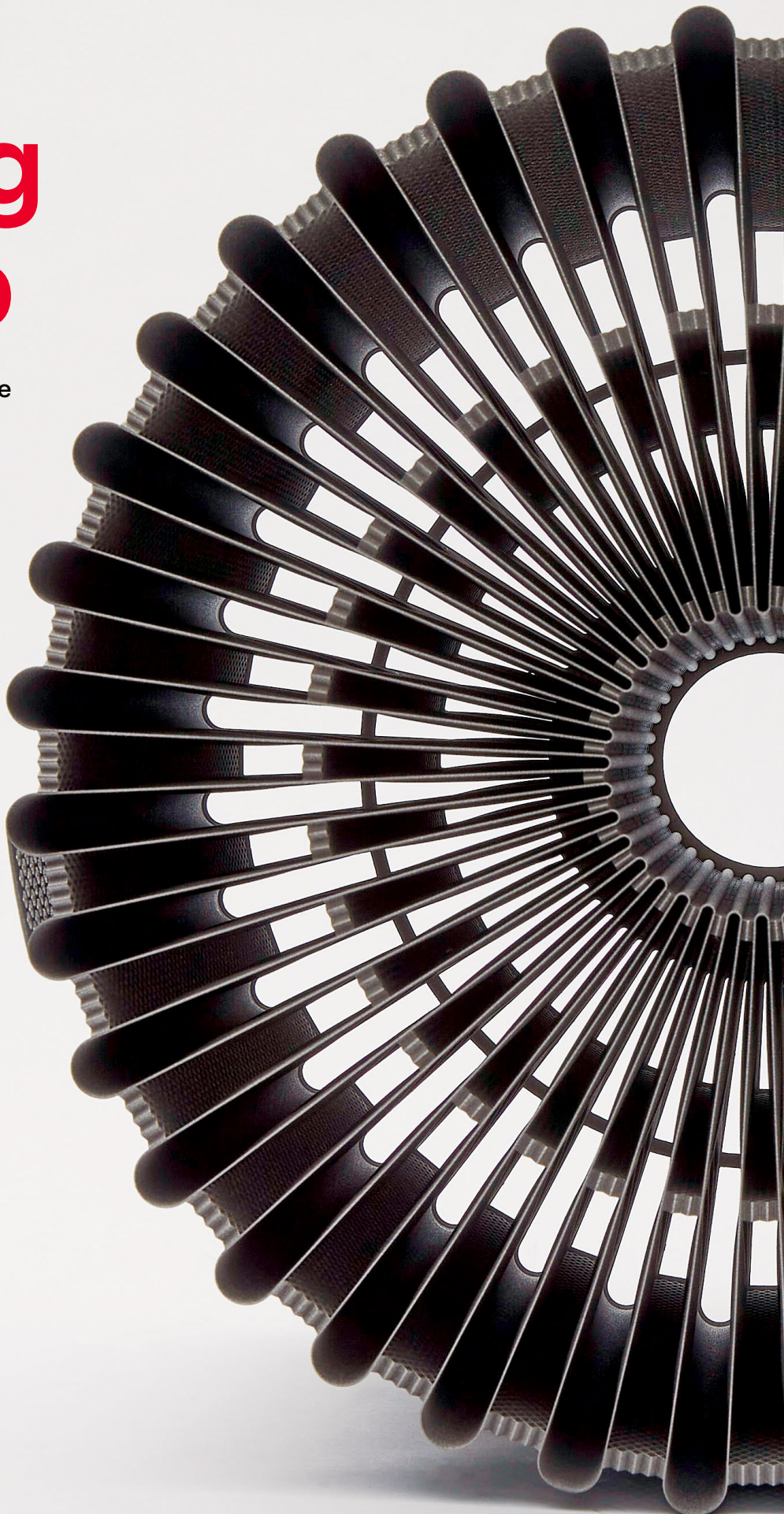


Bridging the Gap

between engineering design and the
shop floor through the power of
Additive Manufacturing



