

BLG: SCALING LASERS ORDERS, CAPABILITY TO TAKE SHARE

BluGlass Limited (ASX:BLG), March 2023



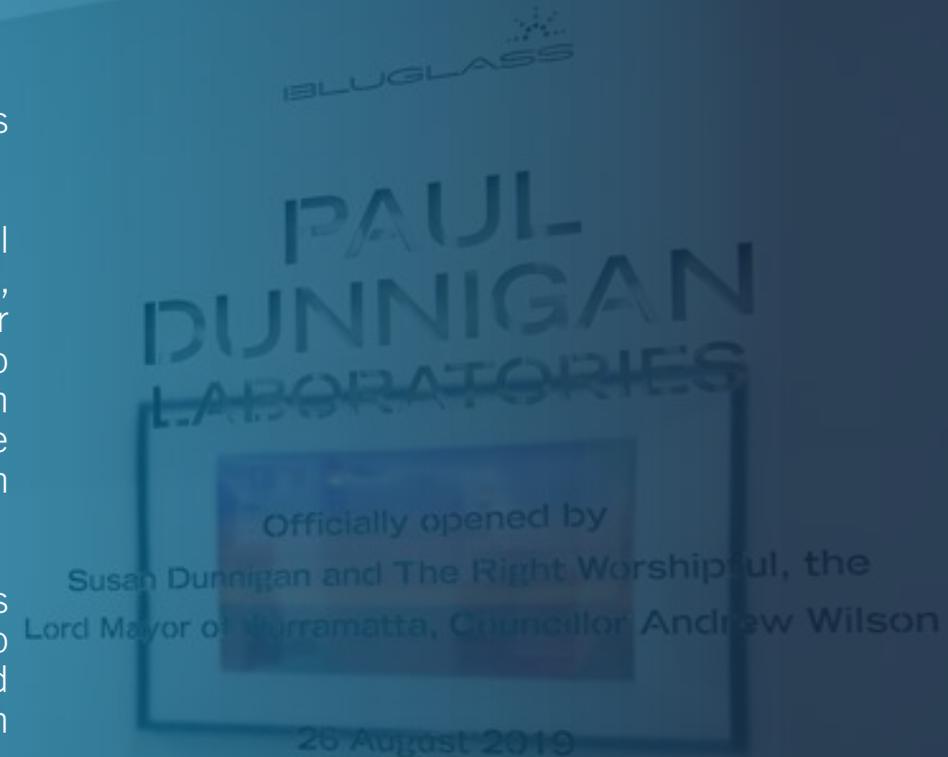
FORWARD LOOKING STATEMENT

This document has been prepared by BluGlass Limited to provide readers with an update of the Company and the Company's technology.

Any statements, opinions, technical data and information, or other material contained in this document, do not constitute commitments, representations or warranties by BluGlass Limited or associated entities, or its directors, agents and employees. Except as required by law, and only to that extent, directors, agents and employees of BluGlass Limited disclaim any loss, claim, demand, damages, costs or expenses of any nature whatsoever arising in any way out of, or in connection with, the information contained in this document.

This document includes certain information which reflects various assumptions, subjective judgment and analysis, and is subject to significant business, economic and competitive uncertainties, risks and contingencies, many of which are outside the control of, and are unknown to, BluGlass Limited. The assumptions may not prove to be correct. Recipients of the document must make their own independent investigations, consideration and evaluations prior to making any decisions to invest in the Company.

Information on Service Addressable Markets (SAM) is based on internal BluGlass modelling and assumptions, both of which depend on successful R&D outcomes and results achieved within estimated timetables. BluGlass recommends a cautious interpretation be taken by investors.



EXECUTIVE SUMMARY

Leading GaN laser supplier	<p>BluGlass is a leading supplier of gallium nitride (GaN) lasers to the global photonics industry. GaN laser diodes are essential semiconductor devices used in a wide range of industries and applications, including advanced manufacturing, automotive, bio-medical devices, AR/VR displays, quantum computing, and scientific research.</p>						
Large and growing markets with few competitors	<p>Global laser revenue is forecast to surpass US\$25B by 2025*. Driven by growth in high-tech applications, the GaN laser diode segment is rapidly expanding, predicted to reach US\$2.5B in the same period. BluGlass is one of just a handful of GaN laser diode suppliers globally with significant unmet customer needs, and high barriers to market entry.</p> <p style="text-align: right;">*Source: Strategies Unlimited 2020</p>						
Launched six products to market & first customer orders received	<p>BluGlass has launched its first suite of GaN laser products to the market in Jan '23 providing a clear path to growing customer orders and commercial revenues. Initial customer orders followed in Feb '23 after significant interest and attention at the leading industry conference, Photonics West. This is just the beginning, with a raft of other products progressing through the supply chain across violet, blue, and green wavelengths.</p>						
Unique competitive advantages to drive growth	<p>BluGlass is establishing itself as a dedicated supplier of GaN laser products to meet significant unmet market needs and address customer demand for flexible form factors, custom products, underserved wavelengths and novel architectures. BluGlass' proprietary RPCVD technology provides unique benefits over the incumbent technology with potential to enable novel devices and increase product performance.</p>						
Substantial revenue capacity & reduced production costs	<p>BluGlass' full-suite production fab increases development speed, reduces production costs and improves profit margins. The fab scales operations, increasing annual wafer and revenue generation capability to US\$170m revenue capacity.</p>						
Capital Raise	<p>BLG is undertaking Capital Raise of approximately \$12.9m comprising;</p> <ul style="list-style-type: none"> • A Placement to raise A\$10.2m ("Placement") under existing LR7.1 & LR7.1A placement capacity • A 1-for-30 non-renounceable entitlement offer to eligible shareholders on the same terms as the Placement to raise approximately \$2.7m ("Entitlement offer") <p>Offer price of \$0.06 per New Share.</p>						
Use of funds	<table border="0"> <tr> <td style="padding-left: 20px;">• Scaling Product Delivery & Capital Expenditure</td> <td style="text-align: right;">\$4.4M</td> </tr> <tr> <td style="padding-left: 20px;">• R&D Financing</td> <td style="text-align: right;">\$2.2M</td> </tr> <tr> <td style="padding-left: 20px;">• General Working Capital and Transaction Costs</td> <td style="text-align: right;">\$6.3M</td> </tr> </table>	• Scaling Product Delivery & Capital Expenditure	\$4.4M	• R&D Financing	\$2.2M	• General Working Capital and Transaction Costs	\$6.3M
• Scaling Product Delivery & Capital Expenditure	\$4.4M						
• R&D Financing	\$2.2M						
• General Working Capital and Transaction Costs	\$6.3M						

A close-up, artistic photograph of a microscope objective lens. The lens is the central focus, with its various rings and glass elements visible. The image is heavily stylized with a color gradient that transitions from a deep purple on the left to a bright blue on the right. The background is filled with a dense, out-of-focus pattern of light-colored, fibrous or crystalline structures, possibly representing biological or material samples being viewed through the microscope. The overall effect is one of scientific precision and aesthetic beauty.

