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Preliminary Note on WREN-1 OWL

WREN-1 with **OWL** was launched 16 August 2024.

Catalog Number	60478
International ID	2024-149L

WREN-1 is the space-based remote sensing component of the Water Resources in Efficient Networks (WREN) and is operated by C3S of Hungary.

Structure and Systems C3S

Structure	6U cubesat, 20 x 10 x 34.05 cm
Solar Panels	Seven panels each with seven 40 x 80 mm solar cells.
EPS	
UHF COM	
UHF ANT	
OWL	Orbital Wherabout Location GPS unit

Payload

- a multi-spectral imaging system in the visible, near infrared and short-wave infrared bands. VIS imager, 40 mm lens? SWIR imager, 80mm aperture lens?

- a micro-vibration monitoring unit which plays an important role in the image quality and
- an orbital position measurement device, (OWL).

Telecommunications

UHF Transceiver	TM 401.750 MHz TC?	4800 Baud GMSK
OWL Beacon	TM 137.925 MHz	LoRa, CR:5, SF:10, BW: 125 kHz

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WREN-1 OWL packet received on 137.925 MHz at my location on 25 September 2024 UTC

```
00:36:29 Packet (88 bytes):
00:36:29
030000013bbe00811645a47674da8e1346578e78368dcdf80b0a5084ad15930bb301
b409432c313c57517ac1792eef674a50ce77ff74c4b161a61d792f364ba47822c2f7
2be2198522fdfa0299eedb1df6ae4c38b6574a53
```

WREN-1 OWL Beacon Format – 88-byte packet				
Parameter	Byte	LE Data	BE Value	
Fixed	1 - 4	03000001		OWL ID?
MET	5 - 7	3bbe00		Mission Elapsed Time in Seconds?
Fixed	8	81		Packet version?
Data	9 - 88	1645a476 74da8e13 46578e78 368dcdf8 0b0a5084 ad15930b b301b409 432c313c 57517ac1 792eef67 4a50ce77 ff74c4b1 61a61d79 2f364ba4 7822c2f7 2be21985 22fdfa02 99eedb1d f6ae4c38 b6574a53		80 bytes encrypted?

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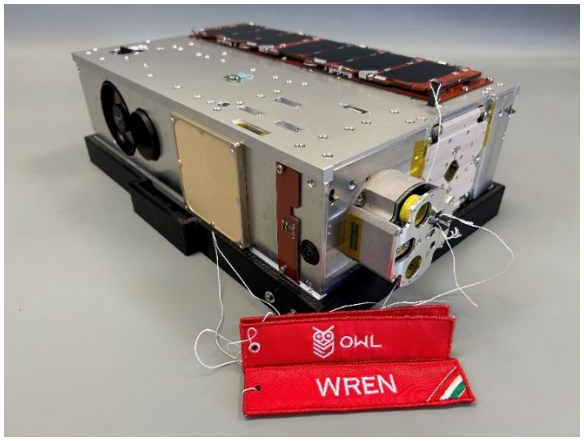
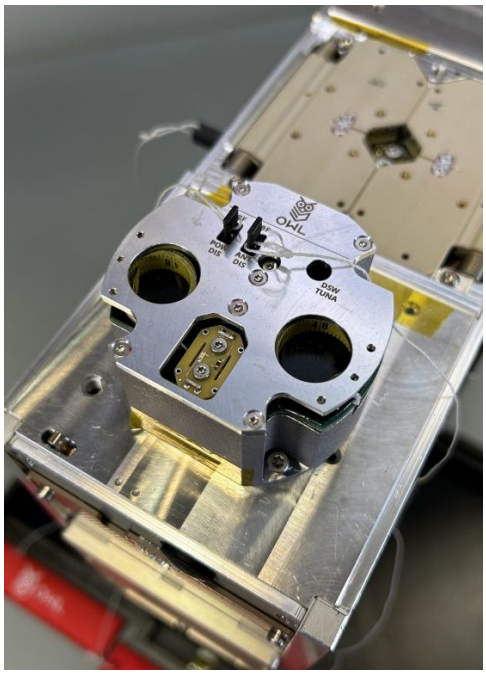
WREN-1 Photos

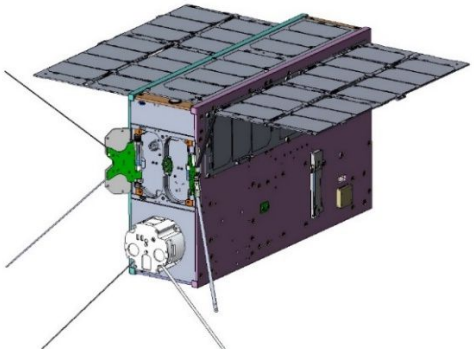


WREN-1 showing two optics openings, S-band antenna, OWL, stowed UHF antenna and solar panels



