OHB SWEDEN

SATELLITE SYSTEMS

Satellite propulsion systems

Electric propulsion

Electric Propulsion

Satellite Propulsion Systems

OHB Sweden is a leader in Electric Propulsion with knowledge of all major technologies and can provide tailored solution for all types of satellites. The current focus is to provide Hall Effect Thruster (HET) systems in a wide power and thrust range to institutional and commercial users. OHB Sweden's has experience in EP since three decades and operational use started 2003 when an EP system with a PPS-1350 HET thruster was launched on the ESA SMART-1 lunar mission breaking the EP firing duration record at the time by far.

OHB Sweden's skilled engineering team is covering all EP technology types and is capable of accompanying our customers from the early deign trade-offs, to the actual design, AIT up to IOC and operational support to the end-of-life of the satellite, no matter what the technology or size.

Epsylon

An inhouse designed, assembled and tested small EP system suitable for <300kg smallsats.

OHB Sweden Epsylon EP solution

Epsylon		
	Power supply	200W to 1kW
	Input voltage	reg/unreg. up to 75V
	Heat rejection	<50W
	Thrust	5 - 60mN
	Isp	1200s -1800s
	It	up to 1,6MNs on a single thruster
	Functionality	Gimbal-enabled
	I/F	RS-485/CAN
	Lead time (PFM)	<12 months
	Support to AIT	• harness/tubing routing • Integration • Xe leak test • Xe loading • High voltage electrical integrity

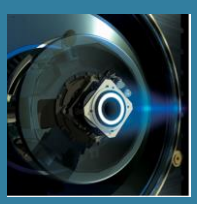
The modular design concept allows our EP systems to have multiple tanks and multiple thrusters configuration

Custom	
	> 1kW
	COTS HET/PPU
	Starting sequence limiting inrush
	Thermal control of pressure regulating system
	Robust FDIR embedding all lessons learnt

Options	
	Xenon loading
	Thruster simulator
	PPU emulator
	Pointing mechanisms
	Electronic pressure regulation

Experience	Small satellites	Interplanetary	Geostationary
Heritage Missions	GMS-T	SMART-1	SGEO AW36-1 Electra (planned) H2Sat (planned)

FEEP, courtesy Enpulsion



End to end firing tests

PPS HET, courtesy Safran

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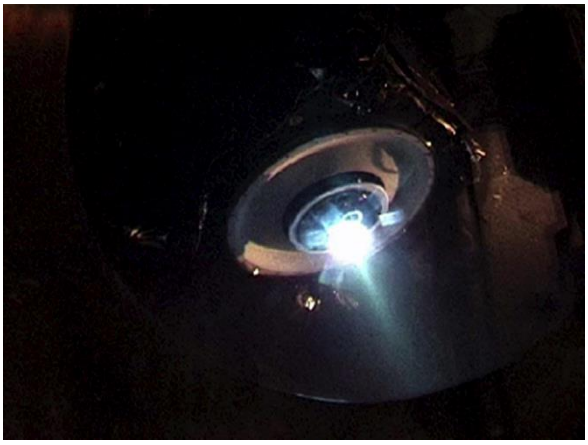


SMART-1 HET thruster during end to end test

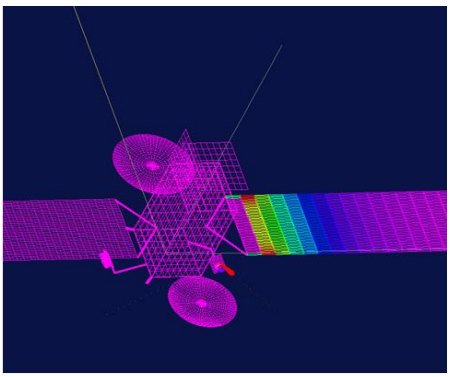
AIT philosophy

Our Assembly, Integration and Test team has adopted a low-cost, New-Space approach for several years now, we have optimized every step so that the verification is inherently part of the work sequence. We exercise a tight cleanliness control of gases used. We benefit from the In-house responsibility over the whole subsystem and the direct interface with all suppliers. Our architectures have elective redundancy based on In orbit experience and continuous consolidation of performance validation

Facilities

Close to Stockholm Arlanda Airport, OHB Sweden features a large variety of facilities used throughout the entire lifecycle of the subsystem. We can host the support structure to integrate the subsystem or we can transport it and integrate it at the customer premises. Our team can assist the system team during spacecraft test, conditioning for flight or commissioning in orbit.

OHB Sweden main cleanroom in Kista, just outside Stockholm



Simulation of plume interaction on GEO spacecraft

MODELLING

Because of the long mission duration and the complex nature of the physical Interactions (plasma plume on satellite surfaces, supercritical behavior of Xenon at high pressure) OHB Sweden has developed and validated with their partners a set of tools allowing to predict the effects over the mission life

Complete HET family - 3kW to 100W – courtesy S. Systems

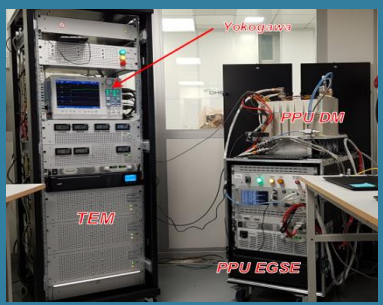
THOR

The Thruster Orientation Rudder is the assembly of 5kW HET on a deployable arm allowing the use of the thrusters in orbit raising and station keeping

THOR EQM entering thermal chamber

HET Simulator

The simulator simulate discharge voltages and currents at the PPU outputs in nominal or abnormal events in order to test the electric propulsion functional chain from end et end



HET simulator & PPU emulator in Fakel SPT-100 configuration

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About OHB Sweden AB

OHB Sweden AB specializes in high-tech solutions for satellite systems. Our core business areas are small satellites, AOCS and propulsion subsystems.

OHB Sweden AB is a subsidiary of OHB SE, one of the three leading space companies in Europe. At OHB SE around 3,000 specialists and system engineers work on key European space programs.

OHB Sweden is certified against ISO 9001:2015

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