

NEWSPACE MARKET · SECTOR CATALOGUE

Thermal Control

Every unit we list in this sector — specifications, manufacturers and where to ask for a quote. Compiled from the live NewSpace Market catalogue.

76

PRODUCTS

24

MANUFACTURERS

9

COUNTRIES

20

WITH DATASHEETS

newspacemarket.com/catalogues/thermal-control/

as of 17 August 2026

What is inside

This catalogue lists **76 thermal control products** offered by **24 manufacturers** across **9 countries**. Of those, 20 carry a manufacturer datasheet and 0 publish a price; the rest are quoted on request — normal in this market, where configuration drives cost.

Entries are grouped alphabetically by manufacturer. Every product links back to its page on newspacemarket.com, where you will find the full specification, the datasheet and a quote form that reaches the manufacturer directly.

Compiled 17 August 2026 from the live catalogue. Specifications are as published by the manufacturers; we normalise units but do not re-measure. Where a figure looked implausible it was left out rather than guessed.

Manufacturers by country

United States 11	Spain 4	Russia 2	France 1	Latvia 1	Belgium 1	United Kingdom 1
Switzerland 1	Netherlands 1					

All products at a glance

PRODUCT	MANUFACTURER	COUNTRY	KEY SPECIFICATION	PRICE
4C-PURE™ Cabled Copper Thermal Straps	Thermal Space Ltd.	United States	Material: OFHC Copper (C101, C10100), 99.99% purity	on request
Absolute Pressure Sensor Vt 220	Glavkosmos	Russia	Range of measurements, Mpa: 0-0,125; 0-0,250; 0-0,500	on request
Acusil® Thermal Protection System (TPS)	Peraton Space	United States	Acusil® II ablation resistance: zero ablation in heat fluxes up to 100 W/cm2	on request
Aerospace Tape (Spacecraft Thermal Control Tape)	DUNMORE	United States	Variants: Second Surface Aluminized Kapton Tape, Stamet Coated Black Kapton...	on request
Aerospace Thermal Control Materials	Sheldahl (Multek Flexible Circuits)	United States	Heritage: Space thermal control material heritage since 1958	on request
Altom10 Series — LHP Evaporator Modules for Microelectronics	Allatherm	Latvia	Materials: Copper (Cu) and Stainless Steel (SS)	on request
Altom14 Series — LHP Evaporator Modules for Power Electronics	Allatherm	Latvia	Material: Stainless Steel (SS)	on request
Arterial Heat Pipes	Glavkosmos	Russia	Purpose: Thermal control of spacecraft equipment.	on request
Axial Grooved Heat Pipes	Glavkosmos	Russia	Purpose: Thermal control of spacecraft equipment	on request
Axial, Arterial, Contour Heat Pipes, Radiator Heat Pipe	Glavkosmos	Russia	Purpose: Design and manufacture of products for providing thermal regime wi...	on request
Conductive Glass Fabric High-Temperature Vacuum Insulation	RUAG Space	Switzerland	Maximum temperature: Up to 550 degrees C	on request
Constant Conductance Heat Pipes (CCHPs)	ACT (Advanced Cooling Technologies)	United States	Space Flight Hours Heritage: 118,664,340+ hours	on request
Contour Heat Pipes	Glavkosmos	Russia	Purpose: Thermal control of spacecraft equipment.	on request
Control unit of the thermal regime support system	SPUTNIX	Russia	Dimensions: 200 x 130 x 30 mm	on request
COOLCAT Cryogenic Superinsulation	RUAG Space	Switzerland	COOLCAT 2 NW: 10 layers double-sided aluminized perforated polyester foil i...	on request
Copper Cable Thermal Straps (CuTS)	Technology Applications Inc (TAI)	United States	Material: 99.99 - 99.998% pure OFHC copper (Cu-101)	on request
Cryocooler Series Thermal Straps (CS-CuTS)	Technology Applications Inc (TAI)	United States	Material: 99.99 - 99.998% pure OFHC copper (Cu-101)	on request
Cryocoolers	Northrop Grumman Space Systems	United States	On-orbit operation: More than 300 combined years	on request

PRODUCT	MANUFACTURER	COUNTRY	KEY SPECIFICATION	PRICE
Custom Cold Plates	Thermal Space Ltd.	United States	Materials: Copper, aluminum, AlSiC, graphite	on request
Deployable Radiators for Satellites	Arquimea	Spain	Architecture: Multi-Loop Heat Pipes (LHP) with embedded condenser lines	on request
DUN-COOL Thermal Management Film	DUNMORE	United States	Function: Radiator or optical solar reflector (OSR)	on request
DUN-DIFFUSE White Kapton Polyimide Film	DUNMORE	United States	Base film: 100 Ga (25 micron)	on request
Electric Heaters	Glavkosmos	Russia	Purpose: Designed to provide thermal conditions for spacecraft onboard equi...	on request
Electric Heaters for Manned Spacecraft	Glavkosmos	Russia	Year of release: 2015	on request
Flexible Thermal Protection for Launchers	RUAG Space	Switzerland	Maximum temperature: Up to 1500 degrees C	on request
Flexible Thermal Straps	Lidax	Spain	Materials: High Thermal Conductivity Materials (Copper, Pyrolytic Graphite)	on request
Gas Thermal Compressor	Allatherm	Latvia	Gases handled: Krypton, Xenon, Hydrogen, hydrocarbons	on request
Graphite Fiber Thermal Straps (GFTS)	Technology Applications Inc (TAI)	United States	Fiber material: GraFlex I / II carbon-fiber bundles; GraFlex III woven grap...	on request
Heat Pipes (HP)	Calyos	Belgium	Technology: Latent heat of vaporization, wick return	on request
Heat Pipes for Space Applications (Axial, Arterial, Diode)	Arquimea	Spain	Heat pipe types: Axial grooved, arterial, diode	on request
High Performance Radiator technology (HiPeR) Flexlinks	Airbus Defence and Space	France	Conductance-to-mass ratio: three to five times higher than traditional solu...	on request
High-Temperature Heat Pipes	ACT (Advanced Cooling Technologies)	United States	Potassium Operating Range: 400–1,000°C	on request
HiK Plates / Heat Pipe Assemblies	ACT (Advanced Cooling Technologies)	United States	Operating Temperature Range: 20–150°C	on request
Honeycomb Radiator Panels	ACT (Advanced Cooling Technologies)	United States	Core Material: Aluminum honeycomb sandwich	on request
IberEspacio Satellite Thermal Control Hardware	Arquimea (formerly IberEspacio)	Spain	Heat transfer capacity (LHP): Up to 1 kW standard; >1.2 kW multi-evaporator	on request
k-Core Encapsulated Graphite Thermal Solutions	Boyd Corporation	United States	Effective thermal conductivity (k-Core assembly): up to 1000 W/m·K	on request
LCS Small-Scale Solution (SSS)	LiquidCool Solutions	United States	Rack size: 24U	on request

PRODUCT	MANUFACTURER	COUNTRY	KEY SPECIFICATION	PRICE
LCS ZPServer	LiquidCool Solutions	United States	Form factor: 2U, standard 19" EIA rack	on request
Loop Heat Pipes (LHP)	Calyos	Belgium	Power vs. water-based cooling: Up to 100% less	on request
Loop Heat Pipes (LHPs)	ACT (Advanced Cooling Technologies)	United States	Ammonia Operating Range: -40°C to 70°C	on request
Loop Heat Pipes for Space Applications	Arquimea	Spain	Heat transfer power: Up to 1 kW	on request
Low Temperature Heat Pipes	Glavkosmos	Russia	Purpose: Aggregate of systems for ensuring the thermal regime of the spacec...	on request
LPT 9310 HP COTS+	Thales Cryogenics	Netherlands	Cooling Capacity: 5.7 W	on request
LPT 9510 COTS+	Thales Cryogenics	Netherlands	Cooling capacity: 1.4 W at 80 K	on request
LPT6510 Pulse-tube Cryocooler	Thales Cryogenics	Netherlands	Max input: 60 W (AC); higher-power versions on request	on request
MAP SPACE COATINGS (Company Profile)	MAP (Aerospace Coatings)	–	Color: White	on request
MAP SPACE COATINGS Thermal Finishing Services	MAP (Aerospace Coatings)	–	Coating type: Water-based, silver-loaded polyurethane	on request
Micro Channel Heat Pipes (MCHP)	Calyos	Belgium	Design: Flat aluminium, customizable length and bends	on request
MLI Blankets	DHV Technology	Spain	–	on request
OHP Radiators	Thermavant	United States	Simple radiator example thermal performance (OHP): 2 °C rise per 150 W	on request
Phase Change Material (PCM) Heat Sinks	ACT (Advanced Cooling Technologies)	United States	Thermal Storage Advantage: 1–2 orders of magnitude higher than sensible ene...	on request
PSG Thermal Links (Pyrolytic Graphite Flexible Thermal Straps)	Lidax	Spain	Material: Pyrolytic Graphite Sheet (PGS)	on request
Pulsating Heat Pipes (PHP)	Calyos	Belgium	PHP Spreader dissipation: 800W	on request
Pulsating Heat Pipes (PHPs)	ACT (Advanced Cooling Technologies)	United States	Wick Structure: None (wickless)	on request
PyroFlex PGS & Graphene Thermal Straps (X-Series)	Technology Applications Inc (TAI)	United States	Material: Pyrolytic Graphite Film/Sheet (PGF/PGS), optional Graphene Layer...	on request
Radiation Refrigerator	Glavkosmos	Russia	Year of release: 2003	on request
Satellite Multi-Layer Insulation (MLI)	RUAG Space	Switzerland	Temperature range: 1 K to 1800 K	on request
Satkit MLI Satellite Kit	DUNMORE	United States	Kit contents: Outer layer material roll, inner layer material roll, polyimi...	on request