BLUGLASS OVERVIEW

WHO WE ARE: LEADING GaN LASER SUPPLIER

BluGlass is one of only a handful of global GaN laser suppliers, with rapidly growing demand and high-barriers to entry

WAVELENGTHS

BluGlass offers GaN lasers to the growing industrial, quantum, biotech, defence, scientific and display markets

400 nm

405 nm

420 nm

450 nm

488 nm

500 nm

525 nm



INDUSTRIAL



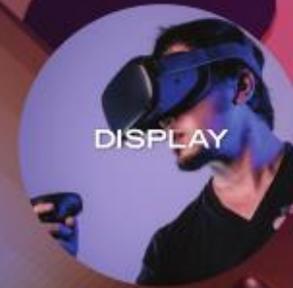
DEFENSE



SCIENTIFIC



BIOTECH



DISPLAY

APPLICATIONS

WHO WE ARE: LEADING GaN LASER SUPPLIER

- ✓ BluGlass has recently launched its first suite of commercial lasers and secured customer orders
- ✓ Acquired purpose-built Silicon Valley laser fab
- ✓ Bringing the Company's revenue capacity to **US \$170M**
- ✓ Leveraging more than a decade of GaN photonics innovation
- ✓ World-class team led by deep laser expertise across Board and Management
- ✓ Innovative technology protected by **93 patents** granted in key semiconductor jurisdictions

GLOBAL OPERATIONS

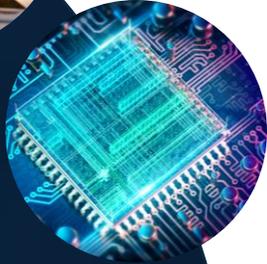
- Sydney, NSW, Australia
- Silicon Valley, California, USA
- Nashua, New Hampshire, USA



KEY INDUSTRY PLAYERS BY SEGMENT



INDUSTRIAL



QUANTUM & SCIENTIFIC



DISPLAY (AR/VR)



BIOTECH



DEFENCE



WHAT WE DO: OFFERING THE WORLD'S EASIEST TO USE GaN LASER LIGHT

BluGlass' vertically integrated laser offering has been designed to meet the market and solve our customers biggest challenges



Plug & Play & Custom Lasers



Offering underserved and custom wavelengths from 400nm-525nm



Single-mode and multi-mode products



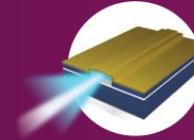
Enhanced designs and novel device architectures for higher-power, higher-brightness lasers



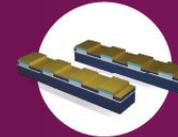
Vertically integrated from design and epitaxy to packaging and testing

Flexible form factors will revolutionise how our customer use GaN laser light

BluGlass' Form Factor Offerings



Single emitters



Laser diode bars



Chips-on-submounts (CoS)



TO Cans (various sizings)



C-Mounts, F-Mounts, Butterfly Pins



Multi-chip Arrays

HIGHLY CONSTRAINED MARKET:

The GaN laser diode industry is an emerging market growing rapidly.



Challenged by constrained supply

Only a handful of global GaN laser suppliers in an emerging market with combined GaN laser systems revenue in excess of \$1B and set to grow to \$2.5B in 2025



Competitors are largely focused on LEDs

Most competitors are not dedicated GaN laser suppliers, with large differentiated product portfolios focused on LED and microLED markets



Low mix/high volume business models

Limited form factor flexibility, customisation and manufacturing agility in current business models is creating significant unmet needs in quantum, scientific defence, and biotech verticals

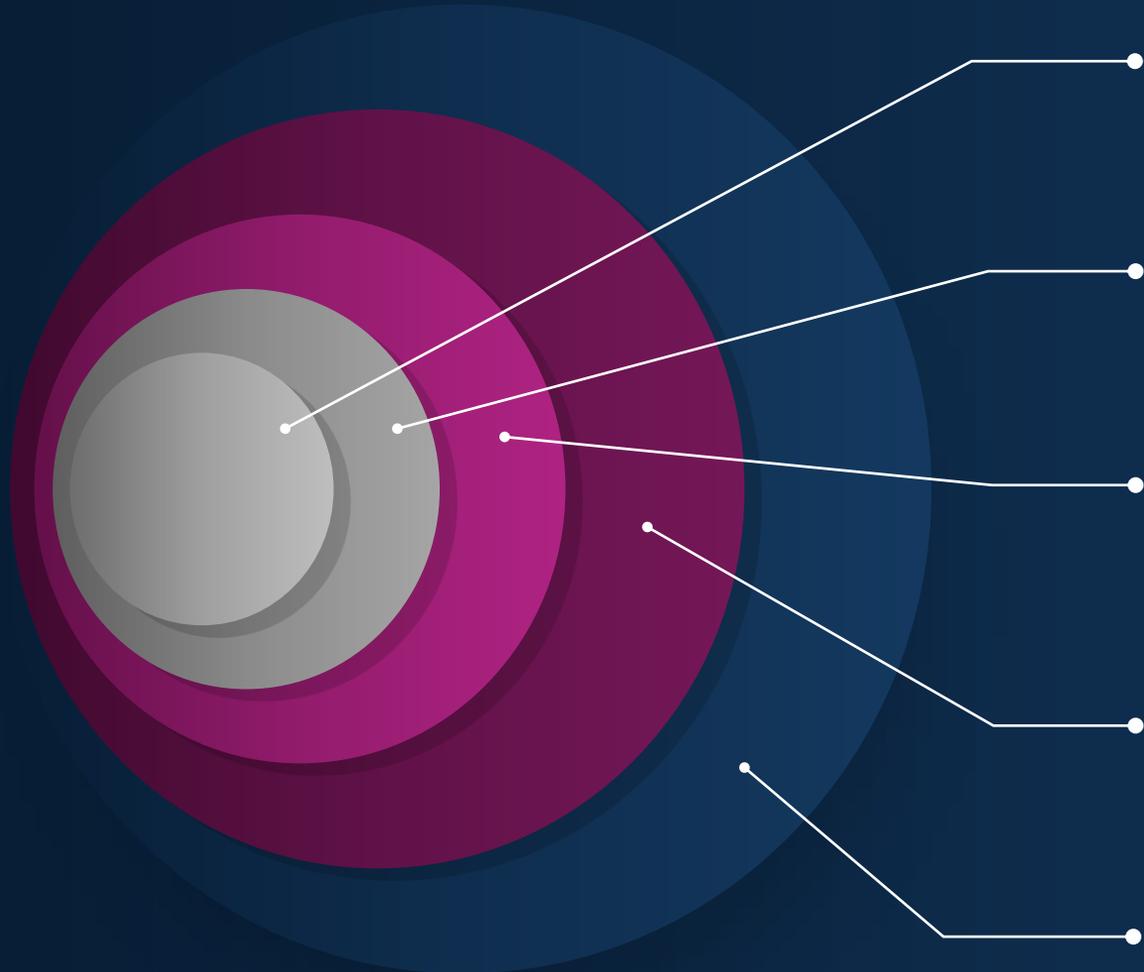


High barriers to market entry

IN NEED OF NEW SUPPLIERS

Customers require enhanced performance, greater packaging flexibility, and custom manufacturing capability

BLUGLASS' COMPETITIVE POSITION: SOLVING CUSTOMER CHALLENGES



Manufacturing flexibility

BluGlass' laser offering addresses underserved markets, wavelengths and delivered in flexible form factors.



