

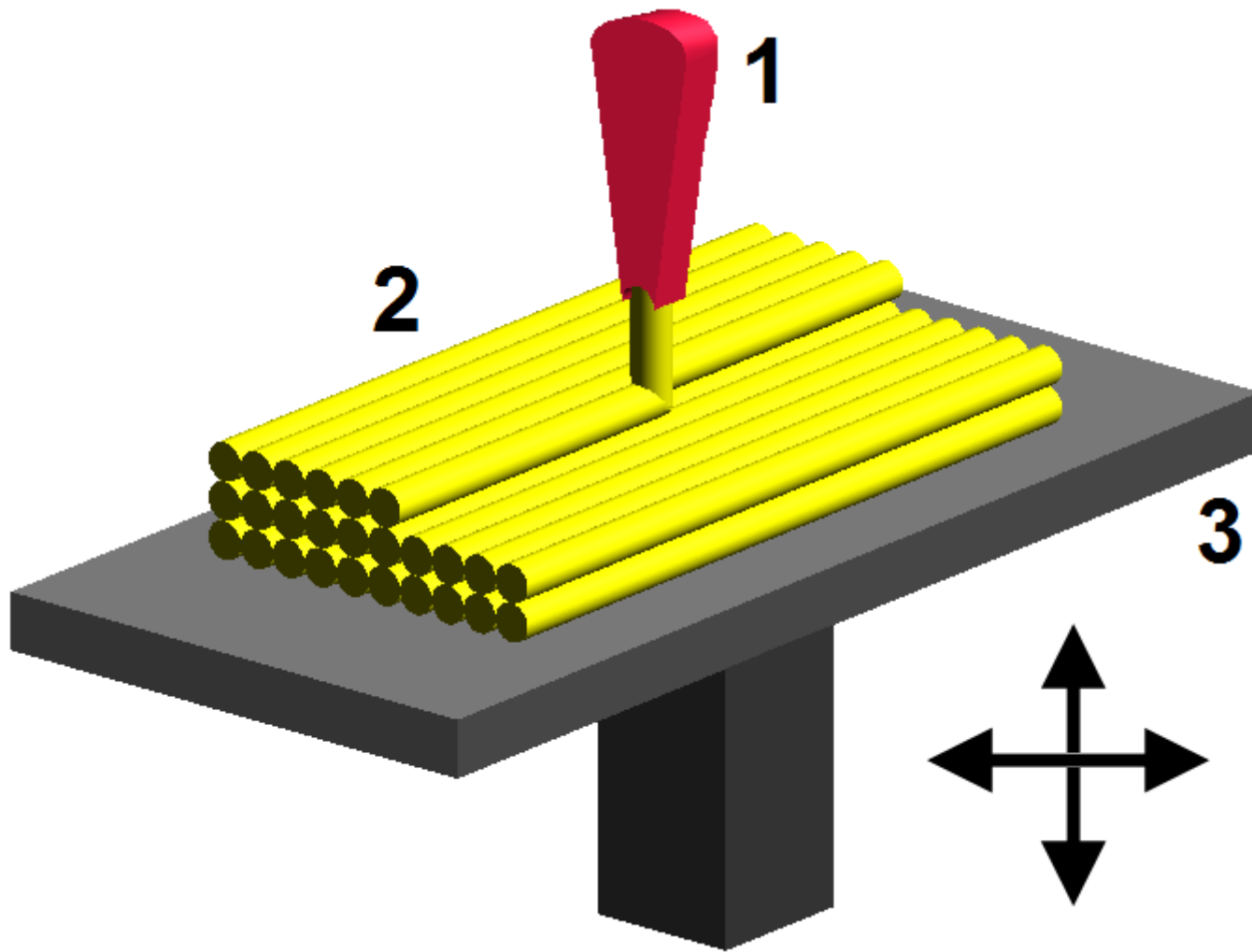
從3D設計到3D列印



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Autodesk產品推廣部



平價3D Printer的原理



