Studio System Success Stories

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Improving commercial food processing equipment with metal 3D printing

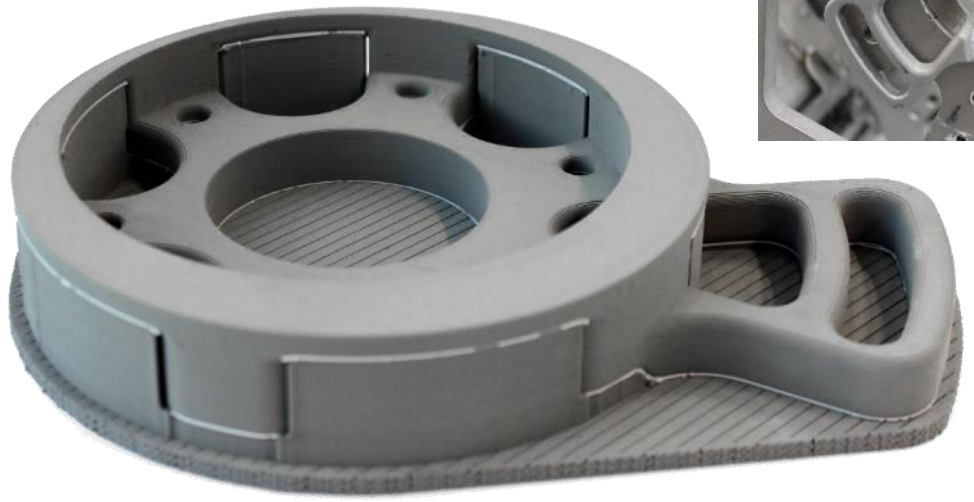
CUSTOMER	**Curio**
LOCATION	Reykjavík, Iceland
APPLICATION	100+ 3D printed parts on the Curio C-2034 filleting machine
CHALLENGE	Traditional production methods limit design possibilities based on manufacturability and the expense of tooling for any design changes. We've measured one degree of heat exchange as fish are processed through the filleter," he explained. "Heat increase means degradation and a shorter shelf life.

Soiution

SYSTEM	Desktop Metal Studio System
MATERIAL	316L Stainless Steel
BENEFITS	• Stainless steel parts are 3D printed in-house on four office-friendly Studio Systems at Gullmolar, a manufacturing company and supplier to Curio • Fast iterations mean user feedback can be immediately incorporated, for example to print a new bracket at a slightly different angle if the skin of a specific species of fish gets stuck in the machine • Design freedoms improve equipment performance, for example by negating the measured one degree of heat exchange from knife to fish during filleting that can lead to product degradation. Internal cooling channels 3D printed into parts improve yields and keep product fresher

"I was always looking at laser powder bed fusion printers. I went to see some in action, but they were always terribly expensive and the part needed a lot of post-processing afterwards, so I didn't actually see the benefits."

Elliði Hreinsson, Founder of Curio and Gullmolar



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First-part production for metal components dramatically decreased

CUSTOMER	**Curio**
LOCATION	Reykjavík, Iceland
APPLICATION	100+ 3D printed parts on the Curio C-2034 filleting machine
CHALLENGE	First lot parts for assembly of a new machine required 54-58 weeks of lead time as files were sent to Asia for tooling design to make molds to cast the metal parts. Stainless-steel components are exposed to heat, water, and harsh cleaning chemicals with the expectation that they remain easy to sanitize, durable, and corrosion-free.

Solution

SYSTEMS	Desktop Metal Studio System (4) ETEC Envision One (2)
MATERIAL	316L Stainless Steel E-RigidForm & Loctite® IND406 Black
BENEFITS	• "Zero-type" parts, left, are 3D printed in plastic on ETEC digital light processing machines to test for fit and function • Tooling-less manufacturing allows designs to quickly advance from plastic to metal production in-house • Green state metal parts, center, are sintered in two Desktop Metal Furnaces to produce end-use stainless steel, right • First-model metal parts are available within a few weeks after iterations and 3D printing on the Studio System

"Desktop Metal machines are speeding up development... we are able to make the first lot of the machine with 3D printed parts without any dead time, we can push machines into the market as soon as we are ready."

