	Coasting Distance	0,20 mm
<input type="checkbox"/> Wipe Nozzle	Wipe Distance	5,00 mm

Hide Advanced Select Models OK Cancel

Punkt 06: vaata, et valitud oleks uus profiil, mille just salvestasid



FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified)

Auto-Configure for Material: PLA

Auto-Configure for Print Quality: Medium

General Settings

Infill Percentage: 0% Include Raft Generate Support

Extruder Layer Additions Infill Support Temperature Cooling G-Code Scripts Speeds Other

Use Skirt/Brim

Skirt Extruder: Primary Extruder

Skirt Layers: 1

Skirt Offset from Part: 4,00 mm

Skirt Outlines: 2

Use Prime Pillar

Prime Pillar Extruder: All Extruders

Pillar Width: 12,00 mm

Pillar Location: North-West

Speed Multiplier: 100 %

Use Raft

Raft Extruder: Primary Extruder

Raft Top Layers: 3

Raft Base Layers: 2

Raft Offset from Part: 3,00 mm

Separation Distance: 0,14 mm

Raft Top Infill: 100 %

Above Raft Speed: 30 %

Use Ooze Shield

Ooze Shield Extruder: All Extruders

Offset from Part: 2,00 mm

Ooze Shield Outlines: 1

Sidewall Shape: Waterfall

Sidewall Angle Change: 30 deg

Speed Multiplier: 100 %

Hide Advanced Select Models OK Cancel

Punkt 11: VALIKULINE: printer teeb enne objekti printimist selle ümber ühe ringi. Kasulik valik, et materjal korralikult voolama saada

FFF Settings

Process Name:

Select Profile:

Auto-Configure for Material:

Auto-Configure for Print Quality:

General Settings

Infill Percentage: 0% Include Raft Generate Support

Extruder | Layer | Additions | **Infill** | Support | Temperature | Cooling | G-Code | Scripts | Speeds | Other

General

Infill Extruder:

Internal Fill Pattern:

External Fill Pattern:

Interior Fill Percentage: %

Outline Overlap: %

Infill Extrusion Width: %

Minimum Infill Length: mm

Combine Infill Every: layers

Include solid diaphragm every layers

Internal Infill Angle Offsets

deg

Print every infill angle on each layer

External Infill Angle Offsets

deg

Punkt 12: VALIKULINE:
täitmiskutsiooni ei kasutata tavaliselt.
Seda võib kasutada objekti sisse
tugistruktuuride printimiseks

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified) [Update Profile] [Save as New] [Remove]

Auto-Configure for Material: PLA [+] [-]

Auto-Configure for Print Quality: Medium [+] [-]

General Settings: Infill Percentage: 0% [Include Raft] [Generate Support]

Extruder | Layer | Additions | Infill | **Support** | Temperature | Cooling | G-Code | Scripts | Speeds | Other

Support Material Generation

- Generate Support Material
- Support Extruder: Primary Extruder
- Support Infill Percentage: 30 %
- Extra Inflation Distance: 0,00 mm
- Support Base Layers: 0
- Combine Support Every: 1 layers

Dense Support

- Dense Support Extruder: Primary Extruder
- Dense Support Layers: 0
- Dense Infill Percentage: 70 %

Automatic Placement

Only used if manual support is not defined

- Support Type: Normal
- Support Pillar Resolution: 4,00 mm
- Max Overhang Angle: 45 deg

Separation From Part

- Horizontal Offset From Part: 0,30 mm
- Upper Vertical Separation Layers: 1
- Lower Vertical Separation Layers: 1

Support Infill Angles

- 0 deg
- [Add Angle]
- [Remove Angle]

[Hide Advanced] [Select Models] [OK] [Cancel]

Punkt 13: VALIKULINE:
toefunktsiooni ei kasutata
tavaliselt

FFF Settings

Process Name:

Select Profile:

Auto-Configure for Material:

Auto-Configure for Print Quality:

General Settings

Infill Percentage: Include Raft Generate Support

Extruder Layer Additions Infill Support **Temperature** Cooling G-Code Scripts Speeds Other