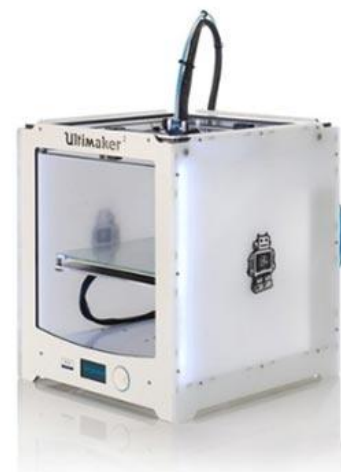
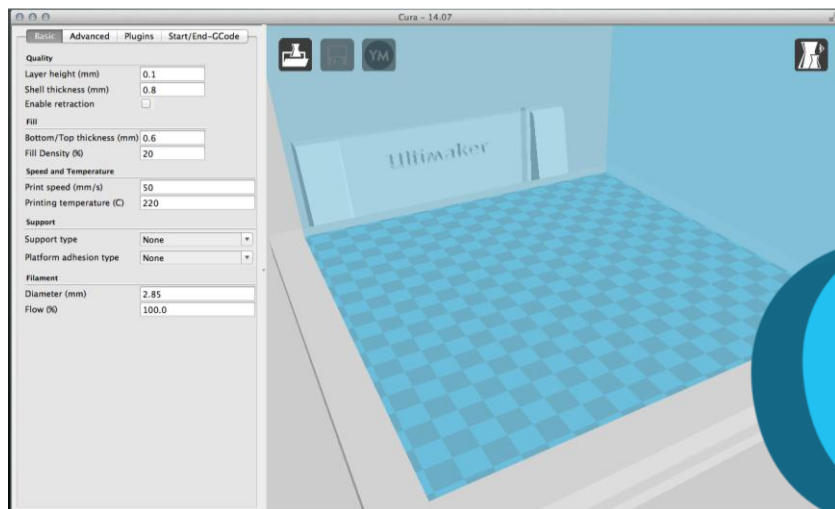
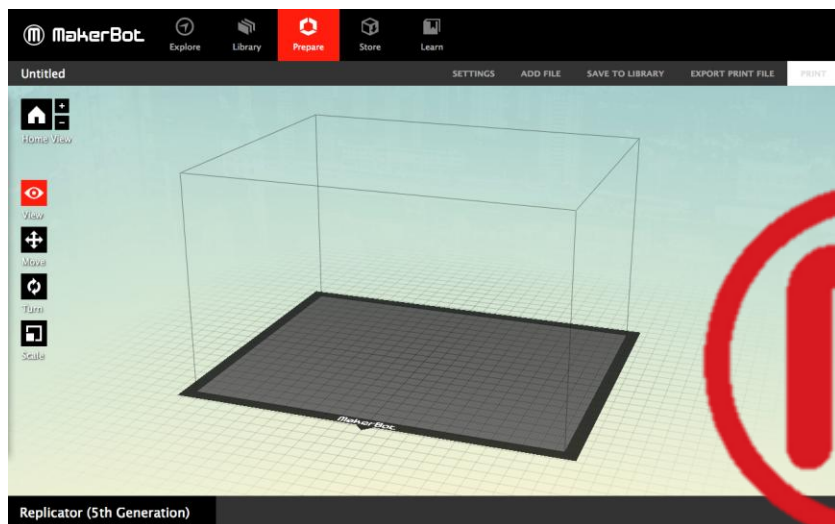
天價3D Printer的成品



