Meta Futura Aerospace

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• Multiple thrusters

THE SOLUTION

Achieving thrust vectoring with a complaint mechanism, where pointing is attained through elastic body deformation.

Advantages:

- Lower mass and volume
- Increased reliability due to fewer numbers of parts
- Increased precision and accuracy due to frictionless motion
- Easily scalable to fit to different satellite sizes
- Reduced costs



META FLEX

A novel attitude and orbit control system tailored for Smallsats



By actively moving two thrusters we unlock capabilities that traditionally required 8 thruster systems.





A single compliant gimbal mechanism can replace the standard 4-thruster setup often used for orbit transfers.

In addition, our technology can be implemented in other applications such as sensor pointing, center of gravity adjustments, station keeping, and numerous other space applications.

MARKET		POTENT	POTENTIAL CUSTOMERS		COMPETITORS		
							Issues:
UK SPACE SECTOR IN 2020/2021 SPACE MANUFACTURING	E17.5B £17.5B £2.15B £2.15B		Surrey Satellite		Other attitude control systems for Smallsats: Clyde Space	 Reaction wheels mechanisims Limited orientation control 	
ANNUAL					CubeSpace	• 5	 Sliding parts
GROWTH			l echnology Lta.	Similar design: Moog's Gimbal thruster		 For large spacecraft Sliding parts 	
TIMELINE					THE TE	AM	
Market Research January 2023	• Start of Design Work May 2023	<i>First prototype testing</i> September 2023	<i>First full system testing</i> June 2024	Fabrizio Pis	sani		Pedro Rodriguez
We talked to industry professionals and possible customers to gauge the interest in	Work has been started on the physics simulation software, which will allow us to accelerate the iteration	A simplified prototype of the compliant mechanism will be tested, to validate the physics simulation software.	Our full attitude control system will be tested in the Universities' satellite testing facility. Here we will be able to test both	Elena Car	ulla		Aleks Tammiksaar
our technology and understand their needs.	phase and give us accurate performance predictions.	Work will start on the actual first prototype.	software and hardware, to fully validate our system.	Marcin Badov	wski		Nestoras Papageorg