ariane 6

MEDIA KIT

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KEY FACTS

ESA's Ariane 6 launch will inaugurate a new era of autonomous European space transportation, powering Europe into space to realise its ambitions on the world stage. It will lift off from a modern launch complex at Europe's Spaceport in French Guiana, carrying with it not just a variety of spacecraft, but also European goals for prosperity.

DATE

2024

Date and time of launch subject to change;
for the latest schedule see:
https://www.esa.int/ariane
Video transmission begins 30 minutes
before launch at esa TV:
https://www.esa.int/ESA_Web_TV

PLACE

Europe's Spaceport, Kourou, French Guiana

FLIGHT DURATION

2 Hours, 51 Minutes, 40 Seconds

PAYLOADS

Several satellites, deployers and experiments from space agencies, companies, research institutes, universities and young professionals.

POWERING EUROPE INTO SPACE

Europe must have autonomous access to space to realise its ambitions on the world stage and promote knowledge and prosperity.

Space is a natural extension of our home planet and forms an integral part of the infrastructure that is vital to daily life on Earth. Europe must assert its rightful place in space to ensure its citizens thrive.

As the world's second-largest economy, Europe must ensure it has secure and autonomous access to space, so it does not depend on the capabilities and priorities of other nations.

Europe's longstanding expertise in launching spacecraft and satellites has been a driving force behind its 60 years of successful space cooperation.

In a world where everyday life – from connectivity to navigation, climate and weather – relies on space, the ability to launch independently is more important than ever before. With the launch of Ariane 6, Europe is not just sending a rocket into the sky, we are asserting our place among the world's spacefaring nations.

ESA's Ariane 6 rocket succeeds Ariane 5, the most dependable and competitive launcher for decades.

The first Ariane rocket was launched in 1979 from Europe's Spaceport in French Guiana and Ariane 6 will continue the adventure.

Putting Europe at the forefront of space transportation for nearly 45 years, Ariane is a triumph of engineering and the prize of great European industrial and political cooperation. Ariane 1 gave way to more powerful versions 2, 3 and 4. Ariane 5 served as one of the world's premier heavy-lift rockets, putting single or multiple payloads into orbit – the cargo and instruments being launched – and sent a series of iconic scientific missions to deep space.

The decision to start developing Ariane 6 was taken in 2014 to respond to the continued need to have independent access to space, while offering efficient commercial launch services in a fast-changing market.

ESA, with its Member States and industrial partners led by ArianeGroup, is developing new technologies for new markets with Ariane 6. The versatility of Ariane 6 adds a whole new dimension to its very successful predecessors.

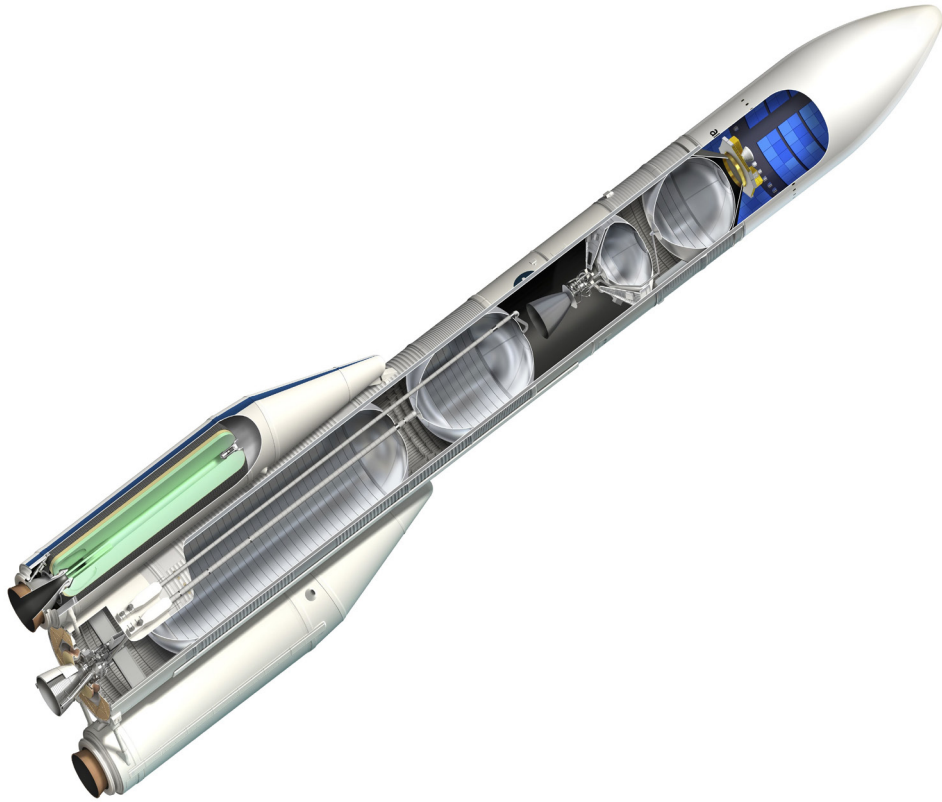
INTRODUCING ARIANE 6

Europe's next launch vehicle is the powerful Ariane 6. It will ensure Europe has secure and autonomous access to space, so it doesn't rely on the capabilities and priorities of other nations. With daily life increasingly reliant on space to keep people and things connected for communication, banking, transport, medicine and weather forecasting, the ability to launch independently is vital.