PRODUCT	MANUFACTURER	COUNTRY	KEY SPECIFICATION	PRICE
Screen-Vacuum Thermal Insulation of Orbital Spacecraft	Glavkosmos	Russia	Flight qualification of the product: Yes	on request
Space Copper-Water Heat Pipes (SCWHPs)	ACT (Advanced Cooling Technologies)	United States	Heat Flux Capability: Up to 50 W/cm ²	on request
Space Liquid Cooling Systems	ACT (Advanced Cooling Technologies)	United States	Cooling Type: Single-phase liquid (pumped fluid loop)	on request
Spacecraft Thermal Management Systems	Boyd Corporation	United States	Products: Heat pipes (CCHP/VCHP), vapor chambers, thermal straps, thermal i...	on request
SX-SBOX Thermal Control (Microsatellite)	SPUTNIX	Russia	Thermal control unit SX-SBOX-THERMU-01: 200 × 130 × 30 mm, 600 g, ≤5 W (hea...	on request
Temperature-controlled Honeycomb Panel	Glavkosmos	Russia	Flight qualification of the product: Yes	on request
Thermal and Structural Subassemblies for Space	Arquimea	Spain	Subsystem types: Laser terminal thermal systems, spacecraft modular thermal...	on request
Thermal Blankets for Space Applications (MLI)	Arquimea	Spain	MLI types: Standard plastic MLI, sewn fabric coated MLI, external MLI, inte...	on request
Thermal Control Unit	CAVU Aerospace	United Kingdom	–	on request
Thermal LyNX®	Thermal Space Ltd.	United States	Thermal conductivity-to-mass ratio: ~2x better than other thermal strap types	on request
Thermal-Protection Materials for Spacecraft	Glavkosmos	Russia	Purpose: Provision of normal thermal conditions on passing the dense atmosp...	on request
Thermally Conductive Vibration Isolation System (TCVIS)	Technology Applications Inc (TAI)	United States	Function: Combined thermal transport (via GFTS graphite fiber strap) and 6-...	on request
Thermo-Modulating Heat Pipes (TMHPs)	ACT (Advanced Cooling Technologies)	United States	Working Fluid / Envelope: Aluminum-ammonia	on request
Thermo-Structural Radiator Panels for Space	Arquimea	Spain	Panel materials: Aluminum skins + aluminum honeycomb core	on request
Thin Metal Foil Thermal Straps (TMF Series™)	Thermal Space Ltd.	United States	Copper Type/Purity: Electrical Tough Pitch (ETP), C110/99.9%	on request
Vapor Chambers	ACT (Advanced Cooling Technologies)	United States	Standard Planar Dimensions: Up to 10" × 20"	on request
Variable Conductance Heat Pipes (VCHPs)	ACT (Advanced Cooling Technologies)	United States	Effective Thermal Conductivity: 10,000 to 100,000 W/m·K	on request
xRAD™ Extruded Thermal Control Radiator	Paragon Space Development Corporation	United States	Technology: Extruded aluminum panels with integral coolant channels (patented)	on request

Products by manufacturer

ACT (Advanced Cooling Technologies)

UNITED STATES · 2003 · 12 PRODUCTS

Premier thermal management solutions company specializing in custom two-phase heat transfer technology for aerospace, defense, and industrial applications.



ACT (ADVANCED COOLING TECHNOLOGIES)
Constant Conductance Heat Pipes (CCHPs)

Precision-engineered aerospace CCHPs with over 118 million space flight hours heritage, manufactured under ISO 9001:2015 and AS9100D certified quality systems.

Space Flight Hours Heritage	118,664,340+ hours
Quality Certification	ISO 9001:2015, AS9100D
Welding Standard	AWS D17.1
Leak Detection Method	Helium mass spectrometer
Fluid Purity Process	Triple distillation

[price on request](#) [datasheet](#)

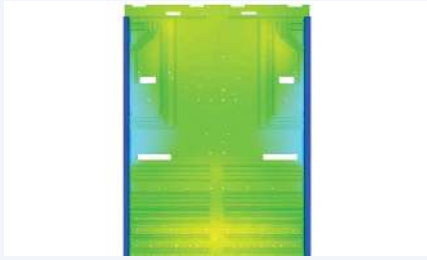


ACT (ADVANCED COOLING TECHNOLOGIES)
High-Temperature Heat Pipes

Alkali metal heat pipes operating from 400°C to 1,100°C using potassium, NaK, or sodium in stainless steel or Haynes envelopes for nuclear space power, solar thermal, and hypersonic

Potassium Operating Range	400–1,000°C
NaK Operating Range	500–800°C
Sodium Operating Range	500–1,100°C
Envelope Materials	Stainless Steel, Inconel Alloy 600, Haynes
IFL Temperature Uniformity	±0.1°C

[price on request](#) [datasheet](#)



ACT (ADVANCED COOLING TECHNOLOGIES)

HiK Plates / Heat Pipe Assemblies

Custom heat spreaders with embedded copper-water heat pipes offering effective thermal conductivities of 10,000–100,000 W/m·K, designed to collect and move heat from multiple compo

Operating Temperature Range	20–150°C
Effective Thermal Conductivity	10,000–100,000 W/m·K
Outer Diameter Range	1/16" (1.5 mm) to 1.5" (38 mm)
Cross-Section Geometry	Round, rectangular, or flattened
Surface Coating Options	Nickel or tin

[price on request](#) [datasheet](#)



ACT (ADVANCED COOLING TECHNOLOGIES)

Honeycomb Radiator Panels

Aluminum honeycomb sandwich panels serving dual roles as spacecraft structural shells and heat rejection radiators, with embedded CCHPs, high-conductivity face sheets, and selectab

Core Material	Aluminum honeycomb sandwich
Face Sheet Enhancement	High-conductivity, optional embedded CCHPs
Surface Finish	Selectable emissivity coatings
Compatible Orbit Classes	LEO, MEO, GEO, deep space
Scalability	CubeSat-class to GEO bus panels

[price on request](#)



ACT (ADVANCED COOLING TECHNOLOGIES)

Loop Heat Pipes (LHPs)

High-capacity two-phase heat transport devices that move larger amounts of heat over longer distances than conventional heat pipes, with sintered nickel, hybrid, and 3D-printed wic

Ammonia Operating Range	-40°C to 70°C
Titanium/Water Variant Range	70°C to 250°C
Traditional Wick Pore Radius	~1 µm
3D-Printed Wick Pore Radius	~8–10 µm
3D-Printed Wick TRL	6

[price on request](#) [datasheet](#)



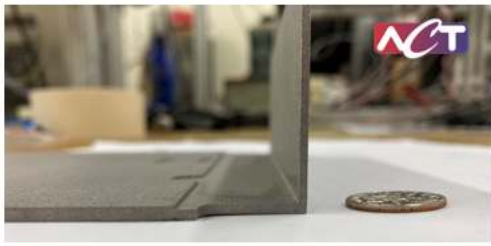
ACT (ADVANCED COOLING TECHNOLOGIES)

Phase Change Material (PCM) Heat Sinks

High-performance PCM thermal energy storage devices that absorb pulsed or duty-cycled heat loads with minimal temperature rise, for single and two-phase liquid cooling loops.

