Growth Opportunity in Manufacturing

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GM & VP Fusion 360 | @Stevehoops

November 2019

AUTODESK

Safe Harbor

Each of the presentations today will contain forward-looking statements about our strategies, products, future results, performance or achievements, financial, operational and otherwise, including statements about our strategic priorities, business model transition, and guidance for the first fiscal quarter and fiscal year 2020; our long term financial and operational goals; our M&A strategy; our capital allocation initiatives; and our stock repurchase program. These statements reflect management's current expectations, estimates and assumptions based on the information currently available to us. These forward-looking statements are not guarantees of future performance and involve significant risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from results, performance or achievements expressed or implied by the forward-looking statements contained in these presentations, such as a failure to maintain ARR, ARPS, subscriptions, billings, revenue, deferred revenue, margins and cash flow growth; difficulty in predicting those financial and performance metrics; failure to maintain spend management; failure to successfully integrate acquisitions and manage transitions to new business models and markets, including our efforts to expand in construction and manufacturing, and attract customers to our cloud-based offerings; failure to successfully expand adoption of our products; and negative developments in worldwide economic or political conditions.

A discussion of factors that may affect future results is contained in our most recent Form 10-K and Form 10-Q filings available at www.sec.gov, including descriptions of the risk factors that may impact us and the forward-looking statements made in these presentations. The forward-looking statements made in these presentations are being made as of the time and date of their live presentation. If these presentations are reviewed after the time and date of their live presentation, even if subsequently made available by us, on our website or otherwise, these presentations may not contain current or accurate information. We disclaim any obligation to update or revise any forward-looking statement based on new information, future events or otherwise.

Non-GAAP Financial Measures

These presentations include certain non-GAAP financial measures. Please see the section entitled "Reconciliation of GAAP Financial Measures to non-GAAP Financial Measures" in the Appendices attached to the presentations for an explanation of management's use of these measures and a reconciliation of the most directly comparable GAAP financial measures.

Manufacturing TAM

$31B

DESIGN & MAKE
TAM BY 2023

28M

DESIGN, ANALYST &
PRODUCTION ENGINEERING
PROFESSIONALS BY 2023

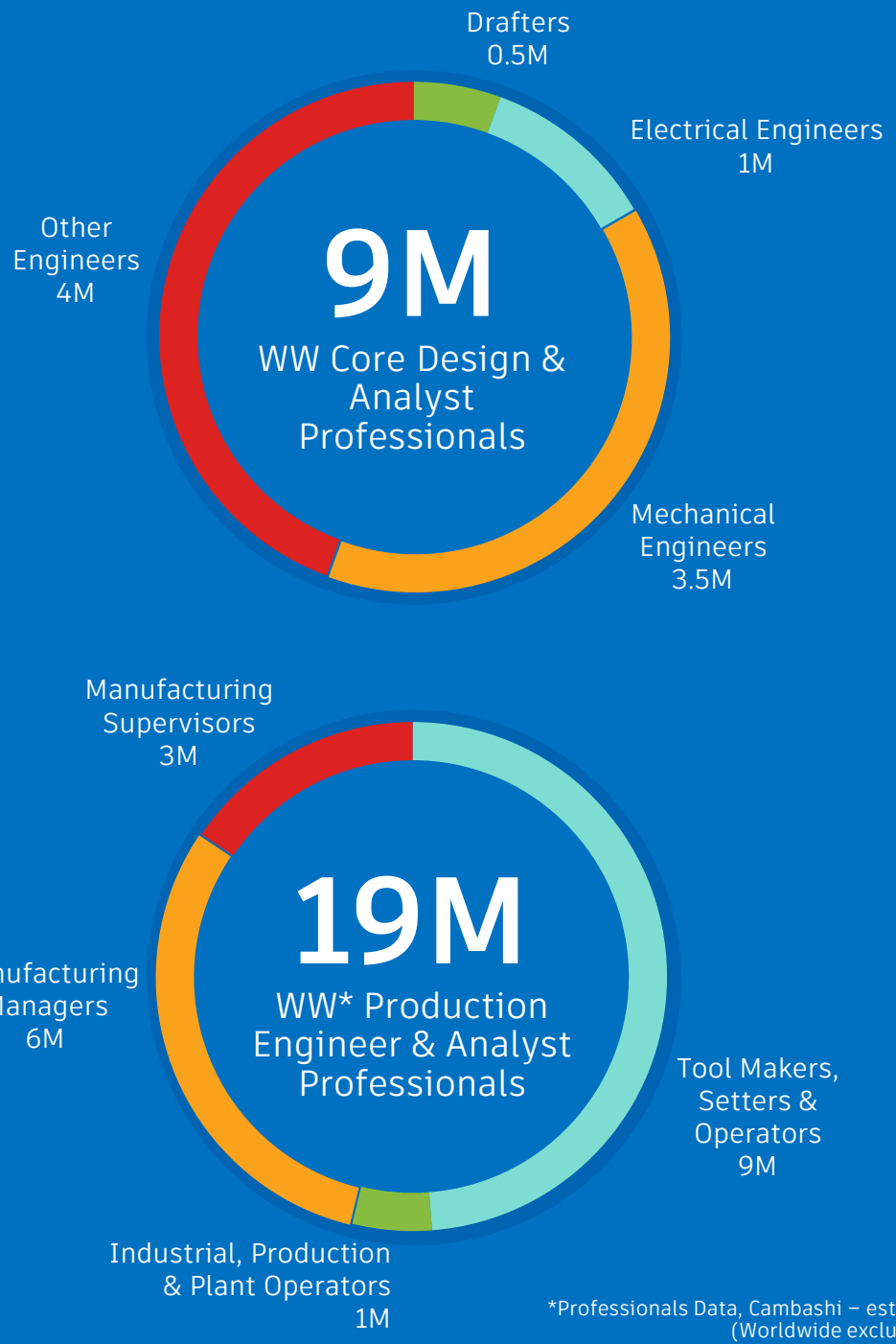
Source: Cambashi FY20 Application TAM. The TAM numbers presented are estimates & are likely understated given the impact
availability of free software, in-house development & other variables.

Manufacturing TAM

$18B
DESIGN TAM BY 2023

+

$13B
MAKE TAM BY 2023



Source: Cambashi FY20 Application TAM. The TAM numbers presented are estimates & are likely understated given the impact of piracy rates, availability of free software, in-house development & other variables.

