

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS (D2)
New missions enabled by Extra-large launchers (8)

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THE FIRST STAGE ROCKET UNITS OF ZENIT LV IS RELIABLE BASIS TO CREATE HEAVY
AND SUPERHEAVY LAUNCH VEHICLES

Abstract

The Yuzhnoye State Design Office proposed the optimal method to reduce cost and terms during development of the heavy and superheavy launch vehicles (LV) such as application of the Zenit first stage rocket units as the first stage of them. Such rocket unit was created during development of the Energia superheavy LV, the side booster (Unit) of which was developed on a basis of the Zenit stage at the Yuzhnoye SDO and the Energia NPO. The rocket unit has the high specific characteristics and the high reliability, since its technical decisions and structural components already are used for the space launches and have the lasting experience gained during two launches of the Energia LV and 71 launches of the Zenit LV having various modifications. If necessary, it is possible to re-use it many times and apply it as an integral part of LV for launch the manned spaceships. The versatility of the rocket unit A of the first stage allows to apply it for various options of the heavy and superheavy LV depending on the assigned task and capabilities of developers. As the potential partners there may be states planning the progress of the heavy (superheavy) LV. If necessary, it is possible to replace the engine RD-171M by four engines RD-810 developed in Ukraine. The Yuzhnoye SDO has experience in designing of family of heavy LV with the lifting capacity up to 55 t into the low Earth orbit (project 11K37), developed at the end of 80s of XX century. The application of the prospective heavy and superheavy LV is reasonable to launch the large GEO platform, the units of large-size orbital stations and the large components of the lunar or interplanetary manned systems or space solar power plants.