Dedicated GaN laser supplier

A dedicated GaN laser supplier targeting the industrial, scientific, biotech, defence and display markets.



Differentiated offering

Proprietary Remote Plasma Chemical Vapour Deposition (RPCVD) platform and Tunnel Junction technology provide competitive advantages, enabling brighter and better performing lasers.



Development capability

Supporting customer product roadmaps with development capability to power innovative new applications.



The world's easiest to use GaN laser light

Packaging and customisation flexibility to reduce customer integration costs, solving key challenges.

STRENGTHENED LEADERSHIP TEAM: DEEP LASER INDUSTRY EXPERTISE

BOARD OF DIRECTORS



James Walker

NON-EXECUTIVE CHAIR

Experienced technology commercialisation leader; Chartered Accountant



Jean-Michel Pelaprat

NON-EXECUTIVE DIRECTOR

Co-founder of blue-laser pioneer, NUBURU; 30 years' semiconductor experience



Stephe Wilks

NON-EXECUTIVE DIRECTOR

Seasoned corporate executive; proven track record in high growth and disruptive industries



Vivek Rao

NON-EXECUTIVE DIRECTOR

Global semiconductor equipment specialist; Executive VP and COO of SPT Micro-Technologies

MANAGEMENT TEAM



Jim Haden

CEO

Veteran laser expert with 30 years' experience; demonstrated experience transforming advanced tech businesses



Dr Ian Mann

COO & CTO

Product development and technology commercialisation specialist with experience through-out photonics industry



Brad Siskavich

EXECUTIVE VP

25 years' experience developing and commercialising new compound semiconductor and laser technologies



Robert Ambrogio

CFO

Highly-credentialed finance executive with more than 20 years' experience



Stefanie Winwood

HEAD OF CORPORATE & IR

Strategic marketing and Investor Relations professional with more than 16 years' experience in high-tech and semiconductor sector



Martin Aguilera

DIRECTOR OF OPERATIONS

More than 25 years' international experience in managing semiconductor manufacturing operations

A close-up, low-angle shot of a microscope lens, with a dense network of fiber optic cables visible in the background. The scene is bathed in a soft, purple and blue light, creating a futuristic and technical atmosphere. The lens is positioned in the upper center, and the fiber optic cables fan out from the center towards the right side of the frame.

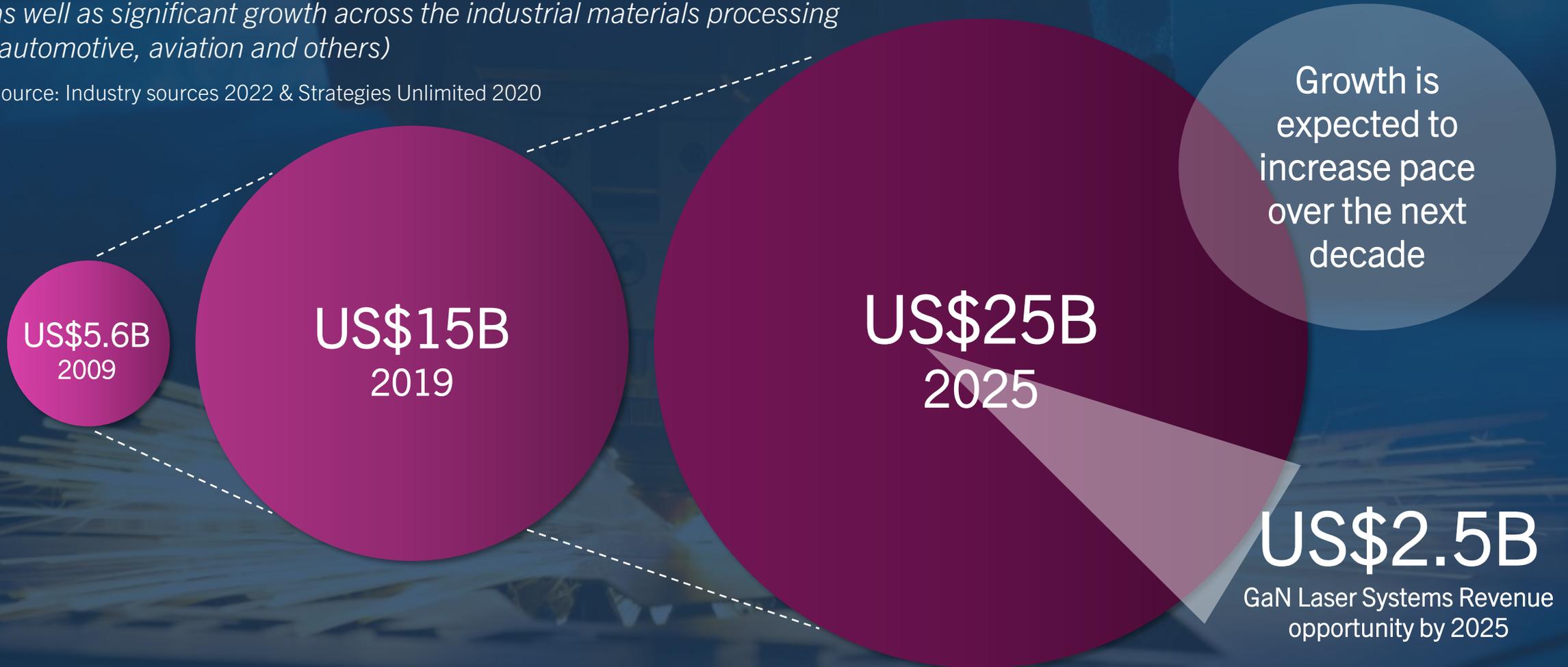
MARKET OVERVIEW

LASER REVENUE GROWTH FORECAST

Laser revenue has almost tripled in past decade

Driven by the adoption of high-tech applications globally such as *smart phones and TV's, 3D printing, electric vehicle and renewable energy storage, as well as significant growth across the industrial materials processing (automotive, aviation and others)*

Source: Industry sources 2022 & Strategies Unlimited 2020



GLOBAL MEGATRENDS DRIVING ADVANCED LASER APPLICATIONS



GaN LASER MARKET VERTICALS (2025)

Industrial Markets



(405nm, 450nm, 525nm)

US \$400M

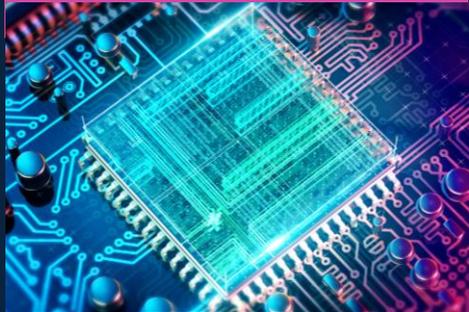
Target Applications:

Materials processing, Machine vision & sensing, 3D printing, Semiconductors

Customer Landscape:

IPG Photonics, nLight, NUBURU, Coherent

Scientific Markets



(405nm, 420nm, 450nm, 490, 525nm)

US \$100M

Target Applications:

Quantum computing, Quantum sensing & navigation, fluorescence microscopy

Customer Landscape:

Coherent, Toptica, AOSense, Modulight

Biotech/Life Science Markets



(405nm, 420nm, 450nm, 490, 525nm)

