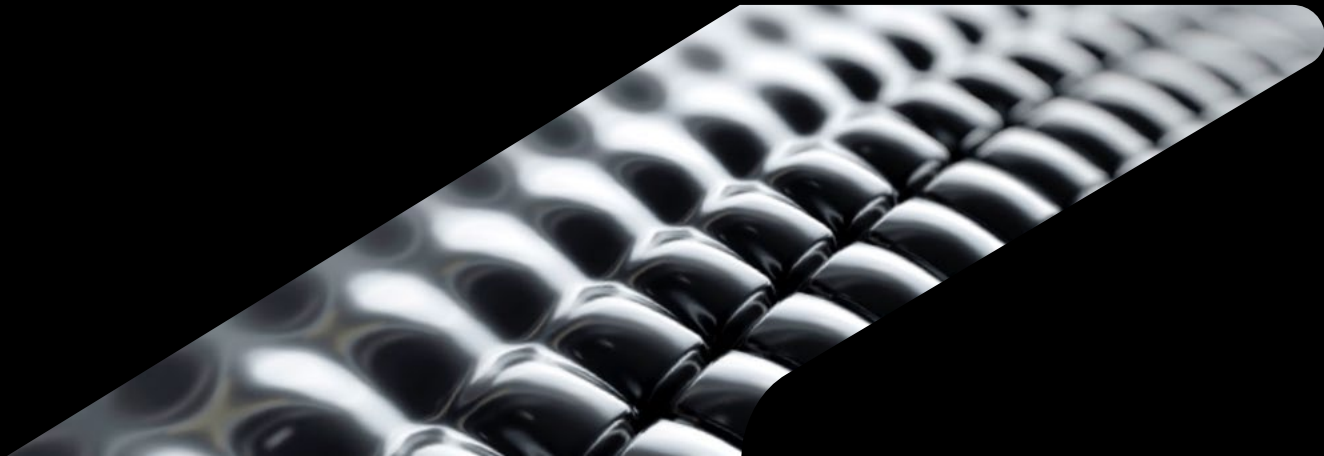




Solve real-world manufacturing challenges using the Fusion 360 Extensions

MFG501023

Dylan Smith
Technical Sales Specialist
Kieran Gill
Customer Advocacy Manager



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Dylan Smith

Technical Sales Specialist



- BSc (Hons) Engineering
- *Coventry University*
- Extensive manufacturing background
- Delcam Acquisition in 2014
- Sales Organisation

Kieran Gill

Customer Advocacy Manager



- BSc (Hons) Mechanical Engineering
- *Oxford Brookes University*
- Medical & Dental Implants
- Delcam Acquisition in 2014
- Customer Engagement Organisation

Fusion 360

Fusion 360 (Core Functionality)

Design

- Product Design Extension
- Simulation Extension
- Generative Design Extension
- Manage Extension

Manufacturing

- Machining Extension
- Additive Build Extension
- Nesting and Fabrication Extension

Fusion 360

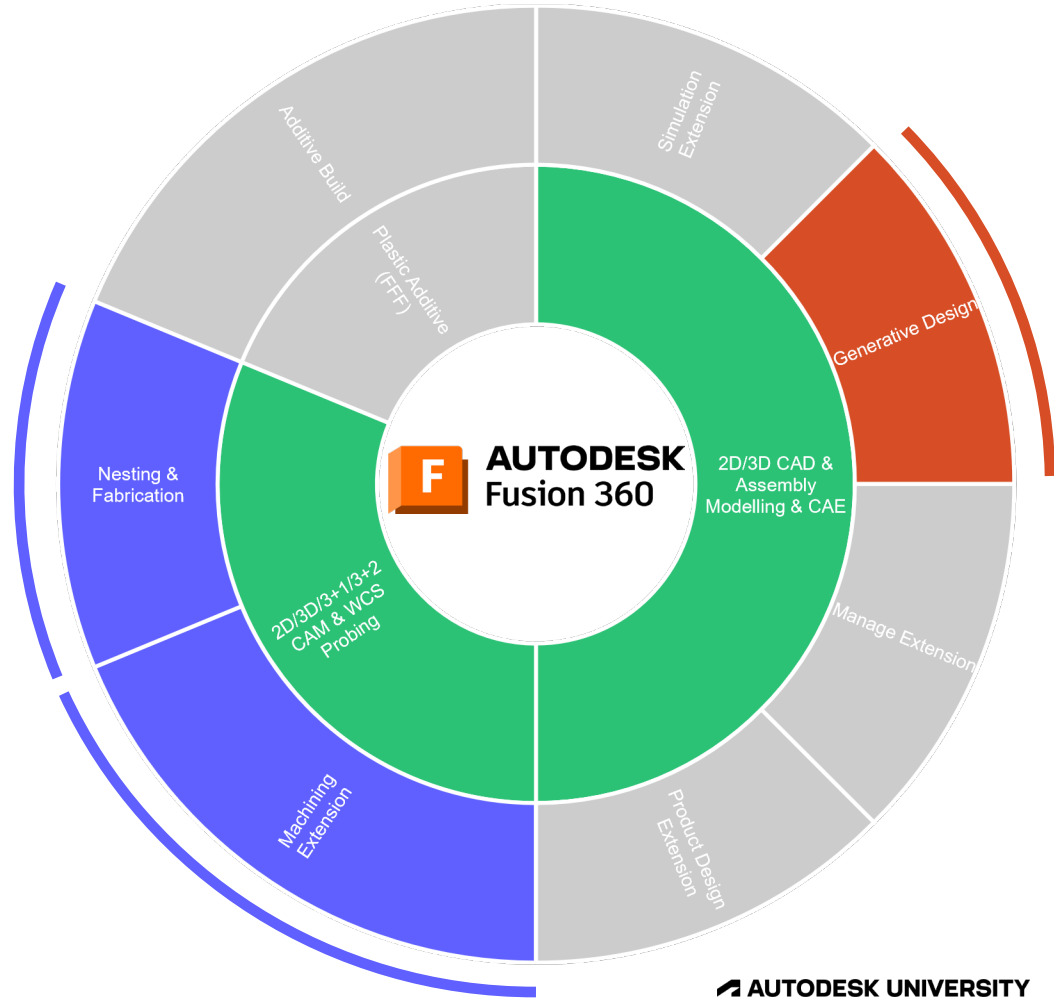
Fusion 360 (Core Functionality)

