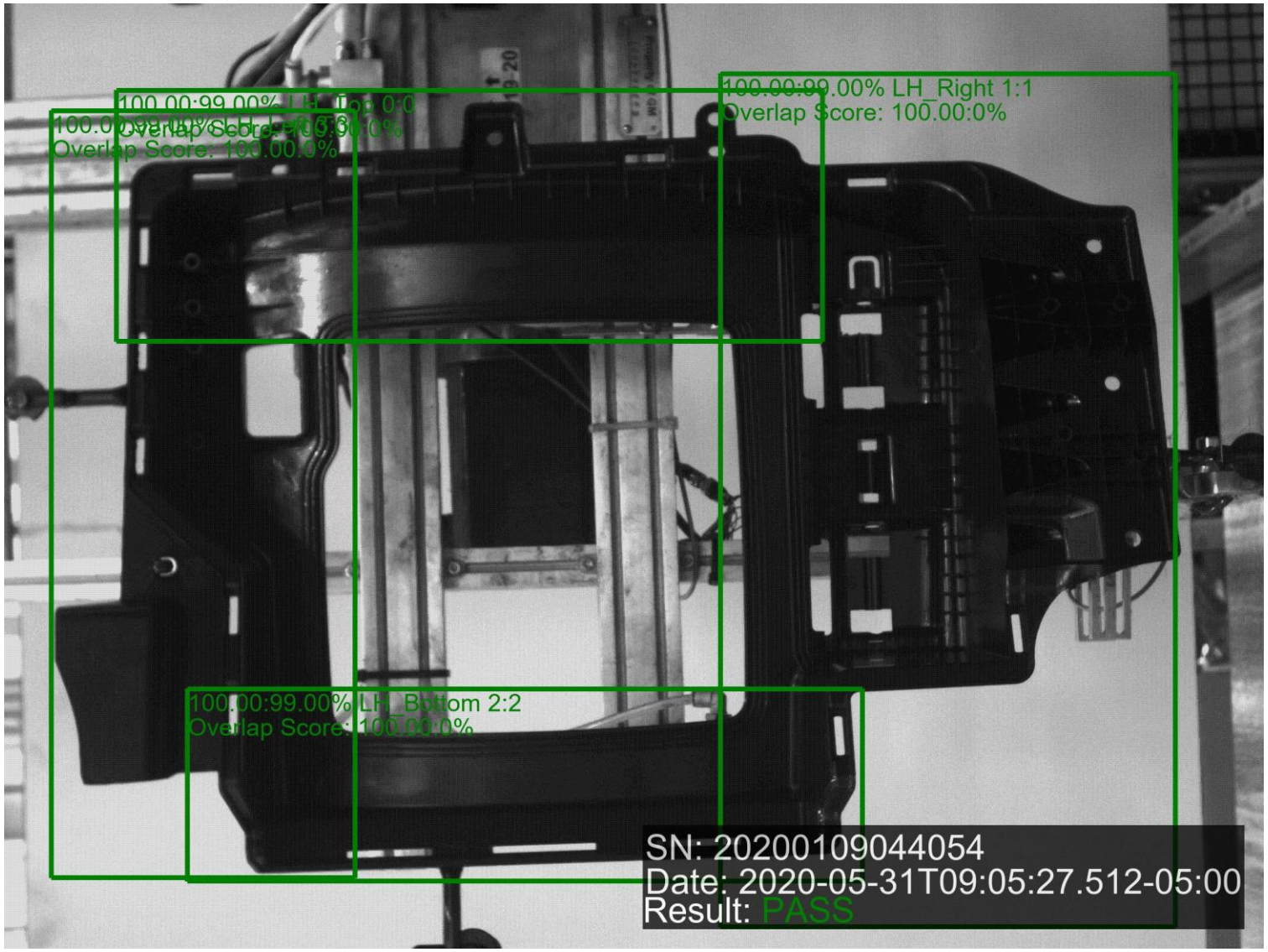
LM3 Technologies

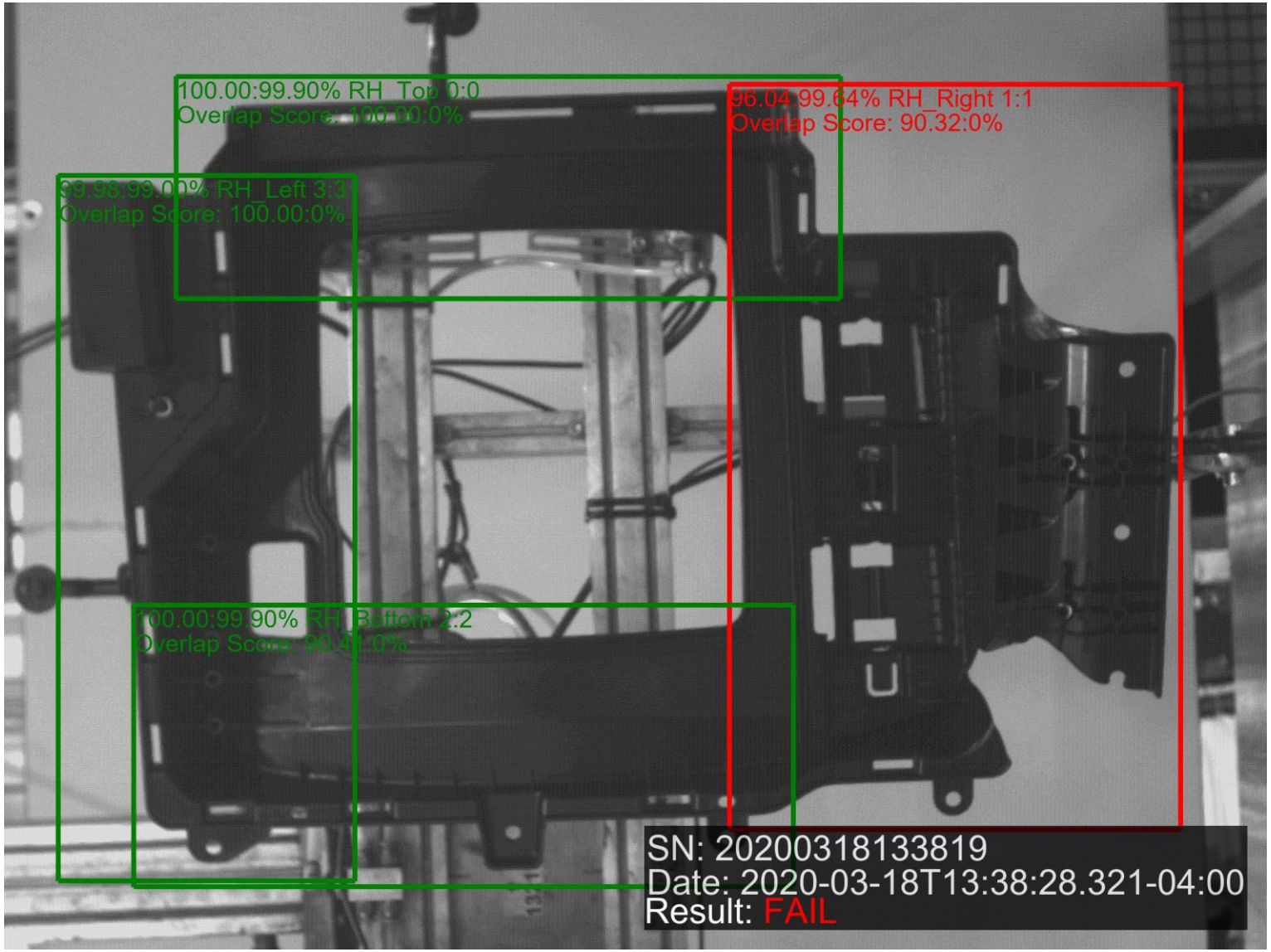
PAQi Defect Detection

Molding

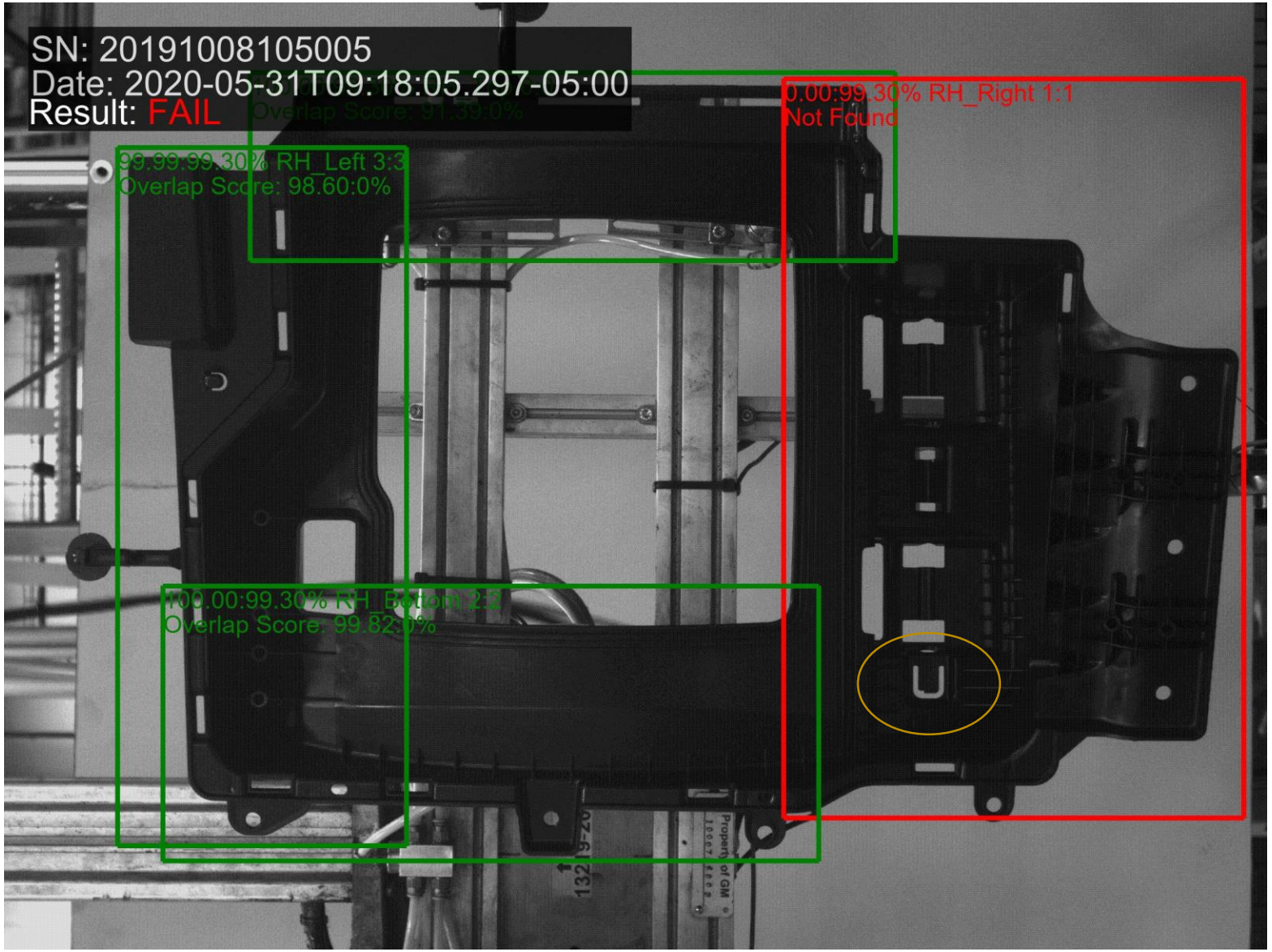
Molded automotive component approximately 24 x 24” in size. 5MP camera used for inspection with robot presenting two cavity parts in steps. Cavity one.



Molded automotive component approximately 24 x 24” in size. 5MP camera used for inspection with robot presenting two cavity parts in steps. Cavity two.