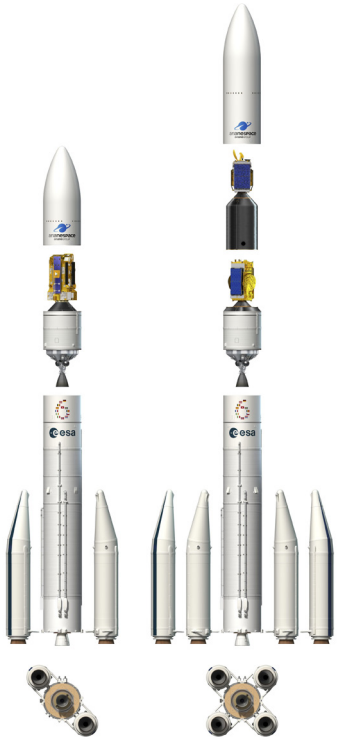
Ariane 6 will launch a wide range of space missions and comes in two versions, depending on the power needed for each flight. Ariane 62 has two solid rocket boosters, while Ariane 64 will have four. Ariane 6's first flight will have two boosters and show off the rocket's restartable upper stage.

With the ability to restart its upper stage up to four times, and its innovative auxiliary propulsion unit, Ariane 6 is especially suited to launch multiple payload missions, including orbiting satellite constellations. The same innovation also allows Ariane 6 to deorbit its upper stage after the mission has ended, to minimise space debris.

For the development of Ariane 6, ESA is working with an industrial network in 13 European countries, led by prime contractor and design authority ArianeGroup. France's space agency, CNES, is preparing the Ariane 6 launch facilities at Europe's Spaceport in French Guiana. Arianespace is the launch service provider that markets and operates the Ariane 6 launcher for institutional and commercial customers to launch a variety of missions into orbit.



ARIANE 6 LAUNCH VEHICLE



Height	56 or 62 m*
Diameter	5.4 m
Mass at liftoff	**62:** up to 540 t **64:** up to 870 t
Stages	main stage, upper stage and boosters
Thrust at liftoff	**62:** 8400 kN **64:** 15 400 kN
Payload mass for low Earth orbit	**62:** up to 10.3 t **64:** up to 21.6 t
Payload mass for geostationary transfer orbit	**62:** up to 4.5 t **64:** up to 11.5 t

*depending on fairing used, first flight: 56 m

Stages	Propellant	Thrust	Burn time
Booster powered by P120C solid rocket motor	142 t each	3500 kN	130 s
Main stage lower liquid propulsion module powered by Vulcain 2.1	150 t	1370 kN	468 s
Upper stage upper liquid propulsion module powered by Vinci	30 t	180 kN	Up to 900 s

Ariane 6 is made up of three main sections, or 'stages', to propel its cargo: two or four boosters, the lower main stage and the upper stage.

The boosters on the side of the main stage provide the main thrust at liftoff. Two or four boosters can be installed depending on the performance needed for each flight.

The main stage is powered by the liquid-fuelled Vulcain 2.1 – an upgraded version of Ariane 5's main Vulcain engine.

The upper stage is powered by a reignitable Vinci engine that runs on liquid oxygen and hydrogen, the same propellants used by the main stage. The Vinci engine allows Ariane 6 to place multiple satellites into orbit on a single mission. Once all payloads have been delivered, the Vinci engine burns a final time to dispose safely of the upper stage, ensuring it does not become space debris and threaten other objects in orbit.

The fairing at the top of Ariane 6 is like a nosecone that splits vertically to reveal the hardware underneath. The fairing comes in 14 m and 20 m lengths, both 5.4 m in diameter and made of a carbon fibre-reinforced polymer. The fairing protects the satellites from the thermal, acoustic and aerodynamic stresses as Ariane 6 rockets to space.

VERSATILE TO LAUNCH ANY MISSION

Ariane 6 was designed with versatility in mind. The rocket comes in two versions and has a reignitiable upper stage to launch multiple satellites on a single flight, as well as missions that need a 'heavy lift' to the Moon and beyond.

Payload carriers allow small satellites to piggyback on a launch providing cost-effective launch opportunities for small companies wanting to access the growing space industry.