Thermal Storage Advantage	1–2 orders of magnitude higher than sensible energy storage
Typical PCM Thermal Conductivity (paraffin)	< 1 W/m·K
Enhancement Structures	Fins, embedded heat pipes, metal foams
Manufacturing	Aluminum vacuum brazing, hermetic sealing, precision PCM charging

[price on request](#) [datasheet](#)



ACT (ADVANCED COOLING TECHNOLOGIES)

Pulsating Heat Pipes (PHPs)

Pulsating Heat Pipes (PHPs), also called Oscillating Heat Pipes (OHPs), are passive two-phase heat transport devices that operate through self-excited oscillation of liquid slugs a

Wick Structure	None (wickless)
Minimum Device Thickness	< 3 mm
Maximum Transport Distance	> 1 m
Compatible Working Fluids	Ammonia, propylene, R245fa, acetone

price on request



ACT (ADVANCED COOLING TECHNOLOGIES)

Space Copper-Water Heat Pipes (SCWHPs)

Flight-proven copper-water heat pipes for high heat flux satellite electronics cooling, capable of handling up to 50 W/cm² with first flight heritage from ISS in 2017.

Heat Flux Capability	Up to 50 W/cm ²
Temperature Gradient (typical)	2–5°C
Wicking Capability Against Gravity	Up to 10 inches
Minimum Bend Radius	3× OD
Generation	GEN III manufacturing process

price on request

[datasheet](#)



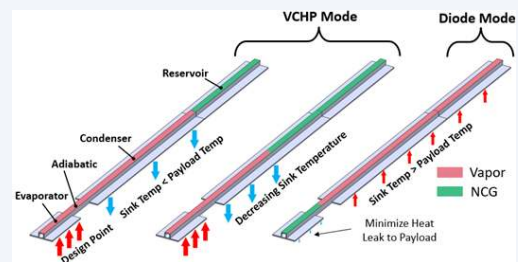
ACT (ADVANCED COOLING TECHNOLOGIES)

Space Liquid Cooling Systems

Custom single-phase liquid cooling loops for spacecraft applications, integrating cold plates, accumulators, cooling lines, and heat exchangers to manage high-heat-flux electronics

Cooling Type	Single-phase liquid (pumped fluid loop)
Components	Cold plates, accumulators, cooling lines, heat exchangers, liquid cooled chassis
Accumulator Functions	Pressure control, volume compensation, transient dampening

price on request



ACT (ADVANCED COOLING TECHNOLOGIES)

Thermo-Modulating Heat Pipes (TMHPs)

A dual-mode spacecraft thermal device combining VCHP and thermal diode functions in a single gas-charged aluminum-ammonia design, eliminating the separate NCG reservoir for reduced

Working Fluid / Envelope	Aluminum-ammonia
NCG Reservoir	Integrated (no separate reservoir)
Demonstrated Load (VCHP Mode)	~36 W
Operating Modes	VCHP mode (forward); Diode mode (reverse blocking)
Control Method	Passive (Non-Condensable Gas)

price on request

[datasheet](#)



ACT (ADVANCED COOLING TECHNOLOGIES)

Vapor Chambers

Planar two-phase heat spreaders with effective thermal conductivities of 5,000–200,000 W/m·K, available in standard copper/water and advanced low-CTE aluminum nitride ceramic varia

Standard Planar Dimensions	Up to 10" × 20"
Standard Heat Flux	> 100 W/cm ²
Standard Thermal Resistance	< 0.08°C/W
Effective Thermal Conductivity Range	5,000–200,000 W/m·K
Low-CTE Variant Max Heat Flux	> 700 W/cm ² (1 cm ² area)

[price on request](#)



ACT (ADVANCED COOLING TECHNOLOGIES)

Variable Conductance Heat Pipes (VCHPs)

Passive spacecraft thermal control devices combining two-phase working fluid with a Non-Condensable Gas reservoir to automatically regulate evaporator temperature across wide power

Effective Thermal Conductivity	10,000 to 100,000 W/m·K
Control Method	Passive (Non-Condensable Gas)
Material Systems Available	Aluminum-ammonia; Copper-monel/water; Sodium-Haynes
Quality Certification	ISO 9001:2015, AS9100D

[price on request](#)

[datasheet](#)

Airbus Defence and Space

FRANCE · 2014 · 1 PRODUCT

Airbus Defence and Space designs and manufactures satellites, spacecraft equipment, and provides related services for telecommunications, navigation, Earth observation, and space exploration.



AIRBUS DEFENCE AND SPACE

High Performance Radiator technology (HiPeR) Flexlinks

HiPeR Flexlinks are highly flexible thermal straps developed by Airbus for spacecraft thermal control, offering superior conductance-to-mass ratio compared to traditional solutions

Conductance-to-mass ratio	three to five times higher than traditional solutions (W/K per kg)
Lead time	about 4 months (average)
TRL	9
Flight heritage	on-board missions in Telecom, Science, Earth Observation and megaconstellations

[price on request](#)

[datasheet](#)

Allatherm

LATVIA · 3 PRODUCTS

Latvian company making heat pipes and loop heat pipes for space thermal management, collaborating with ESA, Airbus D&S, Thales, DLR, and JAXA,

and developing a Xenon compressor for ESA Lunar Gateway.



ALLATHERM

Altom10 Series — LHP Evaporator Modules for Microelectronics

Modular Loop Heat Pipe evaporator modules for microelectronics thermal management — up to 10 m separation, several thousand times the thermal conductivity of copper.

Materials	Copper (Cu) and Stainless Steel (SS)
Charge chamber volume	1–7 cc
Footprint range	28×50 mm to 100×50 mm
Max condenser separation	Up to 10 m
Effective thermal conductivity	Up to thousands times solid copper

price on request



ALLATHERM

Altom14 Series — LHP Evaporator Modules for Power Electronics

High-performance stainless steel Loop Heat Pipe evaporator modules for power electronics cooling — ISO 3834-2 certified welding, manufactured in ISO 8 cleanroom.

Material	Stainless Steel (SS)
Configuration options	1-slot to 3-slot (1SL, 2SL, 3SL) and multi-channel variants
Representative sizes	40×160 mm (1SL), 100×140 mm (2CPL)
Charge chamber volume	2 cc (typical)
Manufacturing standard	ISO 3834-2 welding, ISO 8 cleanroom

price on request



ALLATHERM

Gas Thermal Compressor

Passive, vibration-free thermal compressors for Xenon, Krypton, and Hydrogen gases reaching 200–400+ bar — no moving parts for space propulsion gas management.

Gases handled	Krypton, Xenon, Hydrogen, hydrocarbons
Output pressure	200–400+ bar
Vibration	Negligible (passive thermal operation)
Applications	Satellite propulsion gas management, space instruments, in-orbit refueling

price on request

Arquimea

SPAIN · 2007 · 6 PRODUCTS

Spanish space technology company founded 2007 in Leganes, developing MEMS relay switches, SiC power devices, and miniaturized power conditioning units for satellite applications.



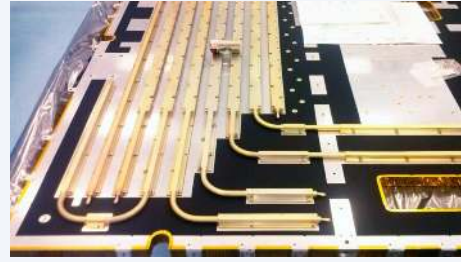
ARQUIMEA

Deployable Radiators for Satellites

Foldable deployable thermal radiator panels based on multi-loop heat pipe architecture for telecommunications satellites, stowed for launch and deployed in orbit to reject high heat

Architecture	Multi-Loop Heat Pipes (LHP) with embedded condenser lines
Maximum radiator surface	Up to 6 m ²
Temperature operating range	-160°C to +120°C
Power range	1 W to 1,000 W
Working fluids	Ammonia, propylene, ethane

price on request



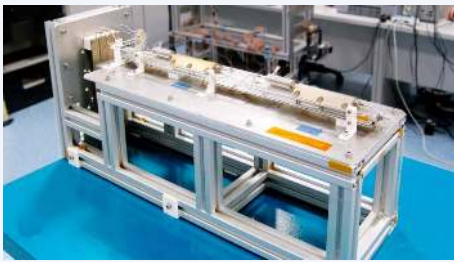
ARQUIMEA

Heat Pipes for Space Applications (Axial, Arterial, Diode)

Space-qualified axial grooved, arterial, and diode heat pipes in aluminum or stainless steel for satellite thermal control, carrying 5–500 W over temperatures from -130°C to +145°C

Heat pipe types	Axial grooved, arterial, diode
Materials	6063 aluminum alloy (axial); stainless steel (arterial)
Working fluids	Ethane, propylene, ammonia, toluene
Temperature operating range	-130°C to +145°C
Power range	5 W to 500 W

price on request



ARQUIMEA

Loop Heat Pipes for Space Applications

Fully customized two-phase passive Loop Heat Pipes (LHP) for satellites, offering up to 1 kW heat transfer power, mechanical decoupling, and lifetime exceeding 15 years, with 52 units