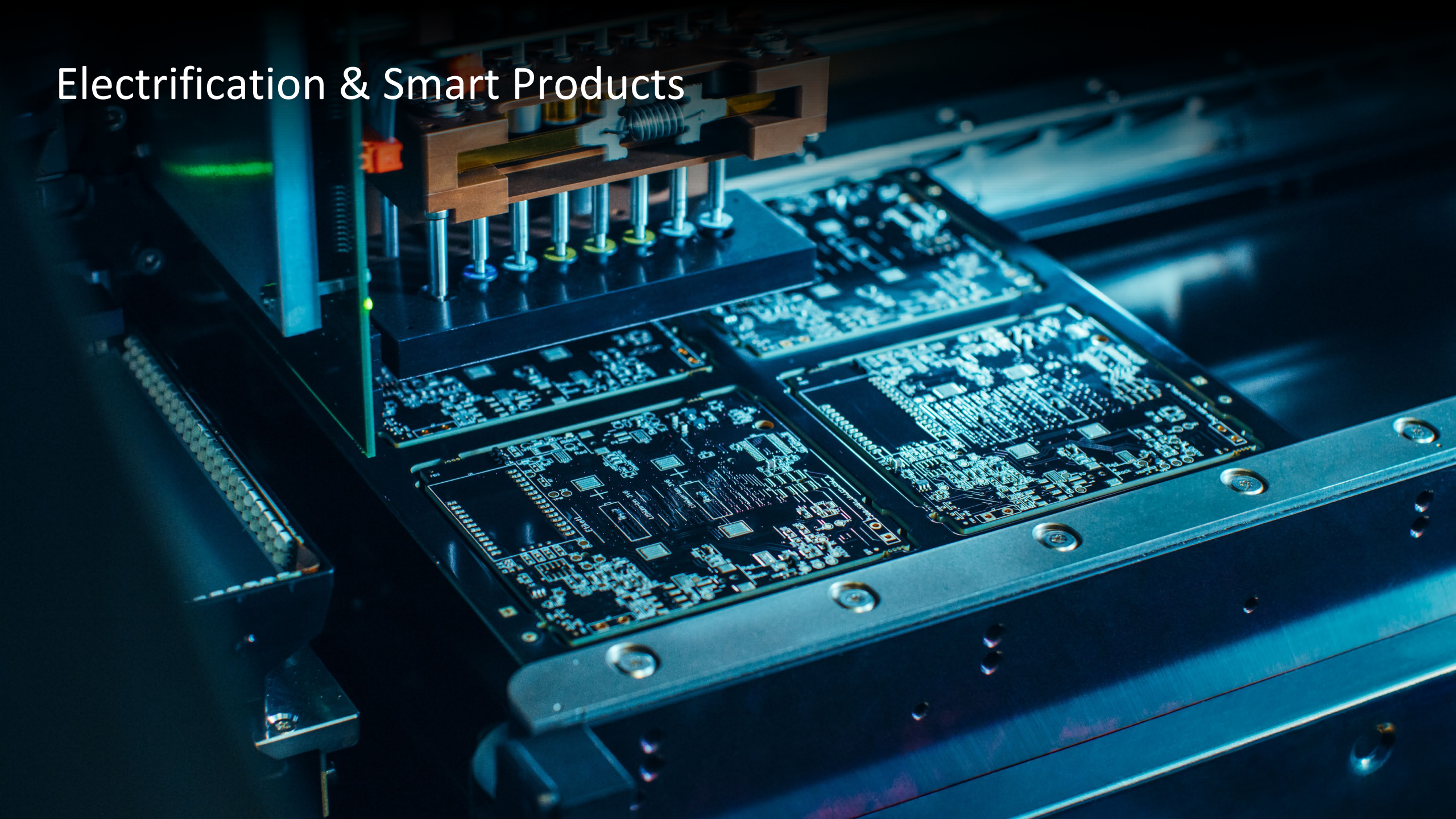
*Professionals Data, Cambashi – est. for CY2022 (Worldwide excluding China)