看懂3D Printer的重要規格

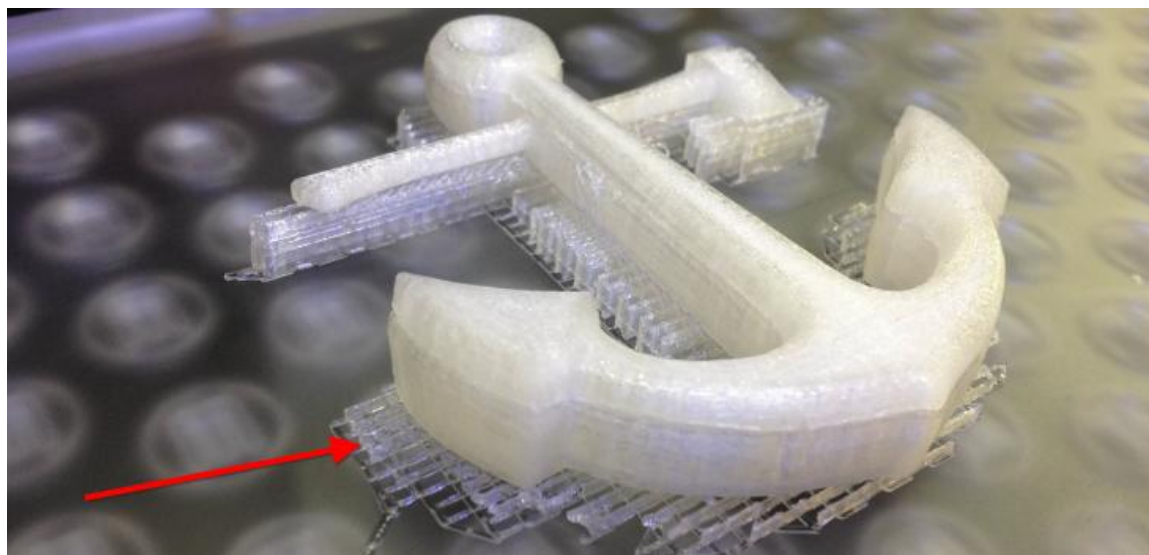
- 工作範圍：200 mm x 200 mm x 200 mm
- 可印線材：ABS、PLA
- 線材直徑：1.75mm、3mm
- 最小列印層高：0.06 mm
- 最高列印速度：180 mm/s
- 最高空程速度：250 mm/s
- 最高擠出溫度：275
- 噴嘴直徑：0.4 mm
- 檔案格式：STL、OBJ

不同機種的列印軟體



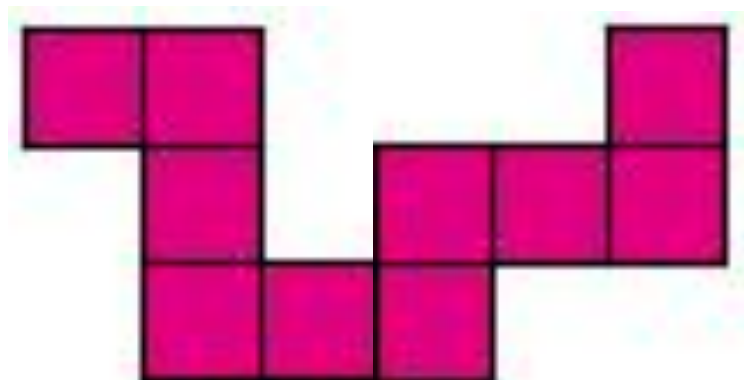
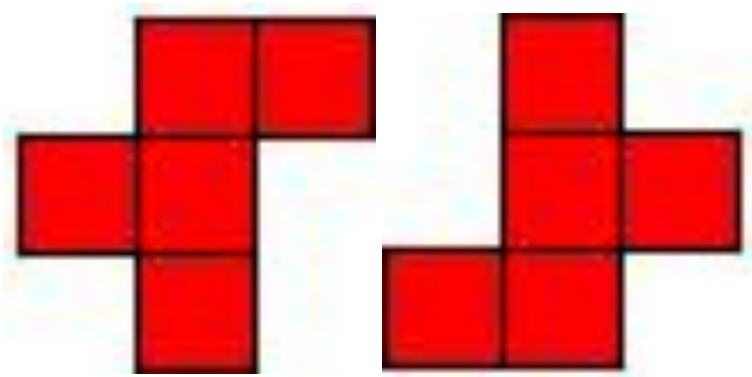
I 棧板 (raft)