Heat transfer power	Up to 1 kW
Temperature operating range	140 K to 400 K (-133°C to +127°C)
Capillary pressure (ammonia)	4×10^4 Pa
Thermal resistance	From 0.005 °C/W
Transport line length	>5 m

price on request



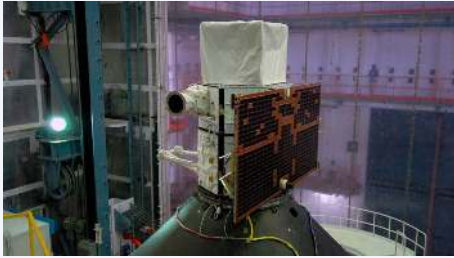
ARQUIMEA

Thermal and Structural Subassemblies for Space

Turnkey integrated thermal and structural subassemblies for thermally demanding satellite systems including active antenna arrays, cryogenic sensors, optical laser terminals, and p

Subsystem types	Laser terminal thermal systems, spacecraft modular thermal platforms, LNA thermal systems,
Temperature range coverage	Cryogenic (down to 20 K) to high temperature (up to +450°C)
Engineering scope	Design, thermal/mechanical analysis, simulation, manufacture, integration, test
Units in orbit	10
Units awaiting launch	18

price on request



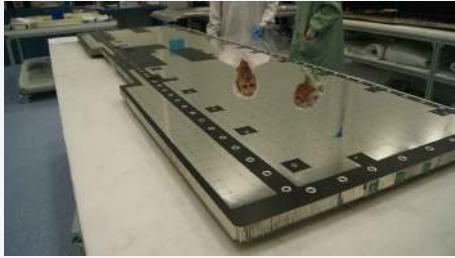
ARQUIMEA

Thermal Blankets for Space Applications (MLI)

Custom multi-layer insulation (MLI) thermal blankets for spacecraft, covering internal and external applications from cryogenic temperatures down to 20 K through high-temperature e

MLI types	Standard plastic MLI, sewn fabric coated MLI, external MLI, internal MLI, SLI, high-temper
Temperature range — typical	-150°C to +150°C
Temperature range — cryogenic	Down to 20 K
Temperature range — high temperature	Up to +450°C
Materials	Kapton®, Upilex®, Mylar®, FEP (Teflon)®, Dacron®, Beta Cloth®, Nextel®, glass fiber, Velcr

price on request



ARQUIMEA

Thermo-Structural Radiator Panels for Space

Aluminum honeycomb thermo-structural radiator panels serving as satellite structure while dissipating heat, with optional embedded heat pipe networks up to 6 kW per panel, delivere

Panel materials	Aluminum skins + aluminum honeycomb core
Maximum panel size	Up to 18 m²
Power dissipation (with embedded heat pipes)	Up to 6 kW per panel
Temperature range	-40°C to +130°C
Heat pipe integration	Available with or without embedded heat pipes; mono-level to multi-level networks

price on request

Arquimea (formerly IberEspacio)

SPAIN · 1 PRODUCT

Former Spanish space engineering company; merged into ARQUIMEA Group. IberEspacio.es now redirects to arquimea.com.

ARQUIMEA (FORMERLY IBERESPACIO)

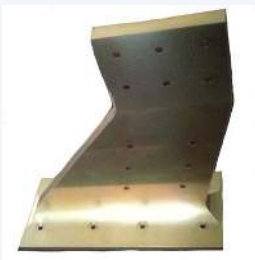
IberEspacio Satellite Thermal Control Hardware

Flight-proven heat pipes, loop heat pipes (LHP), MLI blankets, and thermo-structural panels for satellite thermal management — >1,000 units delivered across 53+ missions includi

Heat transfer capacity (LHP)	Up to 1 kW standard; >1.2 kW multi-evaporator
Operating temperature range (LHP)	140 K to 400 K (-133°C to +127°C)
High-temperature LHP	Up to 125°C (HTLHP, TRL 5+)
Max LHP transport length	Up to 10 m
Working fluids	Ammonia, propylene, ethane, Freon R134a

price on request

US manufacturer of engineered material solutions — sealing, EMI shielding, thermal management, and protection technologies — for aerospace, defense, and other demanding industries.



BOYD CORPORATION

k-Core Encapsulated Graphite Thermal Solutions

Boyd Corporation's k-Core is a proprietary encapsulated Annealed Pyrolytic Graphite thermal-conduction material used to build lightweight, high-conductivity radiator panels, thermal straps, and thermal interface materials.

Effective thermal conductivity (k-Core assembly)	up to 1000 W/m·K
APG core in-plane thermal conductivity	up to 1700 W/m·K
Thermal straps effective conductivity	up to 1200 W/m·K
Radiator panel operating temperature range	-40°C to +72°C
Heat dissipation improvement	≥40°C reduction vs. aluminum equivalent

[price on request](#)[datasheet](#)

BOYD CORPORATION

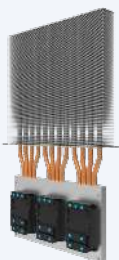
Spacecraft Thermal Management Systems

Boyd Corporation's (Aavid) space-grade thermal management solutions — heat pipes, vapor chambers, thermal straps, and two-phase cooling systems for satellite electronics.

Products	Heat pipes (CCHP/VCHP), vapor chambers, thermal straps, thermal interface materials
Heat Pipe Working Fluids	Ammonia (space standard), water, ethanol
Thermal Straps	Braided copper or graphite fiber; flexible isolation
Thermal Interface	Indium foil, phase-change materials, filled epoxies
Standards	Space-qualified assemblies (ASTM/AIAA); MIL-SPEC screened materials

[price on request](#)

Belgian expert in passive two-phase cooling technologies — heat pipes, loop heat pipes, and pulsating heat pipes — for thermal management in aerospace, defense, and industrial applications.



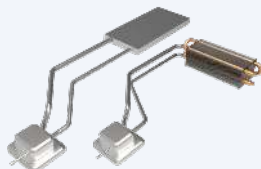
CALYOS

Heat Pipes (HP)

Traditional heat pipe technology providing low thermal resistance passive cooling — scalable to application size, exploits latent heat of vaporization.

Technology	Latent heat of vaporization, wick return
Applications	Data centers, embedded electronics, batteries, power electronics

[price on request](#)



CALYOS

Loop Heat Pipes (LHP)

Long-distance passive heat transport for high heat flux applications — up to 100% less power, 10x lifetime, and 30% less weight than water-based cooling.

Power vs. water-based cooling	Up to 100% less
Lifetime vs. water-based cooling	Up to 10x
Weight vs. water-based cooling	Up to 30% less

[price on request](#)

CALYOS

Micro Channel Heat Pipes (MCHP)

Hybrid HP-PHP flat aluminium heat pipe design — lightweight, customizable in length and bends, for batteries and embedded electronics.

Design Flat aluminium, customizable length and bends

Applications Batteries, embedded electronics, radar/lidar sensors

price on request



CALYOS

Pulsating Heat Pipes (PHP)

Oscillating heat pipe technology with less reliance on gravity — customizable thin/3D form factors, PHP Spreader research prototype dissipates 800W.

PHP Spreader dissipation 800W

Applications Power electronics, inverters, on-board chargers, sensors

price on request

CAVU Aerospace

UNITED KINGDOM · 2016 · 1 PRODUCT

CAVU Aerospace designs and manufactures spacecraft avionics, including radiation-tolerant onboard computers, thermal control units, frame grabbers, and flight-proven satellite cameras for various spac



CAVU AEROSPACE

Thermal Control Unit

Smart efficient thermal management for space systems

price on request

DHV Technology

SPAIN · 2013 · 1 PRODUCT

DHV Technology is a Spanish space technology company designing and manufacturing solar panels, electrical power systems, MLI blankets, and solar array drive assemblies for CubeSats and small satellites. Based in Málaga since 2013.



DHV TECHNOLOGY

MLI Blankets

Custom multi-layer insulation (MLI) blankets for CubeSats and small satellites, providing passive thermal control to maintain temperature within

operational limits.

price on request

DUNMORE

UNITED STATES · 1970 · 4 PRODUCTS

US manufacturer of coated and metallised films (Bristol, PA); MLI thermal blankets and spacecraft thermal management films for satellite and space applications; 50+ years experience.



DUNMORE
Aerospace Tape (Spacecraft Thermal Control Tape)

Thermal control tape line for spacecraft — MLI blanket tape, aluminized/black Kapton tapes, radiator tapes, using flight-proven non-silicone adhesives.