Design

- Product Design Extension
- Simulation Extension
- **Generative Design Extension**
- Manage Extension

Manufacturing

- Machining Extension
- Additive Build Extension
- Nesting and Fabrication Extension



Extensions

Why ?

1. Extend Your Platform

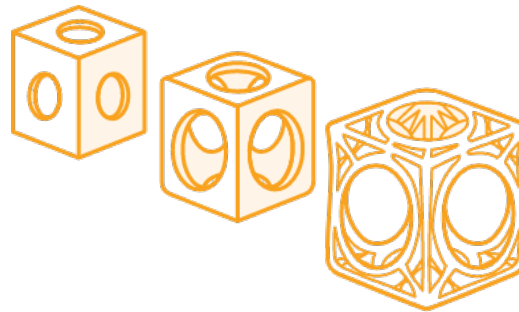
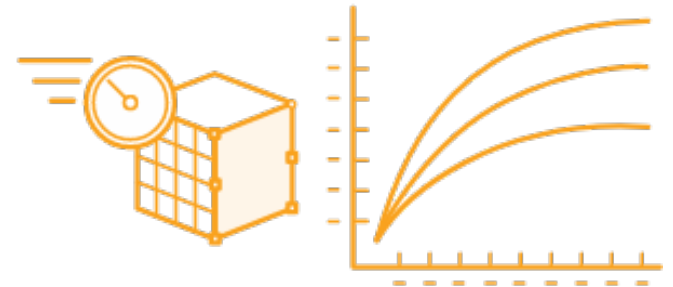
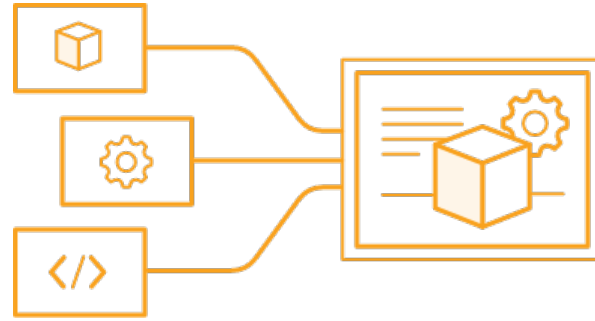
- Eliminate Disconnected Deployment
- Specialised Technologies
- One Platform

