

SPACE PROPULSION SYMPOSIUM (C4)
Propulsion Technology (2) (5)

Author: Dr. Hui CHEN
Xi'an Aerospace Propulsion Institute, China

KEYNOTE: THE 1200KN-THRUST-CLASS LOX/KEROSENE ROCKET ENGINE FOR CHINA NEW
GENERATION LAUNCH VEHICLE**Abstract**

In China, the maximum thrust of former rocket engines in service is about 700 kN. The use of the 1200kN-thrust-class LOX/kerosene engine increases the single engine's thrust by 60%. The engine also achieves a huge leap in China's rocket power from using the conventional toxic propellants to non-toxic and pollution free propellants. LM-5, LM-6 and LM-7 in the next-generation launch vehicle family all use the 1200kN LOX/kerosene engines. To achieve high-pressure staged combustion, the LOX/kerosene engine has made breakthroughs in over 80 critical technologies, such as staged combustion cycle system, self start-up method, work condition regulation in large range, high-efficiency stable burning, cooling for high pressure thrust chamber, high performance reaction turbine, axial thrust balance device, low temperature bearing with high DN, mechanical end face seal with high PV, low temperature valve with large diameter, high precision regulator, thrust vector control method and etc. In addition, China developed nearly 50 new materials through the development of the engines. The LOX/kerosene engine fills the gap of the staged combustion cycle engine in China, which greatly improves the space access ability for the nation. To date, 15 1200kN-thrust-class LOX/kerosene engines have been flown on LM-6 launch mission from Taiyuan Satellite Launch Center, LM-7 and LM-5 launch missions from Hainan Space Satellite Launch Center, with 100% success.