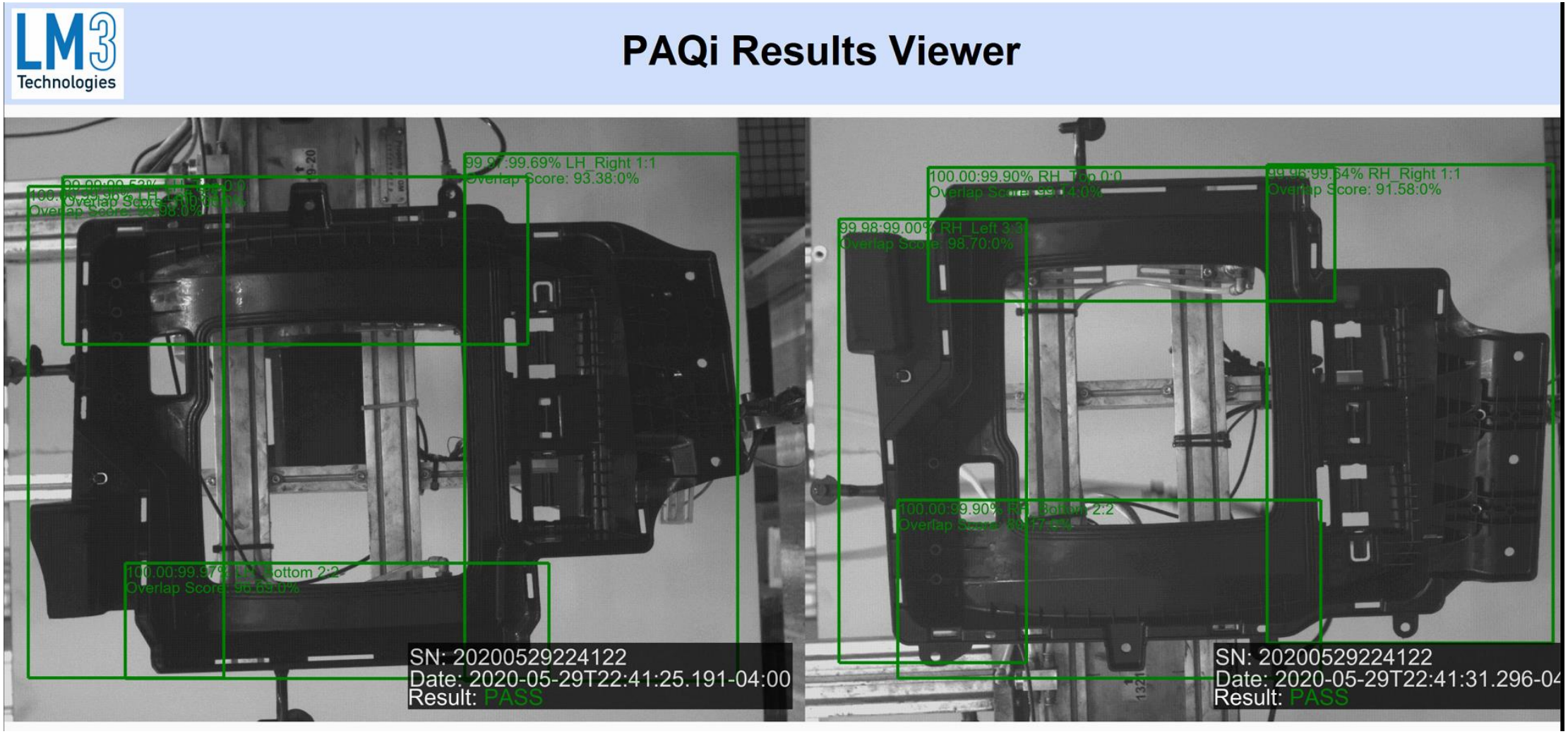


Large short when changing mold



Minor short in rectangular bracket

Splay detection



While many systems are run without a monitor, this system displays the results of the inspection on a 42” monitor positioned towards the front office for use in demonstrating the company’s innovation in molding operations to potential customers.

Advantage Over Other Systems

- One camera can be used to inspect the entire part versus small regions of the part. Because molding defects can occur anywhere on a part, it is necessary to inspect the entire part to be 100% human inspector-less.
- Traditional system are unable to detect variable defects well because configuration is required by defect type and it is impossible to predict how and where a defect will occur.
- No special lighting is required.
- Able to keep up with production line due to the ability to take one image of each cavity and analyze the image once.
- One trained model can be used across multiple molding machines running the same part.
- One trained model can be used for object detection on the same part of different colors because the model can be trained to be color agnostic.
- Multiple models can be used for varying degrees of defects. For example, one model can be trained to detect shorts only by training that splay is acceptable but shorts are not while another could be trained to fail parts with any type of defect.
- Model can be continuously trained on new images to improve accuracy over time.
- Mounting of camera is less arduous because the camera can be position several feet from the part.
- Cost of system is significantly less than traditional system that would require up to 10 smart cameras at $1500/camera plus integration.