Elliði Hreinsson, Founder of Curio and Gullmolar

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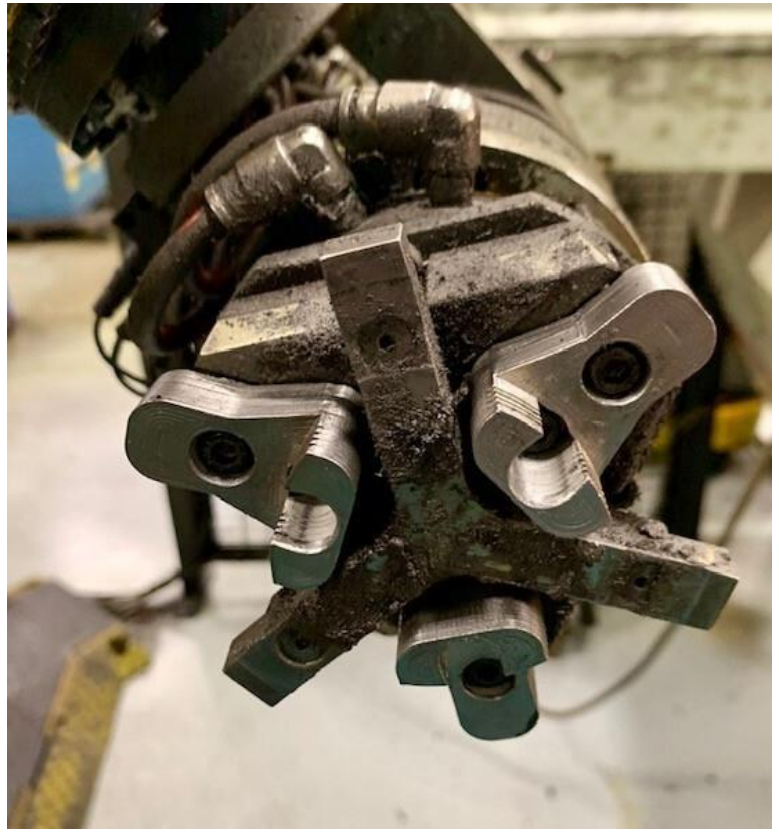
EATON Corp.

Customer	EATON Corp.
Location	Kings Mountain, North Carolina
Application	Automotive components and tooling
Challenge	Quickly re-tool manufacturing lines to reduce downtime and develop and prototype custom parts for unique transportation challenges.

Solution

System	Studio System
Material	17-4 PH Stainless Steel
Benefits	Reduced tooling lead time by more than 60 percent, from 3-4 weeks to just 5-10 days.

> “One of the top benefits of the Studio System is the ability to produce the manufacturing devices we need at a lower cost and with greatly reduced lead times. It’s opening our minds to completely new design possibilities.”
> — Alexandre Georgetti, Senior Manager - Manufacturing Strategy, Eaton Corporation



E.g. Printed robotic gripper

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[EATON] Replacement parts & tooling components

[Part Example]

Furnace Chain Guide

This part is used for guiding a chain on a conveyor belt that is used for loading and unloading of a furnace.

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

65%

[Part Example]

Furnace Door Bracket

Furnace door bracket which attaches to a rotating cylinder. Used to open / close the furnace door.

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

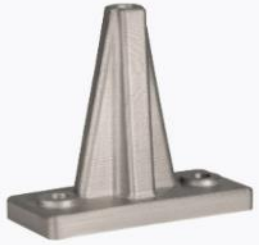
77%

[Part Example]

Furnace Door Stop

A doorstop for one of Eaton's industrial furnaces.