Temperature Controller List (click item to edit settings)

Primary Extruder

Primary Extruder Temperature

Overview

Temperature Identifier:

Temperature Controller Type: Extruder Heated build platform

Wait for temperature controller to stabilize before beginning build

Per-Layer Temperature Setpoints

Layer	Temperature
1	20

Layer Number:

Temperature: °C

Punkt 14: VALIKULINE:
temperatuur tuleks seadistada
20 °C peale

Punkt 15: VALIKULINE: jahutust ei kasutata

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified) [Update Profile] [Save as New] [Remove]

Auto-Configure for Material: PLA [+] [-] Auto-Configure for Print Quality: Medium [+] [-]

General Settings: Infill Percentage: 0% [Include Raft] [Generate Support]

Extruder | Layer | Additions | Infill | Support | Temperature | **Cooling** | G-Code | Scripts | Speeds | Other

Per-Layer Fan Controls

Layer	Fan Speed
1	0
2	0

[Add Setpoint] [Remove Setpoint]

Layer Number: 1 [Fan Speed: 60 %]

Fan Options

Blip fan to full power when increasing from idle

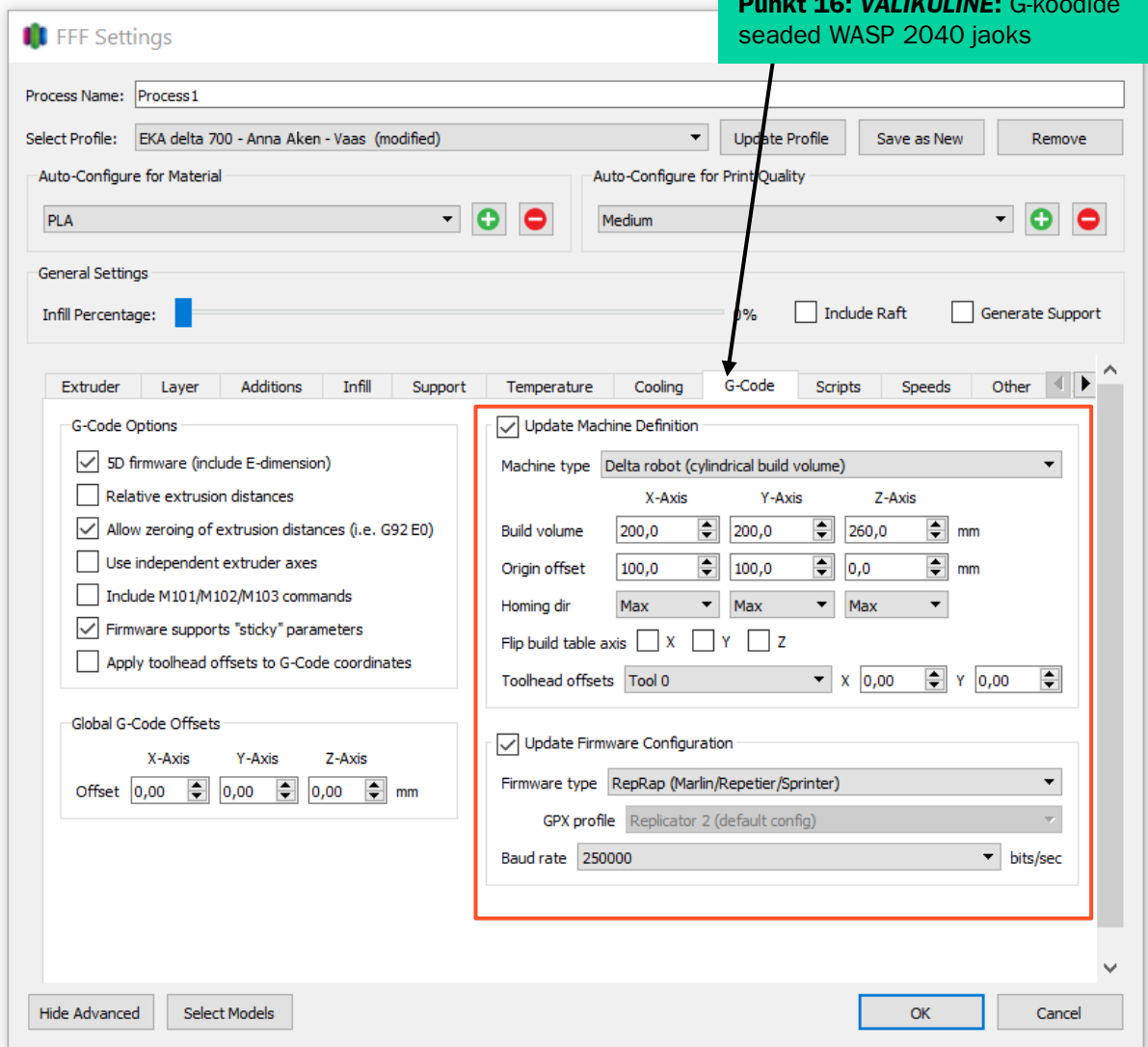
Fan Overrides

Increase fan speed for layers below 45,0 sec

Maximum cooling fan speed: 100 %

Bridging fan speed override: 100 %

[Hide Advanced] [Select Models] [OK] [Cancel]



Punkt 17: VALIKULINE:
genereeritud G-koodi algusesse ja lõppu on võimalik printerile erikäsklusi lisada

The image shows the 'FFF Settings' dialog box. At the top, there are fields for 'Process Name' (Process 1) and 'Select Profile' (EKA delta 700 - Anna Aken - Vaas (modified)). Below these are sections for 'Auto-Configure for Material' (set to PLA) and 'Auto-Configure for Print Quality' (set to Medium). The 'General Settings' section includes an 'Infill Percentage' slider at 0% and checkboxes for 'Include Raft' and 'Generate Support'. A horizontal tab bar at the bottom of the main area includes 'Extruder', 'Layer', 'Additions', 'Infill', 'Support', 'Temperature', 'Cooling', 'G-Code', 'Scripts', 'Speeds', and 'Other'. The 'G-Code' tab is