**Burloak
Technologies**

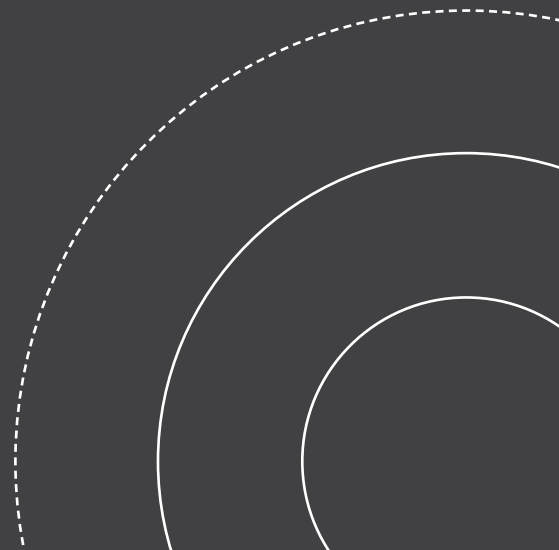
a division of **SAMUEL**^{INC.}

Bringing your Additive Manufacturing vision to life: Burloak Technologies bridges the gap

Manufacturers across a range of industries are increasingly embracing the advantages of Additive Manufacturing (AM). The success of their AM journey, however, requires the support of a capable and experienced partner to bridge the gap between engineering design and production on the AM factory floor. A partner who can help them to achieve a repeatable, reliable process that not only aligns to their unique specifications, but enables them to build better performing components with the highest possible quality. A partner who is relentless in their commitment to helping customers uncover innovative solutions to their toughest manufacturing challenges, so they can face the future head-on.

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At Burloak Technologies, we believe profitable innovation is a science—not an art.

It's built on an insatiable desire to realize untapped business growth, overcome the design constraints of the traditional machine shop, and tirelessly seek out cost-reducing opportunities driven by data, expertise and fearless design interpretation. To us, AM isn't simply an emerging technological advancement with amazing potential—it's a proven manufacturing process with endless possibilities that we're helping our customers to realize every day.

We're relentless in our commitment to helping our customers uncover solutions to their toughest manufacturing challenges, so they can face the future head-on.



SHORTER DEVELOPMENT CYCLES:

We reduce development times by drawing on our in-house, data-led AM expertise.



LIGHTWEIGHT DESIGN:

Leveraging a range of material options and well-honed 3D printing techniques, we significantly decrease component weight while increasing part strength and reliability.



SUSTAINABLE:

With highly efficient material use and lower carbon emissions, AM helps you to achieve a more sustainable and eco-friendly manufacturing solution.



LIMITLESS POSSIBILITIES:

AM supports innovation by enabling previously impossible designs in a vast array of materials and configurations with tailored mechanical properties.



SUPPLY CHAIN OPTIMIZATION:

AM is conducted when, where and in volumes required, relies on fewer materials and partners, and enables the consolidation of multiple parts—helping many OEMs to streamline their supply chains and support in-region supply strategies.



STRONGER PARTS:

AM allows for the creation of complex geometries with increased strength—similar to what we see in nature—with organic shapes that deliver exceptional performance.



FASTER PRODUCTION:

AM solutions are delivered when and where you need them, delivering an unprecedented level of production flexibility and inventory management—driving shorter lead times and lower working capital for your business.



Our Team

Our world-class team spans two locations in Oakville, Ontario and Camarillo, California. These locations include highly skilled engineers and technical professionals who specialize in various aspects of AM including Design for Additive Manufacturing (DfAM), metallurgy, materials testing, AM production and post processing including heat treatment, precision machining and quality assurance.



EOS M400-4 3D printing system for large industrial applications.

In-house additive technologies

Our team taps into a range of ever-expanding advanced AM technologies to provide the best possible solutions to our customers, including:

Laser-Powder Bed Fusion (L-PBF/SLM)

High Speed Extrusion (HSE)

Directed Energy Deposition (DED)

Electron Beam Powder Bed Fusion (EBM/EB-PBF)

Selective Laser Sintering (SLS)

Binder Jetting

Fused Deposition Modeling (FDM)

Lab certified materials

Our evolving portfolio of lab certified materials currently include:

METALS

Titanium Ti-6Al-4V (Ti64)

