SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS (D2)
Future Space Transportation Systems Technologies (5)

Author: Mr. François Bouquet
TNO Defence, Security & Safety , The Netherlands, francois.bouquet@tno.nl

Mr. bernd brauers
Aerospace Propulsion Products bv, The Netherlands, b.brauers@appbv.nl
Mr. Alfons Mayer
TNO Defence, Security & Safety , The Netherlands, alfons.mayer@tno.nl
Mr. Hans Snijders
Aerospace Propulsion Products bv, The Netherlands, h.snijders@appbv.nl

CATALYTIC BI-PROPELLANT IGNITION TECHNOLOGY DEVELOPMENT

Abstract

For the next generation high thrust engine Aerospace Propulsion Products (APP) and TNO Defence Security and Safety are developing technology for a high-power innovative restartable igniter working on 90% hydrogen peroxide and a liquid or gaseous fuel (ethanol, methane or hydrogen). This development has been done in steps: from a peroxide-only device to a full-scale bi-propellant catalytic igniter with methane that delivers a minimum of 500 kW of thermal power. The latest version of the igniter has an actively cooled tube that delivers a hot core flow and a cooling flow into the combustion chamber that will combust further outside of the igniter at a stoichiometric mixture ratio. The advantages of this system are the absence of electronics to start the igniter, which contribute a considerable part of the development costs and possible failure modes of electrically started igniters. The paper describes the functional design of the bi-propellant methane igniter and will present recent test results.