active, showing sub-tabs for 'Starting Script', 'Layer Change Script', 'Retraction Script', 'Tool Change Script', and 'Ending Script'. The 'Starting Script' sub-tab is selected, and its text area contains the code 'G28 ; home all axes'. Below the G-Code section is a 'Post Processing' section with a dropdown for 'Export file format' (Standard G-Code (.gcode)), a checkbox for 'Add celebration at end of build (for .x3g files only)', and a dropdown for 'Random Song'. At the bottom of the dialog are buttons for 'Hide Advanced', 'Select Models', 'OK', and 'Cancel'. Two arrows point from a green text box at the top right to the 'Starting Script' and 'Ending Script' sub-tabs.

Punkt 18 VALIKULINE: kogu printimise ajal on soovitatav hoida ühtlast kiirust

The image shows the 'FFF Settings' dialog box. At the top, there are fields for 'Process Name' (Process 1) and 'Select Profile' (EKA delta 700 - Anna Aken - Vaas (modified)). Below these are sections for 'Auto-Configure for Material' (set to PLA) and 'Auto-Configure for Print Quality' (set to Medium). The 'General Settings' section includes an 'Infill Percentage' slider at 0%, and checkboxes for 'Include Raft' and 'Generate Support'. A tabbed interface at the bottom includes 'Extruder', 'Layer', 'Additions', 'Infill', 'Support', 'Temperature', 'Cooling', 'G-Code', 'Scripts', 'Speeds', and 'Other'. The 'Speeds' tab is selected and highlighted with a red border. It contains a 'Speeds' section with the following settings: Default Printing Speed (3000,0 mm/min), Outline Underspeed (100 %), Solid Infill Underspeed (100 %), Support Structure Underspeed (100 %), X/Y Axis Movement Speed (3000,0 mm/min), and Z Axis Movement Speed (3000,0 mm/min). To the right of the 'Speeds' section is a 'Speed Overrides' section with a checkbox for 'Adjust printing speed for layers below' (set to 15,0 sec) and a label 'Allow speed reductions down to' (set to 20 %). At the bottom of the dialog are buttons for 'Hide Advanced', 'Select Models', 'OK', and 'Cancel'.