Titanium Ti-6Al-4V (Ti64) ELI

Titanium Ti6242

Inconel 625 & 718

Aluminum AlSi10Mg

Aluminum A20X

Copper

Maraging Steel MS1

Cobalt Chrome

Invar 36 & 32-5

Stainless Steel 15-5

SS316L SS Corrax

Hastelloy X

POLYMERS

PCTG

PA & PA-CF HTN & HTN-CF PEEK

ULTEM 9085

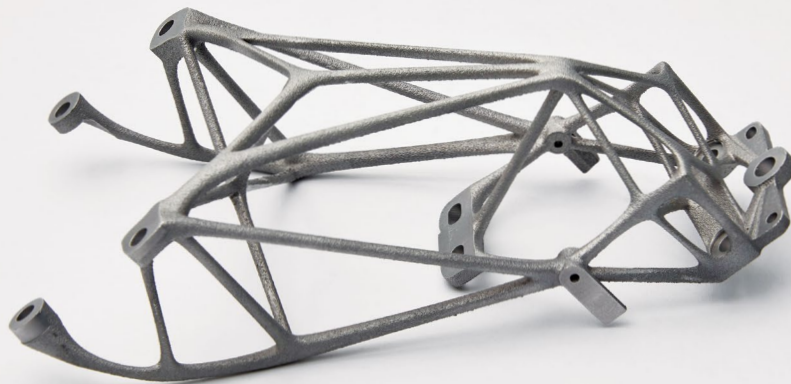
PA11 Polyamide 11

PA12 Polyamide 12

PS Polystyrene

TPE Thermoplastic

Elastomer



Topology Optimized Bracket



Application and Process Design

Our reputation as a fearless problem-solver stems from our desire to help our customers to succeed on their AM journey. By partnering with Burloak Technologies, you gain immediate access to expertise in countless disciplines of design and an extensive range of AM technologies.

In-house simulation capabilities

To support your successful transition from concept to production, we have developed significant in-house simulation capabilities including Light Weighting, Finite Element Analysis (FEA), Moldflow, Heat Transfer, AM Build Simulation, and CNC Machine Simulation.

Post Processing

We offer a variety of finishing services that enhance mechanical/metallurgical properties and improve surface integrity to ensure parts meet dimensional requirements and yield optimal performance—with an increase in strength, durability and flexibility.

Heat treatment

Heat treatment improves part performance by increasing strength, durability and flexibility. We offer a series of comprehensive Nadcap accredited heat treatments including vacuum heat treatment, aluminum solution annealing, quenching and aging, stress relieving and Hot Isostatic Pressing (HIP) processes.

Precision machining

The surface integrity of an AM component needs to occasionally be improved to meet dimensional or geometrical specifications. Multi-axis CNC machines support high precision machining and finishing services, and high precision parts for a wide range of programs. Our technologies include:

3- and 5- axis Milling

2- and 4- axis Turning

4- axis Wire EDM

4- axis Sink EDM

Surface treatment

Surface treatment is an extremely important, but challenging, aspect of AM. Whether your AM components require microscopic deburring, polishing, vibratory tumbling, barrel tumbling, ultrasonic cleaning, abrasive flow machining or centrifugal finishing, we approach this service with the utmost care and precision to ensure we provide a superior surface finish every time—and extend the benefits of AM.



A bay of CNC machines for the post processing of AM parts.



Quintus QIH60 Hot Isostatic Press (HIP). The HIP system is capable of Uniform Rapid Cooling (URC).



Materials Testing Laboratory

Our testing services enable crucial product development and quality control. We use advanced destructive and non-destructive testing techniques to determine if materials are compliant for the intended use. We also act as an advanced materials development laboratory to support wide-ranging research and development projects for tomorrow's new, high-performance materials.



Quality is priority #1

At Burloak, you're in good hands. That's because we understand that your reputation, profitability and safety record hinge on the ability to deliver high-quality products.

Our goal is to help you maintain the highest levels of quality control and assurance possible so you can meet or exceed your quality goals.

Our materials and metrology laboratory uses advanced, non-invasive technologies that efficiently identify hidden failure points in all metal parts and materials. This leads to enhanced product performance and vastly reduced deficiencies, breakdowns and recalls.

Quick turnaround

Our optimized internal processes ensure metal testing is completed in a matter of days—not weeks.

Trusted partner

Our experienced team works as an extension of your own and is here to support you, every step of the way.

Proven expertise

With numerous industry certifications and in-house experts in metallurgy, chemistry and non-destructive testing, you get the peace of mind that comes from working with a highly qualified AM partner.

Powder testing

Powder testing offers invaluable insight into the various properties of a material and helps to guide product design. We ensure parts meet their performance criteria by offering powder sampling, flow rate, powder tap density, powder apparent density, particle size analysis, chemistry (powder and bulk), and Hall and Carney Flow testing.