US \$60M

Target Applications:

Flow cytometry, Medical diagnostics, DNA sequencing, Photodynamic therapy

Customer Landscape:

10X Genomics, Pac Bio, Lumencor, Element Biosciences

Display Markets (AR/VR)



(450nm, 525nm)

US \$60M

Target Applications:

Augmented reality, Virtual Reality & Mixed Reality, Pico projectors, Heads-up display

Customer Landscape:

Apple, Google, META, Samsung

Defense - R&D Markets



(405nm, 420, 450nm, 488nm, 525nm)

US \$115M

Target Applications:

Navigation & guidance systems, Detection & sensing, Advanced materials processing

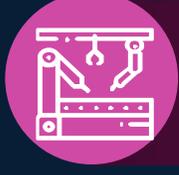
Customer Landscape:

DARPA, Lockheed Martin, Northrup Grumman, Boeing

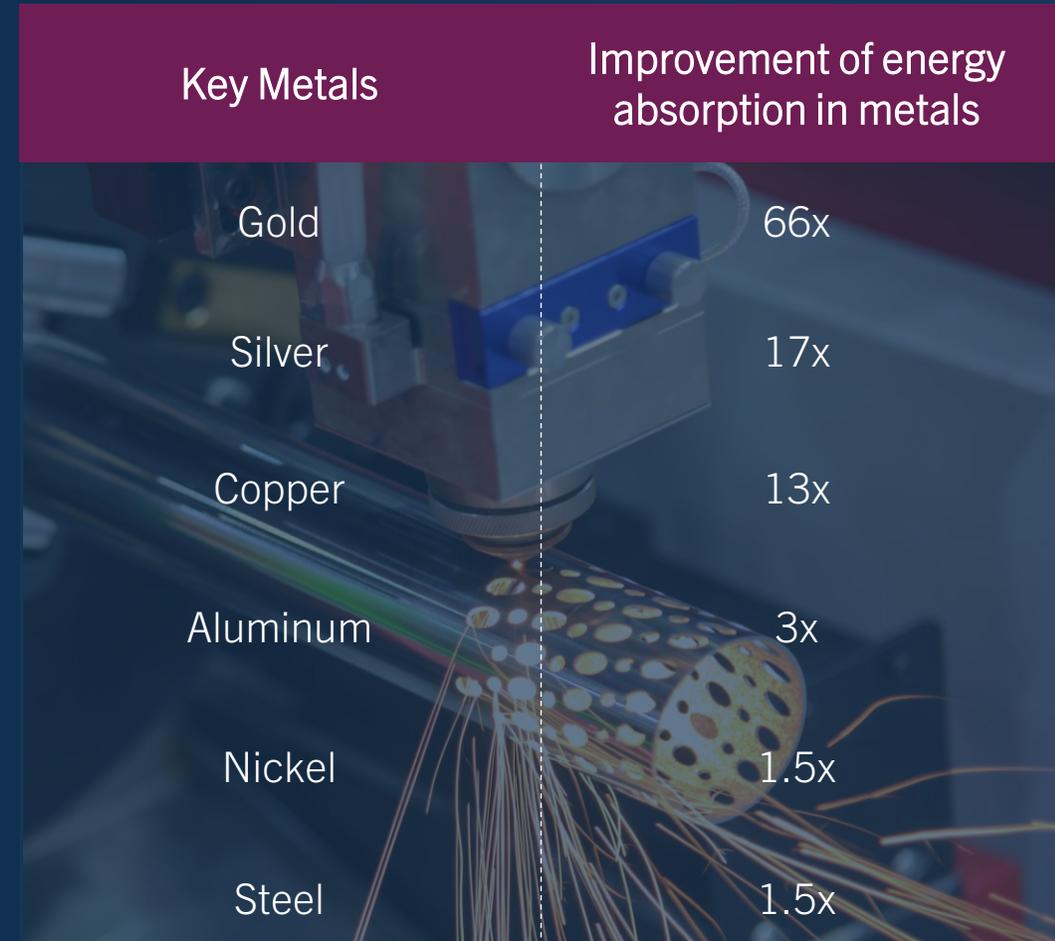
Source: Strategies Unlimited and Internal BluGlass modelling based on industry sources

MARKET DRIVERS - THE ADVANTAGES OF GaN LASER DIODES

Visible GaN laser diodes have many advantages over traditional infrared lasers

-  Visible light has higher absorption in key industrial metals
-  Cleaner, faster materials processing
-  Tighter beam focus and improved efficiency
-  Higher precision manufacturing, enabling increasingly advanced technology applications
-  Visible and UV light interacts favorably with quantum and organic (viruses, bacteria, cancer cells) materials

Key Metals	Improvement of energy absorption in metals
Gold	66x
Silver	17x
Copper	13x
Aluminum	3x
Nickel	1.5x
Steel	1.5x



Source: NASA, 1969

A large industrial machine with a white and grey color scheme. The word "AIXTRON" is printed in large, red, stylized letters at the top. Below it, the words "PLANETARY REACTOR" and "GAS FOIL ROTATION" are printed in smaller black letters. The machine has a large glass window in the center, through which some internal components are visible. A man in a dark polo shirt is standing to the left of the window, looking towards it. Two women are standing to the right of the window, looking at the machine. The background is a plain wall with some pipes and a small framed picture.