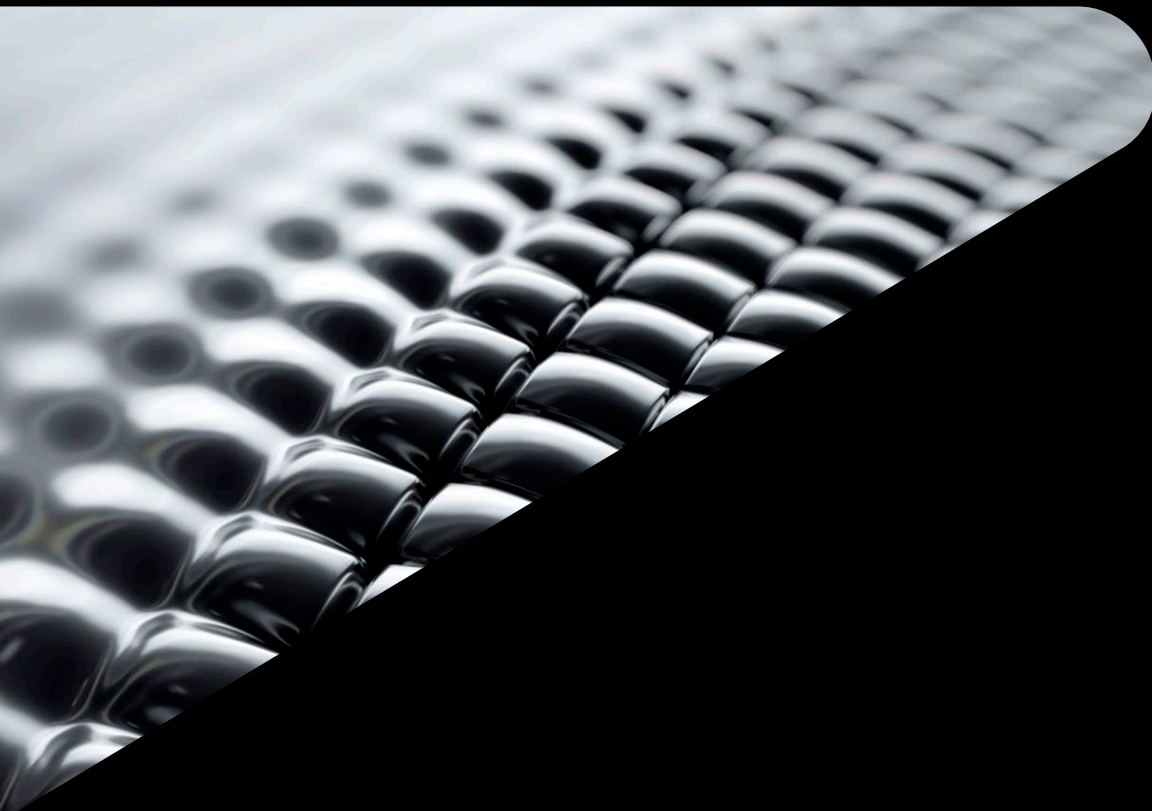
2. Manufacturing Simplification

- Automated Workflows
- Team Collaboration
- Time To Market

3. Flexible Access

- Purchase by the Day, Month or Year





Conturo Prototyping

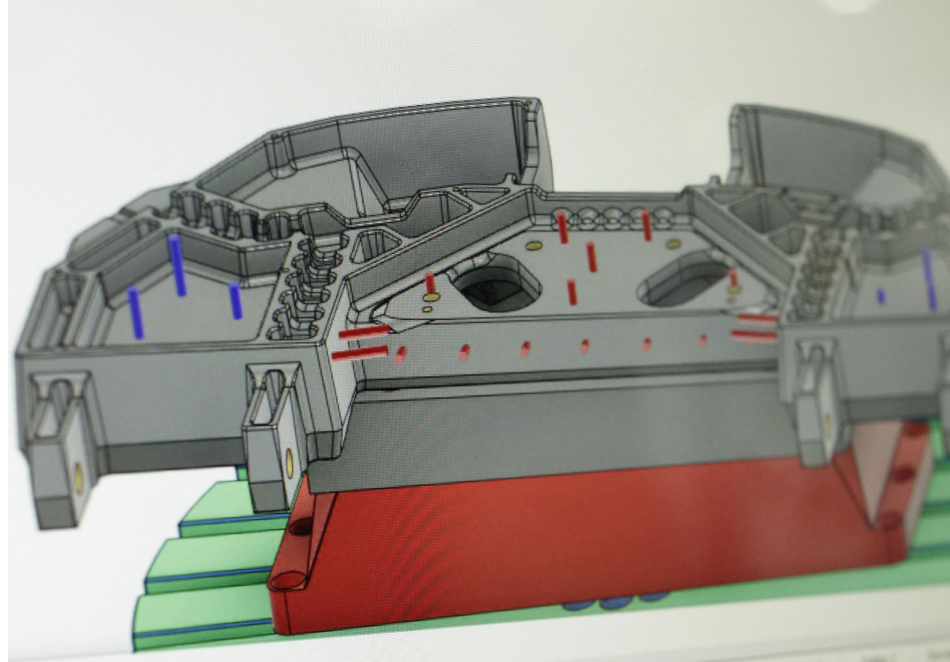
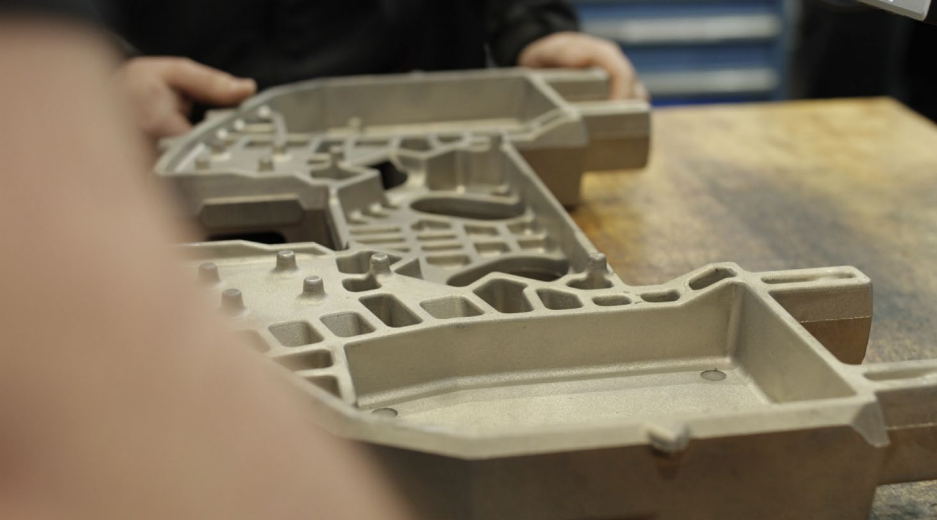
Machining Extension



Conturo Prototyping

Machining Extension

- Conturo are a prototyping company based out of Pittsburg, Pennsylvania
- Founded in 2016, starting out as a 1000 square foot shop, quickly graduating to a 17,000 square foot shop.
- 10 multi-axis CNC mills
- 3 CNC lathes
- Serving multiple industries – generally small to medium sized components (mostly robotics, aerospace and medical)



Projected X	Projected Y	Projected Z	Contact X	Contact Y	Contact Z	Offset	Delta 1	Delta 2	Delta 3
-5.34581	-0.38352	-0.40960	-5.97575	-0.38614	-0.40960	0.00000	-0.01954	0.00000	0.00000
4.01800	-1.10117	7.06098	4.01800	-1.10044	7.06935	0.00000	0.00000	0.00000	0.00000
4.88410	-1.12697	7.06324	4.88410	-1.12574	7.07725	0.00000	0.00000	0.00000	0.00000
-3.48480	-1.15081	7.06532	-3.48480	-1.15054	7.06845	0.00000	0.00000	0.00000	0.00000
-4.23750	-1.10824	7.06160	-4.23750	-1.10814	7.06275	0.00000	0.00000	0.00000	0.00000
9.08240	-0.47986	1.82330	9.08240	-0.46560	1.82330	0.00000	0.00000	0.00000	0.00000
10.55990	-0.47986	2.96310	10.55990	-0.45560	2.96310	0.00000	0.00000	0.00000	0.00000
11.17050	-0.47986	1.05510	11.17050	-0.45920	1.05510	0.00000	0.00000	0.00000	0.00000
-10.23240	-0.47986	2.72730	-10.23240	-0.46360	2.72730	0.00000	0.00000	0.00000	0.00000
0.89340	-0.47986	1.53510	0.89340	-0.47320	1.53510	0.00000	0.00000	0.00000	0.00000
		1.04310	-10.68180	-0.46620	1.04310	0.00000	0.00000	0.00000	0.00000