FFF Settings

Process Name: Process1

Select Profile: EKA delta 700 - Anna Aken - Vaas (modified)

Auto-Configure for Material: PLA

Auto-Configure: Medium

General Settings

Infill Percentage: 0% Include Raft Generate Support

Extruder Layer Additions Infill Support Temperature Cooling G-Code Scripts Speeds **Other**

Bridging

Unsupported area threshold 50,0 sq mm

Extra inflation distance 0,00 mm

Bridging extrusion multiplier 100 %

Bridging speed multiplier 100 %

Use fixed bridging infill angle 0 deg

Apply bridging settings to perimeters

Dimensional Adjustments

Horizontal size compensation 0,00 mm

Filament Properties

Filament Toolhead Index Tool 0

Filament diameter 2,0000 mm

Filament price 1,00 price/kg

Filament density 1,70 grams/cm³

Tool Change Retraction

Tool change retraction distance 12,00 mm

Tool change extra restart distance -0,50 mm

Tool change retraction speed 600,0 mm/min

Hide Advanced Select Models OK Cancel

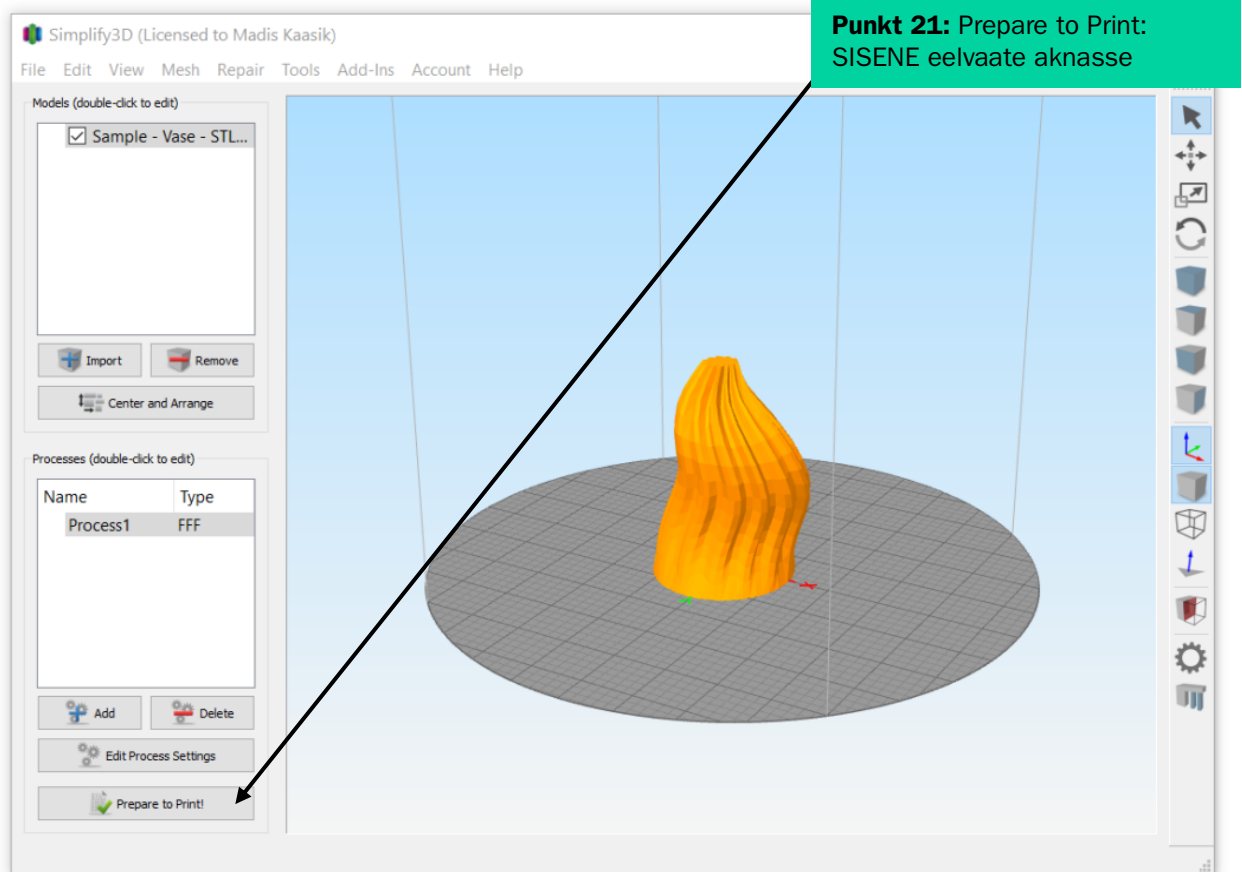
Punkt 19 VALIKULINE:

