

Monitoring Humidity to Reduce Reticle Haze Effects

CyberOptics' ReticleSense Auto Multi Sensor (AMSR) is a powerful solution for controlling reticle haze in 193nm immersion scanner environments. This device measures relative humidity (RH) in all locations of the reticle environment, detecting any location where H₂O is exposed to the reticle.

The ReticleSense AMSR improves yields while driving substantial time and cost savings—enhancing process uniformity with objective, reproducible data.



Understanding Reticle Haze

Without proper control measures, immersion technology scanners are affected by an adverse phenomenon called "haze." Haze is caused by a combination of three specific factors:

Mask Residue/Acid

Controlled by cleaning procedures.

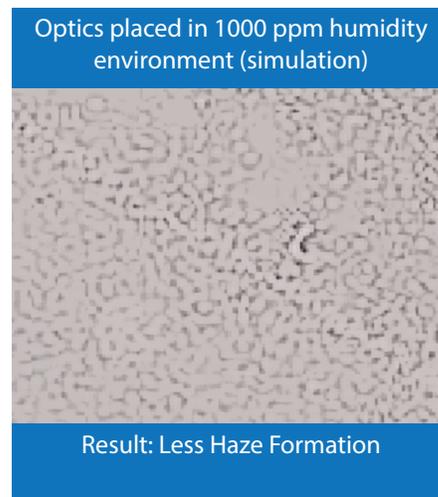
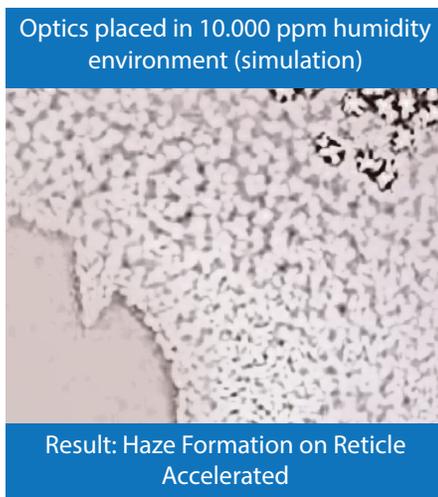
Water/Humidity

Controlled by monitoring H₂O and eliminating H₂O sources in the total reticle environment (not just inside the 193nm scanners).

193nm Light

Cannot be controlled.

Reticle Haze Formation Accelerates When H₂O Is Present



For illustration purposes

Limitations of Current Measurement Methods

Standard reticle environment RH measurement methods come with a variety of problems and limitations. For example, handheld RH sensors are inconvenient due to limited accessibility—and can even compromise or contaminate the reticle environment being tested.

In-situ RH sensors are equally impractical. Like other measurement devices, in-situ RH sensors cannot access many areas of reticle environments. These limitations make traditional measurement methods suboptimal for managing and controlling reticle haze.

AMSR Wireless Real-Time RH Reticle Sensor

CyberOptics' ReticleSense Auto Multi Sensor measures H₂O across the entire reticle environment, helping to identify sources of H₂O to maximize reticle lifetime. This all-in-one device provides highly accurate leveling, speed vibration, and humidity measurements, drastically improving yields in the process.

The ReticleSense AMSR identifies sources of reticle mishandling, as well as incorrect reticle inclination. It's one of the most efficient tools for monitoring and controlling H₂O sources across the total reticle environment to mitigate accumulation of haze.



Leveling

+



Vibration

+



Humidity



AMSR Travels Throughout the Entire Reticle Environment

AMSR wirelessly measures RH, vibration, and inclination - everywhere the reticle goes:

1. Micro Environment
2. Reticle Library
3. Reticle SMIF Pods, Carriers



1. Micro Environment
2. Reticle Library



3. Reticle SMIF pods, carriers

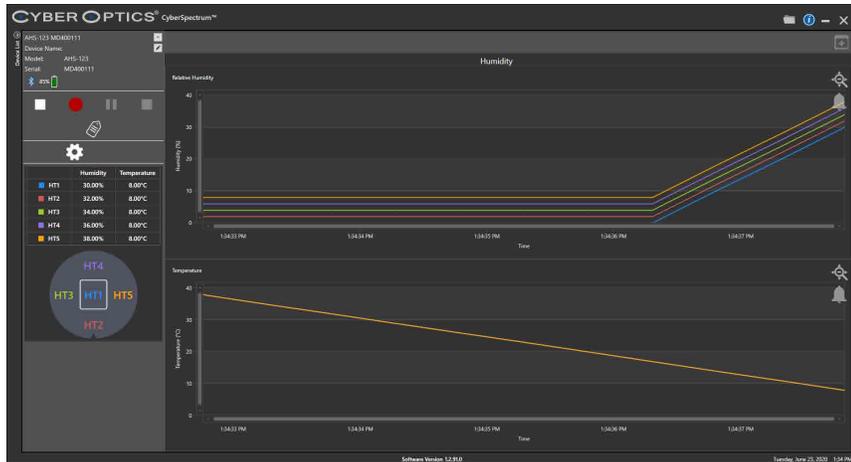


4. Reticle Stockers

*Trademarks are owned by their respective companies.

ReticleSense AMSR RH Functions

(Only HT1 Valid on Reticle Version) - Associate RH with specific events and locations



ReticleSense AMSR Vibration & Leveling Functions

Vibration Measurement

Leveling Measurement



Key Measurements to Increase Yields & Reduce Downtime

AMSR can measure humidity across all locations of the reticle environment, acting as an all-in-one device that also measures leveling and vibration. Moreover, AMSR helps to control inclination, humidity, and vibration—all essential factors in maximizing yield and minimizing downtime.

ReticleSense wireless devices are ideal solutions for reducing reticle haze and supporting faster equipment qualifications. Contact CyberOptics today to learn more about how our high-precision 3D sensing technology can improve your production operations.

CYBEROPTICS®

Contact CyberOptics today for more information
+1 800.366.9131 or +1 763.542.5000 | CSsales@cyberoptics.com | www.cyberoptics.com

Copyright © 2020. CyberOptics Corporation. All rights reserved. Specifications subject to change without notice. 8029068 Rev A