AIXTRON

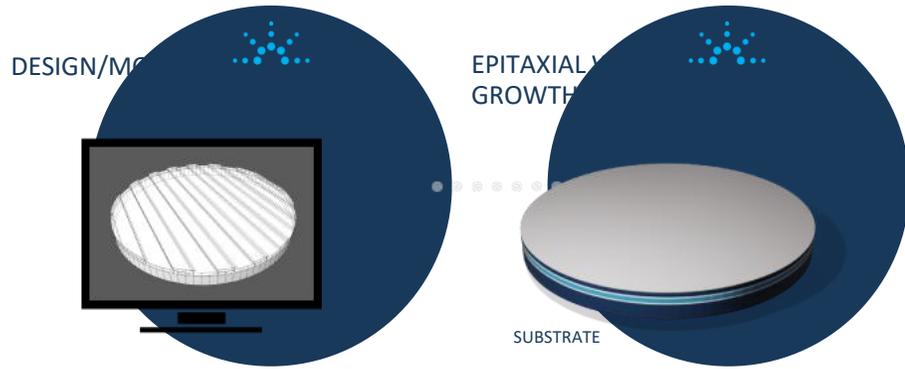
PLANETARY REACTOR

GAS FOIL ROTATION

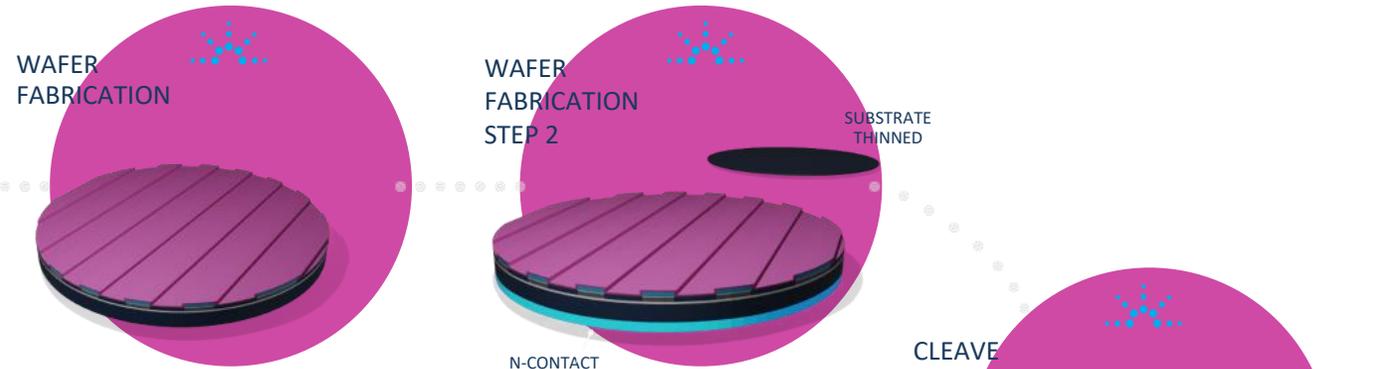
BLUGLASS TECHNOLOGY & MANUFACTURING CAPABILITY

BLUGLASS' FULL SUITE GaN LASER CAPABILITY

SILVERWATER CAPABILITY



FREMONT CAPABILITY



NASHUA CAPABILITY



2023

BLUGLASS LASER PORTFOLIO – SIX PRODUCTS IN MARKET

		Available for Purchase		Higher-Value Products In Development			Next-gen (Premium value/margin) Products in Development
Violet	405nm	MM – 1W	MM – 3W (P)				SM – 500mW
		SM – 250mW		SM – 300mW-400mW			
	420nm	MM – 1W	MM – 3W (P)				SM – 500mW
		SM – 250mW		SM – 300mW-400mW			
	450nm	MM – 1W		MM – 1.6W	MM – 2.2W	MM – 3.5W	MM – 5W
		SM – 100mW		SM – 250mW			
Blue	470nm			MM – 2W			
				SM – 100-250mW			
	488nm			SM – 100-200mW			MM – 1.5-2W
Green	525nm			MM – 0.5-2W			
				SM – 80-100mW			

(P): High Power Prototype Available

MM: Multi Mode

SM: Single Mode

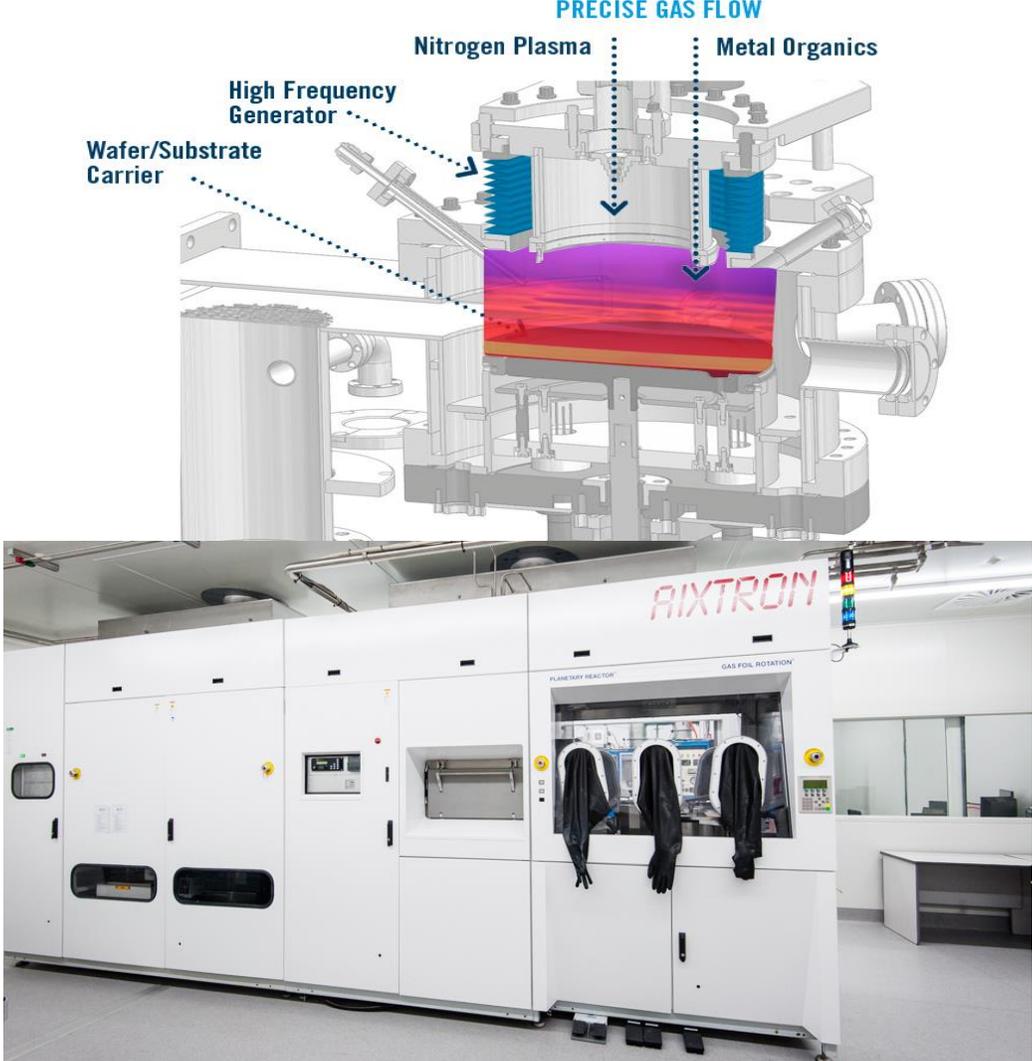


BLUGLASS' PROPRIETARY RPCVD TECHNOLOGY

Remote Plasma Chemical Vapour Deposition (RPCVD) offers many potential benefits in the manufacturer of GaN laser diodes

BENEFITS OF RPCVD

-  **Low-temperature, low hydrogen** manufacturing processes, several hundred degrees cooler than the industry standard MOCVD
-  These unique benefits enable **novel device architectures** for the development of **higher-performing** devices
-  Performance advantages for **longer and shorter wavelength** GaN lasers
-  **Lower cost inputs** and cleaner manufacturing process (ammonia free growth)



The image shows a large industrial machine with a glass viewing window. The machine has the brand name 'AIXTRON' in red, stylized letters at the top. Below the name, there are two labels: 'PLANETARY REACTOR' on the left and 'GAS FOIL ROTATION' on the right. A man in a dark polo shirt is standing on the left, looking into the machine. Two women are standing on the right, also looking at the machine. The machine has several circular ports and a pair of black gloves hanging from the bottom edge of the viewing window. The background is a plain wall with some pipes and a small framed picture.

