

Editor's Note: This article is adapted from the white paper, "Advantages of Using Rugged Integrated IP67 Cameras in Industrial Applications." Visit <https://bit.ly/tj2020imperxwp> to download the full paper to learn about the IP67 rating, the importance of each camera component in IP67 solutions, and how an integrated IP67-rated camera functions in harsh industrial applications.

>> Today, cameras are found almost everywhere, from the intrusive devices we carry around, to doorbell cameras, to rear-view cameras in vehicles, to cameras and imaging systems used in industrial applications worldwide and so on. Standard industrial cameras,

however, aren't built to withstand severe environments with high shock and vibration, wide temperature ranges, high particulate content and water ingress.

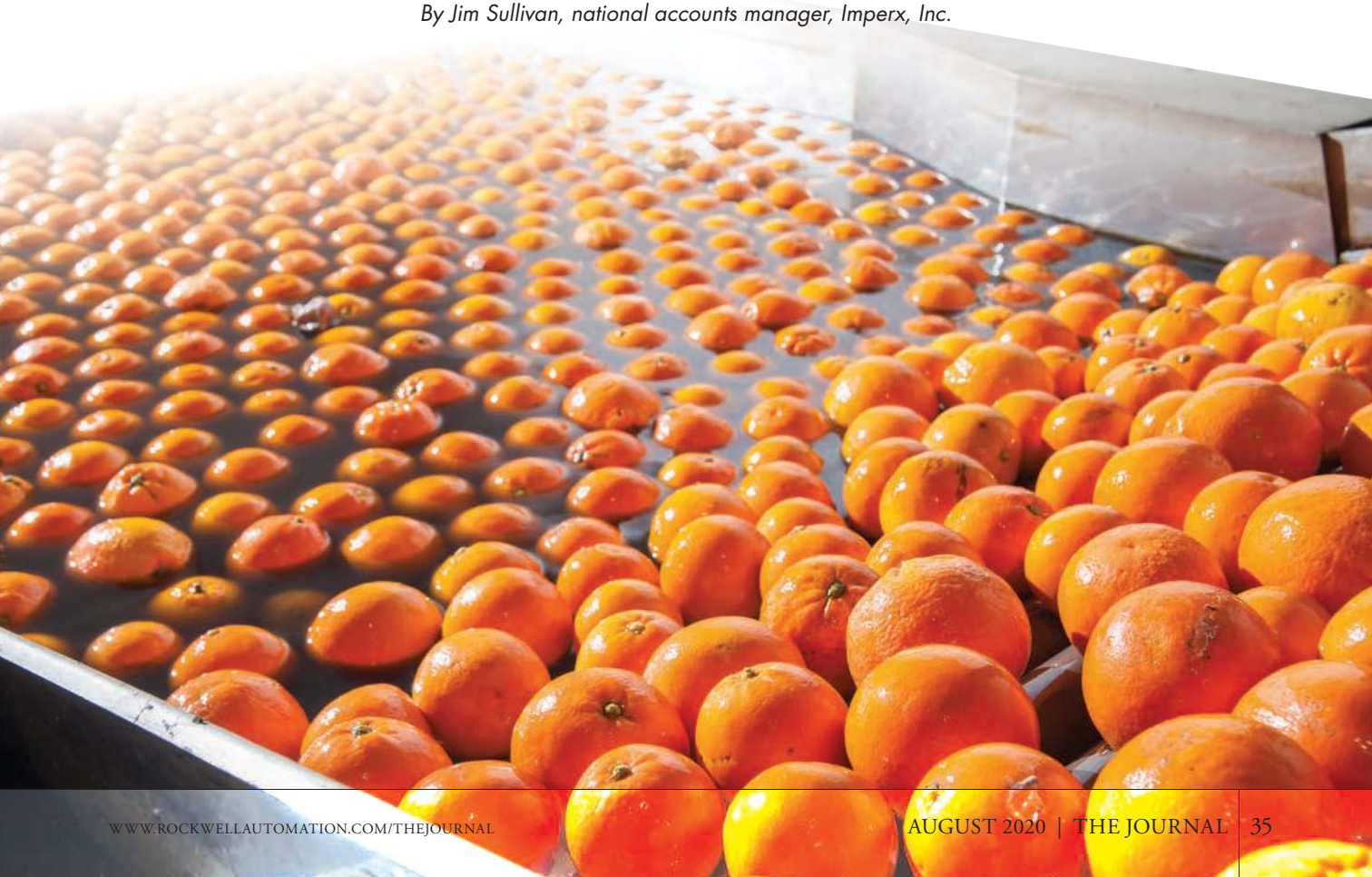
Industrial machine-vision camera manufacturers take different approaches to protect cameras from the elements. One option is to place a camera inside an IP-rated enclosure. The user buys the camera and enclosure from two different companies, then someone determines how to place the camera inside the enclosure and connect it to the computer.