- 加強底層穩固性
- 平台不平整的緩衝
- 缺點：可能會難拆、傷到本體
- 好朋友：膠帶和口紅膠



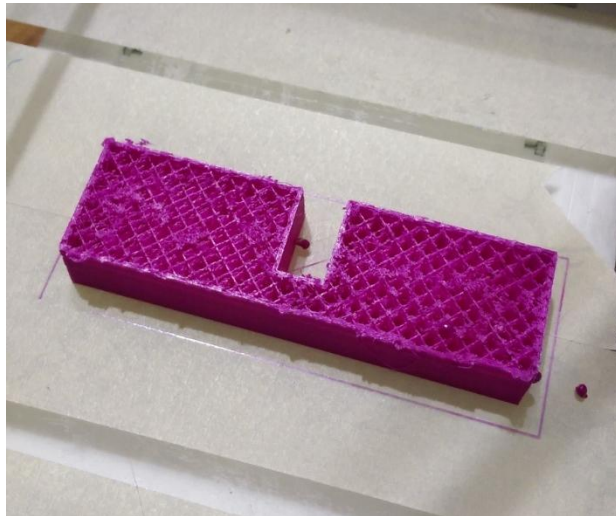
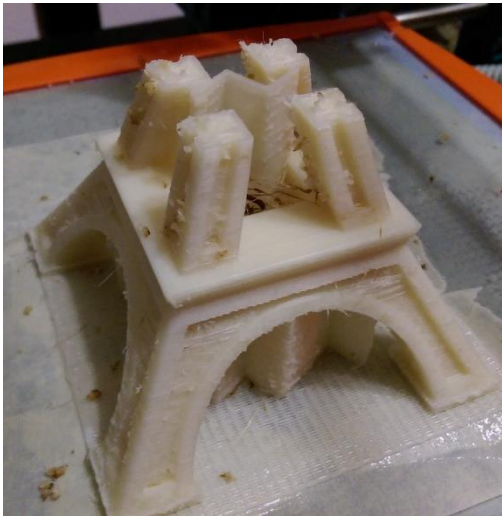
支撐 (support)

- 愈少愈好
- 調整模型放置的角度，向上發展45度以內
- Autodesk meshmixer



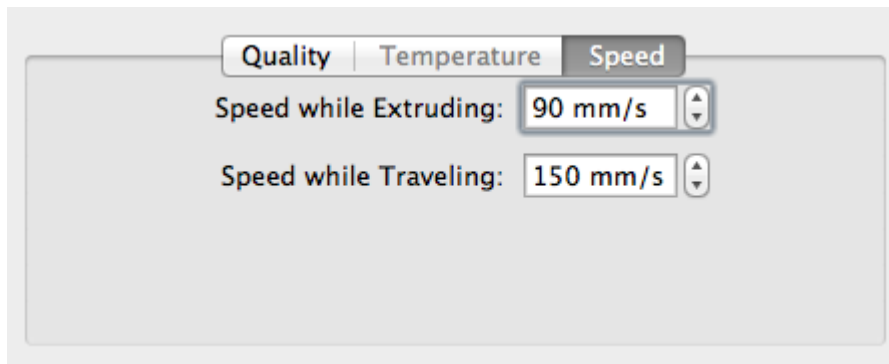
溫度 (temperature)

- 溫度太高：出料過軟、線料氣泡、線料焦黑
- 溫度太低：出料不順、黏著力低、結構鬆散
- PLA：220、ABS：250
- 每次線材的最佳溫度不同，往下隔5度測試

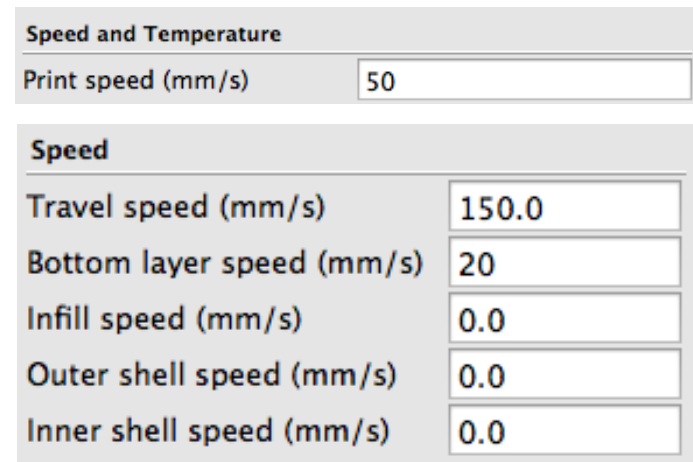


列印速度 (speed)

- 愈慢愈精准，尤其是直角
- 愈慢愈堅固
- Travel speed 是空程速度，可在允許範圍加快
- 部分軟體還可以分別設定不同區域的列印速度



A screenshot of a 3D printing software interface. At the top, there are three tabs: 'Quality', 'Temperature', and 'Speed'. The 'Speed' tab is selected. Below the tabs, there are two input fields with up/down arrows. The first is labeled 'Speed while Extruding:' and has a value of '90 mm/s'. The second is labeled 'Speed while Traveling:' and has a value of '150 mm/s'.