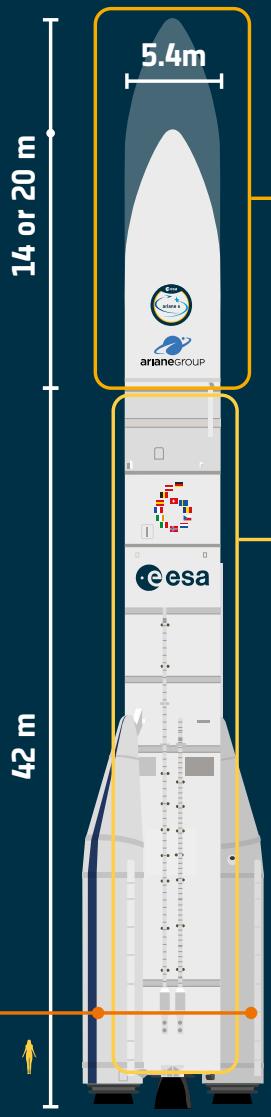
Ariane 62 (Two boosters)	Ariane 64 (Four boosters)
Geostationary transfer orbit performance:	
up to 4.5 t	up to 11.5 t
Launch weight	
540 t	870 t
Thrust	
8400 kN	15 400 kN

Boosters

Depending on the energy needed to get satellites into space, Ariane 6 comes in two versions, with two or four boosters. Each booster provides 3500 kN of thrust.

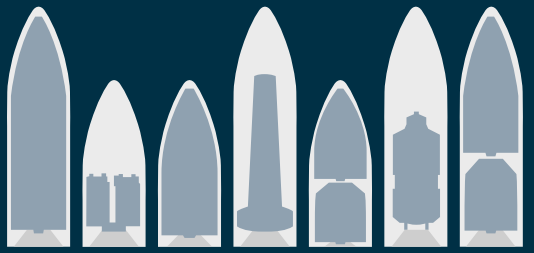
 Ariane 62

Ariane 64 



Upper part

The fairing houses the satellites and comes in two lengths to accommodate all types of passengers.



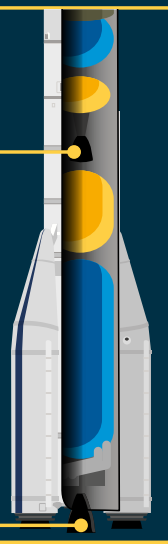
Upper and core stage

Reignitable Vinci engine
180 kN of thrust

Liquid oxygen
cooled to −180°C

Liquid hydrogen
cooled to −250°C

Vulcain 2.1 engine
1370 kN of thrust



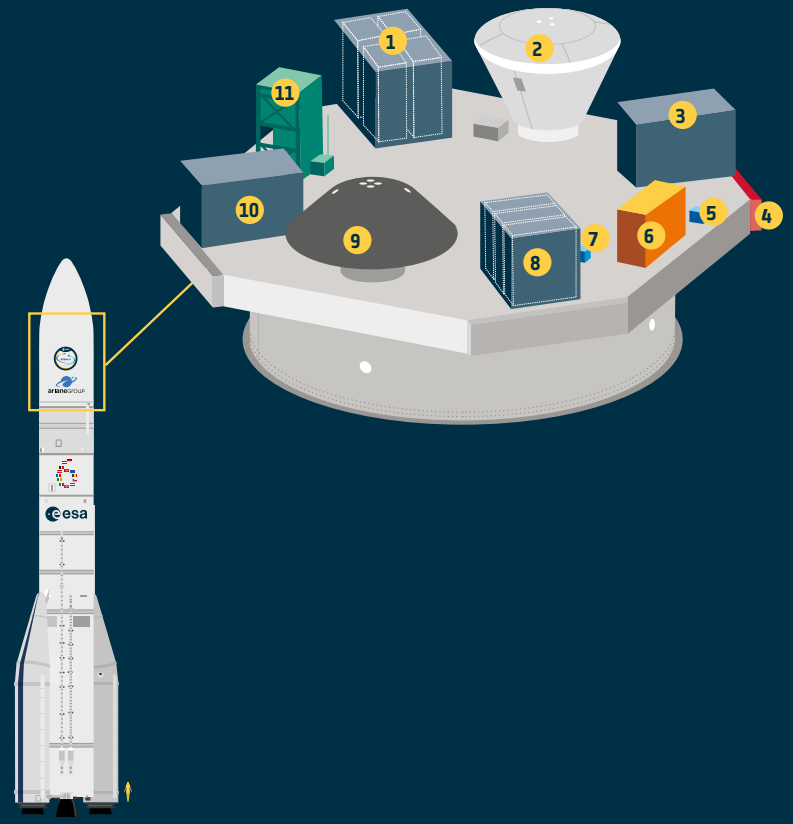
MISSIONS LAUNCHING

Ariane 6 will power Europe into space, enabling it to assert its rightful place on the world stage and ensure the thriving of its citizens. It is designed for versatility, offering customers bespoke launch options while ensuring Europe's independent access to space.
Ariane 6 will launch several satellites, deployers and experiments from space agencies, companies, research institutes, universities and young professionals on its first flight. This plethora of missions is being supplied by three types of organisations: commercial companies, space agencies and universities. Together they have been building hardware to test and prove their technology works in space; satellites to measure weather on Earth or in the Solar System; study the Sun and perform other science experiments.