Variants	Second Surface Aluminized Kapton Tape, Stamet Coated Black Kapton Tape, Germanium Coated B
Adhesive types	Conductive and non-conductive PSA

price on request



DUNMORE
DUN-COOL Thermal Management Film

Passive thermal control film functioning as a spacecraft radiator or optical solar reflector — low solar absorptance, high emittance, ATOX resistant.

Function	Radiator or optical solar reflector (OSR)
Purpose	Passive thermal management, radiation protection, heat rejection

price on request



DUNMORE
DUN-DIFFUSE White Kapton Polyimide Film

White Kapton polyimide film offering high emissivity thermal control — alternative to paint for spacecraft MLI outer layer or radiator second-surface mirror.

Base film	100 Ga (25 micron)
Metalization	Vacuum Deposit Aluminum (VDA)
Coating options	ITO or StaMet
Variants	ITO/100Ga White Kapton WS/VDA, StaMet/100Ga White Kapton WS/VDA

price on request



DUNMORE
Satkit MLI Satellite Kit

Pre-cut multi-layer insulation kit with STARcrest MLI materials sized for small satellite developers to build custom thermal protection blankets.

Kit contents	Outer layer material roll, inner layer material roll, polyimide assembly/edge-binding tape
Target platforms	CubeSat form factors (1U-6U)

price on request

Glavkosmos

RUSSIA · 1985 · 12 PRODUCTS

Glavkosmos coordinates international human spaceflight projects, facilitates satellite launches, develops and supplies rocket components, and provides

equipment for space crews.



GLAVKOSMOS
Absolute Pressure Sensor Vt 220

The Absolute Pressure Sensor Vt 220 is a flight-qualified strain gauge sensor designed to measure absolute pressure of liquid and gaseous media in satellite telecontrol and thermal

Range of measurements, Mpa	0-0,125; 0-0,250; 0-0,500
The basic error,%	±1
The normalizing value of the output signal, mV / V	2,25±0,8
Supply voltage	6+0,3-1,2
Weight, kg	0,16

price on request



GLAVKOSMOS
Arterial Heat Pipes

Arterial Heat Pipes (AHPs) are two-phase, hermetic closed thermal transfer systems designed for spacecraft thermal control, offering high heat transfer capabilities and a long serv

Purpose	Thermal control of spacecraft equipment.
Year of release	1992
Guaranteed service life (years)	25 years after ArHP filling with working fluid.
Estimated production / delivery time (months)	3
Flight qualification of the product	Yes

price on request



GLAVKOSMOS
Axial Grooved Heat Pipes

Flight-proven spacecraft heat pipes (450 W-m transfer, Ø6–20 mm, up to 6 m, -133 to +227 °C) with 100+ satellite heritage. Customizable.

Purpose	Thermal control of spacecraft equipment
Year of release	1996
Guaranteed service life, years	25 (after filling with working fluid)
Estimated production/delivery time	2 months
Flight heritage	Successfully operated on more than 100 Russian and foreign satellites

price on request

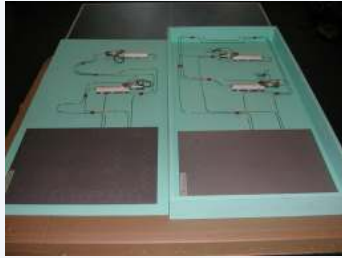


GLAVKOSMOS
Axial, Arterial, Contour Heat Pipes, Radiator Heat Pipe

This product line includes axial, arterial, and contour heat pipes and radiator heat pipes designed for thermal control in space applications.

Purpose	Design and manufacture of products for providing thermal regime with flight application.
Flight qualification of the product	Yes
Brief history of flight qualification	Vast experience in all types of heat pipes and systems.
Possibility to adapt the product to customer requirements	Yes
Testing standard	European standard PSS49

price on request



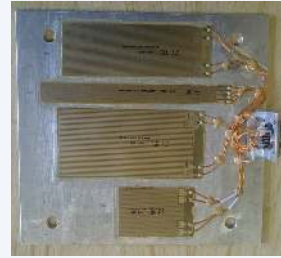
GLAVKOSMOS

Contour Heat Pipes

Contour Heat Pipes (CHPs) are two-phase thermal transfer systems designed for the thermal control of spacecraft equipment, offering flexible integration and high heat transfer capacity.

Purpose	Thermal control of spacecraft equipment.
Year of release	1992
Guaranteed service life (years)	25 years after CHP filling with working fluid.
Estimated production / delivery time (months)	6
Flight qualification of the product	Yes

price on request



GLAVKOSMOS

Electric Heaters

These Electric Heaters (EH) are flexible single-sided printed circuit boards designed to provide thermal conditions for spacecraft onboard equipment. They feature a resistive print.

Purpose	Designed to provide thermal conditions for spacecraft onboard equipment.
Year of release	1976
Guaranteed service life (years)	36
Estimated production / delivery time (months)	3
Flight qualification of the product	Yes

price on request



GLAVKOSMOS

Electric Heaters for Manned Spacecraft

These electric heaters are flexible, single-sided printed circuit boards designed to maintain the surface temperature of manned spacecraft bodies and their fastening elements with.

Year of release	2015
Guaranteed service life (years)	15
Estimated production / delivery time (months)	4
Flight qualification of the product	No
Possibility to adapt the product to customer requirements	Yes

price on request



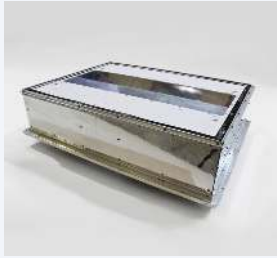
GLAVKOSMOS

Low Temperature Heat Pipes

Low Temperature Heat Pipes are designed to ensure the thermal regime of spacecraft, utilizing ammonia as a heat carrier and featuring axial omega-shaped grooves.

Purpose	Aggregate of systems for ensuring the thermal regime of the spacecraft.
Year of release	1973
Guaranteed service life	23 years
Estimated production / delivery time	3 months
Flight qualification of the product	Yes

price on request



GLAVKOSMOS

Radiation Refrigerator

A passive radiation refrigerator designed to cool radiation receivers to cryogenic temperatures in space, with flight heritage on Meteor-M and Electro-L satellites.

Year of release	2003
Guaranteed service life (years)	10
Estimated production / delivery time (months)	6
Flight qualification of the product	es
Brief history of flight qualification	KA Meteor-M, Electro-L.

price on request



GLAVKOSMOS

Screen-Vacuum Thermal Insulation of Orbital Spacecraft

Screen-Vacuum Thermal Insulation (SVTI) is a passive thermal control system for orbital spacecraft, designed to reduce heat transfer and protect against micrometeorites and space d

Flight qualification of the product	Yes
Brief history of flight qualification	Vast work experience.
Possibility to adapt the product to customer requirements	Yes

price on request



GLAVKOSMOS

Temperature-controlled Honeycomb Panel

Temperature-controlled honeycomb panels designed for spacecraft platforms and payload equipment, featuring aluminum face sheets and options for integrated heat transfer tubes or fl

Flight qualification of the product	Yes
Brief history of flight qualification	Flight qualification since 2000.
Possibility to adapt the product to customer requirements	Yes
Maximum dimensions, mm	5800kh3000
Honeycomb filler	Amg5 - N - 6 - 23P / Amg5 - N - 2,5 - 23P / Amg2 - N - 2,5 - 40P / Amg2 - N - 2,25 - 50P (rus)

price on request



GLAVKOSMOS

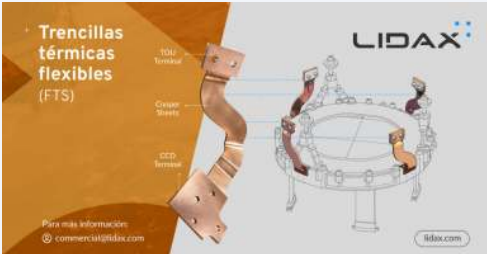
Thermal-Protection Materials for Spacecraft

Nonablative thermal-protection silica-fiber-reinforced materials for coating reusable spacecraft and for radio engineering-purpose articles.

Purpose	Provision of normal thermal conditions on passing the dense atmosphere at landing, antenna
Year of release	1977
Estimated production / delivery time (months)	Depending on the volume of an order
Flight qualification of the product	Yes
Brief history of flight qualification	Spacecraft Buran.

price on request

Madrid-based aerospace engineering company specialising in opto-mechanical systems, flexible thermal straps, and cryogenic units for space missions.