Printed with Studio System™



[Material]

17-4 PH Stainless Steel

[Cost Saving]

84%

[Part Example]

Gear Stamp

Stamp used for parking marking during the gear manufacturing processes

Printed with Studio System™

[Material]

H13 Tool Steel

[Cost Saving]

92%

[Part Example]

Assembly Bearing Press Tool

Assembly press tooling to press bearings into gear box housings

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

86%

[Part Example]

Shaft Press Plate

This fixture is used to assist during the pressing of a shaft into the inner race of a bearing

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

66%

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[EATON] Testing fixtures & gripping components

[Part Example]

Product Testing Fixtures

Testing fixture device for product development prototypes

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Part Example]

Gear Lab Coupling Fixture

Fixture to allow parts to be measured at gear lab measurement machines

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

84%

[Part Example]

Test Stand Oil Fill Nozzle

Assembly end of line tester component to faster fill oil to product during tester process

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

94%

[Part Example]

Robot Gripper

This gripper is used to automatically load a gear hobbing machine so it can perform a gear chamfering operation.

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

90%

[Part Example]

Gear Tooth Chamfer Chuck Jaws

This is a pneumatic jaw for a gear tooth chamfering machining operation.

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

79%

[Part Example]

Main Shaft Gear Robot Gripper Pads

Wear contact pads used on load / unload automation devices.

Printed with Studio System™

[Material]

17-4 PH Stainless Steel

[Cost Saving]

89%

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Additive Italia

Customer	Additive Italia
Location	Stezzano, Italy
Application	End use customer parts and custom tooling
Challenge	Help customers produce parts that are lighter, stronger, less expensive and need less lead time to customizing parts for niche applications or overcoming the constraints of traditional manufacturing methods.

Solution

System	Studio System
Material	17-4 PH Stainless Steel
Benefits	The system has helped Additive Italia win new business, encourage other companies to explore additive options. AddIt was able to help customers optimize geometry, improve part quality while reducing post-processing demands, reduced waste, and rapidly produce light-weighted tooling for the manufacturing floor, reducing wear and tear on machinery.

Add+it

Supplier for:

EWOL PROPELLER EVOLUTION

CIFARELLI

EWOL – Propeller pinions

Preziosa – Spring holder hanger

Cifarelli - Optimized shaker hook for nut and olive harvesting

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Alpha Precision Group

Customer	Alpha Precision Group
Location	St. Mary's Pennsylvania
Application	On-demand tooling, customer prototypes
Challenge	To win jobs, the company must be able to respond to bids quickly—creating necessary tooling for each job as fast as possible and getting parts out the door—all while making sure machine shop resources are available for both internal jobs and customer orders.

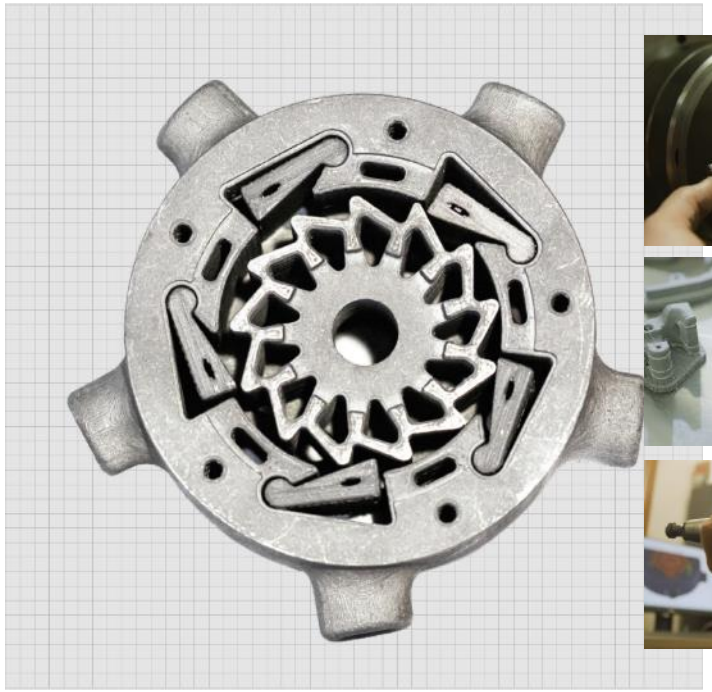
Solution

System	Studio System
Material	17-4 PH Stainless Steel
Benefits	• Reduced tooling lead times by 80-90% • Reduced tooling costs by 80-90% • Eliminated labor-intensive manufacturing steps via innovative tooling designs unachievable without metal 3D printing • Reduced machine wear by reducing mass of end-of-arm tooling • Ability to produce on-demand customer samples and after-market parts without need for tooling • Freed up machine shop for critical tasks

