

# iFACT-MP

Iodine Fed Advanced Cusp field Thruster for Mid-Power

Showcasing European leadership in iodine Electric Propulsion (EP)

## ABOUT iFACT-MP

The iFACT-MP project aims to develop a **competitive iodine-fed thruster** for the 3-5 kW range, by focusing on **key components** like the **Advanced Cusp Field Thruster (ACFT)**, the **fluid system** (including a heated iodine reservoir, an optical flow sensor and control for the thruster), the **neutralizer** and functionally equivalent **PPU breadboard**. The **goal** is to **scale up the ACFT and develop the necessary fluidic components to realize a functional iodine Electric Propulsion (EP) subsystem and enhance its maturity.**

## iFACT-MP KPI's

	State of the Art 3-5 kW EPS (Xe HET)	iFACT-MP EPS	
Subsystem Cost	100%	80%	80%
Subsystem Volume	100%	35%	35%
Subsystem Mass	12kg	<10kg	67%
Propellant Cost	5000 - 15000 €/kg	<100 €/kg	2%
Integration Cost	100%	80%	80%
Specific Impulse	1630 - 1860s	>1800s	125%
Propellant CO <sub>2</sub> e	685 t /MNs	<1 t /MNs	< 0.1%

## iFACT-MP OBJECTIVES

- Specification**  
 Conducting a thorough analysis of market and platform needs to determine the requirements for a compelling Electric Propulsion (EP) subsystem.
- Fluidics**  
 Establishing a complete chain comprising a heated tank, flow control mechanism, and piping for the iodine EP system.
- Thruster**  
 Scaling up the Advanced Cusp Field Thruster (ACFT) to the 3-5 kW power range to meet higher power class demands.
- Test Facility**  
 Creating an iodine-compatible vacuum chamber capable of enabling thorough characterization and endurance testing at the required power level.
- Cathode**  
 Innovating the development of an iodine-fed hollow cathode utilizing C12A7 emitters with enhanced performance characteristics.
- Diagnostics**  
 Pioneering the development of an optical sensor designed to measure iodine flow rate in-situ, enhancing precision and monitoring capabilities.

## iFACT-MP EXPECTED IMPACT

- Sustainability**  
 Drastic reduction in propellant carbon footprint
- Strategic**  
 Ensuring 100% non-dependence from other countries
- Excellence**  
 Expand leadership in iodine EP
- Economic**  
 Significant reduction in propellant & subsystem cost
- Performance**  
 Highly throttleable thruster with xenon-like performance

## iFACT-MP TEAM



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## CONNECT WITH iFACT-MP

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