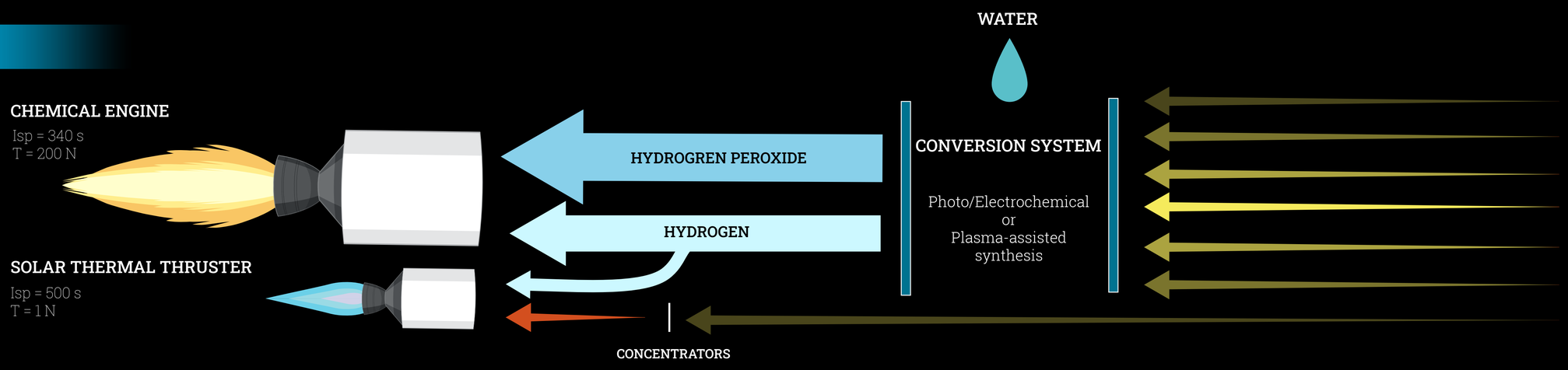
DEVELOPMENT OF A BIMODAL PROPULSION SYSTEM USING WATER AND SOLAR ENERGY

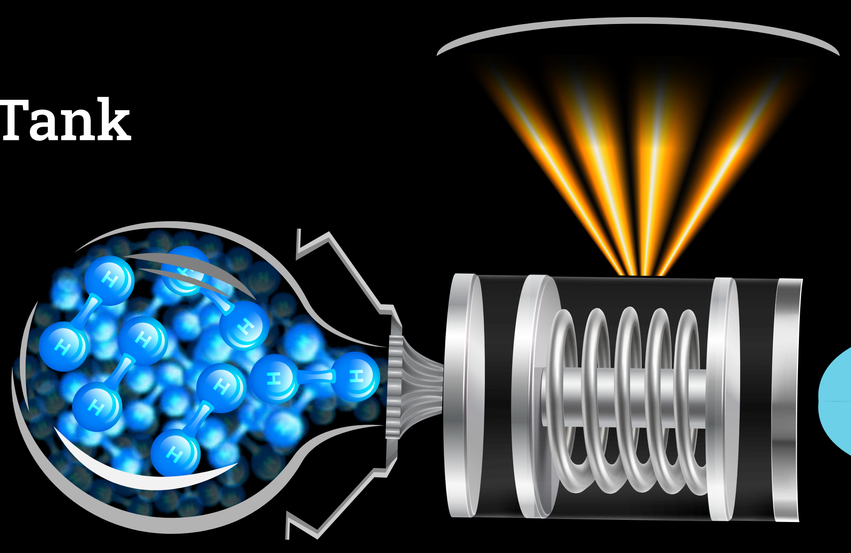
CONCEPT



TESTING

Hydrogen Inflatable Tank

This technological solution has not previously been proposed for space applications, particularly with gaseous hydrogen as the working fluid. The target testing conditions correspond to a Maximum Expected Operating Pressure (MEOP) of 50 bar

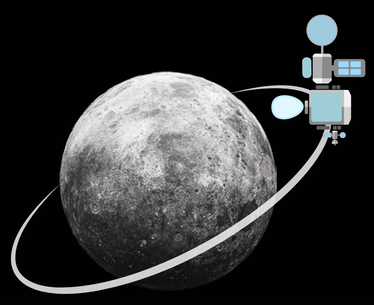


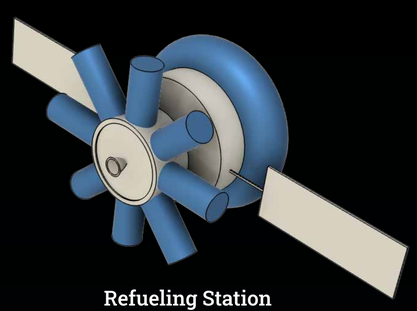
Solar Thermal Propulsion

In a Solar Thermal Propulsion (STP) system, the propellant is heated to temperatures of up to 3000 K using solar concentrators and then expanded through a Laval nozzle. This approach could be a game-changer for sustainable space applications