Two reentry capsules and several satellites are set to fly free, placed at the top of the rocket in order of their release, perfectly timed to be set on their way after leaving their Ariane 6 nest, 600 km above Earth.
Not all the missions will be let loose. Some experiments will remain fixed to the Ariane 6 upper stage; performing their work and collecting data for the duration of the rocket's flight, then returning together in unison like skydivers holding tight for their Earth descent.

PASSENGERS FOR FIRST FLIGHT

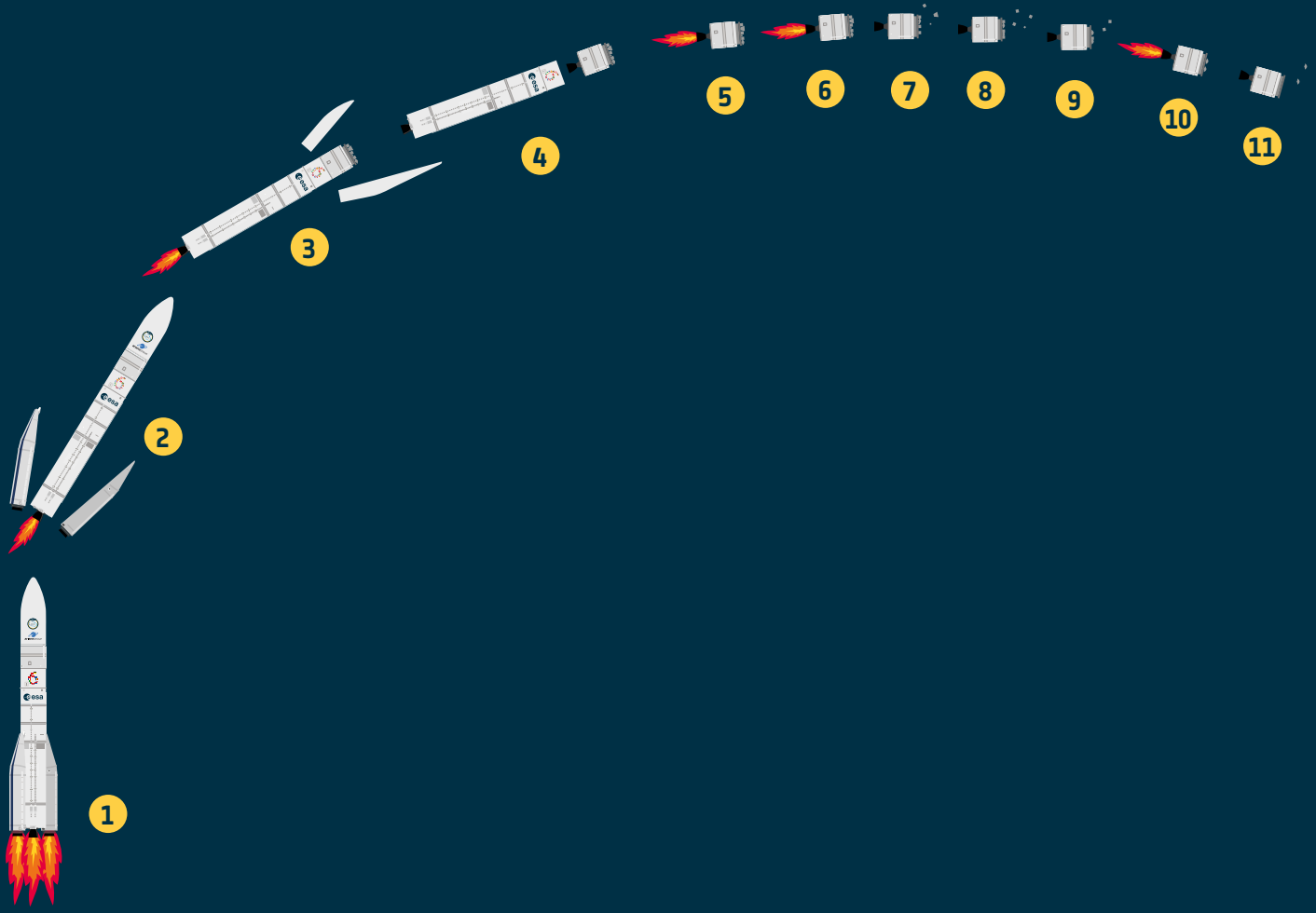
Satellites, deployers and experiments from companies, research institutes, universities, young professionals and space agencies are flying as passengers on the first Ariane 6 flight.