Electrification & Smart Products
Razor
GPS TRACKED


Demand for Mass Customization
NO MERCY


Supply Chain Volatility

Electrification & Smart Products



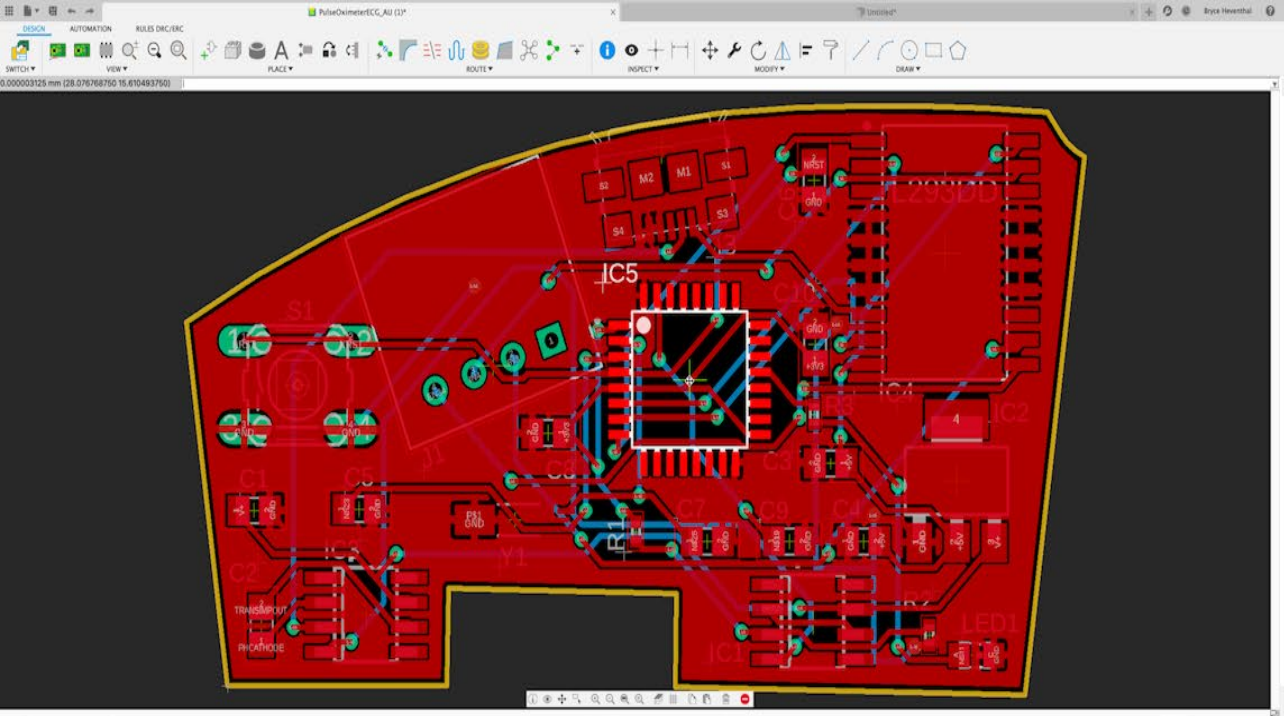
27.1B

NETWORKED DEVICES BY 2021

50%

DEVICES DRIVE
MACHINE TO MACHINE CONNECTION

Sources:
- McKinsey Global Institute January 2019 report
Globalization in transition: The future of trade and value chains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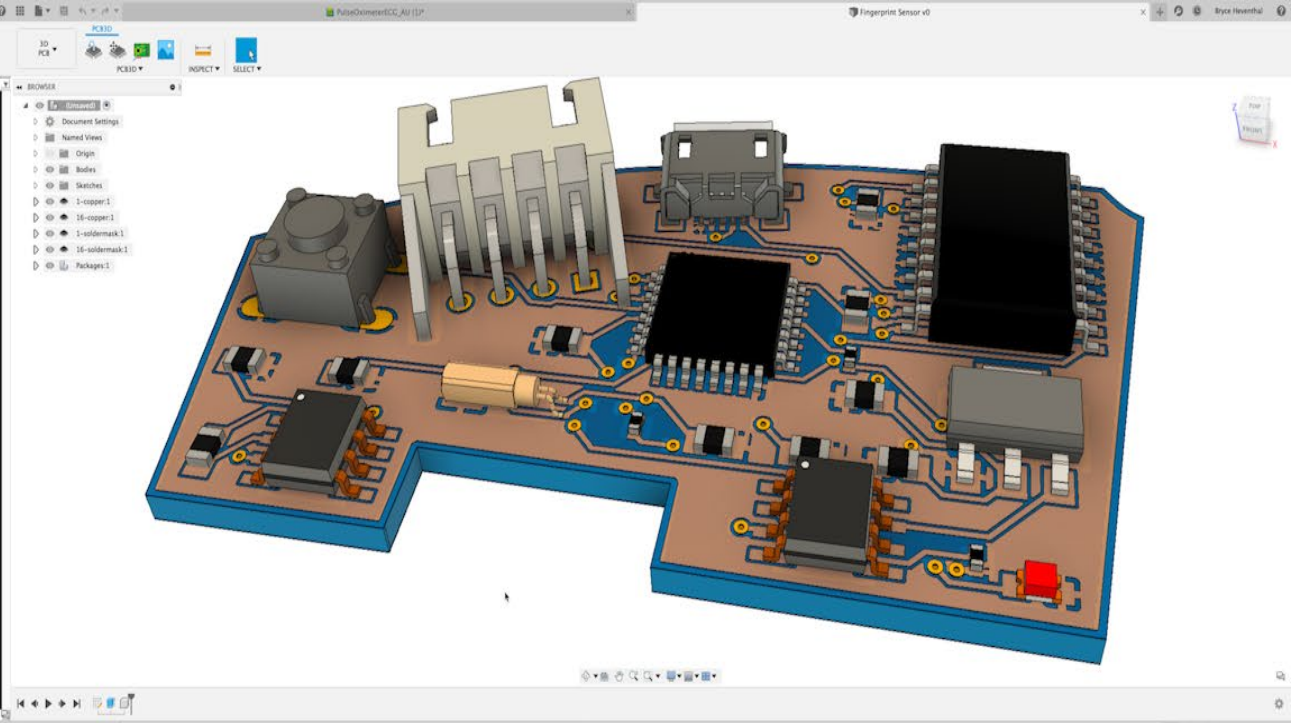
M2
M1
S1
S2
S3
S4
NRST
GND
TRANSMPOUT
PHCATHODE


