

Development of a 200 W Class Hall Thruster for an Active Debris Removal System

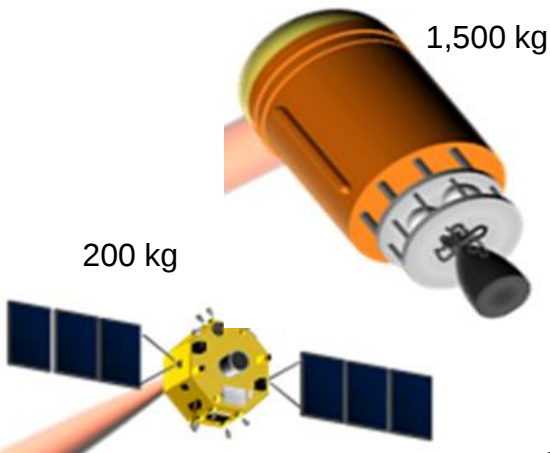
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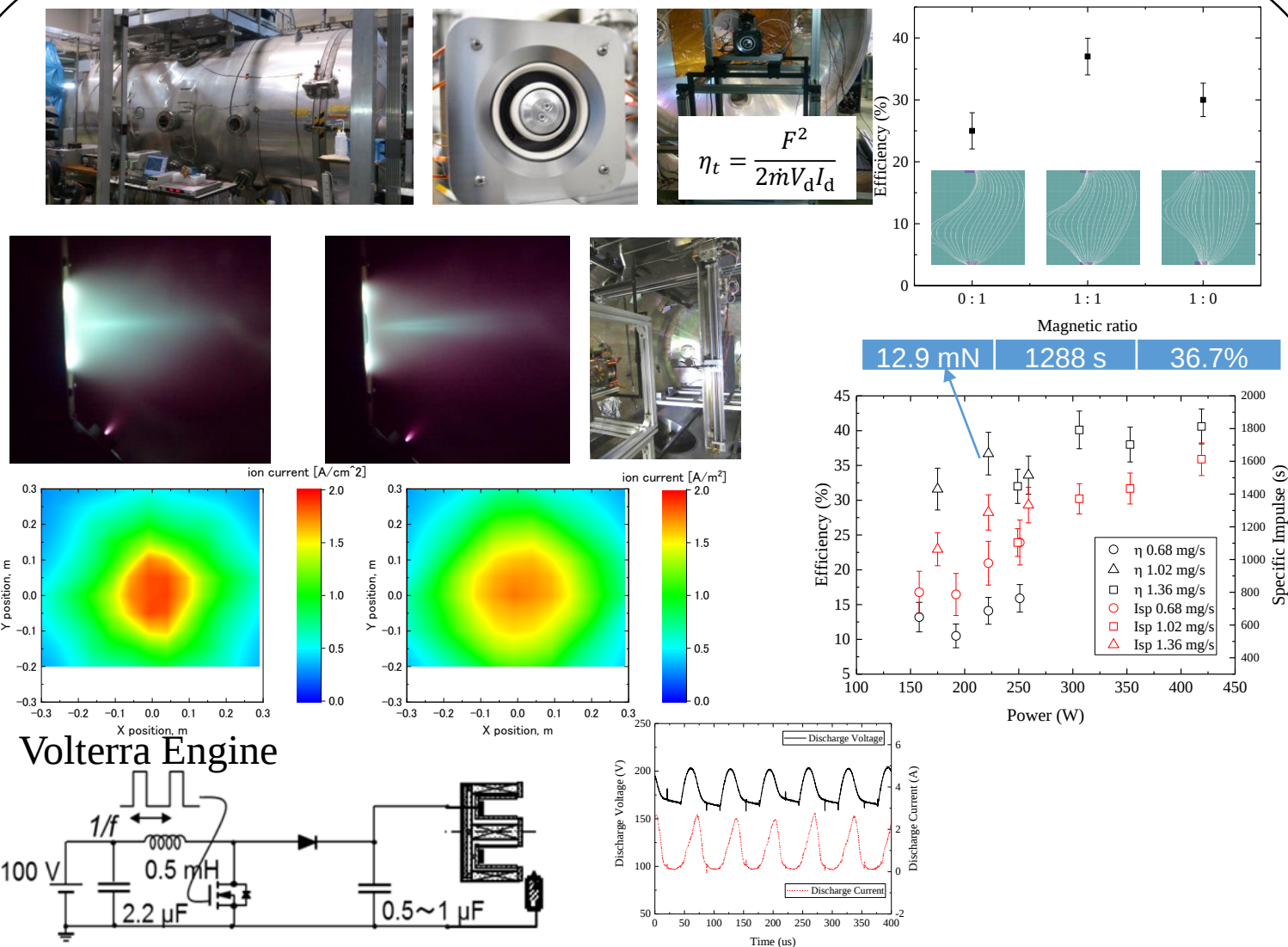
Active Debris Removal

ADR	Debris	Xenon mass	Xenon mass*
200 kg	1,500 kg	40 kg /120L	81 kg
status		ΔV	m/s
approach		165	
De-orbit		217	
De-orbit(non-contact)*		458	

* momentum transfer efficiency of 0.9
P:250 W, I_{sp} :1,000 sec, F : 13 mN ➡ Lifetime 8,500 hour

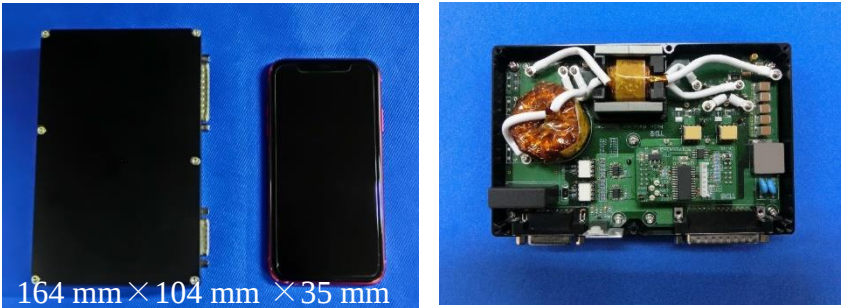


Hall thruster head



Frequenc v	Power consumption	Thrust	Efficiency	F/P
15 kHz	186 W	7.9 mN	16.2%	42.3mN/kW
20 kHz	151 W	7.0 mN	15.8%	46.1mN/kW
DC	163 W	7.0 mN	14.8%	43.1mN/kW

Power supply



Parameters	Value
Input voltage	100 V
Output voltage	300 V
Power consumption	300 W
Efficiency	>90%

- high frequency digital power supply
- switching frequency can be changed