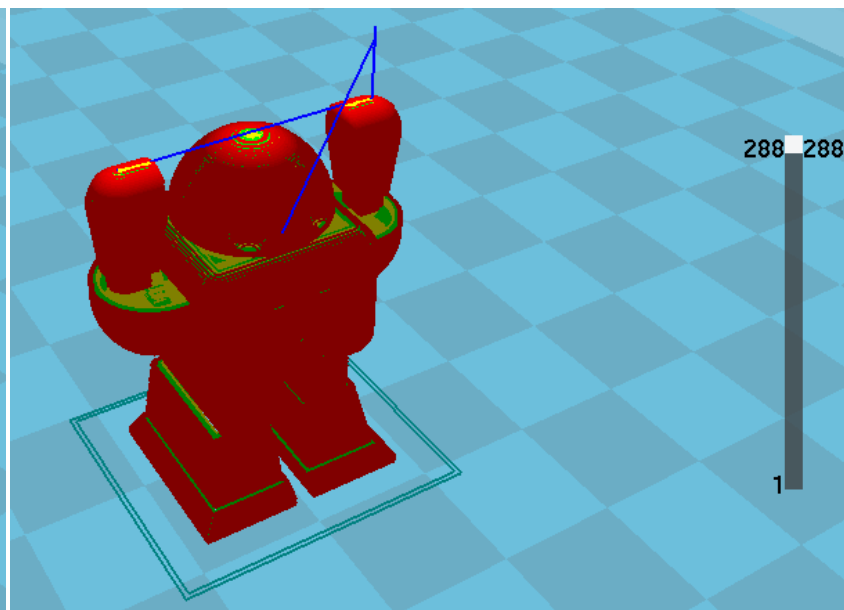
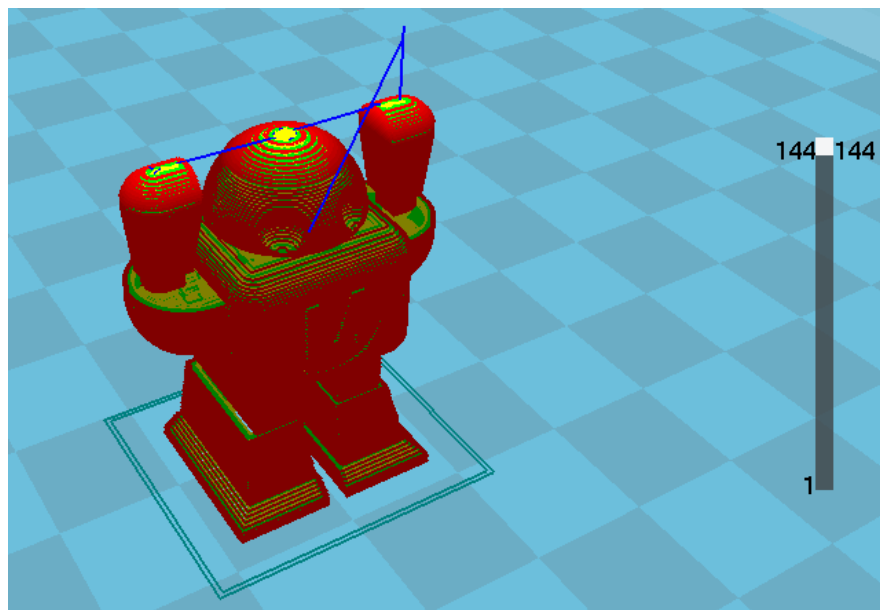


A screenshot of a 3D printing software interface showing 'Speed and Temperature' settings. The 'Print speed (mm/s)' is set to 50. Below this, there is a 'Speed' section with a table of settings.