BROWSER
Document Settings
Named Views
Origin
Bodies
Sketches
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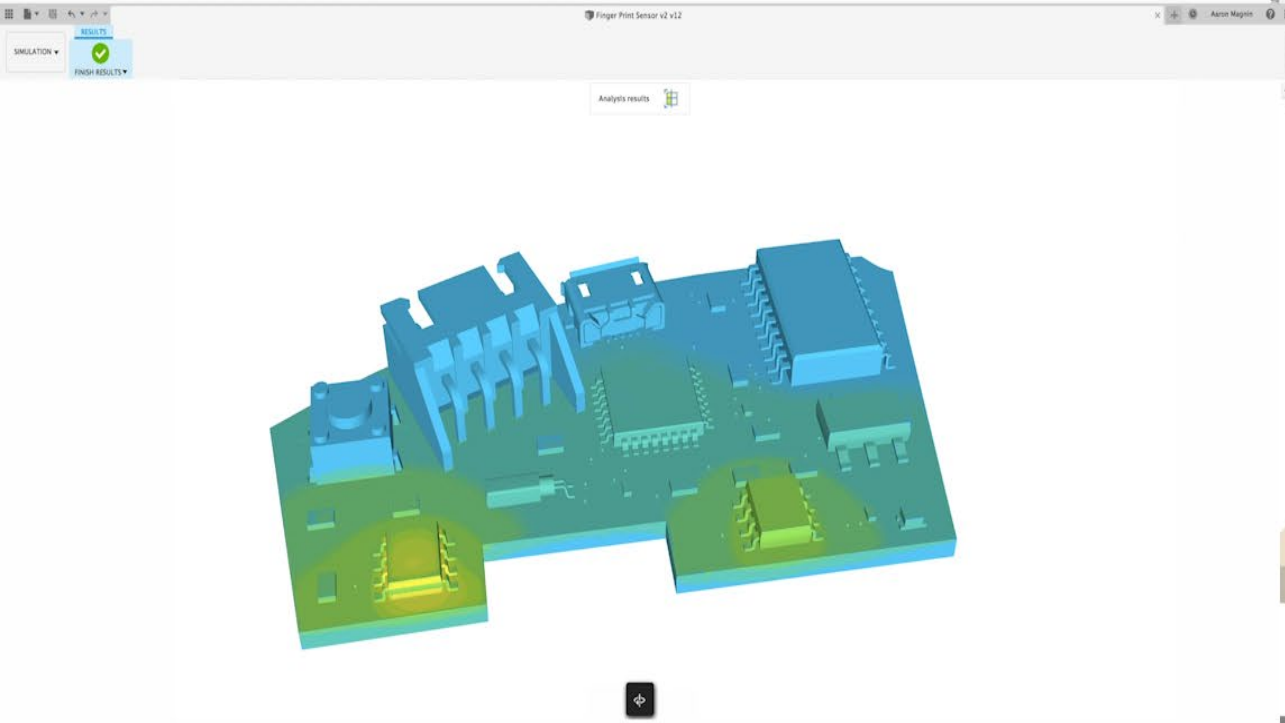
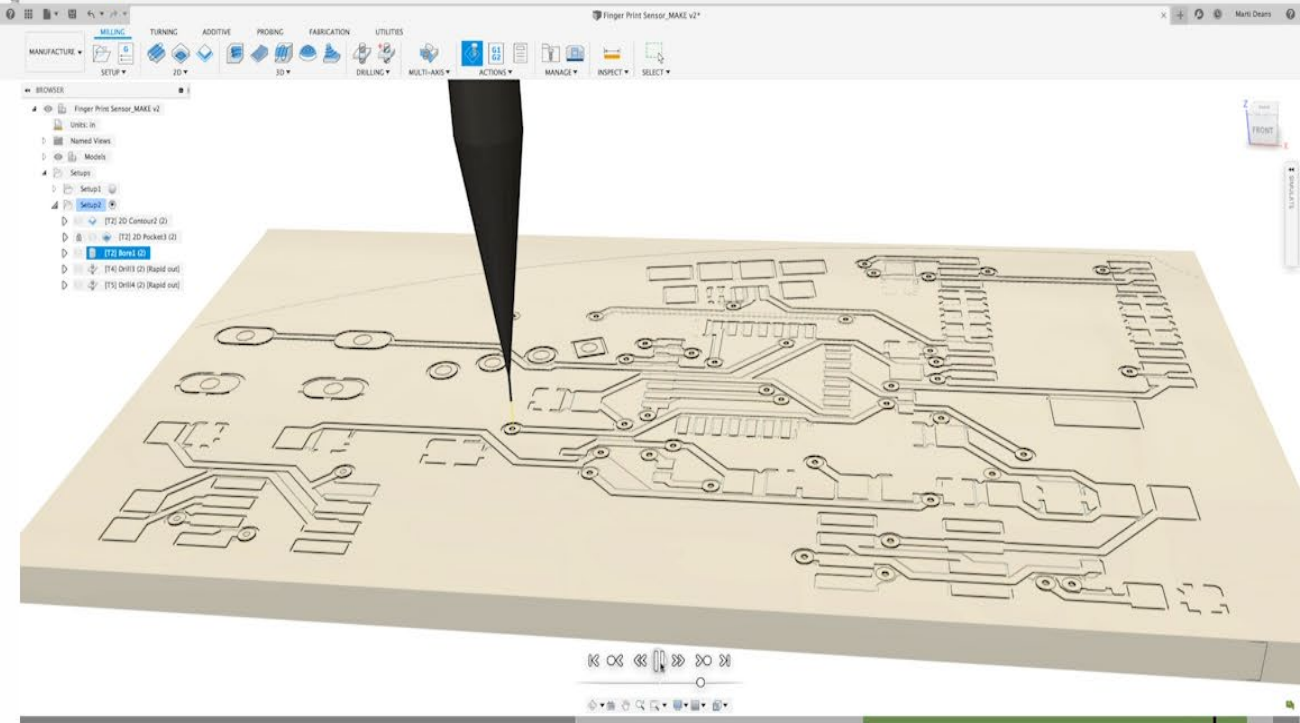
16-copper:1
1-soldermask:1
16-soldermask:1
Packages:1


Finger Print Sensor v2 v12
SIMULATION
RESULTS
FINISH RESULTS
Analysis results


Finger Print Sensor_MAKE v2*
MILLING
TURNING
ADDITIVE
PROBING
FABRICATION
UTILITIES
BROWSER
Finger Print Sensor_MAKE v2
Units: in
Named Views
Models
Setups
Setup1
Setup2
[T2] 2D Contour2 (2)
[T2] 2D Pocket3 (2)
[T2] Bore1 (2)
[T4] Drill3 (2) [Rapid out]
[T5] Drill4 (2) [Rapid out]

Mass Customization

4.2B

CONSUMERS BY 2025

+1.8B SINCE 2010

70%

INCREASE IN PERSONALIZATION INVESTMENT IN NEXT 3 YEARS

Sources:

- BCG.com June 4, 2019

Next level of personalization in retail

GENERATIVE DESIGN

EXPLORE

DISPLAY

FINISH EXPLORE

Outcome filters

- [x] Additive
- [x] 2 axis cutting
- [x] 2.5 axis milling
- [x] 3 axis milling
- [x] 5 axis milling
- [x] Die casting

Materials

- [x] Aluminum 6061
- [x] Aluminum AlSi10...
- [x] Inconel 625
- [x] Inconel 718
- [x] Stainless Steel
- [x] Stainless Steel AI...
- [x] Titanium 6Al-4V

