
Shut-down and restart of solid propellant ramjet

© V.V. Zelentsov, I.E. Nikitina, A.A. Fedorov

Bauman Moscow State Technical University, Moscow, 105005, Russia

Process of shut-down and restart of solid propellant ramjet has been investigated. The article presents the results of mathematical modeling shut-down of ramjet gas generating system by changing the critical section of the gas generator and the creation of unsuitable burning conditions in the afterburner chamber. The ways of refining the model by examining the boundaries of sustainable fuel combustion at different combinations of pressure, temperature and coefficient of excess oxidant as well as the boundaries of steady operation of the air-intake device in the presence of a gas generator jet are outlined.

Keywords: ramjet, gas generating system, solid propellant, ramjet shut-down, ramjet restart.

REFERENCES

- [1] Sorokin V.A., Yanovskiy L.S., Kozlov V.A., Surikov E.V., et al. *Raketno-pryamotochnye dvigateli na tverdykh i pastoobraznykh toplivakh. Osnovy proektirovaniya i eksperimentalnoy otrabotki* [Solid and Paste-like Propellant Rocket-Ramjet Engines. Fundamentals of Design and Experimental Testing]. Moscow, Fizmatlit Publ., 2010, 320 p.
- [2] Bondaryuk M.M., Ilyashenko S.M. *Pryamotochnye vozdushno-reaktivnye dvigateli* [Ramjet Engines]. Moscow, Oborongiz Publ., 1958, 392 p.
- [3] Mazing G.Yu., Nikitina I.E. *Teoriya pryamotochnogo vozdushno-reaktivnogo dvigatelya* [The Theory of Ramjet Engine]. Moscow, BMSTU Publ., 2006, 68 p.

Zelentsov V.V. (b. 1937) graduated from Bauman Moscow Higher Technical School in 1961. Ph.D., advisor to the Rectorate at Bauman Moscow State Technical University. The author of more than 190 publications in the field of armaments, military equipment, thermodynamics and missile system design. e-mail: sm-dean@bmstu.ru.

Nikitina I.E. (b. 1945) graduated from Bauman Moscow Higher Technical School in 1968. Ph.D., assoc. professor of the Rocket and Pulse Systems Department at Bauman Moscow State Technical University. The author of more than 120 scientific publications in the field of gas dynamics and rocket engines. e-mail: nikitina2091@gmail.com

Fedorov A.A., assistant lecturer of the Rocket and Pulse Systems Department at Bauman Moscow State Technical University. e-mail: antoshkamgtu@mail.ru.