Metallography & microstructure analysis

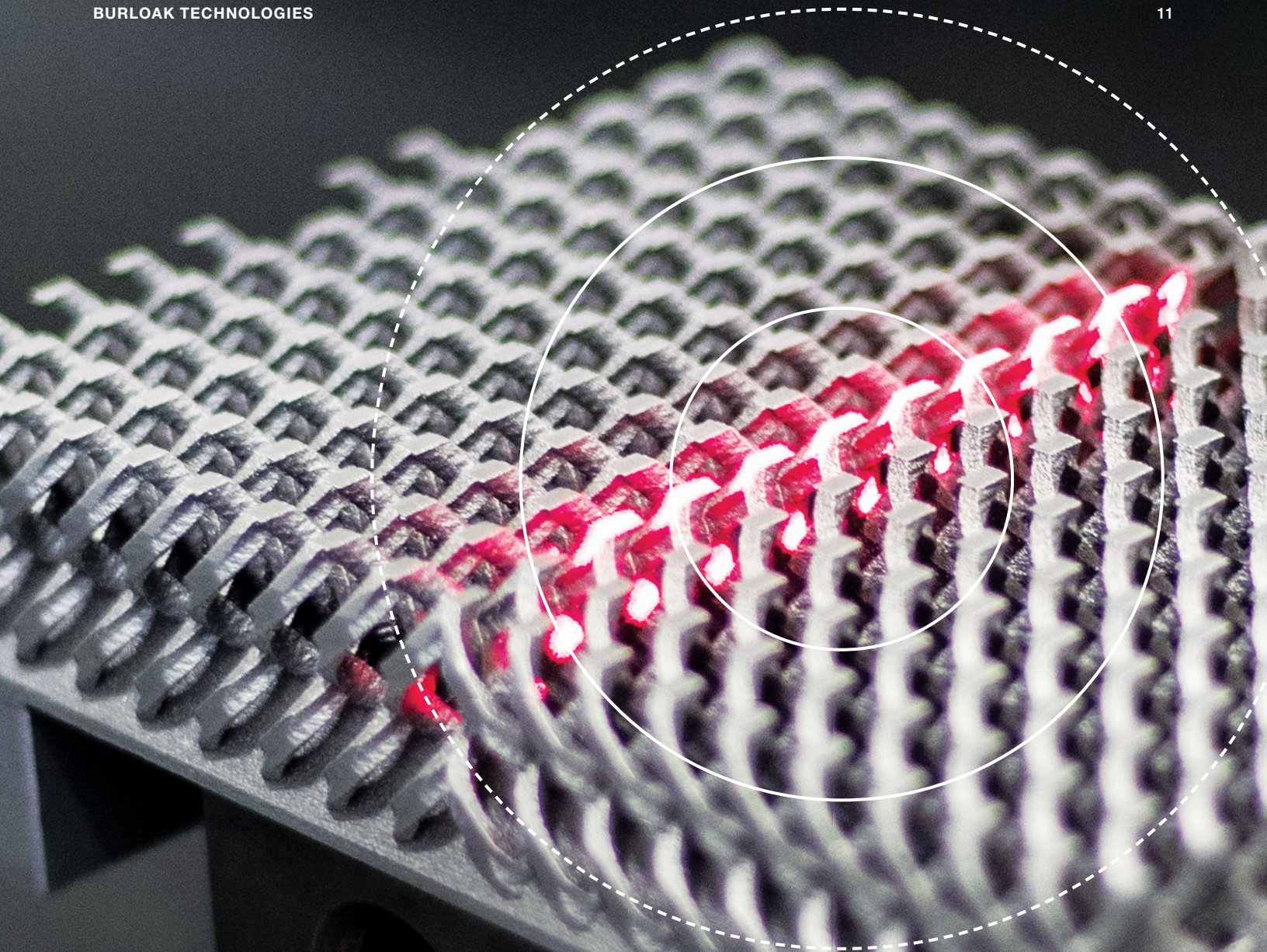
We help determine whether a material has been processed correctly through microstructure analyses such as grain size, phase analysis, inclusion analysis and alpha case measurements.

Mechanical & physical testing

We offer a variety of testing capabilities, including tensile, fatigue, Archimedes density and Rockwell hardness testing to verify the physical and mechanical properties of materials under stress.