Objective ranges Reset

Volume (mm^3)
1.285e+6 — 1.171e+7

Mass (kg)
3.517 — 171.447

Max von Mises stress (MPa)
0.8 — 3.656e+16

Min factor of safety
1.753e-14 — 1,076.62

Max displacement global (mm)
0 — 3.411e+22

Estimated manufacturing cost (USD)
690 — 20,042

Sort by: Maximum von Mises stress

2.13 Axis - Outcome 3
5.4 MPa

2.11 Axis - Outcome 3
5.5 MPa

2.11 Axis - Outcome 9
7.4 MPa

2.11 Axis - Outcome 8
9.1 MPa

2.12 Axis - Outcome 85
9.6 MPa

2.12 Axis - Outcome 82
10.7 MPa

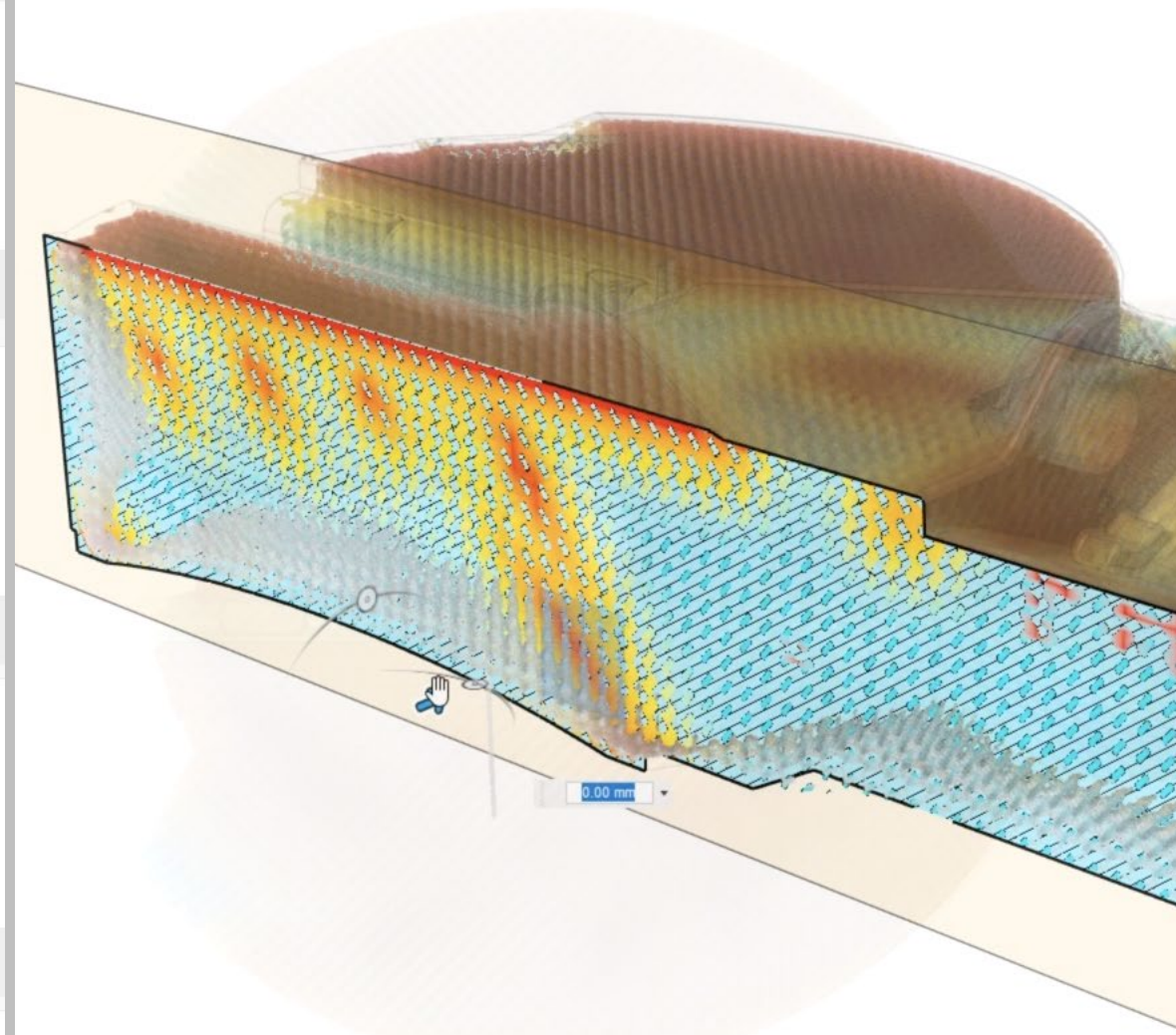
2.10 Axis - Outcome 12
11.6 MPa

2.10 Axis - Outcome 10
11.6 MPa

2.12 Axis - Outcome 60
12.2 MPa

Tisch base AVK 1 v17*

TOOLS | VOLUME FIELDS



Supply Chain Volatility

$1.3T+

DIGITAL PLAFTORMS' IMPACT ON TRADE VIA REDUCTION IN TRANSACTION COSTS

BY 2030

$1.5T+

ADVANCED ROBOTICS DRIVES REDUCTION IN GOODS TRADE THROUGH RESHORING/ONSHORING

BY 2030

Sources:

- McKinsey Global Institute January 2019 report Globalization in transition: The future of trade and value chains

Miter Saw

Orson Krennic

Acme Inc.

Team Jupiter

Open...

New...

Recents

Favorites

Searches

Projects

Process

What's New

Samples

Learning

Give Feedback

Customer Support

Community Forum

KS-Line

KS120_Grundgeraet

Content | Components | Referenced By | View

Open

KS120_Grundgeraet

Fusion Design | Shared Link: OFF

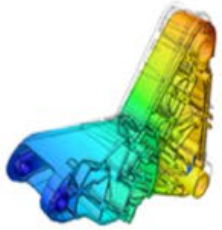
Last Udated on **3:16 PM**
By **Terese Lin**

Related Documents

Switch Assembly

Side Brace

Depth Stop



Displacement Test

- Simulation
- Drawings
- Bill of Materials

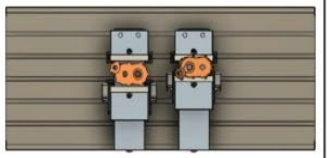
File: NC Programs - Gearbox 1001.pdf

Setup Sheet for Program 1001

Document Path: NC Programs - Gearbox v2

Summary

WCS: #0
Number Of Setups: 2
Number Of Operations: 22
Number Of Tools: 6
Tools: T1 T2 T3 T5 T6 T7
Maximum Z: 1.17in
Minimum Z: -1.175in
Maximum Feedrate: 300in/min
Maximum Spindle Speed: 12000rpm
Cutting Distance: 924.309in
Rapid Distance: 242.166in
Estimated Cycle Time: 12m:36s