1. **ExoPod Nova** ExoLaunch
   - **³Cat-4** Universitat Politècnica de Catalunya
   - **ISTSat-1** University of Lisbon
   - **CURIE** NASA
   - **GRBBeta** Spacemanic
2. **Nyx Bikini** The Exploration Company
3. **OOV-Cube** RapidCube
4. **LiFi** OLEDCOM
5. **SIDLOC** Libre Space Foundation
6. **PariSat** Garef Aérospatial
7. **Peregrinus** Sint-Pieterscollege
8. **RAMI** UARX Space
   - **Replicator** Orbital Matter
   - **Robusta-3A** University Montpellier
9. **SpaceCase SC-X01** ArianeGroup
10. **Curium One** PTS
11. **YPSat** ESA

Experiment · CubeSat · Deployer · Reentry capsule

LAUNCH TIMELINE



	Time (hh:mm:ss)	Event
	-00:00:07	**Vulcain ignition**
1	00:00:00	**Booster ignition and liftoff**
2	00:02:16	**Booster separation**
3	00:03:39	**Fairing separation**
	00:07:35	**Vulcain 2.1 cutoff**
4	00:07:41	**Upper stage separation**
5	00:07:50	**First Vinci boost**
	00:08:53	**First Auxiliary Propulsion Unit power up**
	00:18:32	**Vinci cutoff**
6	00:56:20	**Second Vinci boost**
	00:56:42	**Vinci cutoff**
	01:05:36	**Auxiliary Propulsion Unit cutoff**
7	01:05:53	**First separation command:** OOV-Cube, Curium One, Robusta-3A and initialisation of YPSat and Peregrinus
8	01:05:56	**Second separation command:** ³Cat-4, ISTSat-1, GRBBeta and initialisation of SIDLOC and PariSat
9	01:06:02	**Third separation command:** CURIE and Replicator
	01:14:12	**Second Auxiliary Propulsion Unit power up**
	01:49:41	**Auxiliary Propulsion Unit cutoff**
	01:51:11	**Third Auxiliary Propulsion Unit power up**
10	02:37:15	**Third Vinci boost**
	02:37:43	**Vinci cutoff**
	02:39:26	**Auxiliary Propulsion Unit cutoff**
11	02:40:13	**Capsule separation command:** Nyx Bikini and SpaceCase SC-X01
	02:40:33	**First passivation manoeuvre**

EUROPEAN COOPERATION

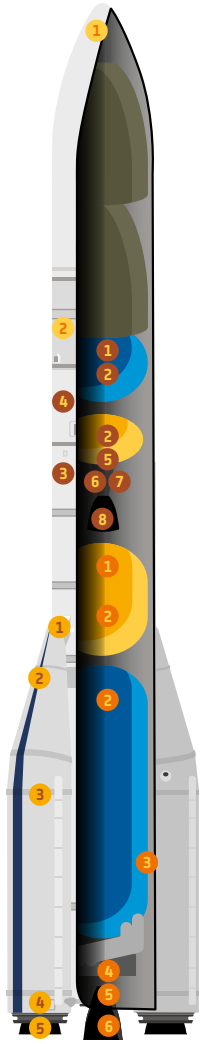
ESA's role in the development of Ariane 6 is to oversee the procurement process, as well as being responsible for the overall launch system, enabling Europe to realise its ambitions on the world stage.

Companies across Europe are building the launch vehicle and its components, with ArianeGroup as prime contractor and design authority. The P120C booster motor – used on both Ariane 6 and Vega-C rockets – is developed by ArianeGroup and Avio. It is integrated in French Guiana by their joint venture, Europropulsion. ArianeGroup integrates the boosters with the stage equipment.

France's space agency, CNES, oversees Europe's Spaceport in French Guiana and is responsible for developing the Ariane 6 launch site for the new mission. Once Ariane 6 is operational, Arianespace will be the launch service provider for the rocket. It already has more than 25 launches on order.

While ESA provides the requirements for institutional missions, European space companies oversee identifying commercial market requirements, as they are responsible for the commercial use of Ariane 6.

13 states are participating in the Ariane 6 programme: Austria, Belgium, Czech Republic, France, Germany, Ireland, Italy, the Netherlands, Norway, Romania, Spain, Sweden and Switzerland.



1. Fairing
Beyond Gravity
2. Launch Vehicle Adaptor
Airbus

Upper stage:
ArianeGroup

1. Propellant lines
Air Liquide
2. Upper stage tanks
MT Aerospace
3. Interface structure
Airbus
4. Inter tank structure
MT Aerospace
5. Thrust Vector Actuation System
Sabca
6. Engine Thrust frame
Airbus
7. Auxiliary Propulsion Unit
ArianeGroup
8. Vinci engine
ArianeGroup
- Oxygen turbopump
  Avio
- Hydrogen turbopump
  ArianeGroup
- Thrust chamber
  ArianeGroup
- Turbine
  GKN Aerospace
- Cardan
  Beyond Gravity
- Propellant valves
  Safran Aero Boosters
- Igniter
  Aerospace Propulsion Products