Our world-class laboratory is equipped with some of the most advanced technologies in the industry.



Quality Assurance

At Burloak, our goal is to help you maintain the highest levels of quality assurance possible. Our Quality Assurance team uses world-class equipment and methodologies to efficiently identify hidden failure points in all your metal parts and materials—enhancing product performance while significantly mitigating the risk of reduced deficiencies, breakdowns and returns.

Burloak’s Quality Assurance team leverages Computed Tomography (micro-CT), Coordinate Measuring Machines (CMM), and 3D scanners for metrology and Non-Destructive Testing (NDT) to confirm the quality of each AM component—giving you the peace of mind that comes with robust and rigorous quality checks. Burloak’s key accreditations include our Quality Management System registered to AS9100D/ISO9001:2015, ISO/IEC 17025:2017, and NADCAP certified in-house heat treatment. The business is also registered for Control Good Program (CGP) in Canada and ITAR in the US, allowing us to work on the most stringent projects/programs.

Our advanced in-house processes and equipment include:

Surface Finish and Coordinate Measuring Machines

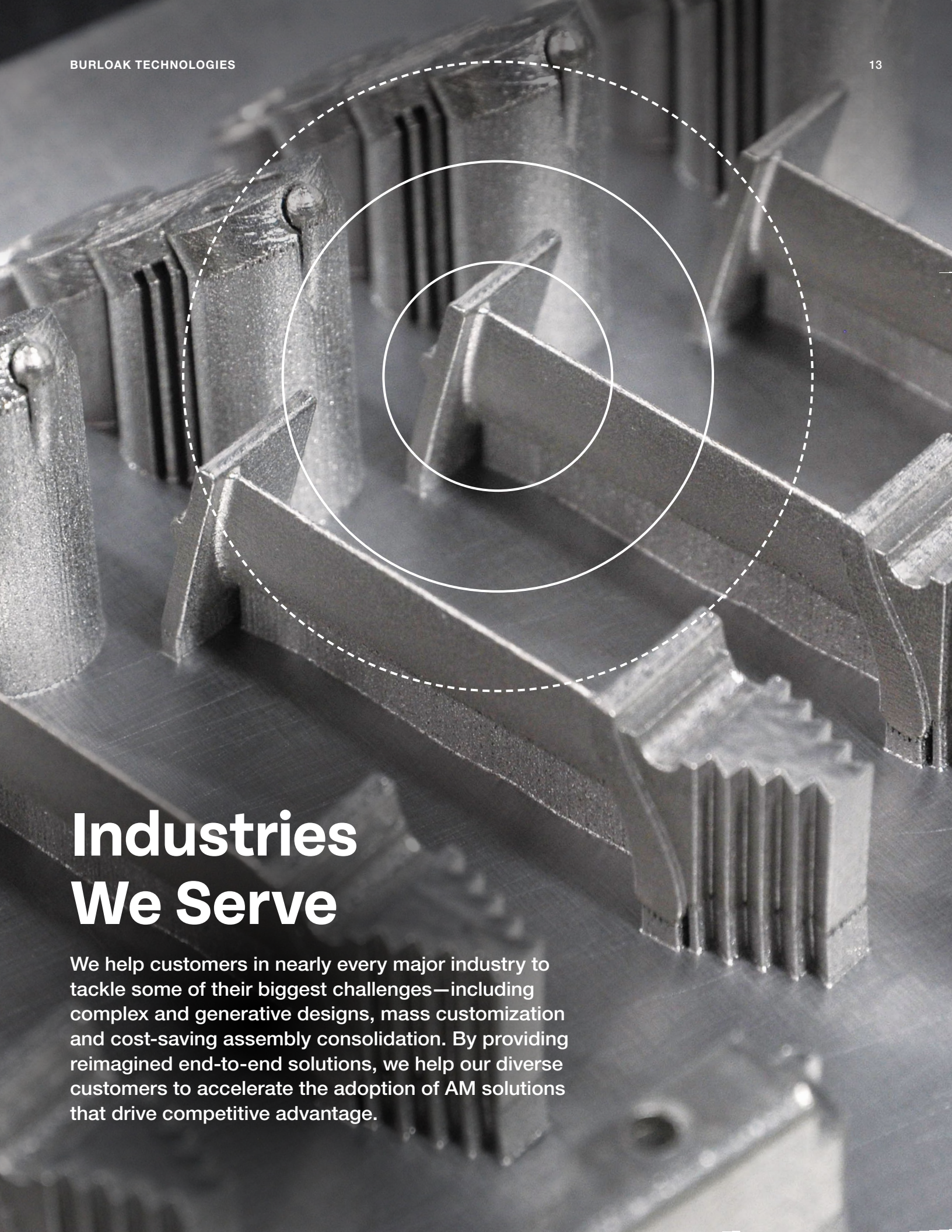
Optical Measuring Systems

Non-Destructive Testing

Computed Tomography and 3D Scanners



High resolution CT scanner for non-destructive evaluation of AM parts.



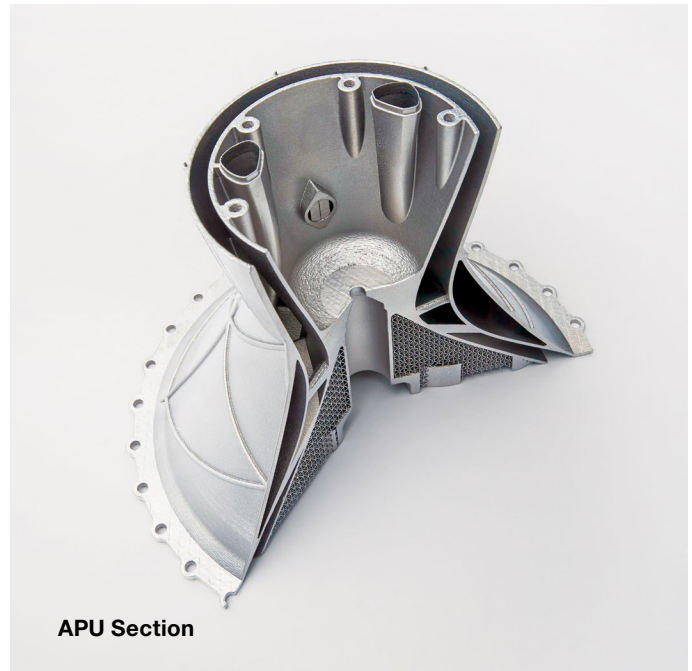
Industries We Serve

We help customers in nearly every major industry to tackle some of their biggest challenges—including complex and generative designs, mass customization and cost-saving assembly consolidation. By providing reimaged end-to-end solutions, we help our diverse customers to accelerate the adoption of AM solutions that drive competitive advantage.

