

# HAES<sup>15</sup>

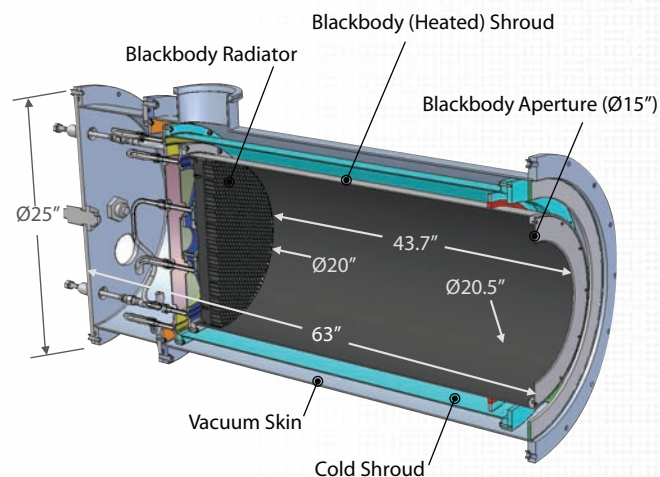
## HIGH ACCURACY EXTENDED SOURCE

HAES<sup>15</sup> is a large-aperture infrared source. It was built at SDL as part of the Geosynchronous Imaging Fourier Transform Spectrometer (GIFTS) program in 2006 and has subsequently been enhanced and used on several IR sensor calibration programs.

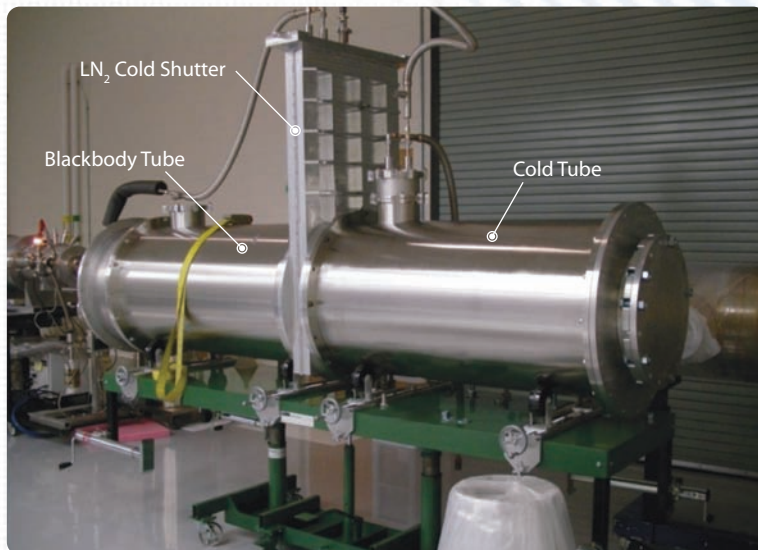
HAES<sup>15</sup> consists of the cavity-enhanced blackbody radiator at one end of the blackbody (heated) shroud and a 15" heated blackbody aperture on the other end. These components work together to reduce temperature gradients and increase effective emissivity of the blackbody radiator viewed by instruments under calibration.

NIST-traceable temperature sensors, together with surface property measurements and analysis, are used to determine radiometric performance and uncertainty. This approach is reinforced with direct radiometric comparison to the NIST-calibrated LWIRCS blackbody (SDL's secondary NIST radiance standard).

An optional LN<sub>2</sub> cold shutter and cold tube are available to allow the measurement of a cold (77K) scene.



Cutaway of HAES<sup>15</sup> blackbody



HAES<sup>15</sup> with optional cold shutter and cold tube installed

### SPECIFICATIONS

#### OPTICAL

CAVITY ENHANCED RADIATOR (DIAMETER) 20"

*The useful exit aperture diameter (up to 15") depends on application & configuration.*

NORMAL EMISSIVITY (1 TO 20 $\mu$ m) >0.996  
(20-25 $\mu$ m) >0.994

#### THERMAL CONTROL

NIST TRACEABLE PRTs 5

THERMISTOR 1

CONTROL TEMPERATURE RANGE 100 K - 350 K

TIME TO COOL & STABILIZE ~16 hrs

TIME TO HEAT & STABILIZE (NEAR ~200 K) ~2 hrs

#### MECHANICAL

COLD TUBE (OPTIONAL) 25" diameter x 54" long

BLACKBODY TUBE 25" diameter x 67" long

*An LN<sub>2</sub>-cooled shutter sits between the two tubes so view to the extended source can be closed.  
The overall length with cold shutter & cold tube is 128".*



**Space Dynamics**  
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