

# ESU

## Energy Storage Unit

Cryogenic instruments for both scientific and observation satellites have increasing demands in measurement accuracy. A low temperature station without any vibration or cryogenic liquids is now available.

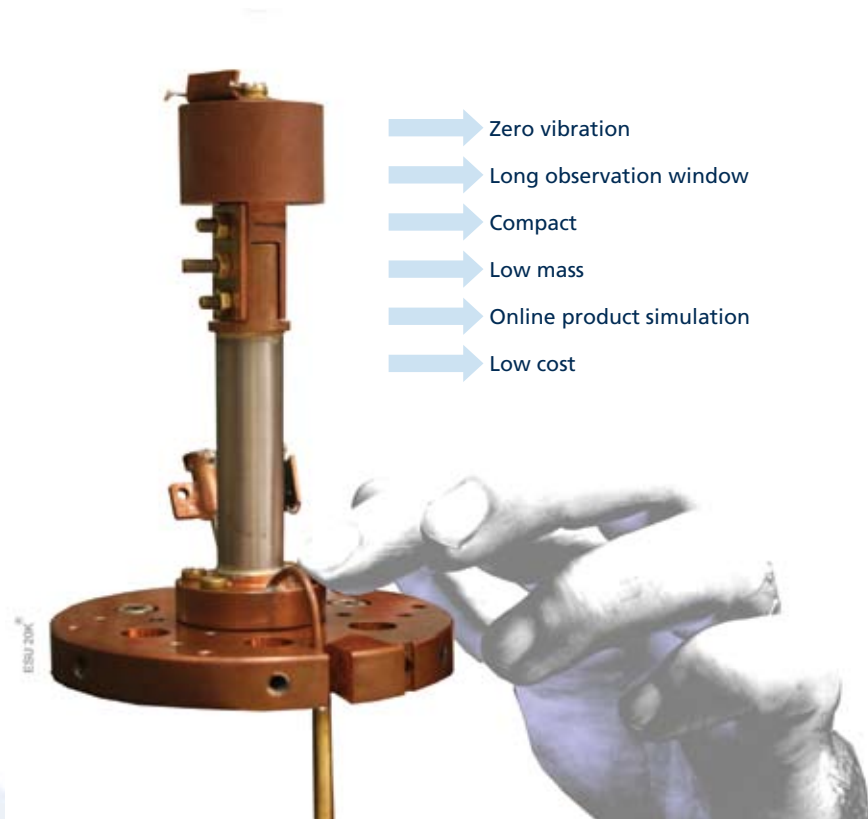
Active Space Technologies and FCT/ UNL introduce two ESU products:

- ESU 20K<sup>®</sup> provides up to 1 hour of zero-vibration below 20K with a heat load of 10 mW
- ESU 6K<sup>®</sup> provides up to 1 hour of zero-vibration below 6K with a heat load of 10 mW

The thermal switch depicted here was developed in collaboration with CEA/INAC/SBT Grenoble - France

The ESU provides an upgrade for your cryogenic application. The ESU is installed between your cryocooler cold finger and instrument. Once the ESU cools down, the cryocooler is stopped and the ESU provides a long zero-vibration observation window with a low mass penalty.

The ESU makes use of a thermal switch and the high enthalpy of some materials in a specific temperature range, decreasing the duty cycle of your cryopump while providing a vibration free environment during observation.



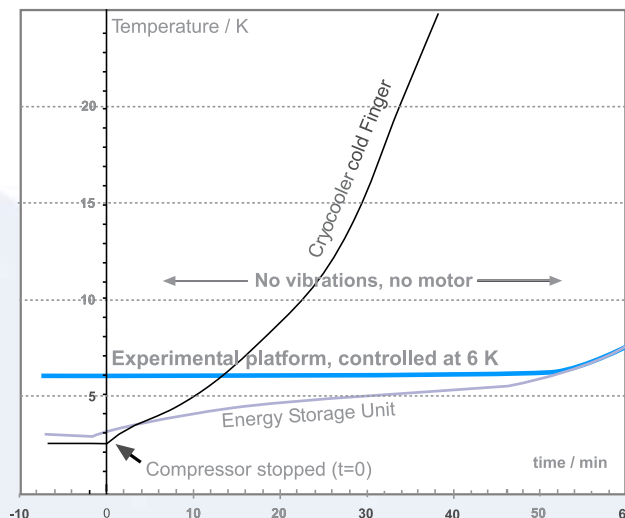
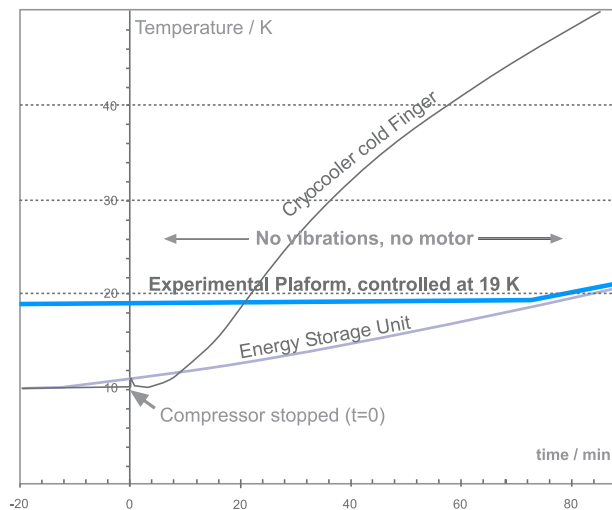
Model	ESU 20K <sup>®</sup>	ESU 6K <sup>®</sup>	ESU 100K <sup>®</sup>
Mass [g]	200	200	273
Volume [cc]	15	40	15
Starting temperature	< 11 K	< 3 K	63 K
Set point	1 hour < 20 K 10 mW input	1 hour < 6 K 10 mW input	1 hour < 100 K, 1 W input 10 hours < 100 K, 100 mW input

### ESU 20K<sup>®</sup>

ESU 20K<sup>®</sup> uses the high enthalpy of Lead to provide up to 1 hour of zero-vibration below 20K with a heat load of 10 mW.

### ESU 6K<sup>®</sup>

ESU 6K<sup>®</sup> uses the high enthalpy of GOS to provide up to 1 hour of zero-vibration below 6 K with a heat load of 10 mW.



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