Speed	
Travel speed (mm/s)	150.0
Bottom layer speed (mm/s)	20
Infill speed (mm/s)	0.0
Outer shell speed (mm/s)	0.0
Inner shell speed (mm/s)	0.0

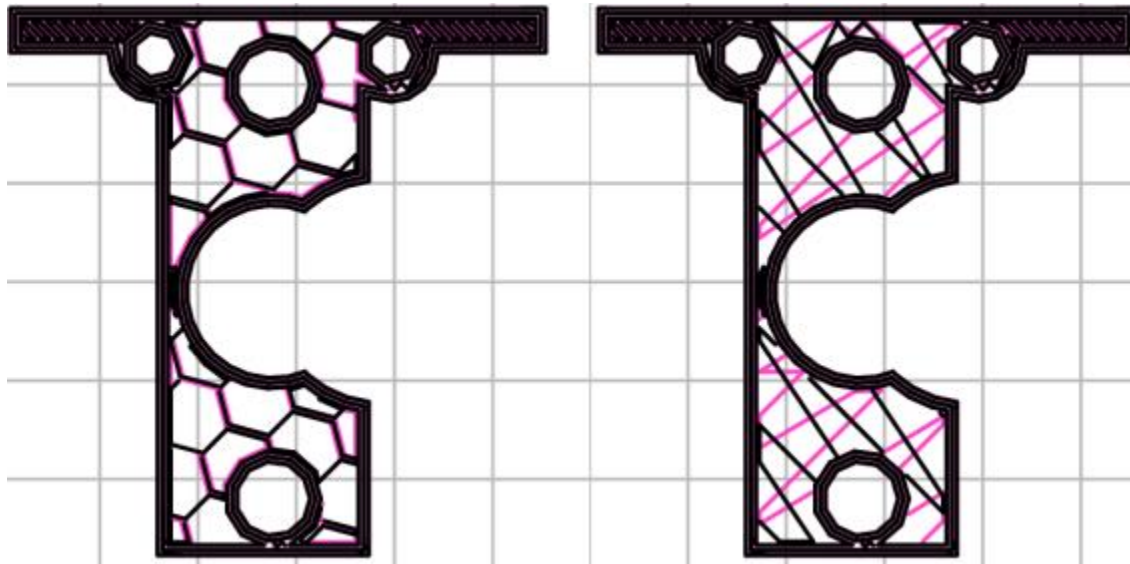
層高 (layer height)

- 精細度
- 完成時間



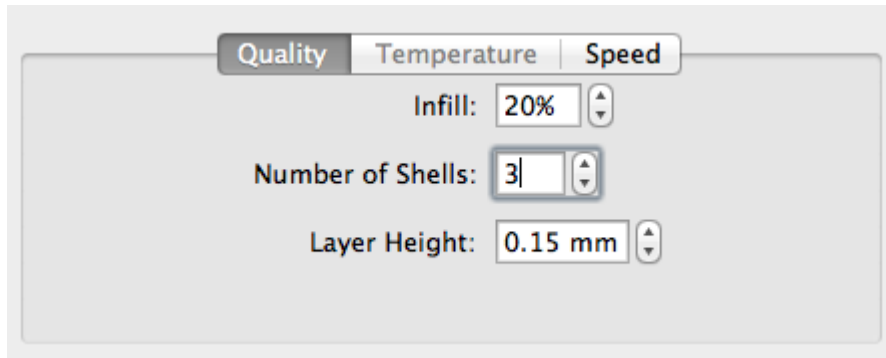
■ 內部填充率 (infill, fill density)

- 節省材料
- 支撐上層結構
- 強化模型應力
- 公仔可低於10%、機構20%以內即可



外層厚度 (shells, thickness)

