

Thursday, 07 April 2022

Background & Summary

The Zyla sCMOS camera platform, like the majority of commercial sCMOS cameras on the market, uses a backfilled chamber design to protect the sensor. To understand more about chamber technologies please refer to the article [“What are camera sensor enclosures and why to they matter?”](#)

For ALL back-filled sensor enclosures, one expects a low-level moisture ingress past the O-ring seals and into the sensor chamber over time. All such cameras utilise a form of desiccant to control the ingress of moisture that does occur. Eventually, the desiccant will become saturated, and condensation may form on the camera window or sensor, indicating the need for the camera's sensor chamber to be serviced.



Andor has noted some variability as to when moisture ingress can become an issue to camera performance (following saturation of the desiccant). As such, Andor has carried out a full and detailed investigative Root Cause Analysis (RCA) of Zyla chamber condensation cases, with a view to further reducing chamber condensation across the active lifespan of the camera. As a result of this programme, Andor's Product Engineering team have thoroughly tested and implemented a new sensor chamber design and introduced additional processes to ensure maximum longevity of the camera.

What Zyla Cameras are affected by this change?

The **full Zyla product portfolio**, i.e. all Zyla 5.5, Zyla 4.2 and Zyla 4.2PLUS cameras and their variants, *excluding* the 'Zyla HF' Fibre Optic bonded variants. Updates are **retrofitable to older Zyla cameras**. At the next service or during RMA, the new chamber will be installed.

What has been updated?

The **new chamber design** is the main update- however additional measures have also been put in place to provide maximum assurance of the best possible longevity:

1. **All new chamber design:** to eliminate potential failure modes found during RCA investigations of cameras found with chamber failures:
 - a. New machined chamber housing assemblies- updates have been made to better prioritise key surfaces and features throughout manufacture
 - b. O-ring materials have been changed
 - c. O-ring sizing has been updated along with alterations to the O-ring channel profile.
 - d. New tests to qualify the chamber integrity before shipping (see point 2).
2. **New Seal Integrity Test:** specific modifications to the chamber body allow the integrity of the chamber seals to be verified. All cameras will undergo the new 7-day chamber test to ensure the chamber seal meets specification before cameras leave the factory.
3. **Moisture Absorption Capacity increased by 50%:** The maximum absorption capacity of the chamber is now 50% greater than before. This helps ensure the longest possible working life for each camera.
4. **New moisture barrier bag:** As a further measure to control moisture ingress we have introduced packing that protects the camera from exposure to moisture from the external environment from when the build process is complete, through to when it is unpacked and ready for use. A visual indicator on the packaging will change from orange to a dark green the more it absorbs the incoming moisture.

When will Zyla Cameras Benefit from the New Chamber Design?

As of the **1st March 2022** all Zyla cameras are of the new chamber design.

Can Zylas with the Original Chamber Design be upgraded to the new Design?

Yes, Zylas with the original chamber build can be upgraded to the new chamber configuration:

- Any camera under warranty or service agreement received in Andor from 1st Jan 2022 will automatically be updated with the new chamber installed, and built to the new process.
- The upgrade to the new chamber will be done under warranty at no cost to the customer
- For RMA cameras i.e. outside of the warranty these can also be upgraded as per FY23 pricing.

Are there any Performance or other Specification changes?

No, an important aspect of this update was that all specifications, especially the cooling performance, mechanical dimensions, optical and mounting would remain consistent for the new chamber design.

How long is the Turnaround Time for the Chamber Upgrade under RMA?

The **turnaround time (TAT) for Zyla cameras is 6 weeks** from receiving the camera (March 2022). Cameras undergoing RMA upgrade need to be checked, stripped down, rebuilt to the new specification and tested. This also includes a 7-day chamber test. The expectation is for TAT to be further reduced as this is of key concern to our customers— please refer to any updates from Product Management on this.

What is the Warranty on the Chamber Upgrade?

The new chamber build will have the **chamber warranty updated to a full 3 years**. Previously, chamber services of the original design under warranty or RMA repair carried a 1-year standard warranty as per other repairs. With the new Chamber we are able to give a 3-year warranty as we have confidence in the reliability of the new design and the updates throughout the build process.

What is the expected Lifespan of the new Camera Chamber?

Many Zylas with the original chamber design have seen heavy use and operational lives of 7+ years. It has been the subpopulation of “early failure” cameras that have failed within warranty, or just out of the warranty period that will be addressed by the new chamber design. Therefore, the market-leading 3-year warranty remains in place for the new chamber design.

Will Upgraded Cameras still need Chamber Services?

All back-filled cameras would be expected to need serviced at some stage in their operational life. This is often overlooked by customers when they purchase a camera. Andor provide [Customer Assurance Plan](#) options to provide cost effective coverage for this after the warranty has expired. Only the permanent vacuum sealed sCMOS cameras: Sona, Marana, Neo and Balor sCMOS platforms are without need of service over their operational life.

Do RMA Cameras need to return to the Belfast Factory for Upgrade?

Yes- cameras must be returned to the factory at Belfast for the new chamber to be installed. This is primarily because the new chamber seal integrity testing is not possible at regional service hubs.

How can I Check if a Camera is the Original or New build?

You can check by camera serial number. Any camera with the VSC-2XXXX has the new chamber. Most cameras with a VSC-1XXXX serial number built between Jan and Feb 2022 also have the new chamber design in place. Information for how to visually check these cameras is provided in the accompanying document: [How to Identify Zyla Cameras with the Original or Upgraded Chamber Design](#).

What other Information is available for Camera Dealers and Distributors?

A PowerPoint Slidepack is available for discussion of the Zyla Chamber enhancement program with camera dealers and distributors who may require extra assurance on these updates. An engineering report is also available that provides additional details. If these are required, please contact a.mullan@andor.com