LIDAX

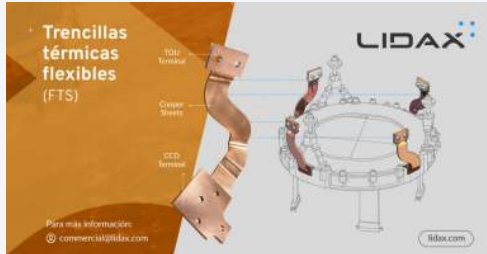
Flexible Thermal Straps

LIDAX Flexible Thermal Straps (FTS) are high-performance solutions for efficient and reliable heat transfer in space applications, available in copper and pyrolytic graphite.

Materials	High Thermal Conductivity Materials (Copper, Pyrolytic Graphite)
Copper FTS Applications	Electronic units and power systems, High-stability payloads, Cryogenic applications, Platf
Pyrolytic Graphite FTS Applications	New Space platforms, payloads and high-sensitivity instrumentation
Offerings	Qualified Standard Solutions, Mission-Specific Customization

price on request

datasheet



LIDAX

PSG Thermal Links (Pyrolytic Graphite Flexible Thermal Straps)

LIDAX’s PSG Thermal Links are flexible thermal straps manufactured from pyrolytic graphite sheet (PGS), engineered for space missions where high thermal conductance combined

Material	Pyrolytic Graphite Sheet (PGS)
Type	Flexible Thermal Strap (FTS)
Applications	Focal plane assemblies, cryo-cooler interfaces, deployable radiators
Mission Heritage	BepiColombo, EarthCARE, PLATO, James Webb Space Telescope

price on request

LiquidCool Solutions

Total liquid immersion cooling technology for servers and electronics, using patented Directed-Flow cooling in standard 19-inch racks for data center, edge, and rugged industrial applications.



LIQUIDCOOL SOLUTIONS

LCS Small-Scale Solution (SSS)

Plug-and-play 24U portable edge compute room — 4–6 ZPServers, PUE < 1.04, < 55 dBA, 16 TB storage, 8 kW max, deploys in under 2 hours, no AC required.

Rack size	24U
Server count	4–6 ZPServers
Max power	8 kW
Storage	Up to 16 TB



LIQUIDCOOL SOLUTIONS

LCS ZPServer

2U immersion-cooled rack server delivering 4 kW per unit with PUE < 1.03 — Total Liquid Immersion with Directed Flow™ (TIDF), brand-agnostic, supports Intel Xeon, AMD EPYC, NVIDIA

Form factor	2U, standard 19" EIA rack
Power density	Up to 4 kW per server
PUE	< 1.03
Dimensions	18" W × 33" D × 3.5" H

PUE	< 1.04	Wet weight	~75 lbs
price on request		price on request	

MAP (Aerospace Coatings)
2 PRODUCTS

MAP is a European aerospace surface treatment and coatings company specializing in thermal control coatings, optical solar reflectors, and surface preparation materials for spacecraft and satellite applications. The company's products inclu

			
MAP (AEROSPACE COATINGS) MAP SPACE COATINGS (Company Profile) MAP SPACE COATINGS specializes in the design, manufacture, and application of thermal finishing coatings for satellites and launchers, emphasizing a zero-defect policy and technolo		MAP (AEROSPACE COATINGS) MAP SPACE COATINGS Thermal Finishing Services MAP SPACE COATINGS provides specialized thermal finishing services for satellites and launchers, encompassing the design, manufacture, and application of thermal coatings.	
Color	White	Coating type	Water-based, silver-loaded polyurethane
Formulation	Water-based polyurethane	Function	EMI shielding, electrical continuity
Properties	Antistatic, low outgassing, thermo-optical control	Application	Launcher fairings
Compliance	REACH	price on request	
price on request		price on request	

Northrop Grumman Space Systems
UNITED STATES · 1939 · 1 PRODUCT

Minotaur family, Pegasus XL, Antares (legacy); MLV co-development with Firefly.

	
NORTHROP GRUMMAN SPACE SYSTEMS Cryocoolers Northrop Grumman's pulse tube cryocoolers provide high reliability for critical space missions, operating without moving parts for extended lifespans.	
On-orbit operation	More than 300 combined years
Operating mechanism	Without moving parts
Applications	Missile defense, climate science, astronomy, weather tracking and prediction
Scalability	Scalable for large-scale and robust spacecraft, and for

smaller, more proliferated
spacecr

Flight Heritage

NASA's James Webb Space
Telescope

price on request

datasheet

Paragon Space Development Corporation

UNITED STATES · 1993 · 1 PRODUCT

US life support and thermal control engineering company providing environmental control systems, spacesuits, and thermal management solutions for NASA, commercial, and defense space programs.



PARAGON SPACE DEVELOPMENT CORPORATION

xRAD™ Extruded Thermal Control Radiator

Patented extruded aluminum thermal control radiator for spacecraft and launch vehicles, eliminating inefficiencies of traditional bonded radiator structures.

Technology	Extruded aluminum panels with integral coolant channels (patented)
Function	Active thermal control – heat rejection to space
Applications	Spacecraft radiators, satellite thermal control, launch vehicle cryogenic insulation
Heritage	Sierra Space Dream Chaser Cargo Module
Product variants	SatRad (satellite), high- turndown radiators, high- energy storage thermal management

price on request

Peraton Space

UNITED STATES · 1 PROJECT

US national security technology company providing satellite communications, space domain awareness, ground systems operations, and intelligence support services to the US government and military.



PERATON SPACE

Acusil® Thermal Protection System (TPS)

Acusil® is a lightweight, silicone syntactic foam-based thermal protection system designed to shield high-value assets like spacecraft and strategic weapons systems from intense heat

Acusil® II ablation resistance	zero ablation in heat fluxes up to 100 W/cm2
Acusil® IV ablation resistance	withstands up to 150 W/cm2
Durability	Decades (30+ years)

price on request [datasheet](#)

RUAG Space

SWITZERLAND · 1993 · 4 PRODUCTS

Swiss-Swedish space components manufacturer providing satellite structures, thermal control products, payload electronics, and antennas for commercial and institutional programs.



RUAG SPACE
Conductive Glass Fabric High-Temperature Vacuum Insulation

Flexible high-temperature vacuum insulation for launchers up to 550 degrees C, free of hazardous components and tunable to customer requirements.

Maximum temperature	Up to 550 degrees C
Type	High temperature vacuum insulation, conductive glass fabric
Advantages over ceramic fabrics	Greater flexibility, no hazardous components, adjustable performance

price on request [datasheet](#)



RUAG SPACE
COOLCAT Cryogenic Superinsulation

Multi-layer vacuum superinsulation line for cryogenic applications, laser-cut to shape, with polyester, aluminium-foil, LOX-compatible and tape variants.

COOLCAT 2 NW	10 layers double-sided aluminized perforated polyester foil interleaved with 10 layers of
COOLCAT 2 NF	Glass fibre fleece spacer with 9 micrometre pure aluminium foil; high temperature tolerant
COOLCAT 2 LOX	5 layers pure aluminium foil with 5 layers glass fibre cloth spacer; liquid oxygen compatible
COOLCAT 2 NI	Polyester foil aluminized in squares (10x10 mm single-sided or 20x20 mm double-sided) with
COOLCAT H	Welding protection of aluminium foil and fibre-glass cloth

price on request [datasheet](#)



RUAG SPACE
Flexible Thermal Protection for Launchers

Coated or laminated ceramic fabric and ceramic felt insulation protecting components near rocket motors and nozzles at up to 1500 degrees C.

Maximum temperature	Up to 1500 degrees C
Materials	Coated or laminated ceramic fabric and ceramic felt insulators
Application	Components in direct vicinity of rocket motors or nozzles

[price on request](#) [datasheet](#)



RUAG SPACE
Satellite Multi-Layer Insulation (MLI)

Custom satellite MLI blankets for 1 K to 1800 K, with MMOD and ATOX protection options, produced for over 800 satellites.

Temperature range	1 K to 1800 K
Protection options	MMOD (micrometeoroid orbital debris) and ATOX (atomic oxygen)
Design process	Electronic 3D models; 3D mock-ups and template fit-checks for complex shapes
Related products	Interfillers, sensors and heaters, thermal analysis and correlation services
Heritage	MLI for over 800 satellites across 50 space projects; Euclid, Juice, BepiColombo, Eutelsat

[price on request](#)

Sheldahl (Multek Flexible Circuits)

UNITED STATES · 1959 · 1 PRODUCT

Sheldahl (Multek Flexible Circuits) is a US manufacturer of flexible printed circuits, printed electronics, electronic materials, and aerospace thermal control materials, headquartered in Northfield, Minnesota.



SHELDAHL (MULTEK FLEXIBLE CIRCUITS)
Aerospace Thermal Control Materials

Flight-proven thin-film thermal control materials protecting spacecraft since 1958, including JWST sunshield materials.