AIXTRON

OUTLOOK & CATALYSTS

SIGNIFICANT PROGRESS IN LAST 12 MONTHS

BluGlass is executing on its technical and commercialisation roadmaps

Strengthened Expert Team



Significantly strengthened leadership team and technical expertise with the appointment of Jim Haden; retained and attracted top talent in Silicon Valley and Nashua

Vertically Integrating



Vertical integration of supply chain underway following acquisition of full-suite laser fab in Silicon Valley with specialist manufacturing team. Speeds production, reduces manufacturing costs and increases margins

Performance Improvements



Program of excellence to systematically optimise each production step and improve the four key ingredients of commercial laser diodes: epitaxy, metals, facets & coatings, and bonds

Fremont Lasers Meet CM Benchmarks



JAN 2023

Transferred p-side process manufacturing to Fremont fab, with first lasers meeting or exceeding electrical and light-output performance benchmarks achieved with contract manufacturers

Launched Product Suite



JAN 2023

Launched first suite of six gallium nitride (GaN) laser products in single and multi-mode devices for customer purchase at leading industry conference, SPIE Photonics West, in San Francisco, USA

First Customer Orders

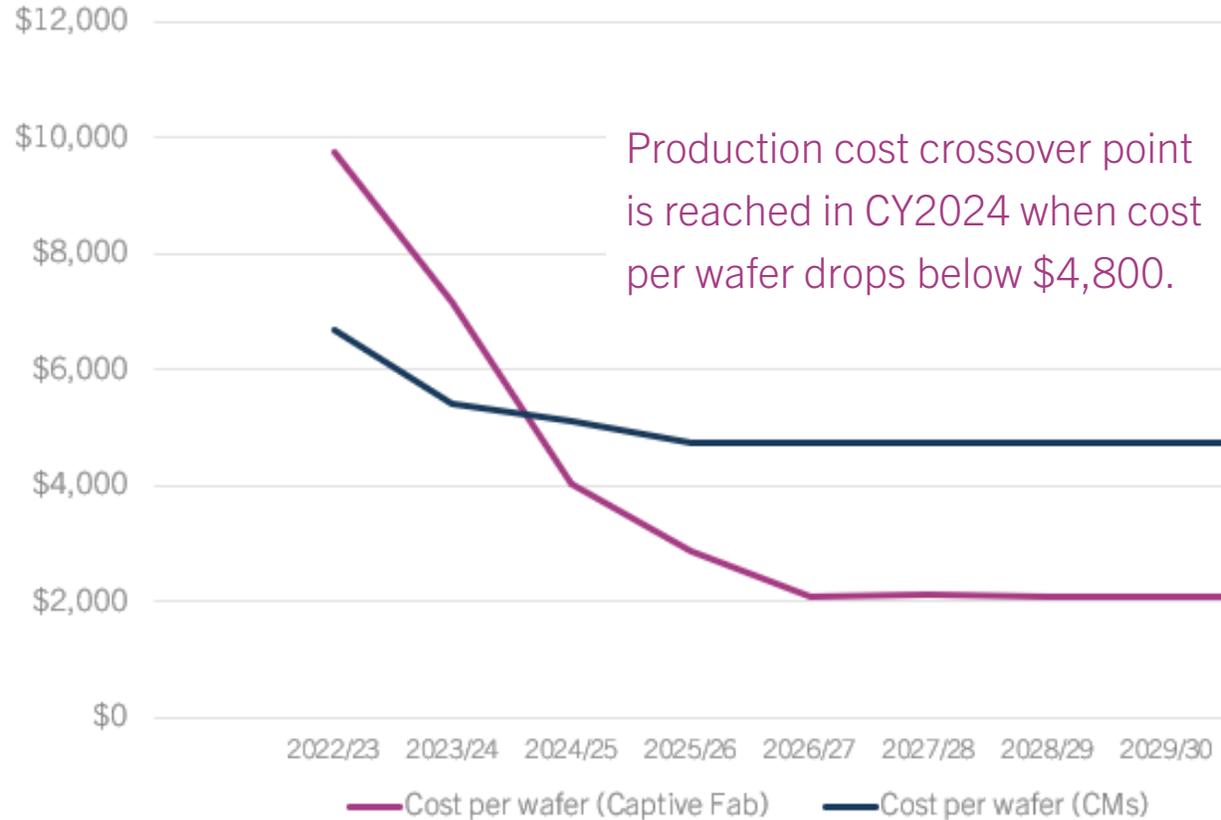


FEB 2023

BluGlass receives first orders from multiple customers

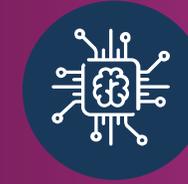
VERTICALLY INTEGRATING IN OWN SILICON VALLEY FAB

BLUGLASS CAPTIVE FAB WILL HALVE WAFER PRODUCTION COSTS



Increased revenue capacity & faster profitability

Increased manufacturing capability is enabling BluGlass to realise competitive advantages. Own fab reduces production costs, increases profit margins, and brings forward projected cash-flow positivity.



Accelerated higher-value roadmaps

Increased development capacity is accelerating higher-value product roadmaps with multiple products progressing through the supply chain.



Leap-frogged contract manufacturers

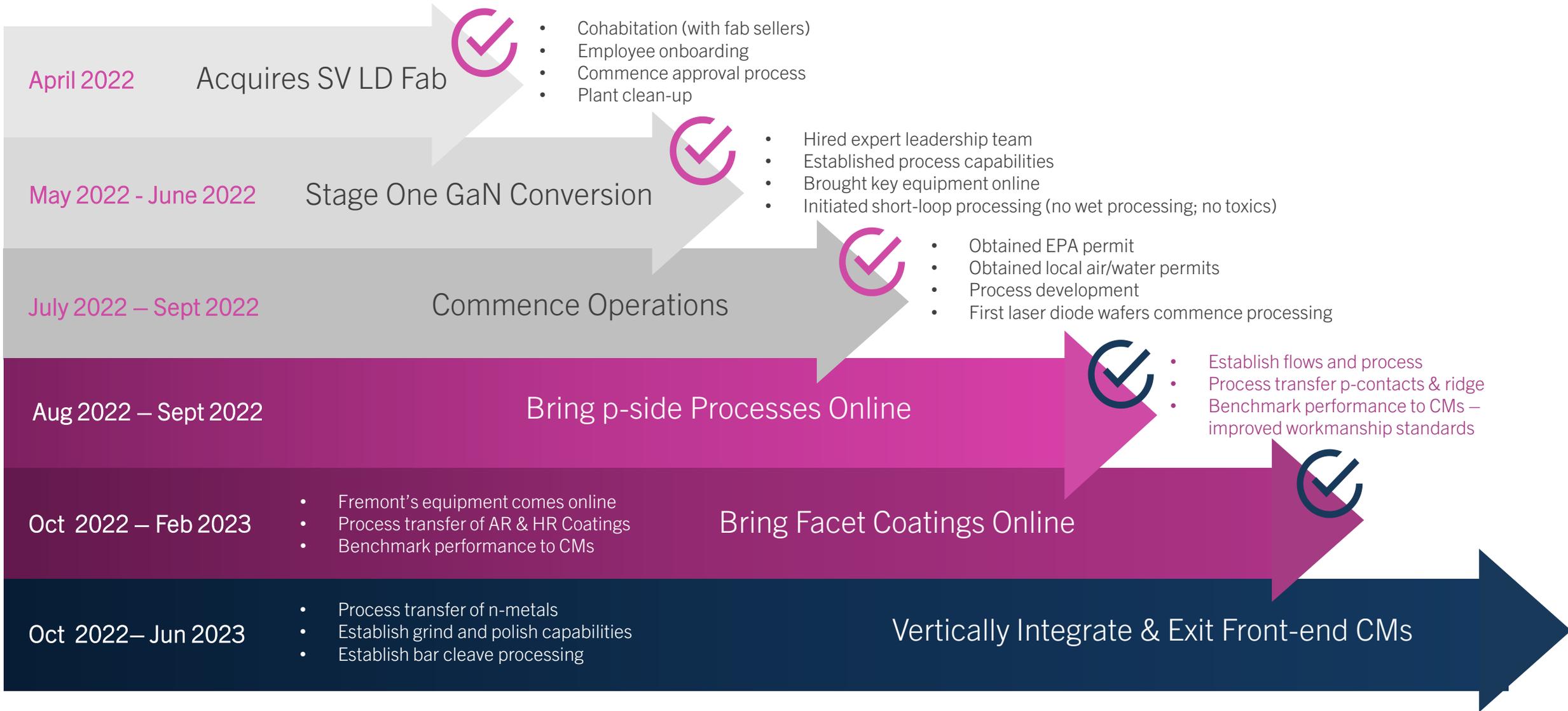
Vertical integration improving quality and consistency of laser products with performance leap-frogging contract manufacturer benchmarks.



