



CASE STUDY /

Ansys + Continental

“Our camera sensor technology is critical to the work we are doing in supporting autonomous function for our customers. Using Ansys AVxcelerate Sensors during ADAS/AD testing and validation, we were able to confidently test real-life scenarios that were previously off-limits to us with simulation, with complete confidence in the accuracy of our results. Even though the work to develop a well-rounded solution is still ongoing, the collaboration between Ansys AVxcelerate Sensors and Continental camera sensor solutions is already delivering promising results.”

Dr. Martin Punke

Head of Camera Product Technology / Continental

Ansys supports Continental in the area of autonomous driving, testing and validation with more accurate camera sensor simulation

To achieve the high level of accuracy advanced driver assistance systems/ autonomous driving (ADAS/ AD) technology requires, Continental must specifically target its camera sensors for simulation. Currently Continental engineers do real-world driving on test tracks or roads to train, test, and validate ADAS or AD systems. They also do component-level testing and simulation; however, there are only limited engineering simulation solutions available to tackle this problem. Even though the effort to develop a well-rounded solution is ongoing, the collaboration between Ansys AVxcelerate Sensors and Continental camera sensor solutions is delivering promising results.

/ Challenges

Continental's existing ADAS/AD testing and validation requirements considered functions that could not be tested in real life, including corner cases and other dangerous scenarios. Yet this activity was essential to understanding critical details about specific ADAS features, as well as problematic use cases that are integral to the development and validation of new sensors and computer vision algorithms. Addressing these challenges required customer support and fine-tuning physically realistic camera sensor models.

/ Ansys Products Used

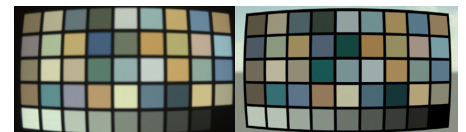
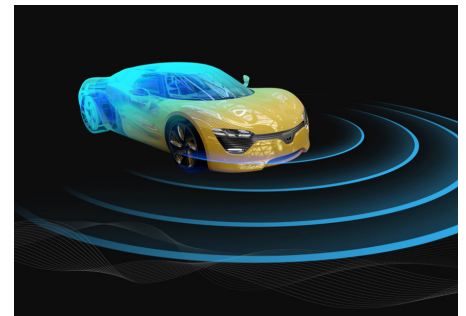
- Ansys AVxcelerate Sensors

/ Engineering Solution

- Used a multi-spectral lens output from AVxcelerate Sensors and fed that into Continental camera sensor models.
- Compared the results from the simulated output from AVxcelerate Sensors versus the real-life model measurements from Continental camera models side-by-side to analyze results.

/ Benefits

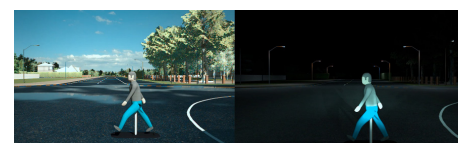
- AVxcelerate Sensors enabled Continental engineers to validate more use cases, including critical use cases essential to their work in new sensor development.
- AVxcelerate Sensors' advanced simulation capabilities initiated future perception stack development without the real camera technology normally needed for testing and validation.
- Continental is potentially benefitting from significantly less development time and less real-world testing, reducing project costs while freeing up the team for other time-sensitive projects. In part, this can be achieved because AVxcelerate Sensors does not need any special calibration as it draws on physics-based solutions.
- Continental is confident in the data coming out of this solution, and pinpointed where additional evaluation and fine-tuning was required.
- Positive outcomes will result in tangible market gains through advanced sensor enablement plus realistic sensor modelling, while presenting faster and better development options.
- Using AVxcelerate Sensors opened up co-simulation possibilities with IPG CarMaker and the potential re-use of existing IPG CarMaker tracks for future Continental product releases.



Real image capture using Continental camera sensor (left) vs. simulated image capture using Ansys AVxcelerate Sensors' multi-spectra lens camera sensor model (right).



Real image at night taken with Continental's front camera (left) and same camera model in Ansys AVxcelerate Sensors taken in virtual environment (right).



Automatic Emergency Braking scenario for vulnerable road users tested with Ansys AVxcelerate during day (left) and night (right).

/ Company Description

Continental develops pioneering technologies and services for sustainable and connected mobility of people and their goods. Founded in 1871, the technology company offers safe, efficient, intelligent and affordable solutions for vehicles, machines, traffic and transportation. In 2021, Continental generated preliminary sales of €33.8 billion and currently employs more than 190,000 people in 58 countries and markets. On October 8, 2021, the company celebrated its 150th anniversary.



ANSYS, Inc.
Southpointe
2600 Ansys Drive
Canonsburg, PA 15317
U.S.A.
724.746.3304
ansysinfo@ansys.com

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you've used a product where Ansys software played a critical role in its creation. Ansys is the global leader in engineering simulation. We help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and engineer products limited only by imagination.

Visit www.ansys.com for more information.

Any and all ANSYS, Inc. brand, product, service and feature names, logos and slogans are registered trademarks or trademarks of ANSYS, Inc. or its subsidiaries in the United States or other countries. All other brand, product, service and feature names or trademarks are the property of their respective owners.

© 2022 ANSYS, Inc. All Rights Reserved.