# World's only stitch-free panoramic multicamera system. One click.





# Highlights

- We see a world where panoramic cameras make robots more autonomous and aerospace safer
- Our technology provides increased autonomy for uncrewed terrestrial and airborne systems -\$10B TAM
- Our systems will improve aircraft navigation & prevent collisions for safer operation -\$200M
- We have been validated by \$3.7M in contracts with NASA, Space Force, Air Force, NSF and more
- 5 Circle Optics received Silver recognition in Pepperdines' Most Fundable Company\* List 2022
- 6 Circle Optics has 12 Patents awarded & pending on their method of aligning fields-of-view
- Our team has bench strength of over 200 patents in the imaging vertical from IMAX, Kodak, and Xerox
- You can be a part of making robots and drones more autonomous and aerospace safer JOIN
   OUR MISSION

# **Our Team**



Zak Niazi Founder, Inventor & CEO

We can access any information we want, but I think that people are innately curious about the world. I want to build technology that opens up experiences for as many people as possible.

Our founder was trying to figure out how to enhance Google Street View's capabilities. Processing the parallax out of 360-degree video requires a person to spend 5+ hours of time for every minute of content. The entire medium is not scalable. Creating the world's first seamless 360° camera was our intention.



lan Gauger Chief Operations Officer

I have always considered myself a builder. Hike to envision new things, think them through, and get them up and running.



Andy Kurtz Chief Research Officer

At Circle Optics there is an opportunity to not only succeed technically, but succeed in terms of business growth. Our space is unique – sparsely occupied.



Allen Krisiloff Chief Technology Officer

I am inspired by the development of new things that can change some aspect of the world. What that aspect is in this case is capturing views of the world in an inspiring way.



Jennifer Sertl Director of Marketing

Even before there were words, there were cavemen paintings. I feel that imagery gets to the human experience more than any other medium.



Peter Stubler Director of Imaging Science

I was attracted to Circle Optics because of the opportunity to work in a small focused team to help develop a new technology. I believe that my diverse background allows me to contribute in many



Phil McMillen Senior Project Manager

There are jobs that were just jobs, but they didn't connect with my passion. Circle does that for me. It is because there is a connection to Circle in that I believe in what we are trying to achieve.



John Bowron Senior Optical Engineer

Circle Optics is a good fit for me because I've been able to do really cool optical design. The concept and the ideas are inspiring.



Robert Metzger Senior Optical Systems Engineer

I am here to make something that has never been made before. And to take that creation and grow the business. It's just so exciting.



Bob Stanchus Senior Mechanical Engineer

I like conceptual work and I like getting concepts delivered. You are presented with the challenge, come up a bunch of ways to do it, and figure it out. It is a really cool thing to use those skills and make something happen.



Carlos Terrero Senior Mechanical Systems Engineer

It excites me that in the near future there will be even better ways to connect and share experiences with others around the world.



Cody Hatch Mechanical Engineer

I am an early adopter and someone always looking for that unique experience.



Thomas Bidwell Mechanical Design Engineer at Circle Optics, inc

# The Future of 360 Immersive Experiences is in Your Hands

- Circle Optics, Inc. is a B-Corp. This choice is a signal in how we value our
  ecosystem, including the planet, shareholders, investors, innovators and
  engineers across the globe. We are dedicated to the pursuit of experience that
  gives more people access to the past, present and future and ignites the human
  capacity to imagine and create.
  - Circle Optics has massive growth potential and is 100% focused on developing and scaling technology that will allow you to have the capability to share your visual experiences with your friends, family, community and the world.

Do you remember the first time you used Google Street View?

What if you could share YOUR OWN live virtual experiences in real-time?

That is what we are working on!

We are raising up to \$1,000,000 to make this a reality and we want YOU be part of it!

Get in early on this  $\,$  Circle Optics community offering and help us shape the future of immersive experiences.