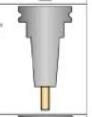


Tools

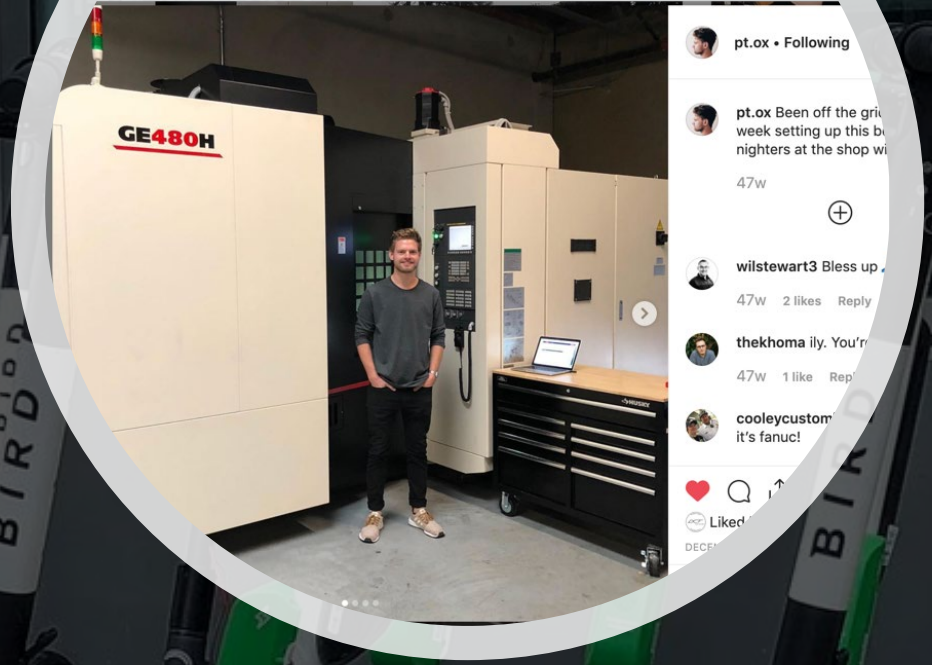
T1 D1 L1
Type: face mill
Diameter: 2in
Corner Radius: 0.06in
Length: 1.5in
Flutes: 5
Description: 2" Face Mill
Comment: Aluminum Only Max Depth of Cut = 0.100"
Vendor: MariTool Face Mill Holder MSAP16-D050A05Rx25.4
Product: Aluminum Only Inserts APET160508PDFRSN-DLC100
Minimum Z: -0.02in
Maximum Feed: 250.00019in/min
Maximum Spindle Speed: 10000rpm
Cutting Distance: 89.544in
Rapid Distance: 4.538in
Estimated Cycle Time: 34s (4.5%)
Holder: CAT40 Arbor

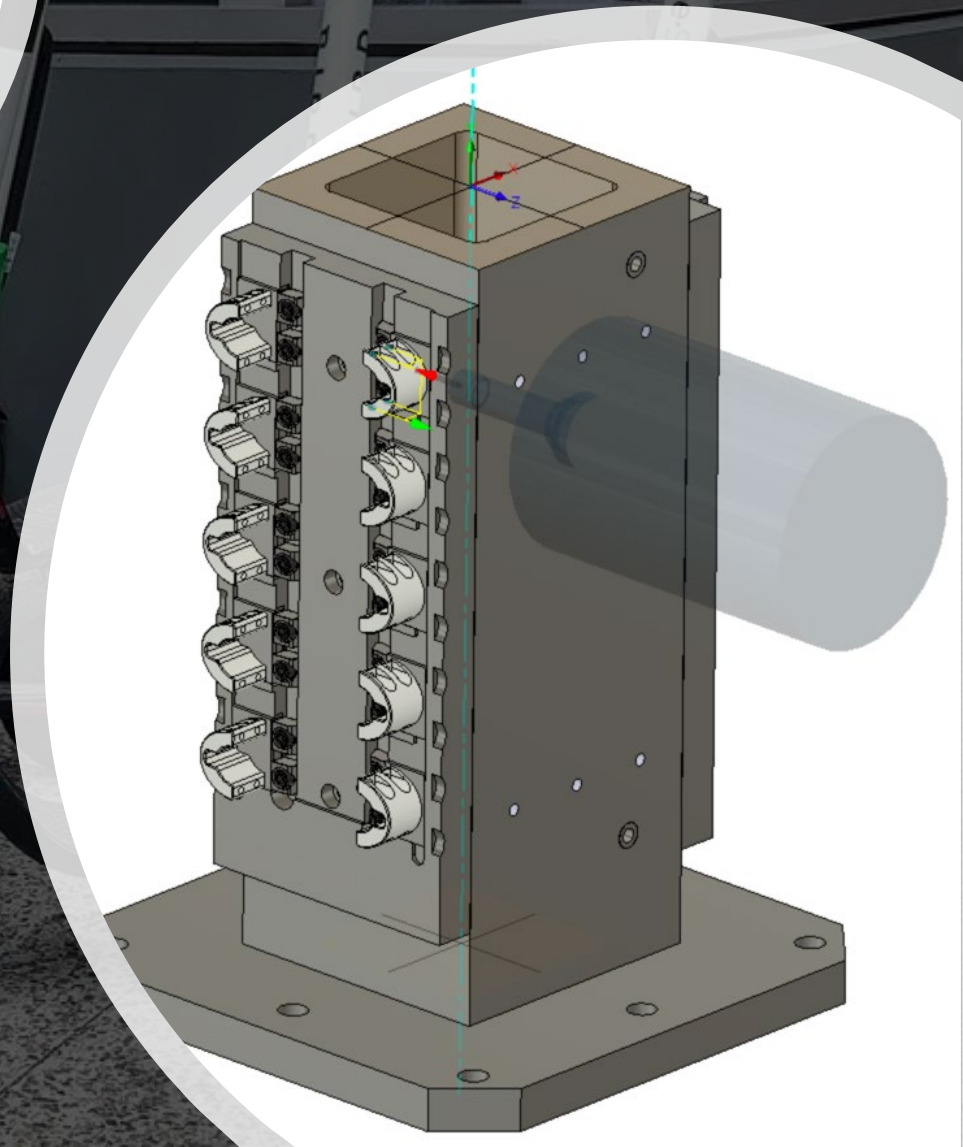
T2 D2 L2
Type: flat end mill
Diameter: 0.5in
Length: 1.4in
Flutes: 3
Description: 1/2" Flat Endmill
Minimum Z: -1.175in
Maximum Feed: 300in/min
Maximum Spindle Speed: 12000rpm
Cutting Distance: 618.849in
Rapid Distance: 110.674in
Estimated Cycle Time: 5m:31s (43.7%)
Holder: Maritool CAT40-ER32-2.35
Vendor: Maritool
Product: CAT40-ER32-2.35

T3 D3 L3
Type: flat end mill
Diameter: 0.375in
Length: 0.975in
Flutes: 3
Description: 3/8" Flat Endmill
Minimum Z: -0.852in
Maximum Feed: 80.0001in/min
Maximum Spindle Speed: 12000rpm
Cutting Distance: 166.001in
Rapid Distance: 29.057in
Estimated Cycle Time: 2m:5s (16.5%)
Holder: Big Kaiser Dual Contact 3/8" x 3.5"
Vendor: Big Kaiser
Product: BCV40-SF.375-3.5