Below Lower Tolerance

Benefits from Extension

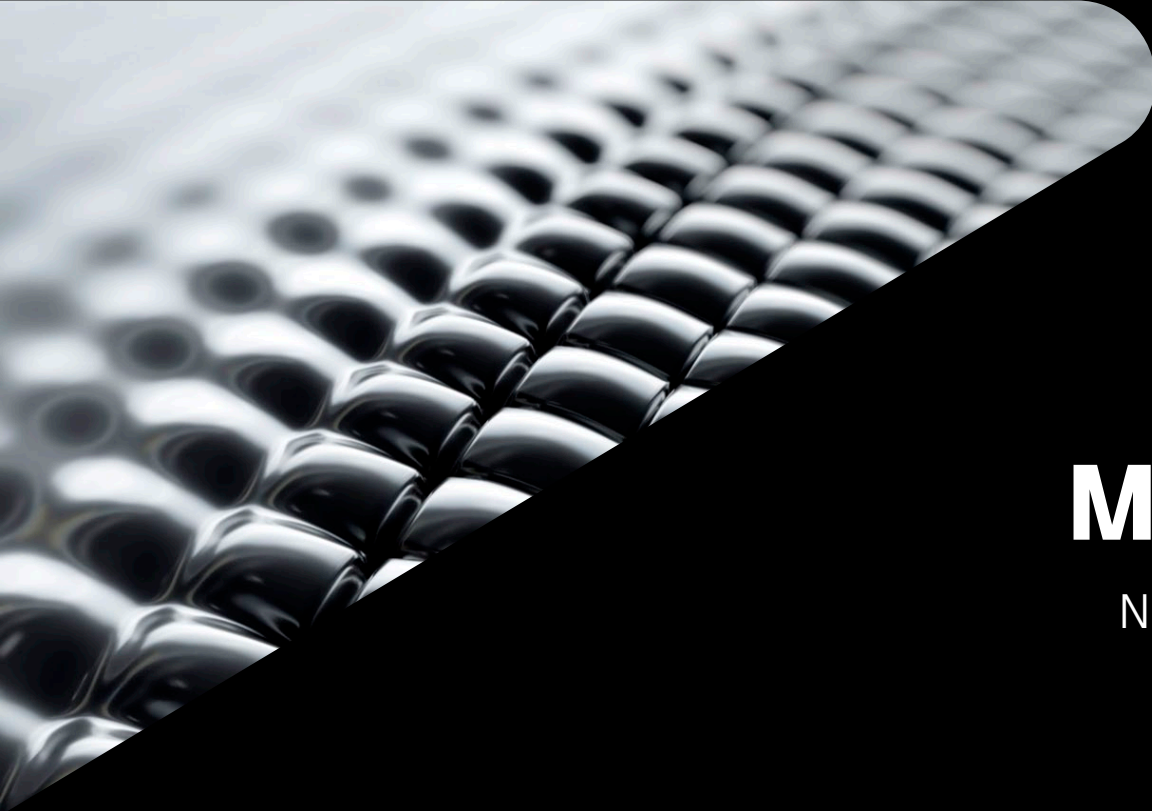
Machining Extension

- Automatic part alignment allows previously manual, time-consuming, unpredictable tasks to be automatic, quick and predictable.
 - Cast parts are typical, making part alignment extremely valuable
- Multi-axis machining allows Conturo to machine components they otherwise wouldn't be able to in 3-axis
 - Multi-axis allows Conturo to machine components in less set-ups, saving them time and money
- Toolpath modifications to edit the toolpaths post toolpath calculation for convenience
- Conturo use hole recognition to automate the drilling of holes in 3 and 5 axis, removing the need for manual clicking within Fusion 360



**“Considering all the time
saving features in the
Machining Extension,
it’s clear the extension
pays for itself in just a
few weeks”**

Patrick Fee
Conturo Prototyping



Ganas Manufacturing

Nesting & Fabrication Extension



Image Courtesy of Ganas Manufacturing

Ganas Manufacturing

Nesting & Fabrication Extension

- Ganas Manufacturing is a small start-up based in Detroit, MI
- Founded in 2015, 15 employees
 - Architectural Millwork
 - Custom-made Furniture
 - Specialty Woodworking
 - Specialty Metalworking
- 3-axis & 5-axis routers
- Horizontal drilling & Dowelling machines

