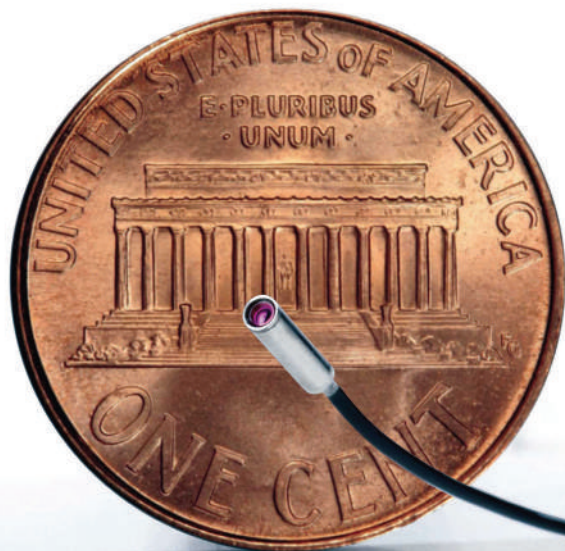


In space, smaller can be better



NASA will incorporate the micro ScoutCam 1.2 into its Visual Inspection Poseable Invertebrate Robot tool for use on the International Space Station.

Medigus

When NASA needed a tiny video camera for an experiment aboard the International Space Station, it turned to an unexpected source: the medical device industry.

The micro ScoutCam 1.2, which is thinner than a dime, was originally designed to allow doctors to peer inside the tight confines of a human stomach. Officials at Medigus, the Israeli company that built the device, said they never envisioned their product would play a role in space.

But Medigus packed plenty of picture power into a small package. A key innovation is that some calculations typically done inside a camera's sensor are instead done in a video processor, a separate device. This allowed "our engineers...to reduce the dimensions of the sensor and thus of the entire camera," says Yaron Silberman, the company's vice president of

sales and marketing. In addition, the camera's sensor is made in a semiconductor fabrication plant, where small products are the norm. Other components come from suppliers with expertise in miniaturization.

NASA approached Medigus after concluding that the color camera would be well-suited to probing the nooks and crannies of a mock satellite. The micro ScoutCam, which is 1.2 mm in diameter, is attached to a cable and can be rotated up to 90 degrees in four opposing directions. NASA says that while the camera's 0.05 megapixel resolution is not as fine as "today's commercially available digital cameras, which have resolutions on the order of 20 megapixels, this capability is perfect for close-range inspection jobs when the camera is only 1 to 2 inches away from its intended target." The tip of the cam-

era has five differently shaped glass lenses mounted on top of each other, turning "the narrow keyhole view of the camera to a broad 100 degrees field of view," Silberman says.

The micro ScoutCam is one of three cameras on NASA's Visual Inspection Poseable Invertebrate Robot, or VIPIR, delivered to the station earlier this year. VIPIR will inspect the mock satellite as part of a series of tests that could pave the way for NASA to robotically service a real satellite.

While Medigus retained the camera's basic design for VIPIR, it made some modifications to prepare the device for space. For example, it added tiny LED lights to the camera's exterior to ensure the camera's operators on the ground can see what they are doing.

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