Core stage:
ArianeGroup

1. Propellant lines
Air Liquide
2. Core stage tanks
ArianeGroup
3. Interface structure
Airbus
4. Thrust Vector Actuation System
Sabca
5. Engine Thrust Frame
Airbus
Vulcain 2.1 aft bay cylinder
MT Aerospace
6. Vulcain 2.1 engine
ArianeGroup
- Oxygen turbopump
  Avio
- Hydrogen turbopump
  ArianeGroup
- Thrust chamber
  ArianeGroup
- Gas generator
  ArianeGroup
- Turbine
  GKN Aerospace
- Cardan
  MT Aerospace
- Propellant valves
  Safran Aero Boosters
- Igniter
  Aerospace Propulsion Products
- Nozzle
  GKN Aerospace

Covers
Aerostar

Boosters:
ArianeGroup

1. Booster gimbal attachments
Kongsberg
2. Booster upper part
Airbus
- Booster attachments
  APCO
- Nose cap
  APCO
- Front skirt ring
  MT Aerospace

3. Distancing Rockets
Nammo
4. Equipped rear skirt
ArianeGroup
- Rear skirt
  MT Aerospace
- Metallic parts
  ATC

5. P120C motor
Europropulsion
- Igniter
  Nammo
- Motor case
  Avio
- Nozzle
  ArianeGroup

Launcher equipment:

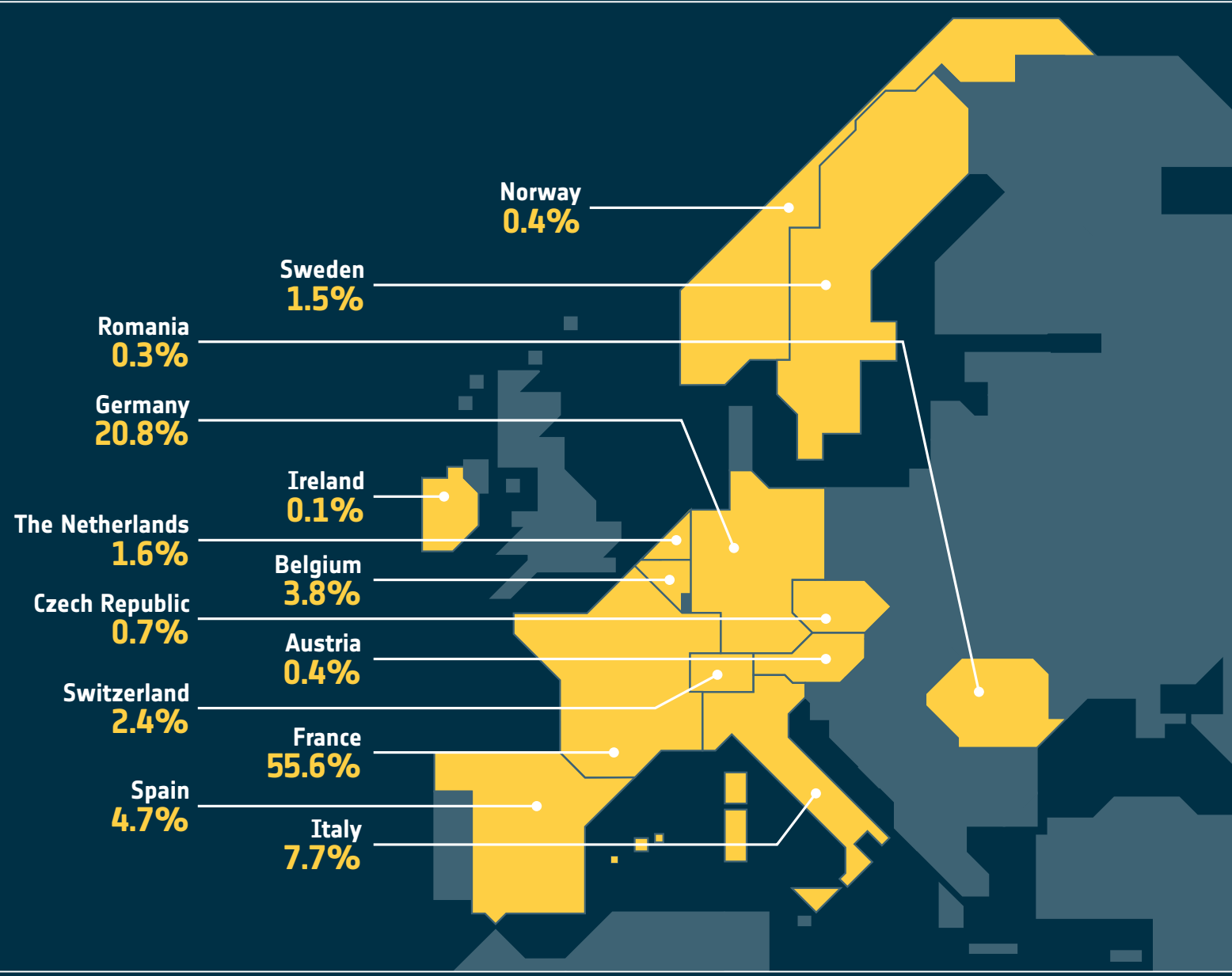
- **Avionics system**
  ArianeGroup
- **Centralized Modular Functional Unit**
  Airbus
- **Onboard safeguard**
  Thales Alenia Space
- **Optical Safety Barrier**
  Kongsberg
- **Telemetry antenna**
  Sener
- **Telemetry transmitter**
  Thales Alenia Space
- **Harnesses**
  Airbus
  Safran Electrical & Power
- **Pyrotechnic lines**
  Dassault Aviation
- **Mechanical Ground Support Equipment**
  APCO
- **Helium high pressure tank**
  Enrichment Technology Company
- **Batteries**
  Airbus
- **Inertial Measurement Unit**
  Safran Electronics & Defense
- **Multi-Channel Acquisition Unit**
  Safran Data Systems
- **Pyrotechnical Firing Unit**
  Airbus
- **Video kit**
  Realtra

