

FUTURE SPACE TRANSPORTATION FLPP SPRING SESSION 2026



ESA FIRST! STRUCTURES, MATERIALS AND PROCESSES

COMPANY INFORMATION

Company: Ariane Group

Consortium:

Ariane Group:
Project leader and end user



Herone:
*Supplier of thermoplastic composite
lines and joining components*

ACTIVITY

Project name: Thermoplastic Composite Joining Methods (TCJM) – E-Socket

Objective: Development of an eco-efficient, lightweight and reliable joining technology for thermoplastic composite tubes based on the E-Socket welding concept (electrical resistance welding).

Applications: Lightweight thermoplastic composite line systems and components for (cryogenic) fluid transportation.

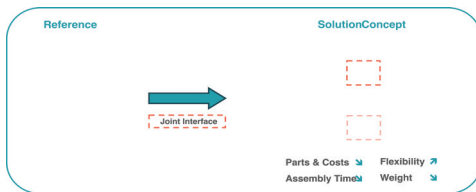


TECHNOLOGY AND INNOVATION

What we developed: A media-tight E-Socket welding concept for thermoplastic composite lines, enabling reliable connections without seals, adhesives or additional additives, while maintaining high structural integrity due to minimised CTE mismatch.

Unique features: Time & cost efficient and scalable welding technology offering:

- high design flexibility
- reduced system complexity (e.g. no additional welding tools)
- compatibility with multiple product configurations



KEY RESULTS

- Development of a unique high-performance E-Socket.
- Tube2Tube joining concept validation enabling significant weight and cost reduction.
- Proof of cryogenic temperature resistance and representative pressure loading (burst pressure testing).
- Evaluation of the environmental footprint, confirming the eco-efficiency potential of the solution.

NEXT STEPS AND MARKET READINESS

Roadmap: Proof-of-concept successfully performed. Next steps include further technology maturation, detailed design optimisation (incl. material) and upscaling activities.

Opportunities: New partnerships & further application deployment

Target Launch: 2028

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