"With the Studio System, we've seen immediate value. One example is a fixture used for high density stainless steel sensor bosses. It is a wear item, so needs to stand up to repeated use. We are now able to produce this part at 83 percent cost savings and in just days instead of weeks or months, meaning we can keep the line running at all times." — Nate Higgins, fmr Business Unit Manager, Alpha Precision Group (APG)

Thread checker

Coining fixture



Custom CNC ratchet

Chuck jaws, gripper, and ratchet

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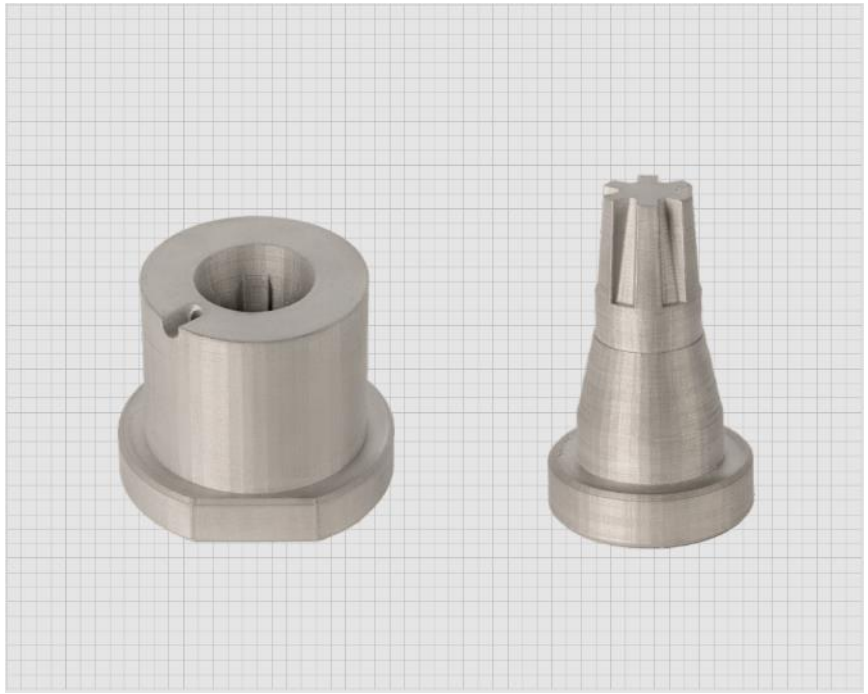
Innovative Plastics

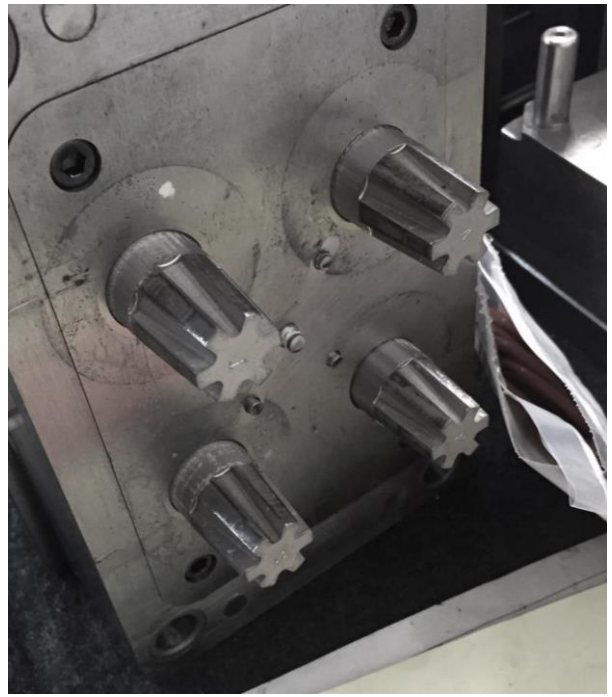
Customer	Innovative Plastics
Location	Madison, Alabama
Application	Molding components
Challenge	• Reduce time to manufacture for critical mold components • Reduce cycle time by incorporating Design for Additive Manufacturing (DfAM) principles into the mold

