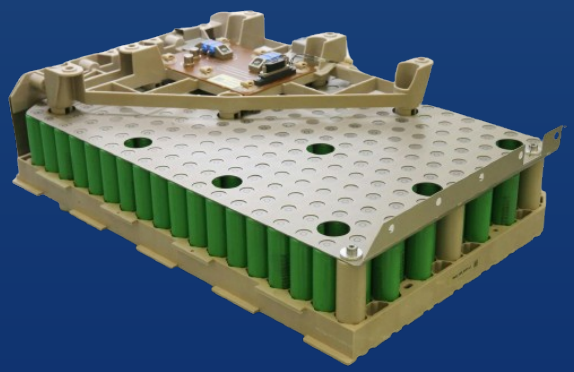
DEFENCE AND SPACE
Space Products

COSMO-BATT

A battery product line made for GEO/MEO Telecom and Navigation satellites

P o w e r



COSMO-BATT is Airbus Space's off-the-shelf battery module and has been developed by Airbus Defence and Space for **Telecom and Navigation satellites**. It draws on Airbus Space's expertise and flight-proven experience with lithium-ion batteries.

The modules are supplied by Airbus as **battery packs**. Several modules are connected in series to achieve the required voltage and mounted on a spacecraft panel. The battery pack also includes interconnects, harness and the necessary management and safety equipment.

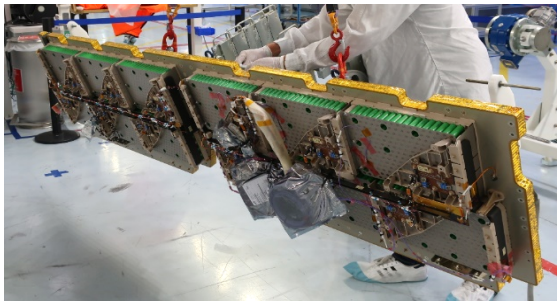
The design is based on a **modular approach** to meet specific mission requirements while minimising non-recurring costs and battery mass. The energy of individual modules ranges from 500 to 3,000 Wh. The industrial design optimises lead times and reduces production costs.

Equipped with COTS lithium-ion cells, fully qualified by Airbus for Space applications, **COSMO-BATT** offers a **disruptive price** advantage over existing products of equivalent configuration, while maintaining a high level of reliability.

Used on the **E3000-NEO**, **OneSat** and **Galileo** platforms, more than **250 units** have been successfully manufactured on the Airbus Battery Assembly Line and more than **70 modules** are currently in service.

AIRBUS

COSMO-BATT modules are supplied by Airbus as **packs**. Several modules are connected in series, usually **11S for 50 V** platforms and **22 or 23S for 100 V** platforms. The mounting panel can either be provided by the customer or be part of the battery product. Airbus Space integrates, tests and validates the battery packs at its **Battery Assembly Line** in Toulouse (France).



		SMALL (-S)	MEDIUM (-M)	LARGE (-L)
Electrical	Battery type	COTS Li-ion		
	Voltage range	2.5 to 4.2 V *Recommended use at 4.16 V during cycling operations*		
	Nominal capacity[1]	From 150 to 262 Ah	From 306 to 575 Ah	From 612 to 805 Ah
	Nominal energy[1]	From 550 to 962 Wh	From 1,125 to 2,112 Wh	From 2,250 to 2,962 Wh
	Energy density	≈ 200 Wh/kg		
	Max. continuous charge current	≈ C/5		
	Max. continuous discharge current	≈ C/2		
Physical characteristics	Dimensions (L x W x H)	206 x 171 x 109 mm	286 x 259 x 109 mm	386 x 259 x 109 mm
	Weight	From 3 to 4.6 kg	From 5.8 to 9.8 kg	From 10.9 to 13.6 kg
Environment	Thermal control	Conductive coupling between unit baseplate and S/C panel		
	Vibrations	Sine: 20 g in plane, 23 g out of plane Random: 8.5 g RMS in plane, 15.1 g RMS out of plane	Sine: 20 g Random: 9.5 g RMS in plane, 15.8 g RMS out of plane	Sine: 20 g Random: 8.1 g RMS in plane, 8.7 g RMS out of plane
	Shocks	20 g 100 Hz, 1,000 g 1.2 kHz, 1,000 g 10 kHz		40 g 100 Hz, 600 g 1 kHz, 1,300 g 3 kHz, 1,300 g 10k Hz
	Radiations	15 years in GEO, SEP tolerant		
Embedded functions	Thermal hardware	1 thermistor		
	Electronical	Protected voltage telemetry Passive balancing, normal and forced mode		
Use case example	Mission type	GEO, 15 years with EOR 22 modules in series		
	Typical cycle life	On ground: 3 years AIT at +25°C, 50% SoC 1 year pre-launch, at +25°C, 100% SoC In operations: 15 years 50 GEO seasons (≈ 2,250 cycles), C/2, repartition from 20 to 80% DoD		
	Nominal temperature range (at cell level)	+0 to +35°C		
	Failure	5% cells failure compatible at least		
	Reliability	> 0.999		

[1] *At C/5, 25°C, on 2.5-4.2 V range at cell level*

Airbus Defence and Space
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