



Vacuum blackbodies



FOR CRYOGENIC OR AMBIENT

IRRADIATIVE ENVIRONMENT

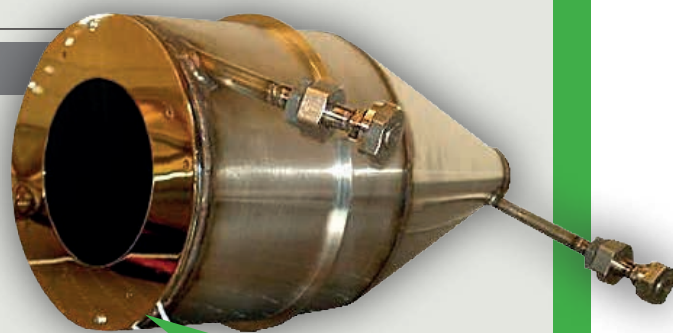
INTRODUCTION

Vacuum blackbodies combine performance of traditional infrared reference sources with specific features in order to operate in vacuum chamber, at cryogenic or ambient temperatures. They can emit over an ultra extended temperature range, set and controlled with high accuracy.

They consist of a vacuum compatible emissive head connected to a controller located out of the chamber. High stability of regulation is ensured by the optimized control of the losses through radiation and conduction.

High emissivity up to 0.999 is obtained thanks to a vacuum compatible coating on a specific surface structure of the blackbody. Temperature of the emissive surface is measured in real time via high precision calibrated Pt sensors.

Various principles of thermal exchanges are available to suit different applications such as characterisation and radiometric calibration of space borne imagers, non-uniformity correction of infrared sensors, etc...

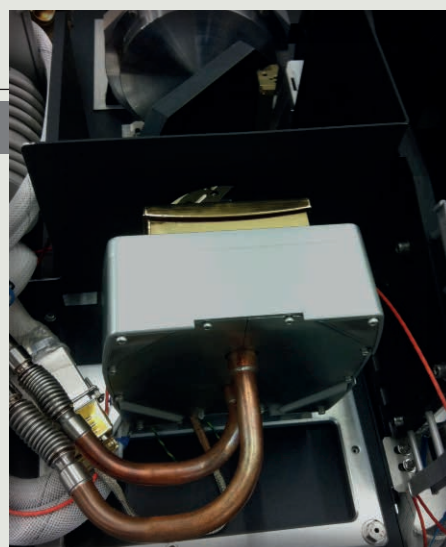


→ RCNV with 0.999 emissivity

→ test of a spatial instrument with DCN1000 V

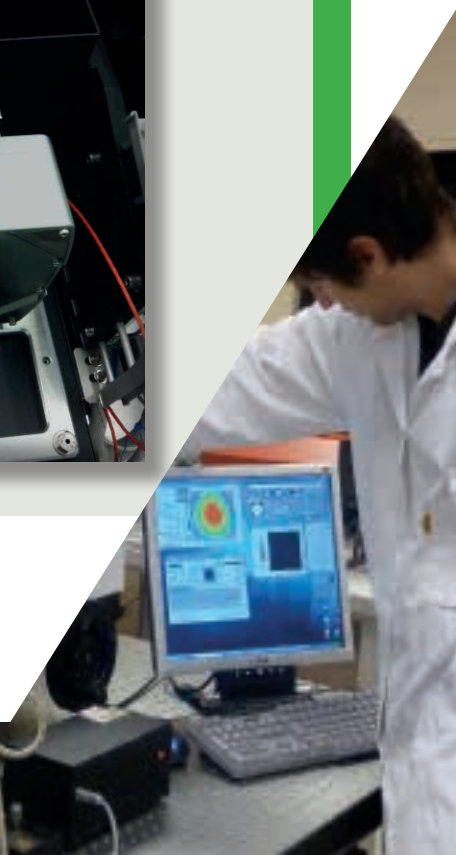
CONFIGURATION

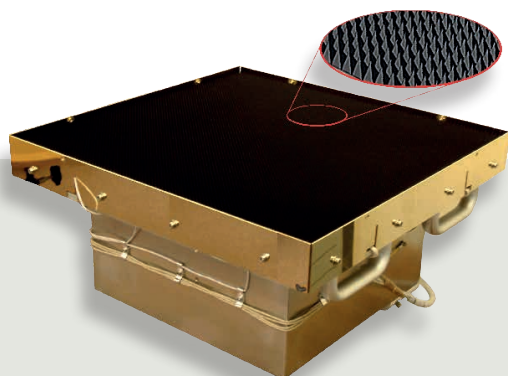
- Absolute temperature range from +100K to +425K
- Real time display of emissive area and set point temperature
- Integration in clean room conditions
- Use of vacuum compatible coatings and materials
- Fast response time and high stability
- High thermal uniformity and emissivity
- Guaranteed radiometric specifications
- Control through touchscreen
- Remote control via Ethernet interface,
- Radiometric calibration over 3-5 μm or 8-14 μm spectral bands.



OPTIONS

- LabVIEW Drivers for all communication interfaces





→ 500x500 mm² ECN100V blackbody head and emissive surface structure



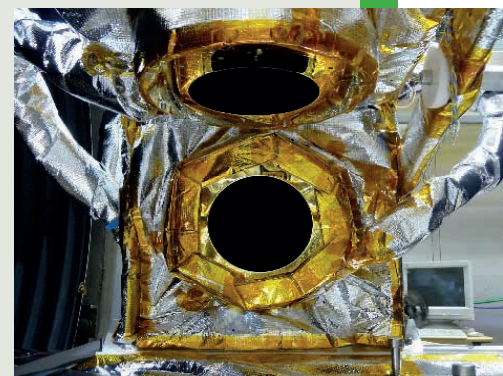
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→ Infrared validation test equipment



→ Characterization of space borne imager

TECHNICAL DATA



	DCN1000V	ECN100V	RCNV
Principle	TEC and circulating fluid cooling	Heater, cooling through cryogenic cold plate (optional)	Fluid circulation around cavity
Emissive surface	50 x 50, 75 x 75 and 100 x 100 mm ²	50 x 50 to 500 x 500 mm ²	Φ 100 mm
Absolute temperature range	235 K to 420 K	100 K to 420 K	100 K or 235K to 335 K
Emissivity	0.98 ± 0.02 (0.99 in option)	0.99 ± 0.01	>0.999
Stability	±0.02 °C	±0.02 °C	±0.05 °C
Temperature measurement accuracy	±0.01 °C		
Thermal uniformity at irradiative environment temperature ±5 °C	± 0.01°C		
Stabilisation time	<10 minutes for any ΔT	30 minutes for ΔT = 100K	<30 minutes for any ΔT
Display resolution	0.001 °C (surface temperature and set point)		0.001 °C (surface temperature) 0.01 °C (set point)
Operating temperature (head)	-20°C to 70°C	80K to 350K	-20°C to 70°C
Operating pressure (head)	10 ⁻⁶ to 1 bar		
Remote control	Ethernet interface		
Operating temperature (controller)	+5°C to +45°C		
Power supply	115/230 VAC, 1 ph., 50/60 Hz		

Above information is subject to changes without notice