PARTICIPATING STATES CONTRIBUTION

Participating states in the Ariane 6 programme provide funds to ESA to develop Europe's rocket.

The states are Austria, Belgium, Czech Republic, France, Germany, Ireland, Italy, the Netherlands, Norway, Romania, Spain, Sweden and Switzerland.

This graphic shows the participating states and their contribution in percent towards the whole Ariane 6 programme.



DESIGNED WITH SUSTAINABILITY IN MIND

ENVIRONMENTAL IMPACT ANALYSIS

An initial 'Life Cycle Assessment' was conducted with ESA's Clean Space Office for every stage of the Ariane 6 programme, to identify how improvements can be made to further reduce impacts on our Earth and space environment. Various potential impacts were assessed, from the emission of greenhouse gases to the pollution of soil and acidification of water. Confirmation of the assessment can only happen once the rocket flies.

CLEANER SAILING

The different elements of Ariane 6 are built in Europe and transported to Europe's Spaceport in French Guiana via the partially wind-powered 'Canopée' – the first cargo ship built for hybrid propulsion.

SUSTAINABLY PRODUCED ROCKET FUEL

ESA and CNES are working towards the sustainable production of liquid hydrogen and oxygen that fuel Ariane 6's main and upper stages. The Hyguane project will enable elements of the production of hydrogen through solar-powered electrolysis of water, reducing the total amount of carbon dioxide emitted by a factor of five.

SUSTAINABLE LAUNCH PAD

The Ariane 6 launch pad was built to limit carbon footprint and to preserve local natural resources. The location was chosen to avoid interfering with protected species.

CONSERVING VALUABLE WATER RESOURCES

Tonnes of water from the Ariane 6 water deluge system – which helps suppress the noise of the rocket and booster engines – is recovered during launch and stored for the next.

RESPONSIBLE USE OF SPACE

Thanks to its restartable Vinci engine and careful mission planning, the Ariane 6 upper stage can repeatedly stop and restart. A final burn can deorbit the stage to burn up in Earth's atmosphere or reorbit into a graveyard orbit, avoiding potential collisions with operational satellites or debris.

RESEARCH CONTINUES

ESA continues to research and develop new technologies and standards to ensure space transportation lives up to the ideals of the missions it launches – to peacefully explore and use space for the benefit of Earth and all its inhabitants, in a sustainable manner and with future generations in mind.

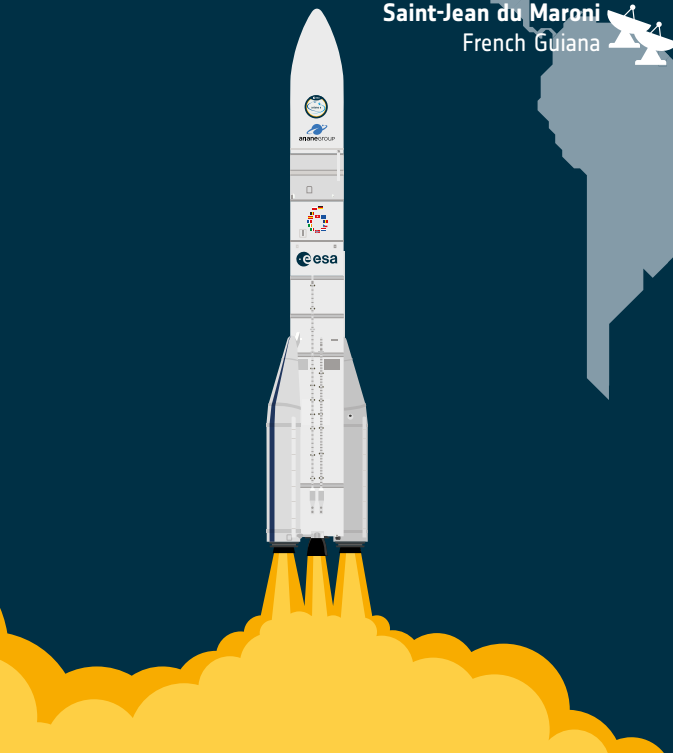
EUROPE'S SPACEPORT IN FRENCH GUIANA

Europe's Spaceport in French Guiana is one of the world's ideal launch sites. Its location near the equator gives rockets launched eastward an extra push from Earth's rotation, significantly increasing the maximum mass of the payload launched compared to more northerly or southerly sites. Open ocean to the north and east offers launch trajectories which do not fly above populated areas, and the region has few to no cyclones or earthquakes.