Expert team

Highly-skilled, expert manufacturing and development team with decades of laser diode experience.

BRINGING FREMONT ONLINE - MORE SPEED, BETTER CAPABILITY



LOOKING AHEAD

UPCOMING CATALYSTS & MILESTONES

- ✓ BLG Launches Laser Product Suite in January
- ✓ BLG Secures first customer orders in February
- Receipt of additional customer orders
- Complete wafer fab vertical integration & exit downstream CMs
- Launch brighter + higher-power lasers in core wavelengths (405nm-450nm)
- Establish distribution agreements with regional distributors
- Complete initial customer qualifications, scale to volume orders
- Launch of 470nm & 488nm products
- Demonstrate next tier of reliability

BLUGLASS LASER DIODE ECONOMIC SCENARIO 2024 – 2028

BluGlass' Economic Scenario shows a potential economic outcome based on the attainment of certain milestones and market penetration.

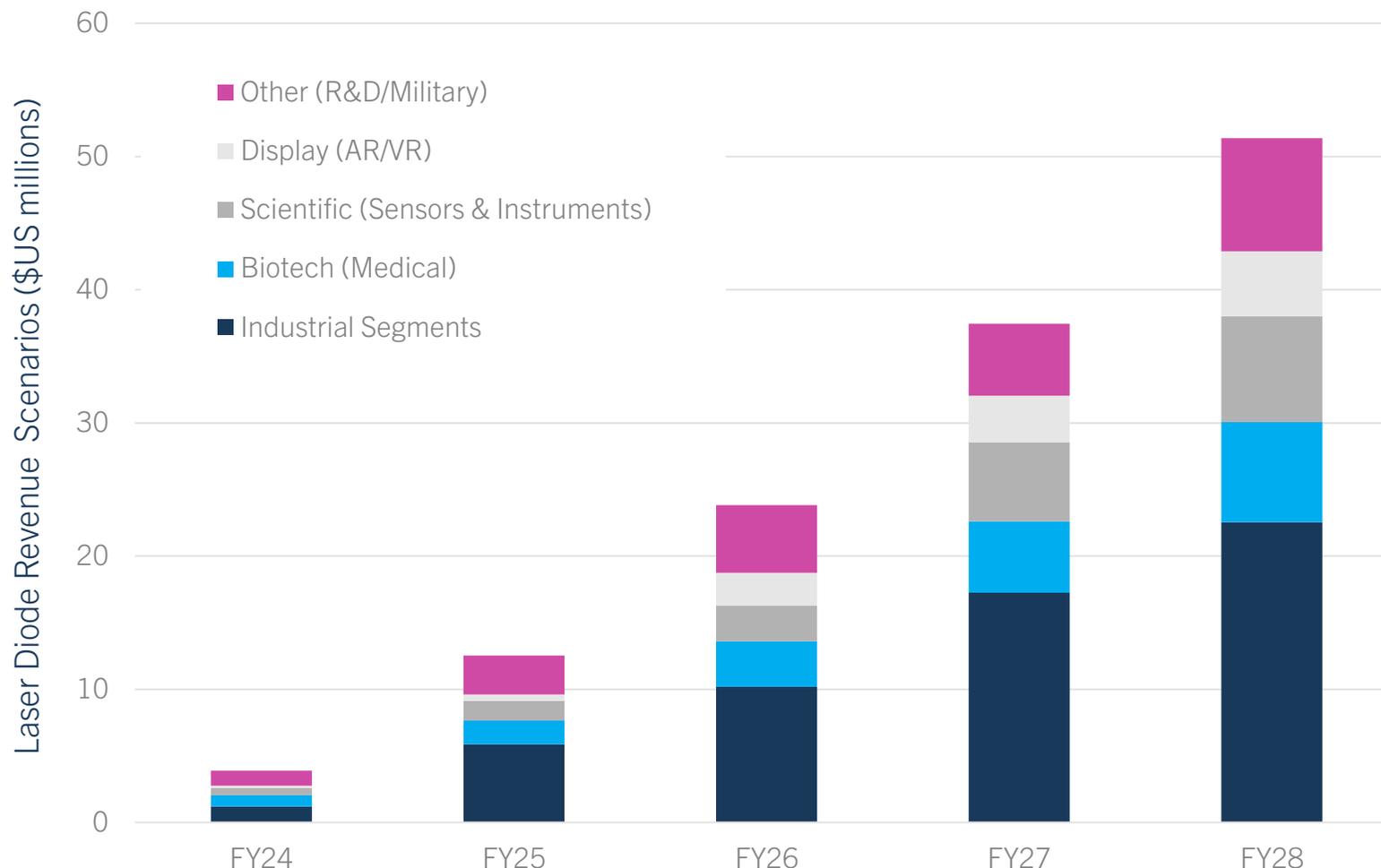
For BluGlass to succeed in coming years, we will need to achieve our technical milestones, meet customer demand and drive market growth. While the Company is focused on being in a position to achieve those goals, there is much work to be done, and these scenarios are not intended to be read as a company revenue forecast.

Assumptions:

This economic scenario relies on key technology milestones (including RPCVD & tunnel junction performance which have not yet been commercialised), financing, supply chain, customer adoption, and market penetration assumptions.

Any impediment or delay in achieving the assumed outcomes could have an adverse effect on the scenario outlined here.

The scenario outlined should be considered speculative until proven.



THE YEAR AHEAD



Vertically Integrate

On track to complete vertical integration of BluGlass' owned Fremont fab, exiting front-end contract manufacturers by end of FY23.

De-risks operations, increases laser quality and consistency while reducing manufacturing costs.



Expand Markets

BluGlass is expanding its GaN laser offering to address new markets:

- Launch brighter & higher-power lasers
- Demonstrate advanced single frequency lasers
- Demonstrate next tier reliability
- Extend products to 400nm and 525nm wavelengths



Grow Order Book

Increase BluGlass' customer base and grow order volumes.