Heritage	Space thermal control material heritage since 1958
Notable program	James Webb Space Telescope onboard thermal protection
Material types	Multi-layer insulation, second-surface mirrors, conductive/non-conductive tapes, thermal c
Manufacturing processes	Vacuum deposition, adhesive formulation and laminating, slitting and sheeting

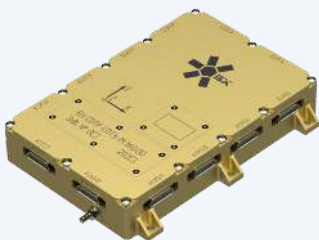
Application
Spacecraft and satellite
thermal management in
vacuum/radiation environments

price on request

SPUTNIX

RUSSIA · 2011 · 2 PRODUCTS

SPUTNIX is a Russian manufacturer of nanosatellite and microsatellite platforms, onboard subsystems and ground infrastructure, operating as a subsidiary brand of Sitronics Group.



SPUTNIX
Control unit of the thermal regime support system

A redundant thermal control unit (SX-SBOX-THERMU-01) that monitors and manages heaters based on analog/digital temperature sensors across the service platform and payload.

Dimensions	200 x 130 x 30 mm
Mass	600 g
Supply voltage	22-33 V
Power consumption without heaters included, no more	5 W
Duplicated interface	CAN2B

price on request



SPUTNIX
SX-SBOX Thermal Control (Microsatellite)

Thermal-control line of the SX-SBOX suite for microsatellite platforms: the thermal-control-system control unit (BU-SOTR) and engineering services for topology optimization.

Thermal control unit SX-SBOX-THERMU-01	200 x 130 x 30 mm, 600 g, ≤5 W (heaters off)
Redundancy	2 half-sets
Heater channels	14 per half-set, ≤60 W each
Temperature sensors	36 analog (P1K0) + 14 digital (DS18B20Z) per half-set
Topology optimization	SX-TOPOLGY (engineering service)

price on request

Technology Applications Inc (TAI)

UNITED STATES · 1994 · 5 PRODUCTS

American thermal strap manufacturer founded 1994 in Boulder CO; world's largest maker of flexible thermal links (copper, graphite, PGS); flown on Orion, OSIRIS-REx, Solar Orbiter, and Starliner.



TECHNOLOGY APPLICATIONS INC (TAI)
Copper Cable Thermal Straps (CuTS)

OFHC copper-cable flexible thermal links used to passively conduct heat between spacecraft and cryogenic components, offered in 127 standard models plus fully custom designs.

Material	99.99 - 99.998% pure OFHC copper (Cu-101)
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TECHNOLOGY APPLICATIONS INC (TAI)
Cryocooler Series Thermal Straps (CS-CuTS)

Standard copper thermal strap line sized to common Sumitomo (SHI) and Cryomech cryocooler cold-tip diameters, with 72 sub-models and free bolt-pattern/length customization.

Material	99.99 - 99.998% pure OFHC copper (Cu-101)
----------	---

Cabling	TAI exclusive OFHC UltraFlex I (0.10 in / 2.5 mm) and UltraFlex II (0.20 in / 5 mm) copper
Standard models	127 standard models, plus Cryocooler Series (72 sub-models)
Thermal conductivity	397 - 2,500 W/(m-K) depending on temperature (4K - 300K)
Residual Resistivity Ratio (RRR)	30 - 100 (typical 50-75, measured by Fermi, Argonne, and Brookhaven National Labs)

[price on request](#) [datasheet](#)



TECHNOLOGY APPLICATIONS INC (TAI)

Graphite Fiber Thermal Straps (GFTS)

TAI provides the world's only Graphite Fiber Thermal Links/Straps (GFTS), and the only carbon-based standard strap product line. GFTS assemblies are the space industry'

Fiber material	GraFlex I / II carbon-fiber bundles; GraFlex III woven graphite fiber sheet
Fiber thermal conductivity	800 - 1,000 W/(m-K) (GraFlex III); 2.75x copper's conductivity at room temperature
Density vs. copper	1/4 the density of copper; 12x more thermal-conductivity/mass efficient than copper, 6x mo
Fabrication efficiency	Realizes up to 95% of material thermal conductivity
Mass	Most custom/standard straps weigh 10 - 30 g (1/5 - 1/10 the mass of an equivalent metallic

[price on request](#)

Cabling	TAI exclusive OFHC UltraFlex I (2.5mm) copper cabling
Cold head diameters	9 (2nd stage) cold head diameters available
Sub-models	72 sub-models to choose from
Assembly method	Solder-free, never brazed or welded

[price on request](#) [datasheet](#)



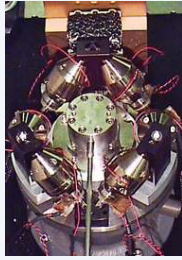
TECHNOLOGY APPLICATIONS INC (TAI)

PyroFlex PGS & Graphene Thermal Straps (X-Series)

TAI's PyroFlex PGS (Pyrolytic Graphite Sheet) product line, also known as the X-Series, is the world's highest thermal-performance, "ultra-low stiffness" th

Material	Pyrolytic Graphite Film/Sheet (PGF/PGS), optional Graphene Layered Foil
Thermal conductivity	1,350 - 2,500 W/(m-K), depending on material, temperature, and sheet thickness
Performance vs. metals	6x the performance of aluminum and 4x the performance of copper at room temperature
Mass vs. metals	28% lighter than aluminum; 77% lighter than copper
Stiffness	mN/mm range on all 3 axes when installed in curved/S-configurations (many measurements <=3

[price on request](#)



TECHNOLOGY APPLICATIONS INC (TAI)

Thermally Conductive Vibration Isolation System (TCVIS)

Combined thermal-transport and 6-axis vibration-cancellation assembly for cryocooler-to-detector-dewar interfaces, co-developed with CSA Engineering and tested at NIST.

Function	Combined thermal transport (via GFTS graphite fiber strap) and 6-axis active vibration can
Vibration reduction (axial, drive frequency)	> 40 dB (100:1 reduction)
Vibration reduction (radial, drive frequency)	31 - 37 dB (37:1 to 70:1 reduction)
Harmonic reduction (next 4 harmonics)	Average 22 dB reduction
Isolation components	Compact electromagnetic actuators, force sensors, passive isolators

[price on request](#) [datasheet](#)

Thales Cryogenics

NETHERLANDS · 2000 · 3 PRODUCTS

Dutch space cryocooler manufacturer in Eindhoven (Thales Nederland); Stirling, pulse tube, and J-T coolers for IR detectors at 10-200K; heritage on XMM-Newton, Herschel, Gaia, INTEGRAL.



THALES CRYOGENICS

LPT 9310 HP COTS+

The LPT 9310 HP COTS+ from Thales Group is a Pulse-Tube Cryocooler designed for space applications, offering a cooling capacity of 5.7 W.

Cooling Capacity	5.7 W
Maximum Input	180 W
Weight	less than 7 kg
Dimensions	24 x 90 x 204 mm

[price on request](#)



THALES CRYOGENICS

LPT 9510 COTS+

The LPT 9510 COTS+ is a Split Pulse-Tube Cryocooler designed for space and scientific applications, offering 1.4 W cooling capacity at 80 K with low vibration and long lifetime.

Cooling capacity	1.4 W at 80 K
Maximum power input	85 W
Weight	under 3 Kg
Dimensions	18 x 122 x Ø 60 mm

[price on request](#)



THALES CRYOGENICS
LPT6510 Pulse-tube Cryocooler

Designed-for-manufacturability pulse-tube cryocooler for 60 K and above, based on the flight-proven MPTC compressor.

Max input	60 W (AC); higher-power versions on request
Induced vibration	<2 N RMS in-axis
Operating temperature	-30 to +50 C (excl. qualification margin)
Off-state parasitic loss	Typical 0.45 W between 80 K and room temperature
Mass	< 3.2 kg

price on request

Thermal Space Ltd.

UNITED STATES · 4 PRODUCTS

US thermal-management engineering firm in Boulder, Colorado, designing and manufacturing spacecraft thermal straps, cold plates, and cryogenic cooling hardware.



THERMAL SPACE LTD.
4C-PURE™ Cabled Copper Thermal Straps

Solderless, flexible copper thermal straps fabricated from 100% oxygen-free high-conductivity (OFHC) copper cable or braid, used to provide high thermal conductance with mechanical

Material	OFHC Copper (C101, C10100), 99.99% purity
Residual Resistivity Ratio (RRR)	Typically 100–200
Terminal hole diameter/location tolerance	0.001-inch or better
Metallization options	Gold (Au), Silver (Ag), Nickel (Ni), Tin (Sn)
Product lines	4C-PURE™ (standard), 4C-PURE-CRYO™ (low-temperature service with material certification an

price on request [datasheet](#)



THERMAL SPACE LTD.
Custom Cold Plates

Custom-designed and fabricated cold plates (thermal control/interface plates) for heat sinking at a specified temperature, built from copper, aluminum, AlSiC, or graphite.