Benefits from Extension

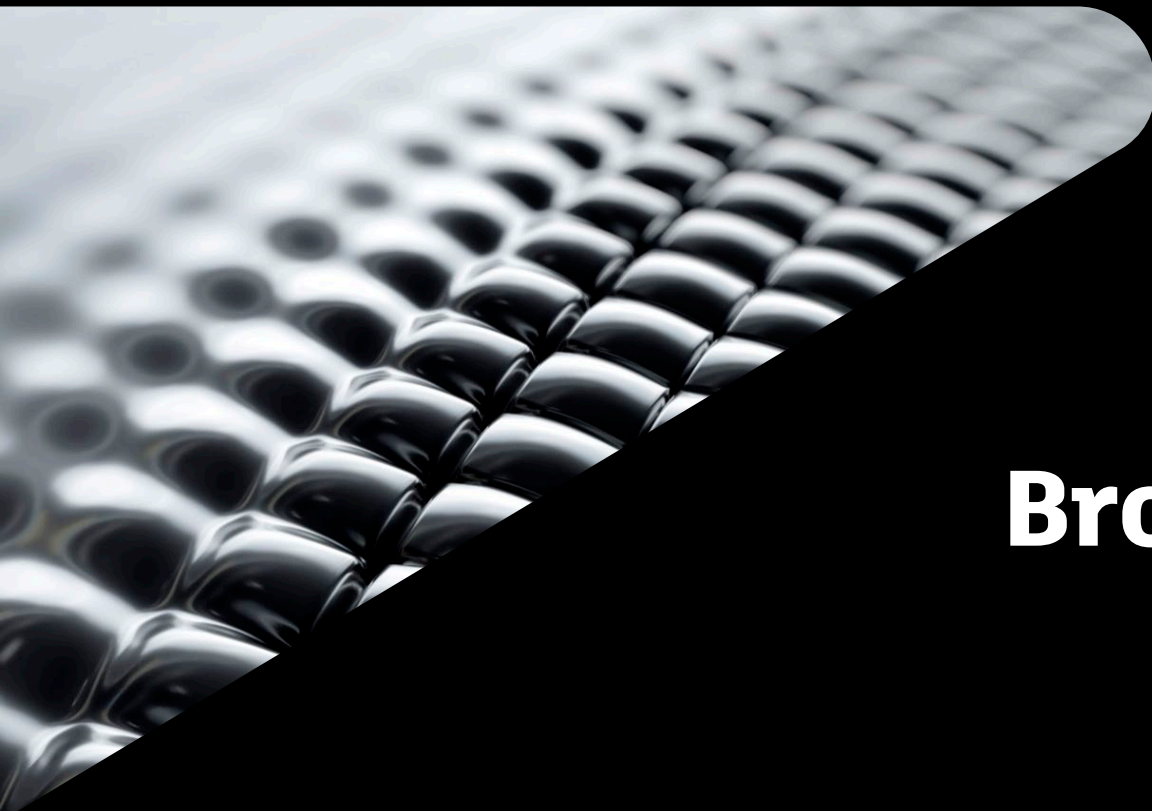
Nesting & Fabrication Extension

- Saving Time with automated nesting
 - Allow nesting in Fusion 360 directly from 3D Computer-Aided Design (CAD) model
 - Automated nesting significantly **reduces scrap from 25% to just 5%**
- Automated repetitive tasks
 - Physically demanding manual tasks significantly reduced
 - Dramatic reduction in human-error related problems
- Reducing production time & growing the business
 - Decreased costs, Increased profit margins, slashing timelines in half
 - More accurate costings due to reduced scrapage



**“Reduces expected
scrap from 25% to
just 5% of any given
sheet”**

Richard Ganas
Ganas Manufacturing



Brown & Holmes

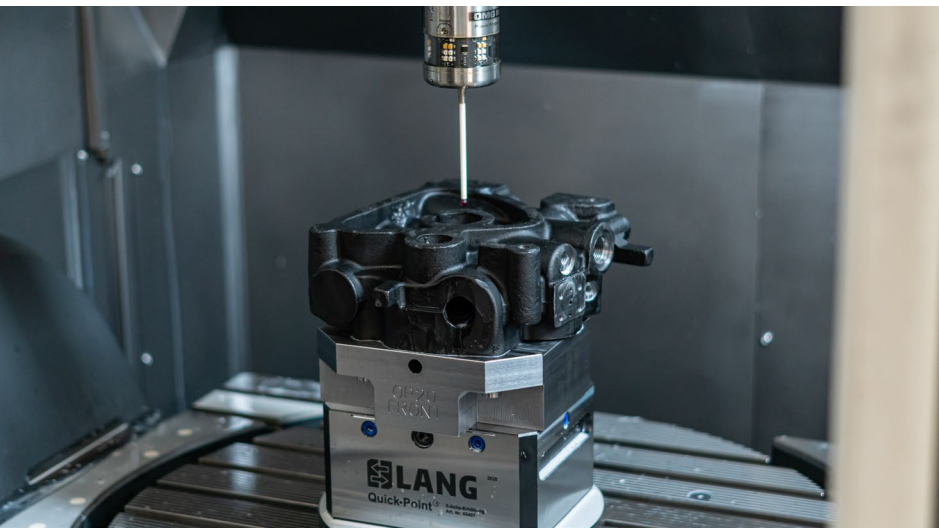
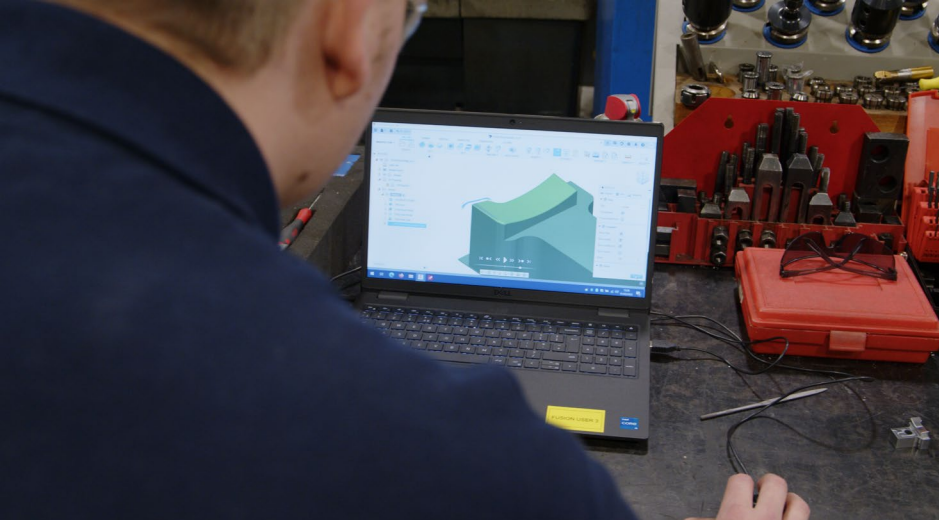
Machining Extension