- Secure new customers, orders
- Complete qualification in customer applications, scale product volumes
- Establish development contracts to deliver custom products
- Enter distribution agreements (Europe, US, Asia)



Drive Revenues

Establish BluGlass as the partner-of-choice in GaN lasers with innovative products and differentiated offering.

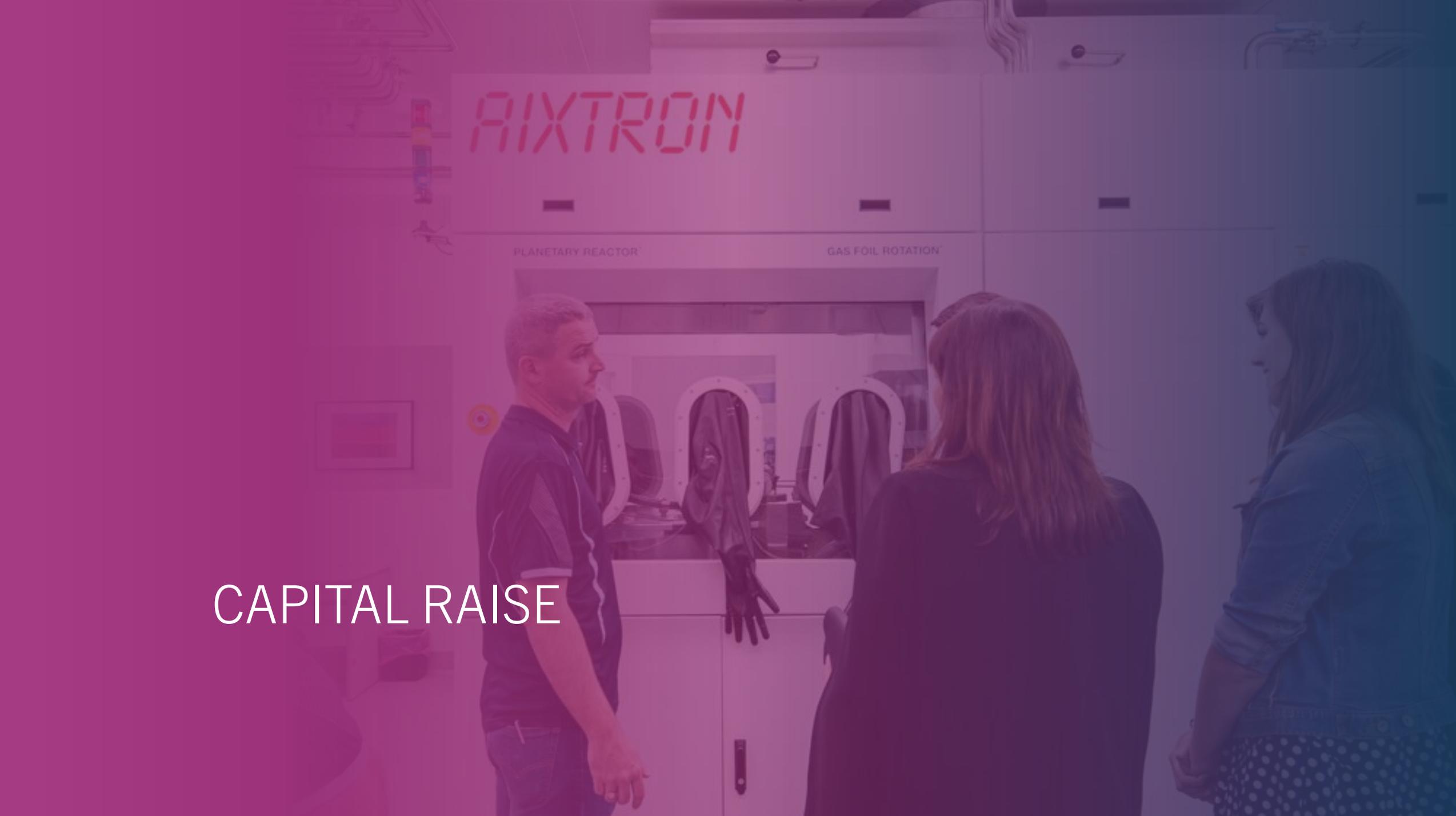
- Deliver customer orders
- Scale manufacturing capability
- Vertical integration to increase gross margins, profitability
- Achieve cash-flow positivity in short to medium term

AIXTRON

PLANETARY REACTOR

GAS FOIL ROTATION

CAPITAL RAISE



TIMETABLE:

Entitlement Offer Timetable

Key Dates	
Trading Halt Lifted and Placement and Entitlement Offer Announced	Monday, 13 March 2023
Record Date for Entitlement Offer	Thursday, 16 March 2023
Settlement of Placement Shares; Entitlement Offer Opens	Monday, 20 March 2023
Allotment of Placement Shares	Tuesday, 21 March 2023
Entitlement Offer Closes	Monday, 3 April 2023
Announcement of Entitlement Offer Results	Wednesday, 5 April 2023
Allotment of New Shares issued under the Entitlement Offer	Thursday, 6 April 2023

The above timetable is indicative only and subject to change without notice

KEY RISKS

Risk	Risk Description
Loss of key management personnel	BluGlass' ability to effectively execute its business strategy depends upon the performance and expertise of its key management personnel. Any loss of key management personnel, any delay in the replacement of any key management personnel, or any extended period where key management personnel are unable to work will adversely affect BluGlass' operations and future performance.
Development and commercialisation of technologies	The success of BluGlass will be impacted by the successful development and commercialisation of its technologies. For instance, BluGlass' RPCVD technology may fail to meet competitive specifications. Should the development not be completed in accordance with BluGlass' specifications or should the results of further testing indicate technology performance is below market requirements, BluGlass will have to expend additional time and resources to rectify any outstanding issues which will delay the commercialisation of the company's advanced roadmaps. BluGlass may also experience difficulty in raising capital if such technology-related milestones are not achieved.
Product liability and uninsured risks	BluGlass is exposed to potential product liability risks, inherent in the research and development, manufacturing, marketing and use of its products or products. Further, BluGlass is exposed to the risk of catastrophic loss to necessary laboratory equipment, computer equipment or other facilities, which would have a serious impact on BluGlass' operations.
Intellectual property	BluGlass relies upon a combination of patents, know-how, trade secret protection and confidentiality agreements to protect its technologies. Legal standards relating to the validity, enforceability and scope of protection of intellectual property rights are uncertain. Effective patent, trade mark, copyright and trade secret protection may not be available to BluGlass in every country in which its products may be sold. Accordingly, despite its efforts, BluGlass may not be able to prevent third parties from infringing upon or misappropriating its intellectual property.
Competition	The industry in which BluGlass is involved is subject to increasing domestic and global competition which is fast-paced and fast-changing. For instance, new technologies could result in BluGlass not being differentiated to other similar offerings. The size and financial strength of some of BluGlass' competitors may make it difficult for it to maintain a competitive position in the technology market. In particular, BluGlass' ability to acquire additional technology interests could be adversely affected if it is unable to respond effectively and/or in a timely manner to the strategies and actions of competitors and potential competitors or the entry of new competitors into the market. This may in turn impede the financial condition and rate of growth of BluGlass.



2023

Investor Relations:

Stefanie Winwood
P: +61 2 9334 2300
E: investors@bluglass.com.au

THANK-YOU & QUESTIONS