Lumenera Low Light, Fast Frame Rate Cameras Chosen by Clay Center Astronomical Observatory

Lumenera Provides Imaging Solution for Reflecting Telescope Used at Astronomical Observatory

The Clay Center Observatory in Brookline, Massachusetts is a unique Kindergarten through Grade 12 educational institution that provides a hands on learning experience for students with an interest in astronomy. The school features a state-of-the-art astronomical observatory equipped with a custom-made, diffraction-limited 0.64 m (25 inch) f/9.6 Ritchey-Chrétien reflecting telescope, similar in optical design to the Hubble Space Telescope.

The telescope with optically perfect mirrors, better than 1/100th of a wave at 632.8 nm, requires an equally as innovative imaging solution. The Clay Center faced the challenge of capturing images of fast moving objects through the telescope: planets; rocket launches; satellites; and meteors, all in dark conditions. This required a highly sensitive low light camera with fast frame rates.

Highly Sensitive, Low Light Camera with Fast Frame Rates Needed for Spectroscopy

The Clay Center needed a camera with high signal to noise ratio and 30 to 60 fps to record rapidly moving data under low light.

The cameras were even flown on NASA's High Altitude aircraft and used for spectroscopy, the study of the interaction between matter and radiated energy.

The imaging solution implemented had to be sensitive enough to detect change within the spectrum and identify individual debris during an explosion. Snapshots would be taken at 100 ms instead of every second, as typically done in this field of study, driving requirements for higher frame rates.

The Clay Center Using Lumenera Cameras

Highlights

- The Clay Center diffraction-limited 64 cm (25 inch) telescope required an equally as innovative imaging solution.
- High signal to noise ratio and 30/60 fps were required to record rapidly moving data under low light, were flown on NASA's High Altitude aircraft and used for spectroscopy.
- Lumenera was able to provide imaging solutions to meet the challenging demands. The Clay Center implemented the Lg235, Lw560, Lw075, Lu075, SKYnyx*2-0*, SKYnyx*2-1* and INFINITY*2-1*R.

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Camera Comparison Confirms Lumenera's Solutions Offer Highest Signal-to-Noise Ratio and Greatest Sensitivity Available on the Market

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The organization tested a large number of cameras three years ago, and Lumenera's cameras provided the highest signal-to-noise-ratio and greatest sensitivity of the competition. Lumenera provided the Clay Center with an extensive range of high quality digital cameras with unique combinations of speed, resolution and sensitivity to satisfy their imaging needs.

Lumenera's SDK allowed the Clay Center to program and customize imaging software to completely match their specifications. The cameras also allowed the organization to record uncompressed data onto their hard drive as needed.

"We have approximately ten Lumenera cameras, and they have been indispensable for high resolution, high frame rate, exceptional SNR imaging of astronomical objects. We often operate at f/10 or slower in astronomy, and these cameras, specifically the Lw075 (SKYnyx2-0) camera is superb. We have done asteroid photometry integrating the SKYnyx2-0 for four seconds, and the SNR is exceptional without cooling." said Ron Dantowitz – Director of the Clay Center Observatory.

"I have also recently used the INFINITY2-1R for an asteroid photometry program and it is an excellent choice for wider field imaging where reference stars are needed – or for wider field lunar or terrestrial imaging. The near infrared sensitivity is excellent when there is not an infrared blocking filter present!"

Since the adoption of Lumenera technology at the Clay Center Observatory, the organization has never considered another imaging provider. Lumenera cameras provided the high sensitivity and fast frame rates the state-of-the-art telescope required to take clear images of extraordinary objects.

About Lumenera

Lumenera Corporation, a division of Roper Technologies, headquartered in Ottawa, Canada, is a leading developer and manufacturer of high performance digital cameras and custom imaging solutions. Lumenera cameras are used worldwide in a diverse range of industrial, scientific and security applications.

Lumenera solutions provide unique combinations of speed, resolution and sensitivity in order to satisfy the most demanding digital imaging requirements. Lumenera customers achieve the benefit of superior price to performance ratios and faster time to market with the company's commitment to high quality, cost effective product solutions.

For further information about Lumenera, please visit www.lumenera.com or call 613-736-4077.

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