Brown & Holmes

Machining Extension

- Brown & Holmes provide turnkey workholding and sub-contract machining solutions to a range of applications
- Founded in 1939 with around 32 employees
- Serves many different industries
- Brown & Holmes have machine tools from multiple vendors, such as Doosan, Mazak, DMG MORI, Colchester, XYZ and Bridgeport
- Additive manufacturing is apart of many workflows



Benefits from Extension

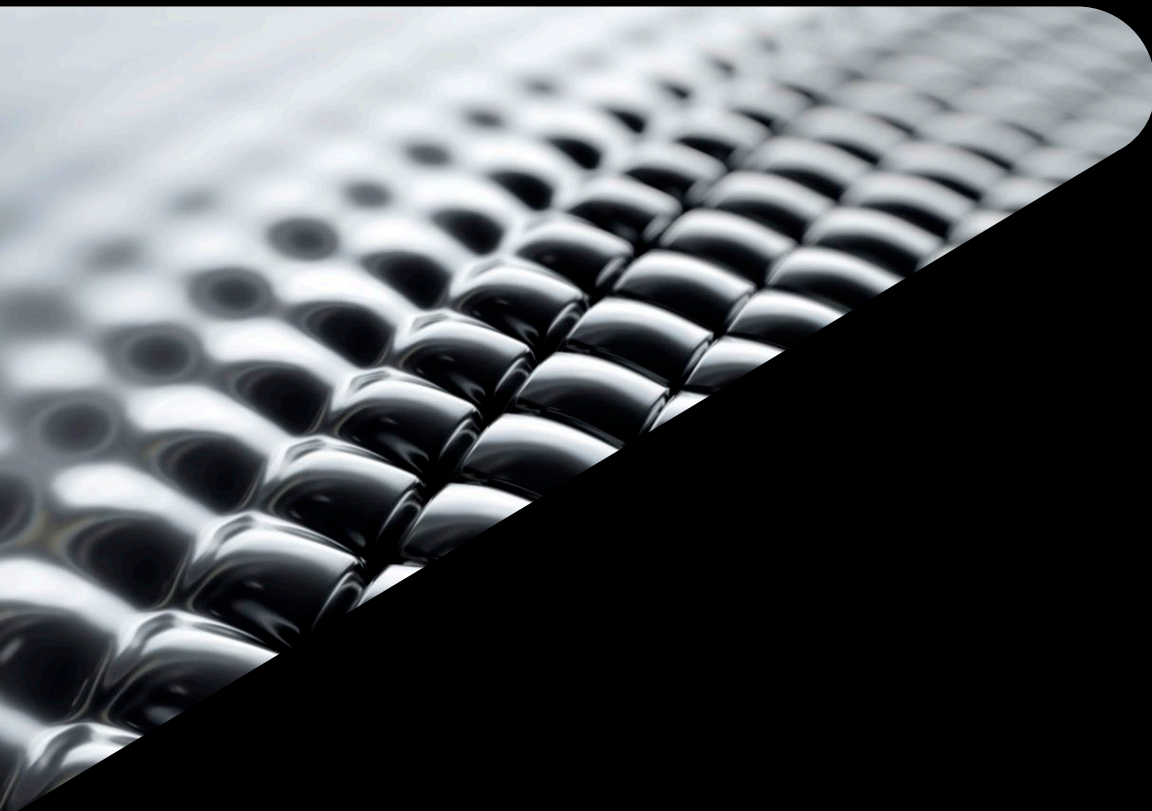
Machining Extension

- Fusions 4 axis and 5 axis ability in the machining extension allows seamless onboarding due to the ease of use
 - Ability to take on more complex, valuable work and complete it more quickly
 - Training is optimum but the online resources allow for quick onboarding
- Hole recognition replacing manual long hand programming on the machine tool controller
 - Automation
- Toolpath modifications allow higher quality, safer and more efficient toolpaths
 - Toolpath trimming