1. Bridging: ei kasutata tavaliselt
2. Filament Properties: ei kohaldu
3. Tool Change Retraction: ei kasutata
4. Dimensional Adjustments: ei kasutata tavaliselt

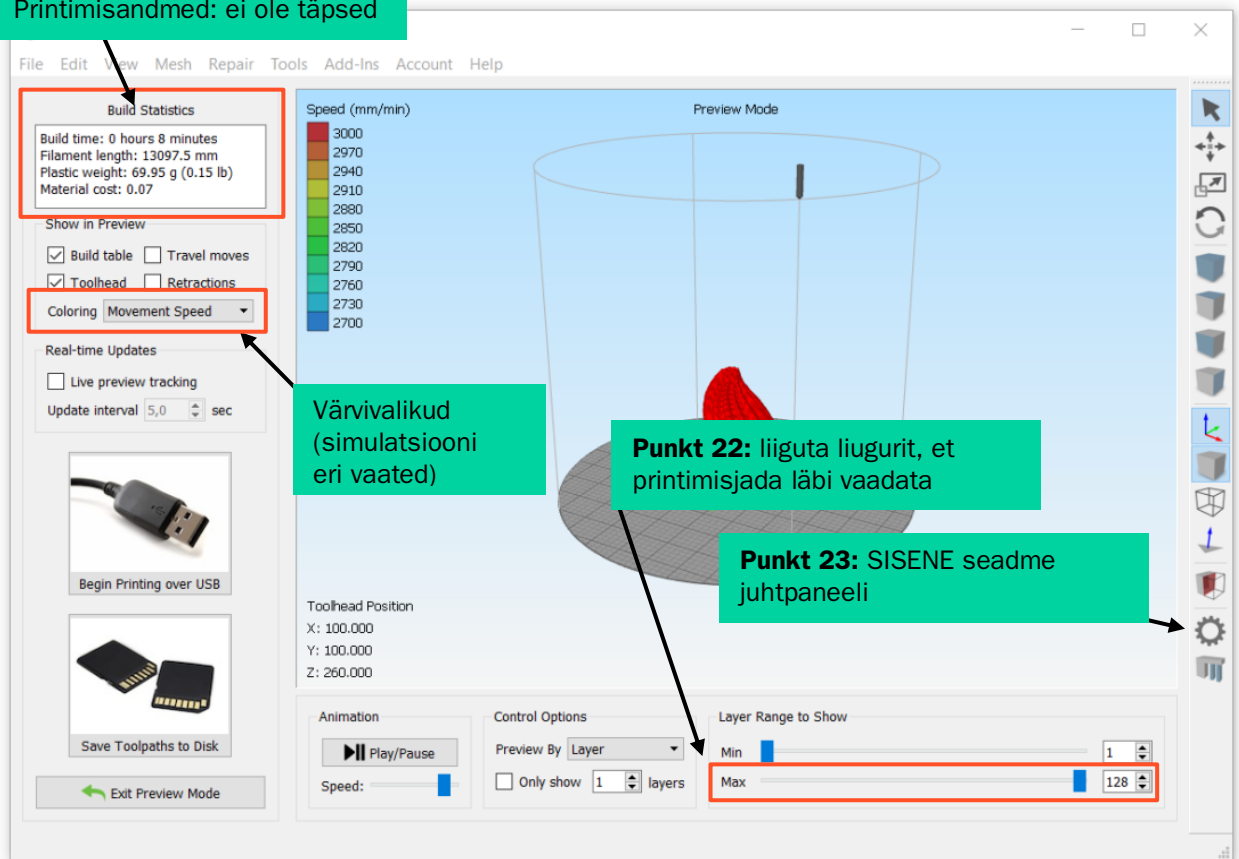
Punkt 20 VALIKULINE:

