Paper ID: 57482
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IAF SPACE PROPULSION SYMPOSIUM (C4)
Liquid Propulsion (1) (1)

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PROSPECTS FOR USE OF UPGRADED RD-180 ENGINE IN RUSSIAN PROGRAMS FOR CREATION OF LAUNCH-VEHICLES OF NEW GENERATION

Abstract

Unprecedented and extremely important for Russian rocket engineering powerful oxygen-kerosene RD-180 rocket engine project of development and implementation on global market of space transportation was realized as a result of active scientific and technical, marketing and foreign economic activities of JSC "NPO Energomash" with support of government departments. Today, RD-180 engine is perceived as a unique high-tech product, example of combination of ultimate power characteristics, perfection of design and high reliability. High specific parameters along with structural simplicity and versatility ensure for this engine a significant competitive advantage in main oxygen-kerosene LRE class. On set of qualities this engine does not yet really operated analogues in world practice of rocket propulsion. That is why all newly developed rocket engine of this type in world compared to RD-180 engine. The experience, gained during development of RD-180 engine, currently allows NPO Energomash to create liquid rocket engine practically any dimensions with high specific parameters and operational characteristics in minimum time (no more than 3 years) with working on a small number of examples (from 3 up to 10 engines). Given flawless flight statistics engine - 88 consecutive successful launches of American "Atlas" family LV made at beginning of 2020 - Russian State Corporation for space activity "Roskosmos" made decision to use an improved version of this engine with RD180MV index in future programs of creation of space transportation of new generation: "Soyuz-6" LV, which is LV of middle class with capacity up to 9 tons in LEO, and "Yenisei" LV of superheavy class with capacity about 100 tons in LEO, which uses as third stage a first stage of "Soyuz-6" LV with RD180MV engine. Some design-technological decisions, allowing to provide 100