- 參考模型向上成長的角度
- 參考內部填充率設定
- 有的是設定「層數」，有的是設定「尺寸」

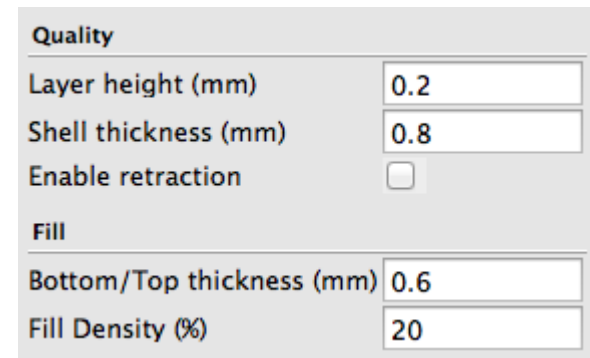


Quality | Temperature | Speed

Infill: 20%

Number of Shells: 3

Layer Height: 0.15 mm



Quality

Layer height (mm): 0.2

Shell thickness (mm): 0.8

Enable retraction: ☐

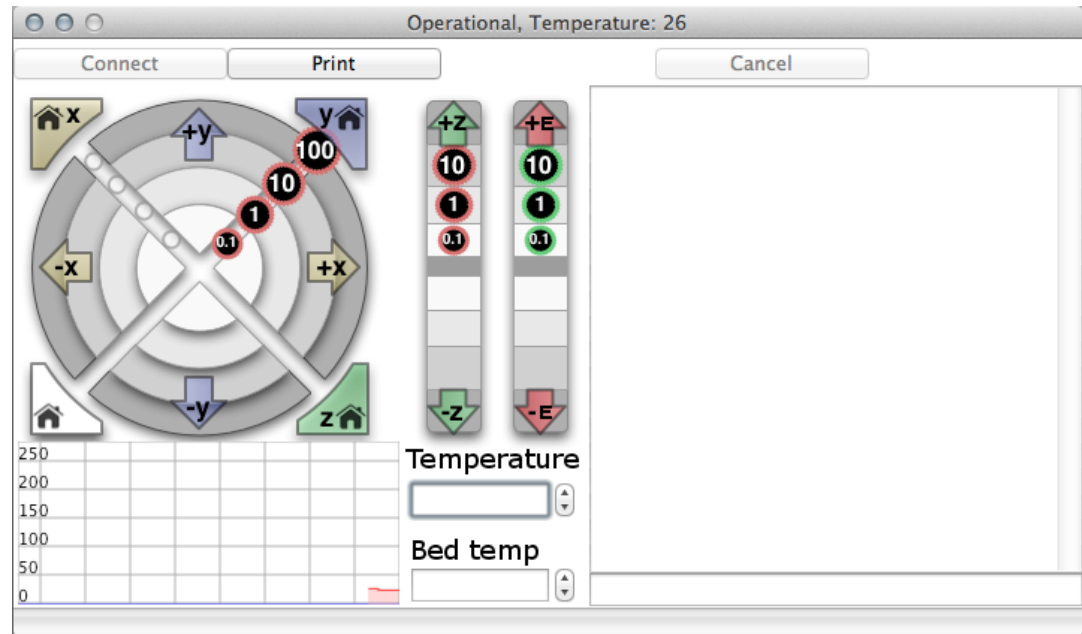
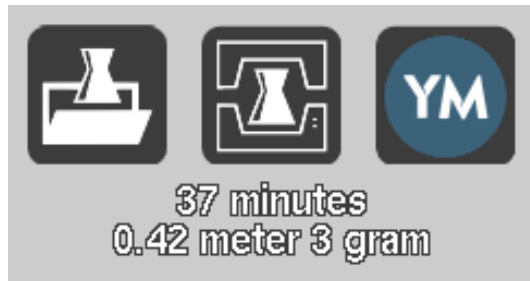
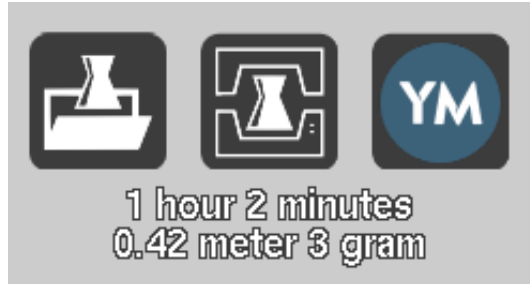
Fill

Bottom/Top thickness (mm): 0.6

Fill Density (%): 20

列印 (print)

- 預估時間、預估用料 (重量、長度)
- 進度與溫度監控



選擇碁峰 超越顛峰

LET'S GO TOP WITH GOTOP