1. Layer modifications: kiire võimalus lõpetada/alustada printimist kindlal kõrgusel
2. Thin wall behavior: eksperimentaalne seade, ei ole katsetatud
3. Single extrusion: ei kasutata
4. Ooze control: ei kasutata
5. Movement behavior: ristumise vältimise lahtrisse tuleb teha linnuke
6. Slicing behavior: eksperimentaalne seade, ei ole katsetatud

The screenshot shows the 'FFF Settings' dialog box. At the top, there are fields for 'Process Name' (Process1) and 'Select Profile' (EKA delta 700 - Anna Aken - Va). Below that is the 'Auto-Configure for Material' section with 'PLA' selected. The 'General Settings' section includes an 'Infill Percentage' slider at 0%, and checkboxes for 'Include Raft' and 'Generate Support'. The 'Advanced' tab is selected, showing several sections: 'Layer Modifications' with checkboxes for 'Start printing at height' and 'Stop printing at height', both set to 0,00 mm; 'Thin Wall Behavior' with dropdowns for 'External Thin Wall Type' and 'Internal Thin Wall Type' (both 'Perimeters only') and a spinner for 'Allowed perimeter overlap' at 10%; 'Single Extrusions' with spinners for 'Minimum Extrusion Length' (4,00 mm), 'Minimum Printing Width' (100%), 'Maximum Printing Width' (100%), and 'Endpoint Extension Distance' (0,20 mm); 'Ooze Control Behavior' with checkboxes for 'Only retract when crossing open spaces', 'Force retraction between layers', 'Minimum travel for retraction' (3,00 mm), 'Perform retraction during wipe movement', and 'Only wipe extruder for outer-most perimeters'; 'Movement Behavior' with a checked checkbox for 'Avoid crossing outline for travel movements' and a spinner for 'Maximum allowed detour factor' at 1,0; and 'Slicing Behavior' with radio buttons for 'Non-manifold segments' (Discard/Heal) and a checked checkbox for 'Merge all outlines into a single solid model'. At the bottom are buttons for 'Hide Advanced', 'Select Models', 'OK', and 'Cancel'.



Printimisandmed: ei ole täpsed



4. Seadme juhtpaneeli juhised

The screenshot shows the Machine Control Panel interface. At the top, there are buttons for 'Connect', 'Print', and 'Pause'. Below these, the 'Port' and 'Baud Rate' (set to 250000) are visible. A 'G-Code Library' table is shown with columns for 'Filename', 'Run Time', and 'Material Usage'. The 'Add to Library' button is highlighted. On the right, there are sections for 'Accessory Control' (Extruder, Heated Bed) and 'Override Settings' (Movement, Extrusion).

Punkt 01: vali port (port ilmub, kui oledprinter USB-kaabliga ühendanud)

Punkt 02: WASP 2040 baudikiirus on 250 000

Punkt 03: vajuta ühendamisnuppu „Connect“ (kui programm on ühendatud, muutub nupp roheliseks)

Sakk G-code:
G-kood kuvatakse mudeli viilutamise järel või võite G-koodi ise importida