Materials	Copper, aluminum, AlSiC, graphite
Cooling/heating methods	Refrigerant loops (HCFC/HFC/HC), cryogenic liquids (LN2, liquid methane), cryocoolers, the
Control inputs	Thermocouple, RTD, or thermistor
Communications	Serial, USB, or Ethernet
Control method	PID controller, push/pull heating/cooling

price on request

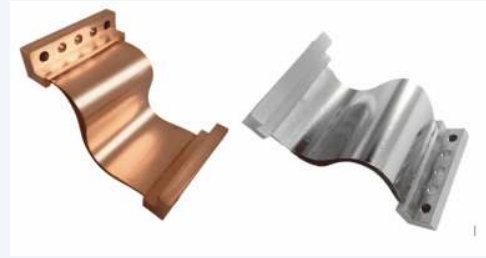


THERMAL SPACE LTD.

Thermal LyNX®

A solid-state graphene thermal strap technology offering superior thermal conductance-to-mass ratio, high flexibility, and NASA-approved low-outgassing materials for spacecraft the

Thermal conductivity-to-mass ratio	~2x better than other thermal strap types
Thermal conductivity vs. aluminum (at ~220 K)	16x per unit mass
Thermal conductivity vs. copper (at ~220 K)	27x per unit mass
Elastic modulus vs. graphite fiber	~20x lower (much more flexible)
Thermal conductivity-to-density ratio	>2x graphite fiber
price on request	



THERMAL SPACE LTD.

Thin Metal Foil Thermal Straps (TMF Series™)

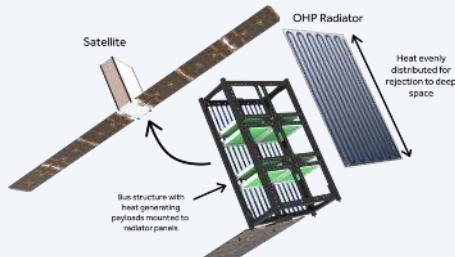
The TMF Series™ Thin Metal Foil Thermal Straps, including Copper Foil Straps (CuFS™) and Aluminum Foil Straps (AlFS™), offer superior thermal and mechanical performance for various

Copper Type/Purity	Electrical Tough Pitch (ETP), C110/99.9%
RRR Range	50-100
Copper Type/Purity	Oxygen Free High Conductivity (OFHC), C101/99.99%
RRR Range	100-500
Copper Type/Purity	4N/99.99%
price on request	

Thermavant

UNITED STATES · 2007 · 1 PRODUCT

US oscillating heat pipe (OHP) thermal management company; heat frames, chassis, radiators, and cold plates for space, airborne, and high-temperature electronics applications.



THERMAVANT

OHP Radiators

Oscillating heat pipe (OHP) embedded spacecraft radiators and structural panels for on-orbit waste-heat rejection, delivering up to 9x higher thermal conductance and 40% lower dens

Simple radiator example thermal performance (OHP)	2 °C rise per 150 W
Simple radiator example thermal performance (solid Al)	18 °C rise per 150 W (9x worse than OHP)
Simple radiator effective density (OHP)	1.6 g/cm³ (Al 6061 T4 w/ selective coating)
Simple radiator effective density (solid Al)	2.7 g/cm³ (1.7x worse than OHP)
Simple radiator shape & size	Al 6061 T4, approx. 19" x 19" x 0.04-0.16" thick (variable thickness)

price on request

Manufacturers in this sector

ACT (Advanced Cooling Technologies)

United States · 2003 · 12 products

Premier thermal management solutions company specializing in custom two-phase heat transfer technology for aerospace, defense, and industrial applications.

Airbus Defence and Space

France · 2014 · 1 product

Airbus Defence and Space designs and manufactures satellites, spacecraft equipment, and provides related services for telecommunications, navigation, Earth observation, and space exploration

Allatherm

Latvia · 3 products

Latvian company making heat pipes and loop heat pipes for space thermal management, collaborating with ESA, Airbus D&S, Thales, DLR, and JAXA, and developing a Xenon compressor for ESA Lunar

Arquimea

Spain · 2007 · 6 products

Spanish space technology company founded 2007 in Leganes, developing MEMS relay switches, SiC power devices, and miniaturized power conditioning units for satellite applications.

Arquimea (formerly IberEspacio)

Spain · 1 product

Former Spanish space engineering company; merged into ARQUIMEA Group. IberEspacio.es now redirects to arquimea.com.

Boyd Corporation

United States · 2 products

US manufacturer of engineered material solutions — sealing, EMI shielding, thermal management, and protection technologies — for aerospace, defense, and other demanding industries.

Calyos

Belgium · 4 products

Belgian expert in passive two-phase cooling technologies — heat pipes, loop heat pipes, and pulsating heat pipes — for thermal management in aerospace, defense, and industrial applications.

CAVU Aerospace

United Kingdom · 2016 · 1 product

CAVU Aerospace designs and manufactures spacecraft avionics, including radiation-tolerant onboard computers, thermal control units, frame grabbers, and flight-proven satellite cameras for va

DHV Technology

Spain · 2013 · 1 product

DHV Technology is a Spanish space technology company designing and manufacturing solar panels, electrical power systems, MLI blankets, and solar array drive assemblies for CubeSats and small

DUNMORE

United States · 1970 · 4 products

US manufacturer of coated and metallised films (Bristol, PA); MLI thermal blankets and spacecraft thermal management films for satellite and space applications; 50+ years experience.

Glavkosmos

Russia · 1985 · 12 products

Glavkosmos coordinates international human spaceflight projects, facilitates satellite launches, develops and supplies rocket components, and provides equipment for space crews.

Lidax

Spain · 2 products

Madrid-based aerospace engineering company specialising in opto-mechanical systems, flexible thermal straps, and cryogenic units for space missions.

LiquidCool Solutions

United States · 2006 · 2 products

Total liquid immersion cooling technology for servers and electronics, using patented Directed-Flow cooling in standard 19-inch racks for data center, edge, and rugged industrial application

MAP (Aerospace Coatings)

2 products

MAP is a European aerospace surface treatment and coatings company specializing in thermal control coatings, optical solar reflectors, and surface preparation materials for spacecraft and sa

Northrop Grumman Space Systems

United States · 1939 · 1 product

Minotaur family, Pegasus XL, Antares (legacy); MLV co-development with Firefly.

Paragon Space Development Corporation

United States · 1993 · 1 product

US life support and thermal control engineering company providing environmental control systems, spacesuits, and thermal management solutions for NASA, commercial, and defense space programs

Peraton Space

United States · 1 product

US national security technology company providing satellite communications, space domain awareness, ground systems operations, and intelligence support services to the US government and mili

RUAG Space

Switzerland · 1993 · 4 products

Swiss-Swedish space components manufacturer providing satellite structures, thermal control products, payload electronics, and antennas for commercial and institutional programs.

Sheldahl (Multek Flexible Circuits)

United States · 1959 · 1 product

Sheldahl (Multek Flexible Circuits) is a US manufacturer of flexible printed circuits, printed electronics, electronic materials, and aerospace thermal control materials, headquartered in No

SPUTNIX

Russia · 2011 · 2 products

SPUTNIX is a Russian manufacturer of nanosatellite and microsatellite platforms, onboard subsystems and ground infrastructure, operating as a subsidiary brand of Sitronics Group.

Technology Applications Inc (TAI)

United States · 1994 · 5 products

American thermal strap manufacturer founded 1994 in Boulder CO; world's largest maker of flexible thermal links (copper, graphite, PGS); flown on Orion, OSIRIS-REx, Solar Orbiter, and Starli

Thales Cryogenics

Netherlands · 2000 · 3 products

Dutch space cryocooler manufacturer in Eindhoven (Thales Nederland); Stirling, pulse tube, and J-T coolers for IR detectors at 10-200K; heritage on XMM-Newton, Herschel, Gaia, INTEGRAL.

Thermal Space Ltd.

United States · 4 products

US thermal-management engineering firm in Boulder, Colorado, designing and manufacturing spacecraft thermal straps, cold plates, and cryogenic cooling hardware.

Thermavant

United States · 2007 · 1 product

US oscillating heat pipe (OHP) thermal management company; heat frames, chassis, radiators, and cold plates for space, airborne, and high-temperature electronics applications.

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