

BETSMA V2.0 SERVICE

Electrodynamic Tether Mission Analysis Software

Bare Electrodynamic Tether Mission Analysis Software (BETsMA v2.0) is a simulation software dedicated to the analysis of space missions with electrodynamic tethers (EDTs). It can simulate different types of EDTs and scenarios, like deorbiting, reboost, station-keeping and power generation. It includes a tool to makes optimal tether design and a comprehensive flight simulator equipped with several dynamic models of the EDT of different complexity to meet the needs of the analysis.

Its fast algorithms, modes of use (beginner, advanced and expert), and thorough set of outputs, including evolution of the orbital parameters, deorbit time, tether electrical values, and survival probability among others, make BETsMA a unique tool for a broad audience. With BETsMA, non-tether experts can easily explore the capabilities of EDT technology at a high level, while tether scientists can study advanced subjects related to new EDT concepts and dynamics and control.



SOFTWARE CAPABILITIES

BETsMA CAPABILITIES		
Mission objective and EDT operation mode	EDT in Passive Mode	Standard Deorbiting
		Constant Current Deorbiting
		Constant Power Deorbiting
		Power Harvesting
	EDT in Active Mode	Standard Reboost
		Constant Current Reboost
		Station Keeping
EDT Types	Bare Electrodynamic Tether (BET) Low-Work-Function Tether (LWT) Bare-Photovoltaic-Tether (BPT)	
Current collection models	OML/Beyond OML	
Tether dynamics models	Vertical, Spinning, N-Particles, N-Bar	

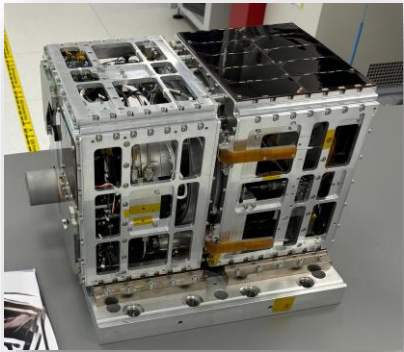
SERVICE

We offer a comprehensive analysis of EDT missions. Depending on the needs of the customer the analysis can include:

Optimal design of EDT systems for given mission scenarios	The service provides overall EDT system envelope and performance (mass & volume of the EDT system, deorbit & reboost times, harvested power, etc). The analysis take advantage of the strong EDT heritage of PERSEI thanks to the E.T.PACK-F and E.T.COMPACT projects.
Broad parametric analysis.	Taking advantage of the computational resources of PERSEI and efficient implementation of BETsMA, deep parametric analysis can be performed varying mission objectives, orbital parameters, EDT dimensions, etc.
Detailed mission analysis	Research groups can benefit from a detailed analysis of a given scenario to receive the complete output file of the simulation with the dynamic evolution of the EDT, thermal and electrical variables, orbital parameters, survivability probability etc. Different types of EDTs, control laws for the electrical current, and EDT dynamical model are available.

BENEFITS OF THE SERVICE

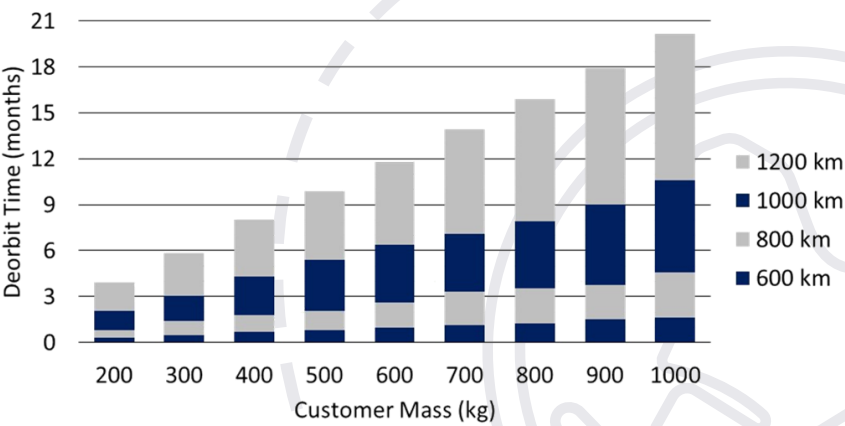
- **Analysis solidly based on real hardware experience.** PERSEI Space participates in the E.T.PACK-F project, which is developing a 12U autonomous EDT deorbit device, and will lead its in-orbit demonstration in Q2, 2026
- **Minimum effort from customers.** Just a few input data are needed to provide the service.
- **Integral service.** According to the customer needs, the service can include simulations, reports, and aid to prepare scientific publications.



E.T.PACK-F Deorbit Device
Engineering Qualification Model.

EXAMPLE OF BETsMA’s CAPABILITIES

SCENARIO
Deorbit
Orbit inclination: 50°
Tether length: 1.5 km



For customized information, please contact us at:

EMAIL: info@perseispace.com WEBSITE: www.perseispace.com