Solution

System	Studio System
Material	H13 Tool Steel
Benefits	• Reduced lead time from 6 weeks to 2-3 weeks with Studio System™ • Reduced mold cost from $10k-$12k to $6-$8k (3D Printed Mold + CNC) • Projected cost savings of ~30%

"At Innovative Plastics, it's our goal to provide state-of-the-art service to our customers, from the design stage, through prototyping and into final production. For us, 3D printing brings significant cost and time savings."
— Tom Kerr, Tooling and Program Manager, Innovative Plastics





Tooling for exhaust cap for boat cover

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John Zink Hamworthy

Customer	John Zink Hamworthy
Location	Tulsa, Oklahoma
Application	Emission control components and manufacturing floor tooling
Challenge	• Produce complex atomizers for improved emissions control • Reduce overhead by manufacturing one-off replacement parts on-demand

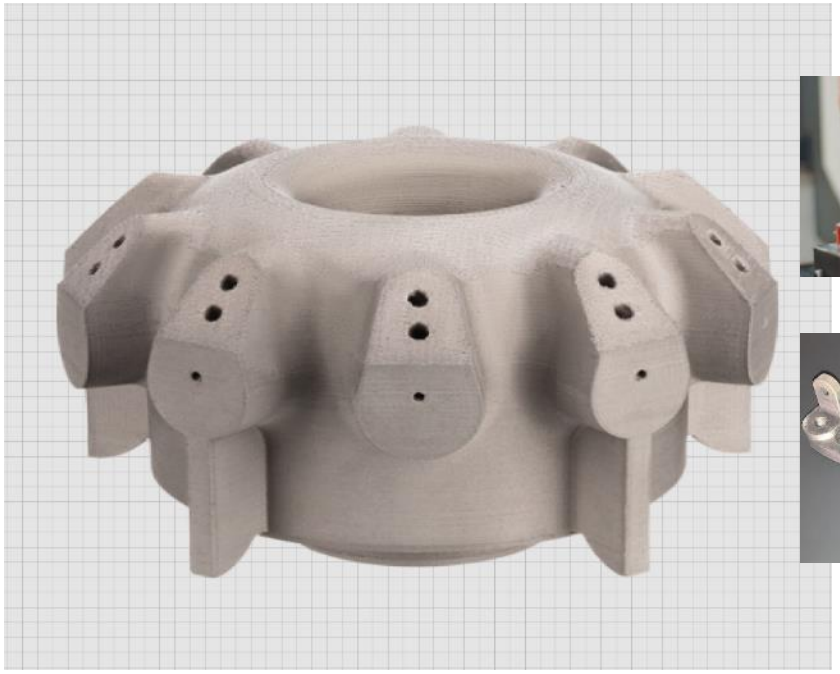
Solution

System	Studio System
Material	17-4 PH Stainless Steel
Benefits	• The company has been able to produce custom parts tailored to their customers' applications faster than ever before. • The innovative new atomizer design, made possible only through the use of additive technology, significantly reduces fuel use, from 120 kg/hour to just 38 kg/hour, resulting in both cost savings and reduced emissions. • Internally, parts like the laser gas nozzle and tool handles have improved workflows.