T5 D5 L5
Type: spot drill
Diameter: 0.25in
Tip Angle: 90°
Length: 0.85in
Flutes: 3
Description: 1/4" Spot Drill
Minimum Z: -0.725in
Maximum Feed: 30in/min
Maximum Spindle Speed: 12000rpm
Cutting Distance: 39.221in
Rapid Distance: 37.449in
Estimated Cycle Time: 1m:19s (10.4%)
Holder: Big Kaiser Dual Contact 1/4" x 3.5"
Vendor: Big Kaiser
Product: BCV40-SF.250-3.5





Job Shop and Motorsports Manufacturing

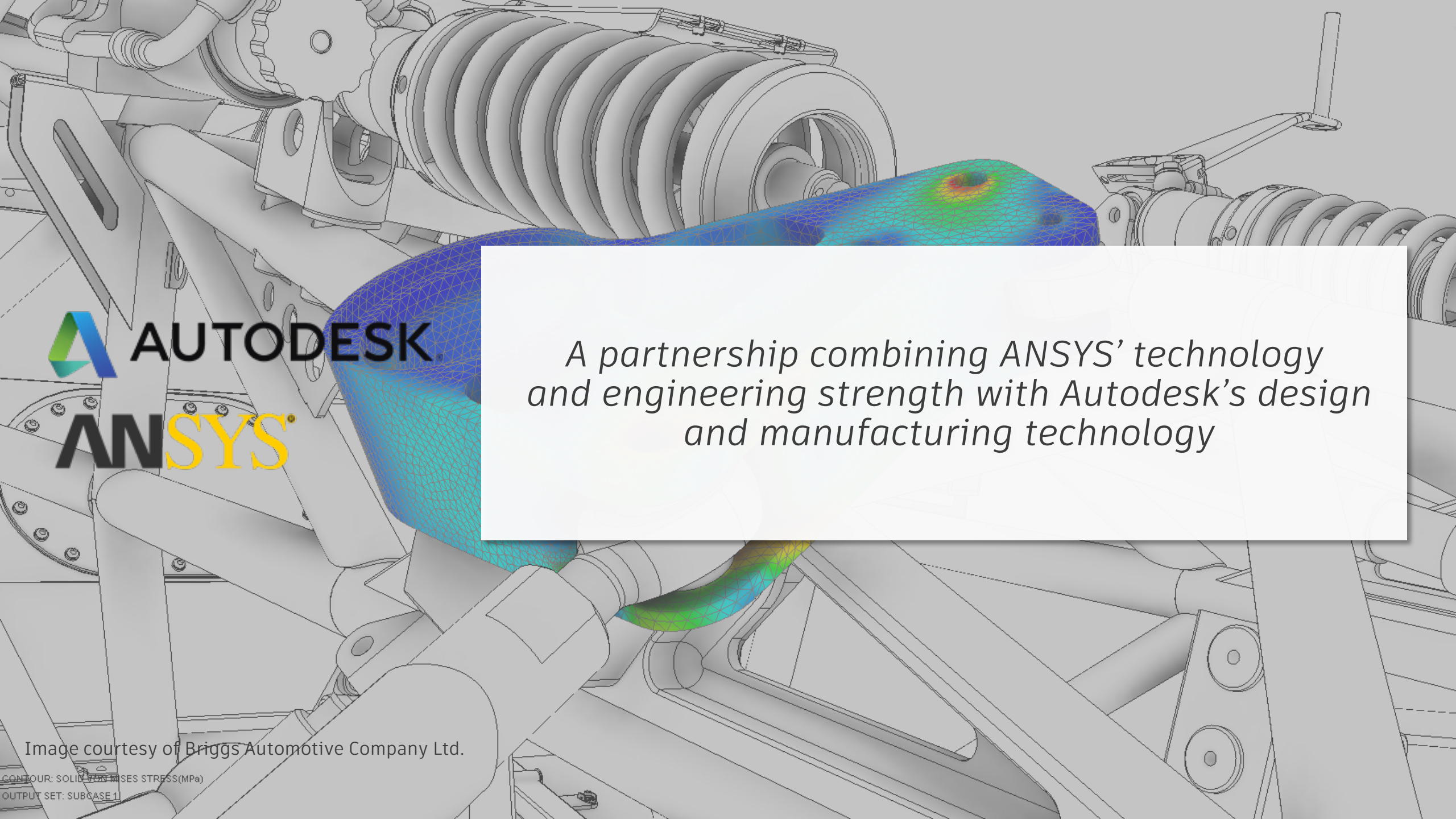
FTR Manufacturing

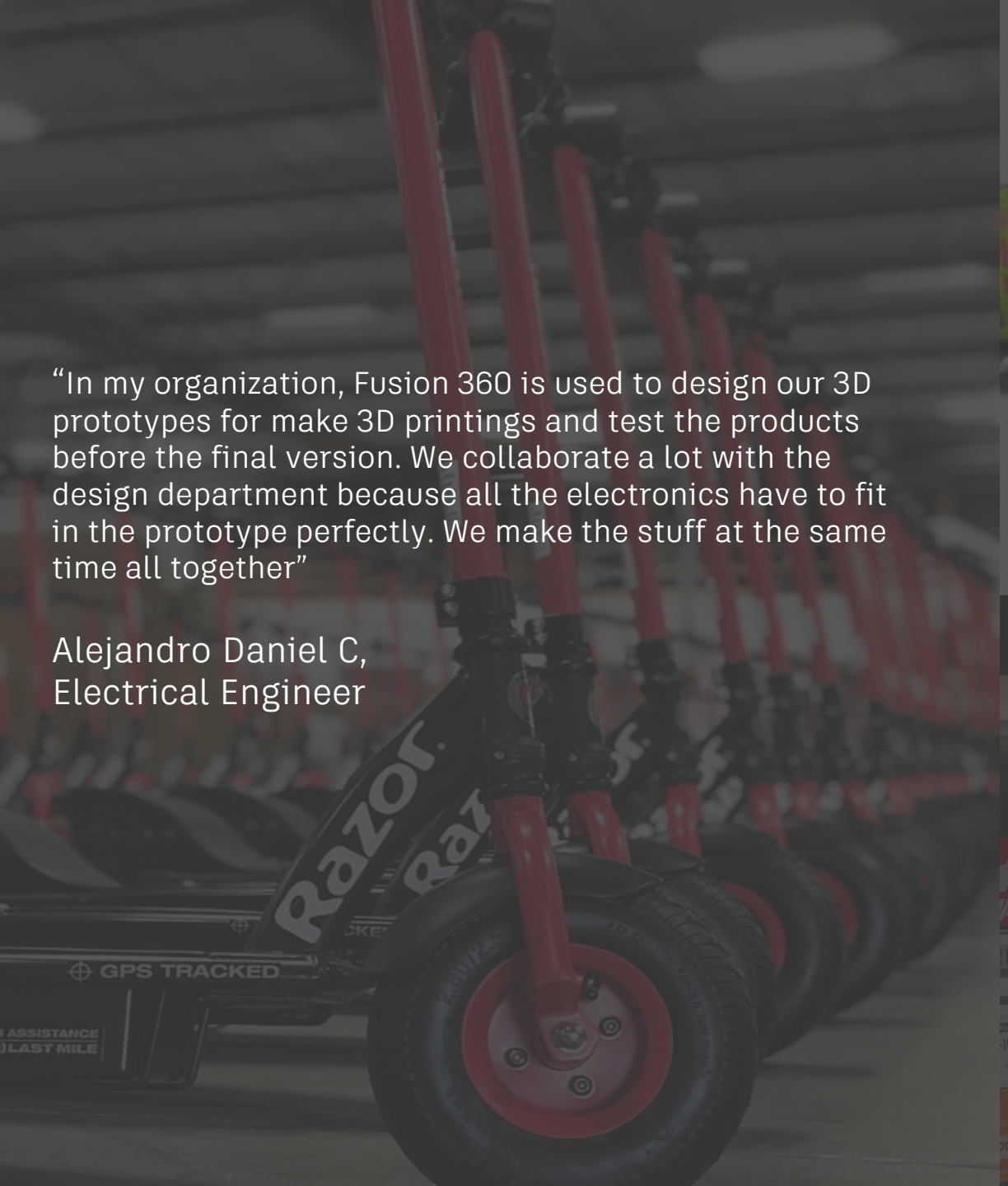
Unprecedented Value

AUTODESK®
FUSION 360™

$495/year Sub
+
$1500/year Extension
+
Outcome based pricing for Generative Design

$5,000-$50,000


AUTODESK.
ANSYS
A partnership combining ANSYS' technology and engineering strength with Autodesk's design and manufacturing technology
Image courtesy of Briggs Automotive Company Ltd.