# Positioning

360° imaging is already part of everyday life. From accelerating the delivery of life saving resources, to ensuring aerospace safety, to enhancing surveillance capabilities for protection, to increasing immersive experiences participation, Circle Optics technology will work for you. Different from other cameras on the market which work by overlapping fields-of-view, creating perspective errors, Circle Optics works by aligning fields-of-view to produce a seamless 360° image instantly. No distortion. One click and done.

#### Solution

Circle Optics' method of aligning fields-of-view produces no distortion and requires no stitching, enabling your field-of-view to be accurately captured in real time. Our solution is protected by a dozen patents.

#### Circle Optics Technology is Different

Those requiring a wide field-of-view image have long been forced to choose between one of two flawed methods, a distortion-filled fisheye lens with resolution sacrifices or a parallax-laden multi-camera rig that requires a time-intensive and expensive post-production process. The concept of a real-time, high-fidelity camera rig was thought to be impossible due to the insurmountable problem of parallax distortion. This is fundamentally wrong! Other cameras rely on overlapping circular fields-of-view which contain

parallax (perspective distortion) where they meet.

Circle Optics uses polygonal (non-circular) lenses with polygonal fields-ofview that align along their edges without overlap or parallax distortion, and therefore produce a perfect video capable of being live-streamed without corrective software.

This fundamental breakthrough in the way optical systems work provides benefits in any field currently relying on wide field-of-view imaging.

#### ROBOTICS / DRONES \$10B

The drone industry is hampered by an inability to meet regulations to fly beyond line of sight of a human operator. Circle Optics is miniaturizing its novel camera technology under contract with NASA and NSF to enable drones to meet FAA regulations. 15 million drones are expected to fly beyond line of sight by the end of the decade, and they will need this solution to meet regulatory requirements.



Circle Optics' work in aerospace has been adapted to enhance autonomous systems, such as drones. From this, customer discovery has shown the significant benefits our technology provides for the increased autonomy of both terrestrial and aerial uncrewed systems. Circle Optics is miniaturizing its novel camera technology to provide emerging capabilities to both terrestrial and airborne uncrewed systems. With the ability to enhance a wide range of autonomous imaging capabilities for robots, Circle Optics will enable better self-localization and navigation allowing these systems to operate beyond line-of-sight in GPS-denicd environments. Furthermore, this technology can be deployed to collect higher quality visual data for autonomous platforms. This same technology can be adapted for future use in self-driving vehicles for navigation and collision avoidance purposes.

# AEROSPACE / DEFENSE \$200M

Persistent ground surveillance solutions scan our skies for threats including missiles, aircraft and UAVs to secure United States' borders, but solutions today have narrow fields-of-view that operators describe as "looking through a straw." Circle Optics is working with the Space Force to eliminate the straw-like view, giving full hemispheric coverage of the sky with resolution never before possible with our distortion-free optics.



Circle Optics' optimized camera technology will enhance situational awareness capabilities for small aircraft with its ability to produce a unified image of the surroundings instantly. These systems will improve aircraft navigation and prevent potential collisions for safer operation.

# IMMERSIVE EXPERIENCES / MEDIA \$122M

Capturing content for the immersive entertainment industry costs on average \$10k per finished minute of video for stitching. Circle Optics' Hydra camera system eliminates this cost and hassle. In an instant, content is ready for the big screen and live events can be streamed in 8k resolution and with 12-bit color to dome theaters and VR headsets.





Circle Optics' Hydra camera system will make capturing content for the entertainment industry more advanced, faster, and less expensive. Hydra is the only camera that can create content at the resolution needed for dome theaters—the next generation of cinema. Hydra's unique architecture offers the ability to capture captivating and real-time 360° video that will thrive in virtual reality and dome theaters. In an instant, content is ready for the big screen and live events can be streamed in 8k resolution with 12-bit color.

# THE PROBLEM — Stitching is expensive & time-consuming

# THE SOLUTION — Aligning fields-of-view

We made the world's first seamless 360° camera!



We want you to be part of the Circle Optics story!

\*This is a projection and can't be guaranteed.