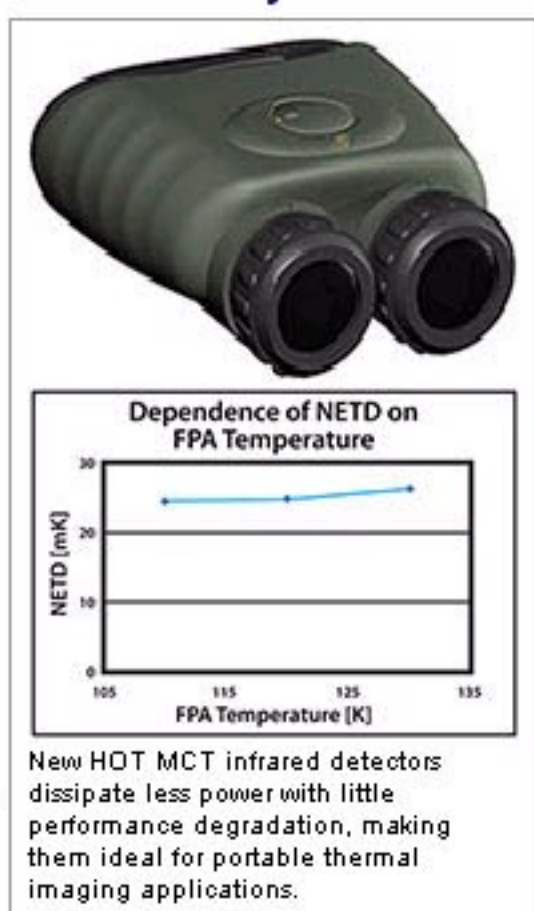




## HOT MCT Detectors Bring High Performance with Lower Power and Improved Reliability

Cooled IR detector technologies are known to deliver very high infrared imaging performance. Cryogenic cooling is required to minimize the electrical noise due to the detector dark current. Although evolutionary cooler refinements have made the systems quite reasonable, the cooling does have some disadvantages, such as increased cost, size, power dissipation, cool down time and decreased reliability. New MCT detectors are described that deliver excellent performance at high operating temperatures (HOT). As a result, many benefits are described, including decreased system costs, smaller size, lower power dissipation, faster cool down times and increased reliability.



 **Read more!**  
Download this white paper to read the entire article.

## Dual Band IR Detectors for the Next Generation

The fabrication of dual-band infrared detectors is reaching maturity at Sofradir after many years of research and technological improvement in cooperation with CEA-LETI. The semi-planar structure uses a proven standard process with robust reproducibility making it a natural choice for third generation detectors. Currently, 24 $\mu$ m-pixel pitch VGA arrays are available having median NETD around 18mK with operability over 99.5%. The new dual-band technology is ideal for large FPAs as well as for detectors used in dual active/passive operating modes in order to assure robust target engagement and improve detection probabilities.



5.5 $\mu$ m band      9.5 $\mu$ m band  
Dual-band infrared imaging detectors that deliver images in two infrared bands

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## Compact Dewar Designs Enable Large Format Infrared Detectors

Improvements in cooled FPA technology and dewar packaging including reductions in pixel pitch and optimizations in FPA encapsulation have resulted in increased compactness of infrared detectors and easier integration into infrared imaging systems. The latest example is JUPITER, a 15 $\mu$ m pixel pitch HD-TV format (1280x1024) integrated detector dewar cooler assembly (IDDC), which boasts impressive specifications for dewar compactness, low power consumption and reliability. Initially introduced in a large dewar with a large split Stirling cooler compressor, the new JUPITER is now available in a new compact dewar that has a maintenance-free vacuum over a typical 18-year mission profile and can be integrated with a variety of compact, high reliability Stirling coolers.

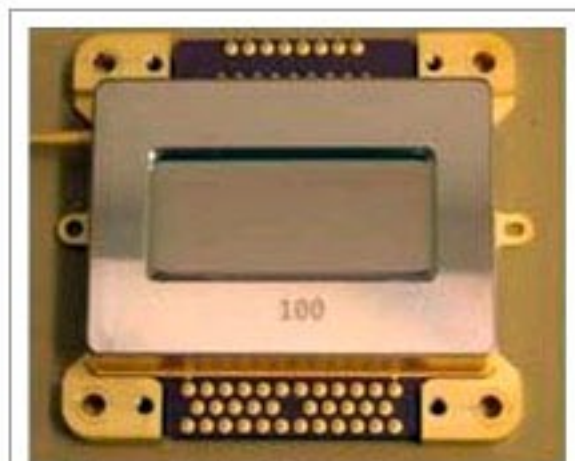


Sofradir's JUPITER realizes HD-TV performance in a small package

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## Latest Developments in Infrared Detectors for Space Applications

The use of infrared imaging systems in space has increased over the past few years. Infrared detectors are used in various applications including hyperspectral observation, earth observations for meteorological and scientific research and for science experiments. This paper reviews the latest development in infrared detector solutions at Sofradir in developing solutions based on 2nd and 3rd generation MCT detectors for space applications. Included is a description of high reliability infrared detector designs, hyperspectral solutions from visible up to VLWIR waveband as well as a review of performance and qualifications for current programs.



Space configuration of the Saturn SWIR detector (1000x256) compatible with passive cooling system

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## LWIR and VLWIR Infrared Cameras and Detectors



Infrared camera engines are now available based on LWIR and VLWIR QVGA as well as LWIR VGA cooled MCT infrared detectors. Because of their versatility, these engines are ideal for easy integration into a wide range of electro-optical systems delivering exceptional sensitivity and spectral performance. The engines harness the full performance of the Sofradir IDDCAs while offering unique flexibility to meet the needs of any application or OEM requirement. Full frame rate is and integration time are adjustable. In addition, the camera permits detector sub-windowing at higher frame rates. Camera communication occurs through a serial interface. 14-bit digital data can be streamed via LVDS or through optional Camera Link and/or Gigabit Ethernet. An IRIG time stamp capability is available as an option. A variety of software developer toolkits (SDKs) and command software modules are available for further flexibility.

**Learn more!** ▶





## Cooled Infrared Detectors for Any Spectral Band



Cooled MCT detectors are available for infrared imaging in a variety of spectral bands including short-wave SWIR (400nm-2.5 $\mu$ m or 800nm-2.5 $\mu$ m), mid-wave MWIR (3-5 $\mu$ m or 1.5-5 $\mu$ m), and long-wave LWIR (7.7-9.5 $\mu$ m or 7.7-11.5 $\mu$ m) models. Ideal for easy integration into a wide range of electro-optical systems, delivering exceptional sensitivity and resolution performance. Applications include: target signature, tracking and detection, ISR, high speed infrared imaging, hyperspectral imaging, remote sensing, and laser imaging. If you seek to develop a product or sub-system based on an infrared detector and require detector electronics to optimally drive the detector, [contact us](#).

**Learn more!** ▶

## Download These Other White Papers!

-  Cooled IR Detectors for Remote Sensing and Hyperspectral Imaging ▶
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