"While the limits of traditional manufacturing had locked the company into a relatively static atomizer design for decades, the possibilities of 3D printing opened their eyes to entirely new design options, including irregularly-shaped holes to assembly consolidation and controlled airflow to optimize the fuel-air mixture."
— Jason Harjo, Design Manager, John Zink Hamworthy Combustion

Optimized fuel atomizer

Laser gas nozzle



Replacement burner tip

Custom lathe tool handles, Safety shutoff yolk and handles

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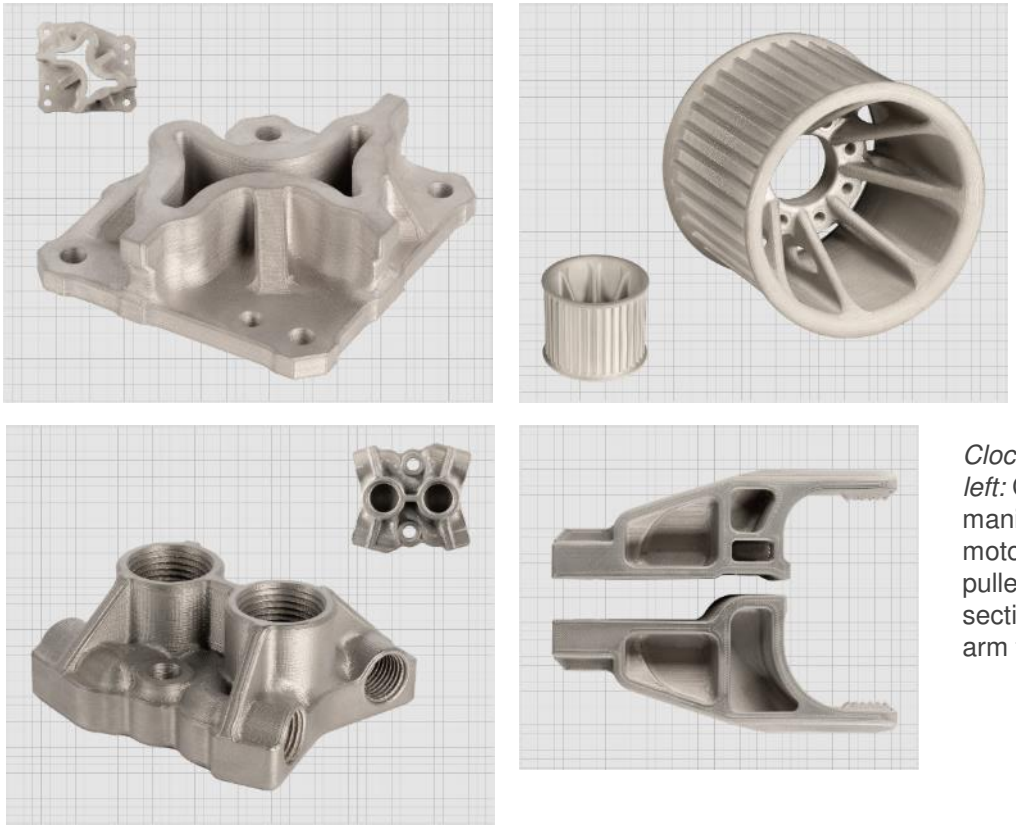
Egar Tool & Die Ltd.

Customer	Egar Tool & Die Ltd.
Location	Cambridge, Ontario
Application	Automotive stamping dies and manufacturing tooling
Challenge	The company must be able to quickly produce dies to meet customer requirements. And, as a producer of more than 15 million stamped parts and welded assemblies annually, Egar must be able to quickly retool for different jobs.

Solution

System	Studio System
Material	17-4 PH Stainless Steel, H13 Tool Steel, 4140 Chromoly Steel
Benefits	• The Studio System™ has been a major success for Egar Tool and Die - with it, Egar engineers have been able to quickly create everything from stamping dies to tooling that are precisely tailored to their different applications. • Printed and light-weighted parts allow machinery to run faster and for more efficient manufacturing, enabling Egar to quickly produce stamped parts with less downtime on their manufacturing floor.

"I'm very excited for the future of AM in both metal and plastic. There has been and continues to be great advancements in both areas. In my opinion Desktop Metal™ is at the forefront of these advancements, and I am looking forward to seeing what printer or technology they will come up with next." — Colin Kools, Director of Additive Manufacturing , Egar Tool and Die Ltd.



Clockwise, from top left: Consolidated air manifold, Servo motor timing belt pulley, Stamping die section, Transfer arm tooling.

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