A second approach is to have the camera manufacturer integrate the IP67 compliance into the camera itself. An integrated IP67 camera solution (see **photo**) simplifies the camera's protection with minimal impact on size and cost.

WHAT IS AN IP67-RATED MACHINE VISION CAMERA?

Here's what IP67 means, and how the IP67 rating protects a camera from dust and water ingress, temperature extremes or high shock or vibration.

By Jim Sullivan, national accounts manager, Imperx, Inc.



There's no need for a separate enclosure, and users can obtain the IP67-rated camera from a single supplier.

What is an IP Rating?

The International Electrotechnical Commission (IEC) developed the "Ingress Protection" standard to give a measurable way to define concepts such as "waterproof" or "dustproof." Two digits define the IP for a device.

The 1st digit, which relates to "Solid Ingress Protection," defines the level of protection the enclosure provides from contact with objects inside the enclosure and the ingress of solid foreign particles (dust) into the enclosure.

The second digit of IP relates to "Water Ingress Protection." It defines how well an enclosure prevents water from entering the enclosure. The range of water protection goes from 1, where there is protection against dripping water, up the scale to protection from water ingress at increasingly higher pressures. From water flowing down a grade and hitting the enclosure, to sprayed and splashed water, to protection from jet streams of water, finally "7" and "8" allows for completely immersing the enclosure or device in water.

Therefore, the IP67 rating for machine-vision cameras means the camera is protected from ingress of dust, and it can be submerged to depths up to 1m for up to 30 minutes without affecting camera use.

When using an integrated IP67 camera solution, it's a best practice to understand the type of cabling that will be used to maintain compliance, the enclosure options available to surround and protect the lens to accommodate

This integrated IP67 solution has protection built directly into the camera.



>> Download the White Paper

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varied sizing needs, and the way the lens enclosure can affect the resolution of the final image from the camera. You can learn about all this by downloading our white paper at <https://bit.ly/tj2020imperxwp>.

Industries and Applications

Some markets where use of an IP67 camera is ideal include oil and gas, transportation, automotive, aerospace, manufacturing, security, military and more — any place that isn't a pristine environment.

For example, the food and beverage industry has areas where there is extensive cleaning, such as regularly washing an area with disinfecting solutions, and some splash zones will exist. IP67 protection can also help automotive and other manufacturing industries such as machining and metal processing where gases, sparks, metal particles, dust, oil and solvents can be present.

The IP67 enclosure is dustproof, but it should not be used in environments where the camera needs to be explosion proof. That is entirely another spec and solution, and not part of the IP rating scale.

Evaluate Environmental Conditions

When choosing a camera, particularly for harsh environments, be sure your camera is protected and will survive in whatever conditions you may have. Consider what type of contaminants the camera will need to endure; choosing IP67-rated products will offer protection from dust and water ingress, temperature extremes or high shock or vibration without breaking the bank. □

Imperx Inc., based in Boca Raton, Florida, is a participating Encompass™ Product Partner in the Rockwell Automation PartnerNetwork™ program. Imperx designs and manufactures high-performance cameras, process video recorders and frame grabbers.