

SPACE 101 SME Engagement with ESA UK Space Conference 2017

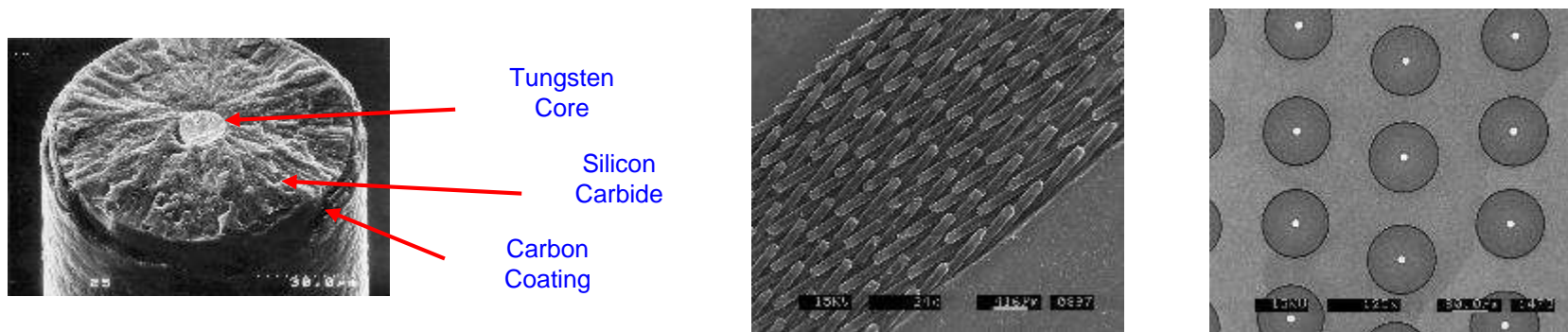


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Fibre Reinforced Metals

- **35% to 70% lighter metals**
- Aluminium stronger and stiffer than titanium
- Titanium Stronger and Stiffer than steel
- Development can be slow due to value of products
- Launch costs >£100M-1kg to Space = £20k to £50k
- Lighter products are needed **but** new technology has risk
- UKSA and ESA help mitigate the risk



Applications



1ltr 120Bar MEOPS xenon tank.
535Bar leak before burst failure
Design, make , test in 6 months.

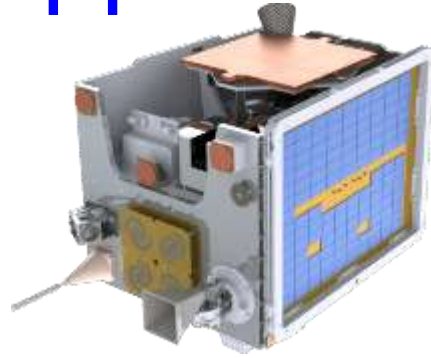
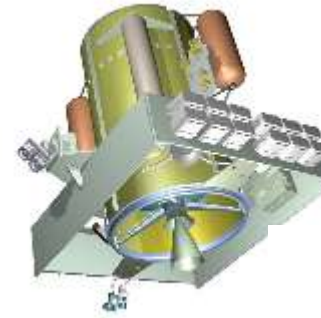


Image courtesy of Surrey Satellite
Technology Limited



ESA Alphasat image



Image courtesy of Reaction Engines Limited

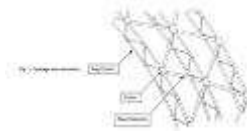


Figure 36 LARAD Robot Arm



- Initial Project vi Innovation Triangle Initiative
- SSTL support for a spherical Pressure vessel development.
- €50k ~12 months –
- 3 stages of funding are possible to mature technology- Must have increased user support at each stage.
- TISICS project showed good potential, but highlighted the need for more significant investment

TISICS Filament Wound Titanium Composites FWOT

- Significant budget of €2.5M agreed with two phases.
- Phase one –successfully completed March 2017
€1M
- Phase 2 from July 2017 for 18 months. €1.5M
- Programmes targeting commercial use
- TISICS partnered with Thinklaser – Specialist in Laser Systems
- UNIQUE technology for Europe
- ESA support European non-dependence and industrial advantage.

ESA

- Procurement process takes time-
- Good interaction with technical teams is essential..... But also programme team and UKSA.
- Lots of people in the approvals chain to convince
- All are very busy – so allow time but remind regularly.
- UK has euro payments so hedge on costs.
- ESA P payment- Complex- cross you fingers! Payments are on 30 days – very good.

Thank You Any Questions?

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