

Burning rubber – cheap, safe rocket fuel

Norway-based aerospace company Nammo plans to conduct the first test flight in 2016 of a hybrid rocket propulsion system aimed at powering a low-cost, next-generation orbital launch system

NORTH STAR LAUNCH VEHICLE

Payload: 10kg low-cost “nano” satellite to 350km-high polar low earth orbit

Corona: Single hybrid “unitary” rocket motor

Aurora: Four unitary rocket motors

Borealis: Cluster of seven rocket motors

Hybrid propulsion: Liquid oxidiser reacts with solid fuel

Liquid oxidiser: High-concentration solution of hydrogen peroxide – 85-98% – in water. Nonflammable and stable

Hydrogen
Oxygen
Solid fuel
Combustion channel

HTPB solid fuel: Synthetic rubber – hydroxyl-terminated polybutadiene – it cannot explode and is totally safe to handle

Carbon
Hydrogen

Hybrid rocket motor is environmentally friendly, producing carbon monoxide, carbon dioxide and water vapour

Hybrid rocket motor

Oxidiser tank