WREN-1 OWL

WREN-1 during construction



WREN 3D model with solar panels, UHF antenna and OWL VHF antenna deployed

2/10/2024

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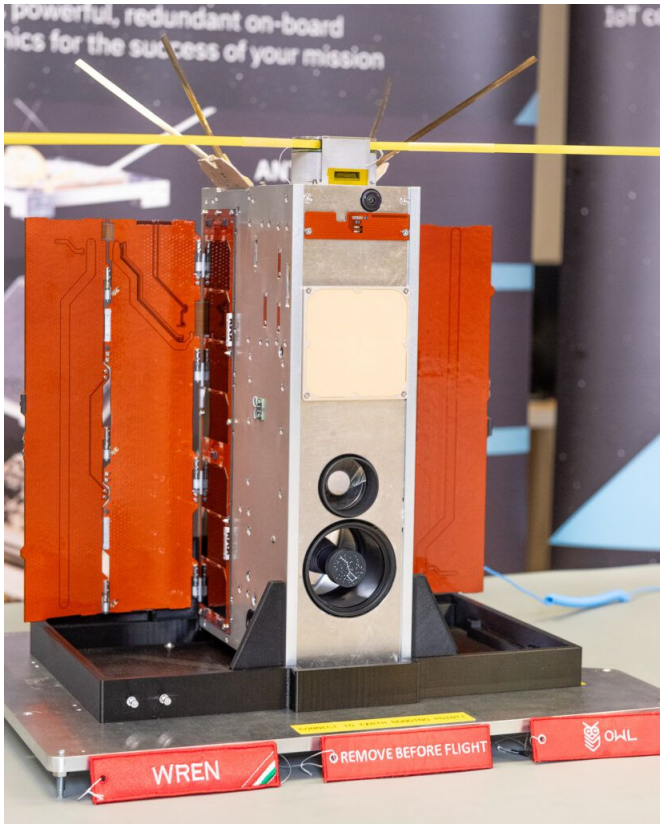
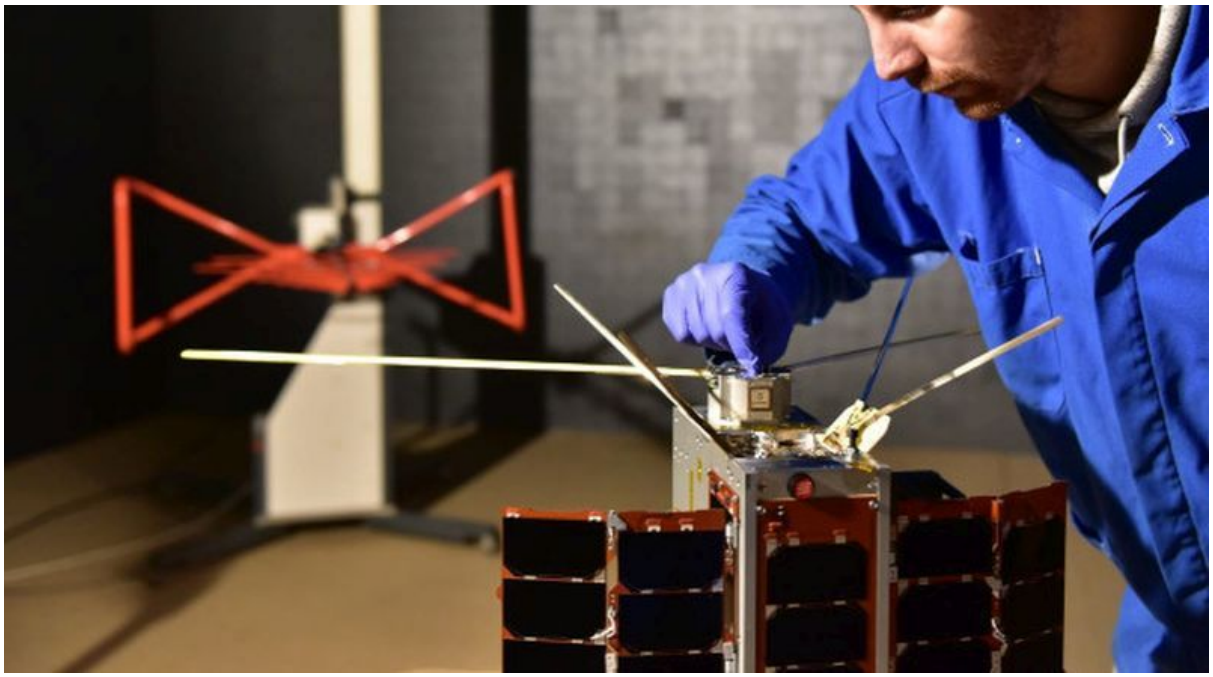


View of earth-facing side with large aperture SWIR imager and small aperture VIS imager



Partial view of WREN-1 with solar panels, front UHF and rear OWL VHF antennae deployed.