Punkt 04:
PRINTIMISE
ALUSTAMINE

PRINTIMISE
PAUSILE PANEK

TURVALÜLITI

Kui printeril esineb tõrge, peab kindlasti vajutama seda nuppu

Machine Control Panel

Initialization

Disconnect Print Pause

Port: \\.\COM3 Refresh

Baud Rate: 250000 bits/sec Verbose

G-Code Library Communication Temperature Plot Jog Controls

SENT: M105
READ: ok T:39.3 /0.0 B:0.0 /0.0 T0:39.3 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.8 /0.0 B:0.0 /0.0 T0:39.8 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.0 /0.0 B:0.0 /0.0 T0:39.0 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.1 /0.0 B:0.0 /0.0 T0:39.1 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.6 /0.0 B:0.0 /0.0 T0:39.6 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.7 /0.0 B:0.0 /0.0 T0:39.7 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.9 /0.0 B:0.0 /0.0 T0:39.9 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.4 /0.0 B:0.0 /0.0 T0:39.4 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.3 /0.0 B:0.0 /0.0 T0:39.3 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.5 /0.0 B:0.0 /0.0 T0:39.5 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.3 /0.0 B:0.0 /0.0 T0:39.3 /0.0 @:0 B@:0
SENT: M105
READ: ok T:39.4 /0.0 B:0.0 /0.0 T0:39.4 /0.0 @:0 B@:0

Send

Position Readout

X 0.00 Zero X
Y 0.00 Zero Y
Z 0.00 Zero Z

Emergency Stop

Force Next

Accessory Control

Active Toolhead: Tool 0

Extruder 190 39 °C On Off
Heated Bed 60 0 °C On Off

Set Fan Speed

Custom Commands

Disable Motors Enable Motors
Print from SD Card Pause Current SD Print
Upload to SD Card SD Card Status
Macro 1 Macro 2 Macro 3

Override Settings

Movement: 100% 100
Extrusion: 100% 100

Sakk Communication :

Kuvab teavet ja võimaldab
printerile käsklusi saata

Machine Control Panel

Initialization

Disconnect Print Pause

Port: \\.\COM3 Refresh

Baud Rate: 250000 bits/sec Verbose

G-Code Library Communication Temperature Plot Jog Controls

Bed Setpoint Extruder Setpoint

Temperature (C)

200
175
150
125
100
75
50
25
0

0 5 10 15 20 25 30

Samples

Monitor Temperatures Clear Plot Data

Position Readout

X 0.00 Zero X
Y 0.00 Zero Y
Z 0.00 Zero Z

Emergency Stop

Force Next

Accessory Control

Active Toolhead: Tool 0

Extruder 190 39 °C On Off
Heated Bed 60 0 °C On Off

Set Fan Speed

Custom Commands

Disable Motors Enable Motors
Print from SD Card Pause Current SD Print
Upload to SD Card SD Card Status
Macro 1 Macro 2 Macro 3

Override Settings

Movement: 100% 100
Extrusion: 100% 100

Sakk Temperature:
temperatuuri teave ei ole
oluline

Custom Commands:
kasutatakse harva

Machine Control Panel

Initialization

Disconnect Print Pause

Port \\.\COM3 Refresh

Baud Rate 250000 bits/sec Verbose

G-Code Library Communication Temperature Plot Jog Controls

-Y -100 -10 -1 -0.1 0.1 1 10 100 +Y

+Z Retract 100 -100 10 -10 1 -1 0.1 -0.1 -0.1 0.1 -1 1 -10 10 -100 100 -Z Extrude

Jog Speeds

X/Y-Axis Z-Axis Extruder

Speed (mm/min) 1800,0 1200,0 240,0

Home X Home Y Home Z Home All

Position Read

X 0.00 Zero X

Y 0.00 Zero Y

Z 0.00 Zero Z

EMERGENCY STOP

Force Next

Accessory Control

Active Toolhead Tool 0

Extruder 190 39 °C On Off

Heated Bed 60 0 °C On Off

Set Fan Speed

Custom Commands

Disable Motors Enable Motors

Print from SD Card Pause Current SD Print

Upload to SD Card SD Card Status

Macro 1 Macro 2 Macro 3

Override Settings

Movement: 100% 100

Extrusion: 100% 100

1% 200% 50% 150%

Sakk Jog: kasutatakse printeri telgede ja ekstruuderi käsitsi liigutamiseks

Override Settings: ekstruuderi liikumise ja kiiruse muutmine enne printimist ja selle ajal

Valminud Hariduse Infotehnoloogia Sihtasutuse IT Akadeemia programmi toel.



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Koostanud **Madis Kaasik ja Lauri Kilusk, Eesti Kunstiakadeemia**, jaanuar 2021