**“Fusion 360 has
reduced NCR’s by 34%
and helped to double
turnover”**

Paul Bourne
Brown & Holmes



Evolve

Machining Extension

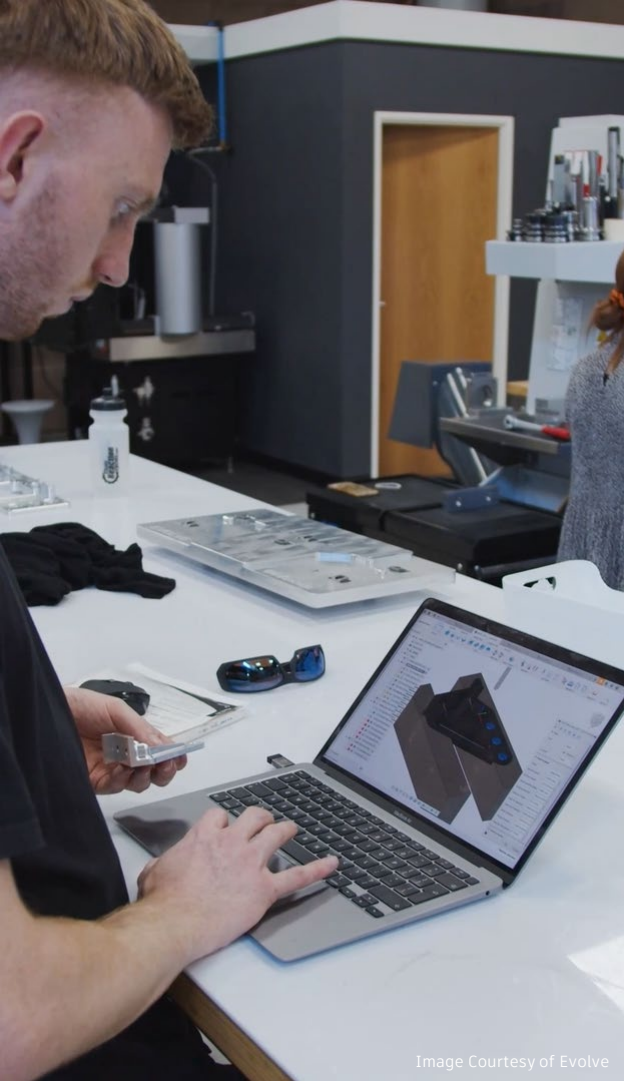
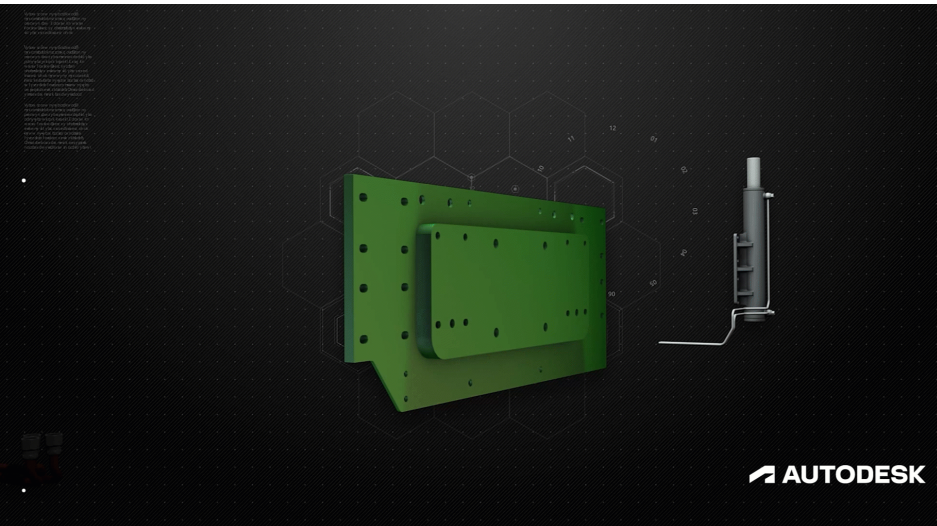
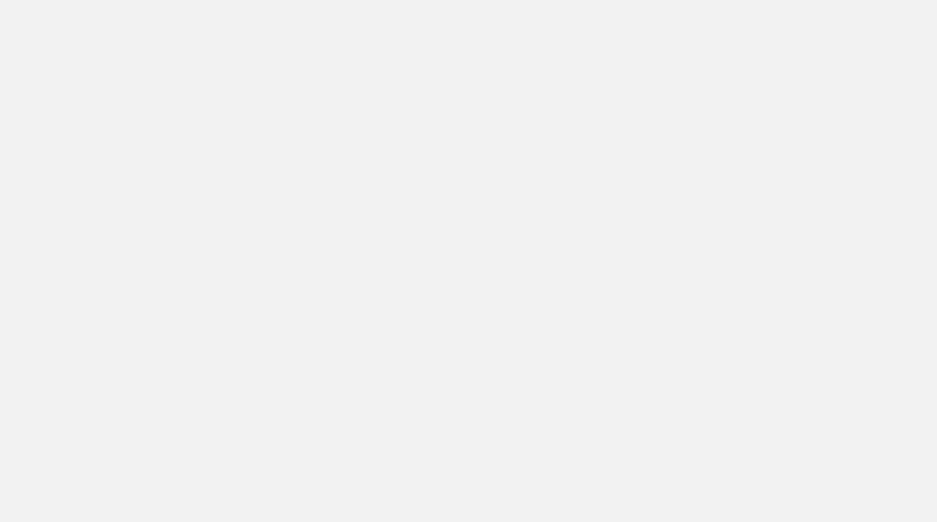


Image Courtesy of Evolve

Evolve

Generative Design Extension

- Evolve is an industrial machinery manufacturer based out of Banbury, UK with MD, Matt Hill
- Founded in 2014 with around 10 employees
- What industries they serve
 - Automotive, Aerospace, Marine, Defense, Industrial
- 5-axis subtractive machines
- 3-axis subtractive lathes
- Metal Additive machines



Benefits from Extension

Generative Design Extension

- Improving product performance
 - Reduce weight to hit performance and range targets
 - Maximise strength and stiffness
 - Must be optimized for CNC milling
- Explore multiple design solutions driven by AI
 - Quickly able to explore multiple design outcomes
 - Matt Hill says. *"It created something that was very interesting and aesthetically pleasing that perhaps we wouldn't have created if we'd have done this from a traditional design method"*
- Reducing product cost
 - **Generative design helped to reduce weight by 40%**
 - Matt Hill says. *"We're really looking forward to having this as a tool in our toolbox for the future, to make our design process more efficient, and add value to our customers going forward"*