Aviation

Today's aviation OEMs are challenged to innovate and evolve to remain competitive in a dynamic world. From new production to maintenance, repair and overhaul—the goal of AM for aviation is ultimately to deliver high-quality solutions to fuel innovation and overcome longstanding manufacturing, delivery, inventory and engineering challenges.

Our world-class integrated capabilities enable aviation manufacturers to explore scalable manufacturing solutions for lighter, stronger and better performing flight components.



WHY CHOOSE BURLOAK AS YOUR AM PARTNER?

Extensive, proven experience serving the aviation sector and thorough understanding of the industry's robust requirements.

The industry's most comprehensive and thoroughly integrated suite of capabilities and technologies to develop and scale the most complex projects.

Engineering focus on total weight reduction, parts consolidation, topology optimization and buy-to-fly ratio.

Consulting through stringent qualification processes.

Approved AM supplier for aviation—partner to industry leaders.

Nadcap accredited post processing solutions in-house.

Space

The global push for interconnection and communications bandwidth is transforming the space sector as it moves to meet demands with innovative satellite constellations and GEO stationary units. With the number of launches increasing exponentially, the quick turnaround, on-demand nature of AM makes it a game changer for getting innovative and high-performing new designs off the ground.



Structural Component

WHY CHOOSE BURLOAK AS YOUR AM PARTNER?

Focused on maximizing innovation without compromising integrity—parts consolidation, weight reduction and enhanced reliability.