CONTOUR: SOLID VON MISES STRESS(MPa)
OUTPUT SET: SUBCASE 1

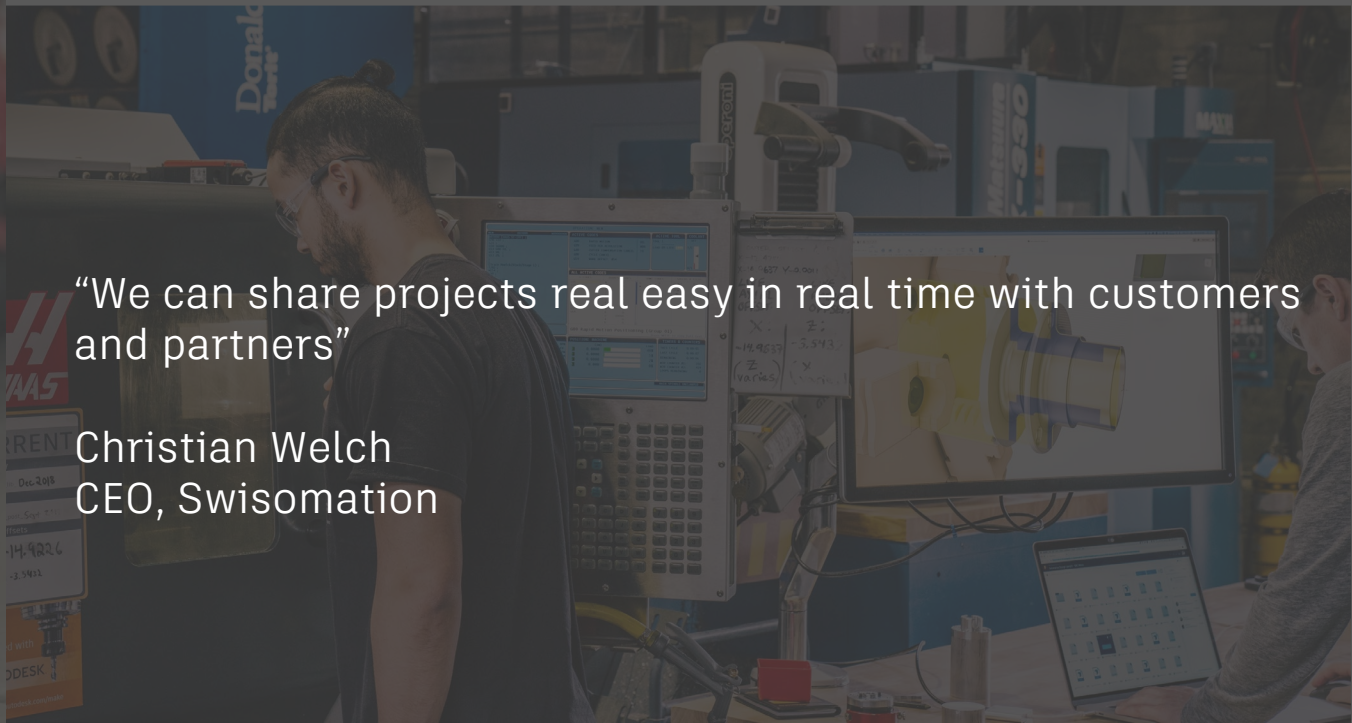


"In my organization, Fusion 360 is used to design our 3D prototypes for make 3D printings and test the products before the final version. We collaborate a lot with the design department because all the electronics have to fit in the prototype perfectly. We make the stuff at the same time all together"

Alejandro Daniel C,
Electrical Engineer

"This *(Generative Design)* disruptive technology provides tremendous advancements in how we can design and develop components for our future vehicles to make them lighter and more efficient"

Ken Kelzer
VP, Global Vehicle Components and Subsystems
GENERAL MOTORS



"We can share projects real easy in real time with customers and partners"

Christian Welch
CEO, Swisomation

AUTODESK®

Make anything.