APPLICATIONS

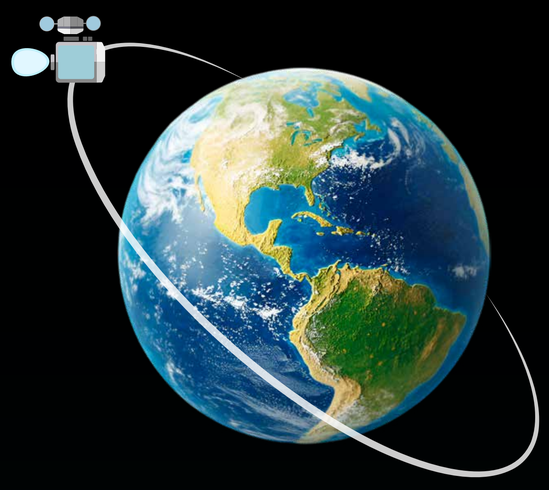
LUNAR APPLICATIONS

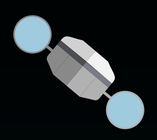




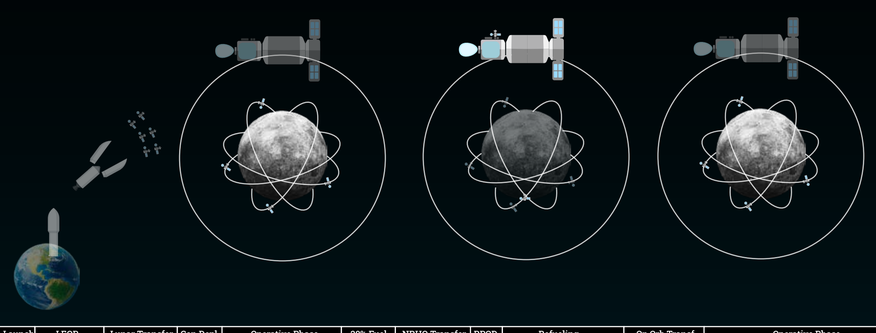
Refueling Station

LEO APPLICATIONS



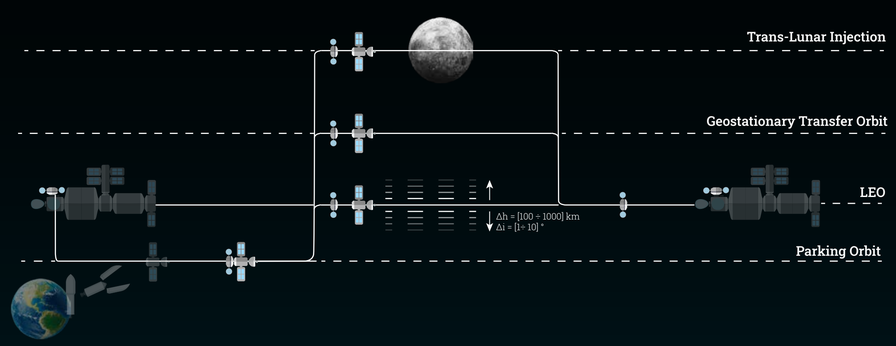


LUNAR COSTELLATION



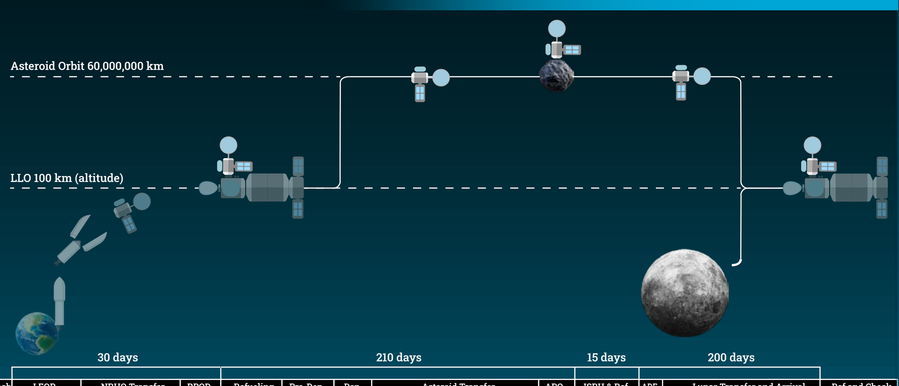
Pre-Launch	LEOP	Lunar Transfer	Con Depl	Operative Phase	20% Fuel	NRHO Transfer	RPOD	Refueling	Op Orb Transf	Operative Phase
Non-Recurrent Phases				Recurrent Phases						

KICK STAGE



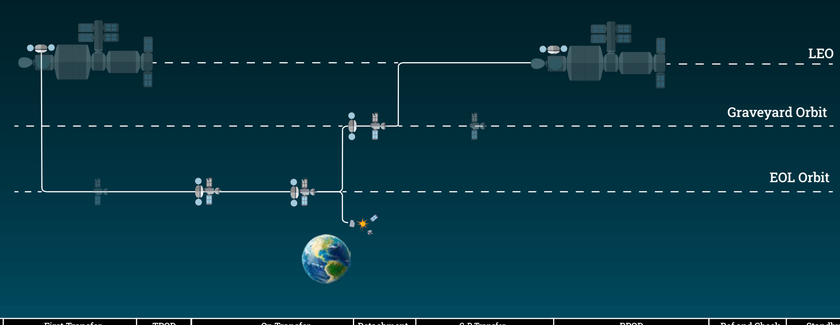
Pre-Dep	First Transfer	TPOD	Op Transfer	Detachment	C-B Transfer	RPOD	Ref and Check	Standby
KS Operations		Target Commissioning			KS Operations			

ASTEROID ISRU



	30 days			210 days					15 days		200 days	
Pre-Launch	LEOP	NRHO Transfer	RPOD	Refueling	Pre-Dep	Dep	Asteroid Transfer	APO	ISRU & Ref	ADE	Lunar Transfer and Arrival	Ref and Check
Non-Recurrent Phases				Recurrent Phases								

ACTIVE DEBRIS REMOVAL



Pre-Dep	First Transfer	TPOD	Op Transfer	Detachment	C-B Transfer	RPOD	Ref and Check	Standby
ADR Operations		Target Decommissioning			ADR Operations			

TU Delft

Green SWaP

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