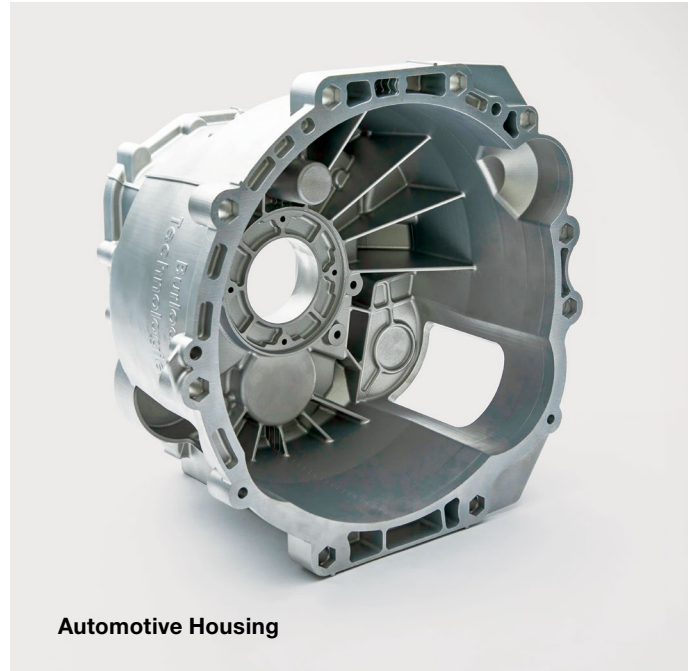
Proven track record serving space OEMs—trusted by leading blue-chip companies to help speed time-to-launch.

Converting AM's creative potential into a practical expression with end-to-end manufacturing and quality assurance.

Automotive

The automotive industry is no stranger to competition and the need for speed and high performance. To get ahead and avoid disruption, companies are integrating innovative practices into every aspect of their operations—including AM.

AM offers manufacturers more agility by allowing for faster prototyping, lightweight designs, testing and increased part performance. These advantages translate to higher efficiency, design optimization and cost-effective solutions at many stages of a product's lifecycle—giving automakers the edge needed to evolve rapidly with the changing landscape.



Automotive Housing

WHY CHOOSE BURLOAK AS YOUR AM PARTNER?

A leader in delivering scalable solutions that shorten lead times, solve production challenges and improve functionality.

Leveraging innovative AM solutions to significantly reduce component weight—supporting your efforts to build lighter, more fuel/battery efficient, lower emission vehicles.

Expertise in certified materials—from metals to polymers.

Registered to AS9100D and ISO9001, and Canada Controlled Goods Approved.

Energy

From refining to processing, utilities to smart energy solutions, and beyond—the energy sector is continually challenged to serve customers faster, smarter and more cost-effectively while addressing the mounting environmental challenges our society faces. These demands are leading to new applications and designs that are more difficult to manufacture due to complexity, material choices and challenging end-use environments.

AM is quickly becoming part of the solution as companies seek out more eco-friendly, lightweight and one-off project components. AM's flexibility supports easy integration throughout any stage of the product cycle—from product development to repair and maintenance or volume production of highly critical components.



WHY CHOOSE BURLOAK AS YOUR AM PARTNER?

Support from research and exploration through to design for AM and production.

AM design for structural, heat-resistant and high-performance components such as turbine blades, vanes, manifolds and casings.

Full in-house integration of AM capabilities and production support systems—design development, materials testing, part printing, Nadcap accredited heat treating, machining and surface finishing.

Maximized design potential with data-driven, leading-edge AM expertise and capabilities.

Industrial manufacturing

Today's industrial manufacturing companies are continually challenged to speed products to market faster and more cost-effectively.

In this fast-paced environment, tooling, fixturing and end-use parts are complex and expensive to create. The more complicated an assembly, the higher the material costs—and the more time-consuming the manufacturing process—unless you opt for AM.

Burloak Technologies delivers simplified assemblies and complex geometries to support your productivity goals.