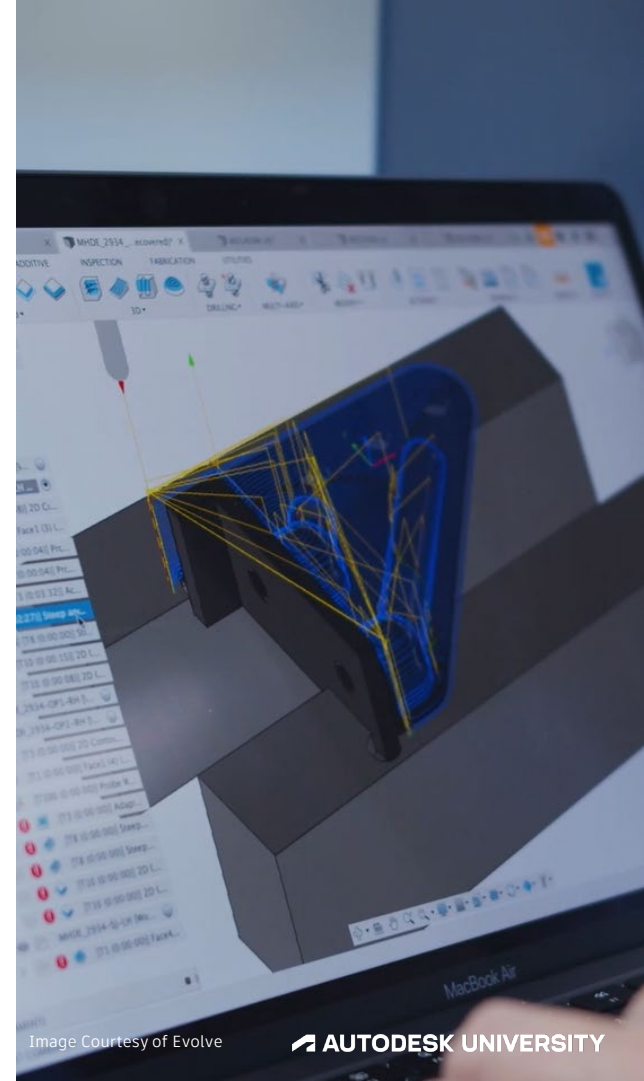


Image Courtesy of Evolve

**“40% weight
reduction on electric
hypercar component
with generative
design and 2.5 axis
machining”**

Matt Hill
Evolve



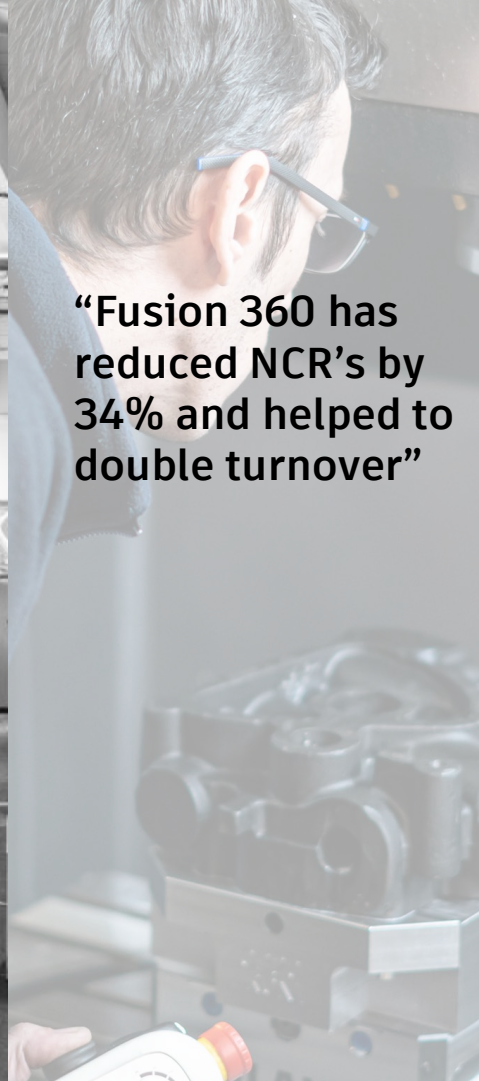
“Considering all the time saving features in the Machining Extension, it’s clear the extension pays for itself in just a few weeks”





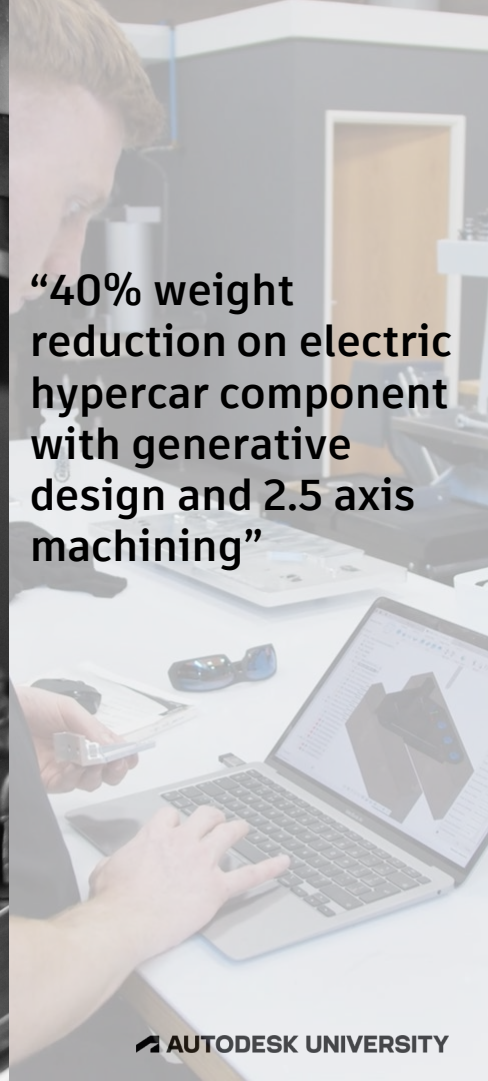
**“Reduces expected
scrap from 25% to
just 5% of any given
sheet”**





**“Fusion 360 has
reduced NCR’s by
34% and helped to
double turnover”**





“40% weight reduction on electric hypercar component with generative design and 2.5 axis machining”

Q&A



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