

# MTU (MOVABLE THERMOSTATING UNIT) OPERATION DURING LAUNCH CAMPAIGN OF KSLV-II

Bum Seok Oh,<sup>1</sup> Ju Yong Ko,<sup>2</sup> Jungseok Lee<sup>3</sup>, Choonghyo Jang,<sup>4</sup> Han Jang<sup>5</sup>

<sup>1,2,3</sup>Department Launcher Technology Development Office, KARI, Daejeon, Republic of Korea

<sup>4,5</sup>Enerbest Co., Ltd., Daejeon, Republic of Korea

[obs@kari.re.kr](mailto:obs@kari.re.kr), [www.kari.re.kr](http://www.kari.re.kr)

**Abstract:** KSLV-II (Korea Space Launch Vehicle) 2<sup>nd</sup> flight test was performed at June 2022. For the payload inside the fairing of launch vehicle, environmental conditions required from payload user should be fulfilled for successful mission. After the payload is encapsulated within the payload fairing, the payload environment is carefully controlled for temperature, relative humidity, and cleanliness with proper air flow rate. The KSLV-II launch vehicle is rolled-out from the assembly building and transported to the launch pad. During transportation, air-conditioning is supplied through a Movable Thermostating Unit (MTU) with electrical generator. The MTU consists of two refrigeration systems, a blower, a heater, a filter, and a control system. Air-conditioning is supplied to the payload by an umbilical cable after the encapsulated payload is arrived to the launch pad.

The air is supplied to the payload at a maximum flow rate of 2,500 kg/hr to 2.6-m fairing at assembly building and 1,000 kg/hr during transportation to launch pad. Air flow around the payload is circulated and discharged through vents in the aft end of the fairing. The flexible duct for supplying air to payload fairing is connected up and the air enters the payload compartment through the MTU connector. Environmentally controlled (ISO class 7) air can be provided by the MTU as shown in Figure 1. A long-term continuous operation (about 2 weeks) is performed in the summer conditions of the Korean Naro Space Center. The supplying air reached the required condition range even if in worst summer weather condition of high temperature and high humidity. The design scheme, specification and operation procedure during launch campaign of the MTU are presented. Temperature and relative humidity response of supplied air according to variation of atmosphere conditions are showed also.

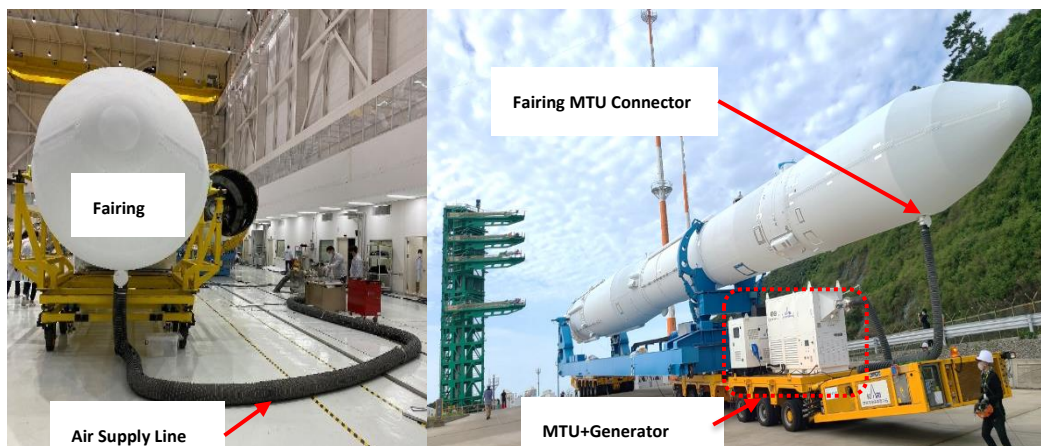


Fig. 1. MTU operation at assembly building and during transportation to launch pad