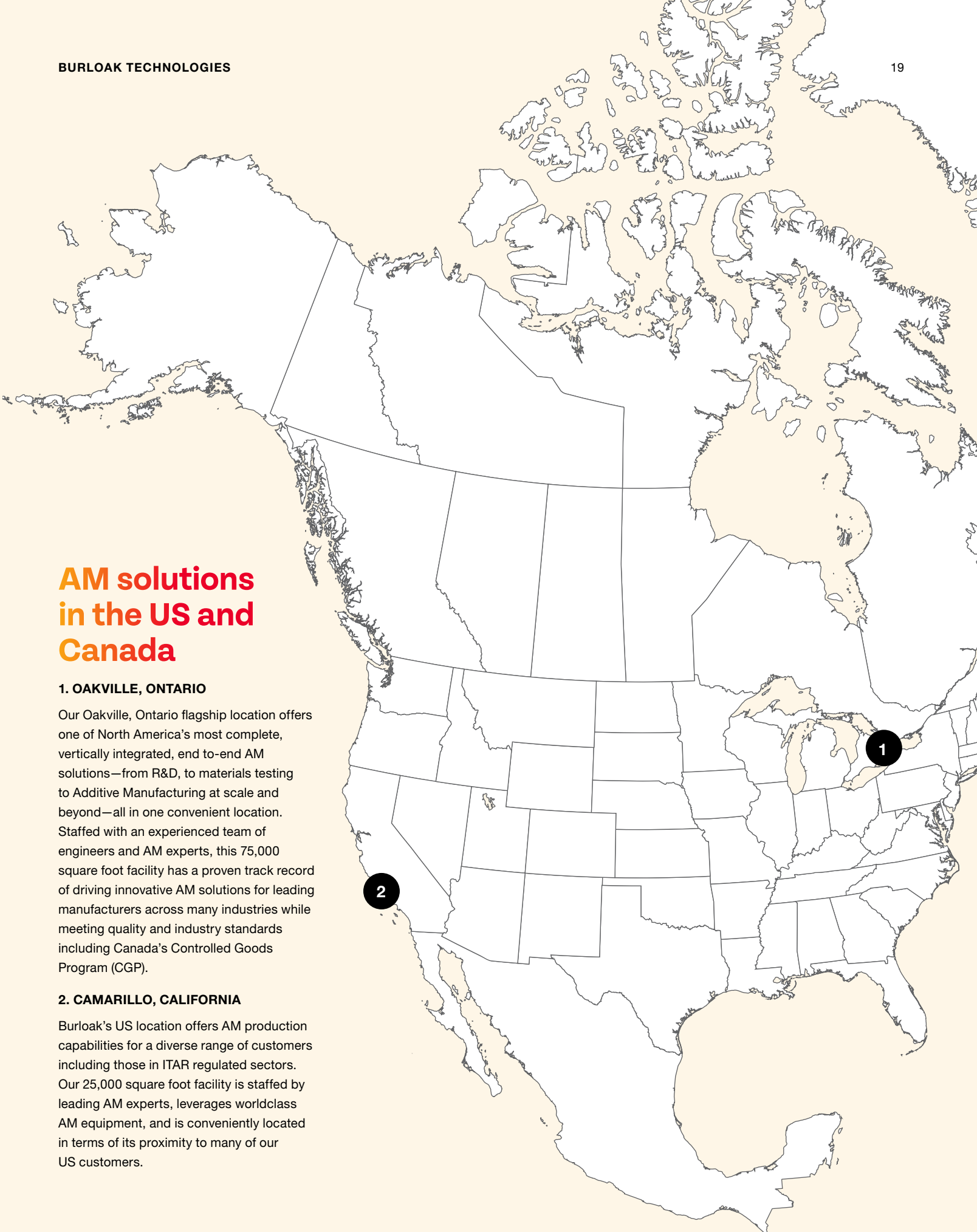


WHY CHOOSE BURLOAK AS YOUR AM PARTNER?

End-to-end services—application and process design, AM, post processing, materials testing lab and quality assurance.

Mastery of complex and customized products for AM design—nozzle, manifolds, tooling, conformal cooling channels, fixtures and more.

Capacity to simplify supply chain as a single-source strategic supplier of AM solutions.



AM solutions in the US and Canada

1. OAKVILLE, ONTARIO

Our Oakville, Ontario flagship location offers one of North America’s most complete, vertically integrated, end to-end AM solutions—from R&D, to materials testing to Additive Manufacturing at scale and beyond—all in one convenient location. Staffed with an experienced team of engineers and AM experts, this 75,000 square foot facility has a proven track record of driving innovative AM solutions for leading manufacturers across many industries while meeting quality and industry standards including Canada’s Controlled Goods Program (CGP).

2. CAMARILLO, CALIFORNIA

Burloak’s US location offers AM production capabilities for a diverse range of customers including those in ITAR regulated sectors. Our 25,000 square foot facility is staffed by leading AM experts, leverages worldclass AM equipment, and is conveniently located in terms of its proximity to many of our US customers.



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