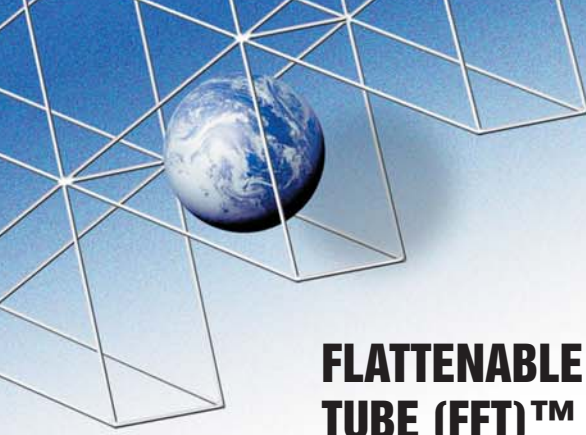


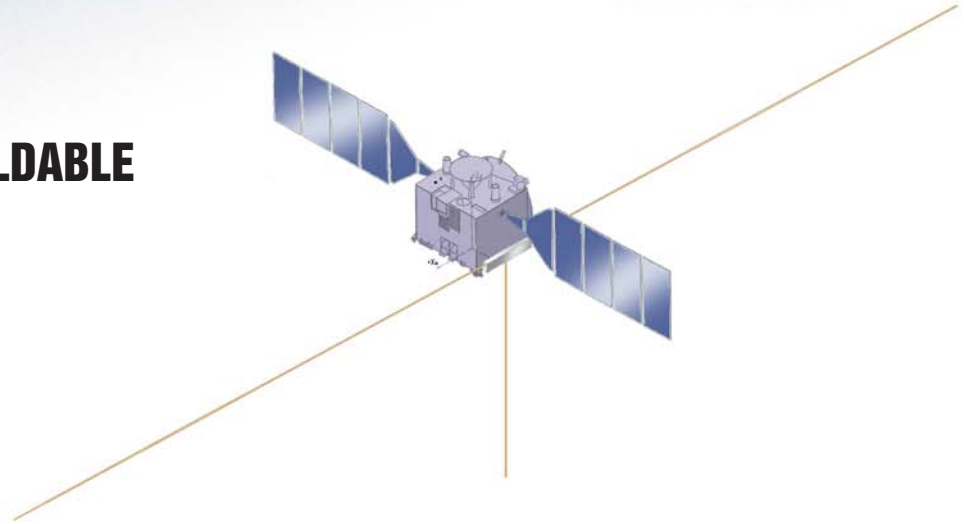
NORTHROP GRUMMAN

Space Technology

Astro Aerospace



FLATTENABLE FOLDABLE TUBE (FFT)™



FLATTENABLE FOLDABLE TUBE (FFT)[™]

Description:

FFT Boom Hinge (U.S. Patent No. 6,343, 442) is an elegant, simple, ultra-lightweight antenna structure that is revolutionary in its design. Ideal for making large antennas and arrays such as dipoles, monopoles, and Yagi antenna shapes that can fold up and stow in a small volume, yet deploy 20 meter and more. The novel hinges combine reliable hinging, opening force, and lockout features as an integral part of the tube.

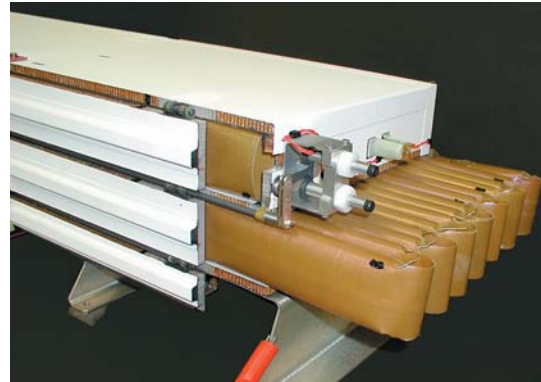
The first antenna developed using the FFT was for the Mars Express satellite. It is 40 meter tip-to-tip with a 7 meter monopole with a mass of 7.5 kg.

Features:

- Lightweight
- Low thermal bending
- Passive deployment
- Flight qualified
- Unlimited length

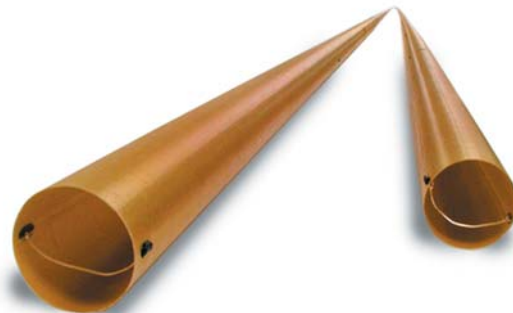
Uses:

- Lightweight instrument and payload booms
- Antennas
- Solar sail support structures



Stowed Antenna

Description	Specifications
Mass	16.5 lb (7.50 kg)
Stowed Dimensions	
Length	66 in (1.67 m)
Width	12 in (0.30 m)
Height	8 in (0.20 m) [0.199 m]
Deployed Dimensions	
Length	136 ft (41.41 m)
Width	284 in [23.7 ft] (7.22 m)
Height	8 in (0.20 m)
Deployed Frequency	0.08 Hz
Tube Diameter	1.5 in
Tube Stiffness	8.3×10^4 lb-in ²
Temperature Range	+60°C/-160°C



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