The Ariane 6 launch complex is newly developed and features a mobile structure to integrate the rocket, boosters and payloads, which then rolls away for launch. Hundreds of metres of tunnels protect wires for data connection, fuel pipes to bring propellant and gases to the launcher, and huge pipes for the water deluge system that is triggered at liftoff.

GROUND TRACKING NETWORK

This map shows the tracking stations used for the first flight.



Rocket tracking serves two main purposes. While the rocket is flying, precise knowledge of its path and how it is functioning allows warnings to be given and safety measures taken if anything doesn't go to plan. An extensive antenna network for tracking the launcher exists across the world using both CNES, ESA Estrack and partner antennas.

Ariane 6 rockets will be tracked independently by these dishes as they soar to the sky, each mission will have different tracking stations on call depending on the mission profile – every pivotal phase of a flight is closely followed and understood as a rocket passes overhead at 28 000 km per hour and at altitudes of hundreds of kilometres.

Once a launch is complete, tracking data and telemetry are used to fine-tune its performance, making every future launch even more precise and reliable.

ARIANE 6 PARTNERS

ESA

ESA manages Europe's space transportation programmes, including the Ariane 6 programme. ESA's role in the development of Ariane 6 is to oversee procurement, as well as being in charge of the overall launch system. ESA is the operator of the Ariane 6 inaugural flight.

www.esa.int/Ariane

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ARIANEGROUP

ArianeGroup is the prime contractor for the development and production of Ariane 6 launcher system. It oversees the entire supply chain including equipment and structures, engine manufacturing, integration of the various stages, and launcher integration at Europe's Spaceport in French Guiana.

www.ariane.group

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ARIANESPACE

Arianespace provides launch services for all types of satellites into all orbits. From the second Ariane 6 flight onwards Arianespace operates the flight from liftoff, on behalf of its customers.

www.arianespace.com

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CNES

France's space agency CNES (Centre National d'Etudes Spatiales) is responsible for developing and maintaining Europe's Spaceport in French Guiana. At the spaceport, CNES manages operations, the reception of satellites, launch vehicle monitoring and tracking, range security and environmental protection.

www.cnes.fr

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HOW TO FOLLOW

EUROPEAN SPACE AGENCY

ESA is tasked with guiding the development of Europe's space capabilities and making sure that its investments in space benefit the citizens of Europe. An international organisation with 22 Member States, ESA coordinates its members' financial and intellectual resources to conduct programmes and activities that largely surpass the scope of action of a single European state.

ESA manages the development of Europe's current and future space transportation programmes, including Ariane 6, Vega-C and Vega-E, and Space Rider. On Ariane and Vega, ESA manages the overall programmes, while European industry builds the launch systems, with ArianeGroup (Ariane 5 and 6) and Avio (Vega-C and -E) as prime contractors. ESA Member States fund about two thirds of the total cost of running and maintaining Europe's Spaceport. ESA owns the various launch complexes, which are operated by Arianespace.

www.esa.int
Media contact: media@esa.int

ESA Web TV: esawebtv.esa.int

Information for general public: esa.int/ariane

EuropeanSpaceAgency

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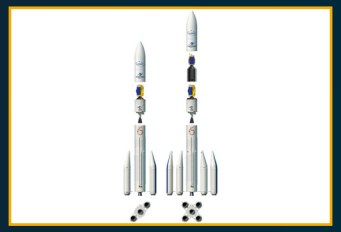
Hashtags: **#Ariane6** **#EuropeSpacePort**

Merchandise

IMAGES AND VIDEOS

IMAGES



Artist's view of Ariane 6 cutaway

Ariane 6 mobile gantry

Ariane 6 stacked

Ariane 6 launch zone

Ariane 6 processing to launch

VIDEOS

Ariane 6 mobile gantry on the move

Ariane 6 assembly timelapse

Ariane 6 upper stage engine test

Ariane 6 water system test

The latest images and videos are available here: https://photolibrary.esa.int/

THE EUROPEAN SPACE AGENCY

Established in 1975, ESA now has 22 Member States and cooperates with many others. These countries are home to more than 500 million European citizens. If you're one of them, then we're working for you.

Our mission is the peaceful exploration and use of space for the benefit of everyone. We watch over Earth, develop and launch inspiring and unique space projects, fly astronauts and push the boundaries of science and technology, seeking answers to the big questions about the Universe.

We are a family of scientists, engineers and business professionals from all over Europe, working together in a diverse and multinational environment.

An ESA Production