

# Modern Airships

## Consolidated Table of Contents

Peter Lobner, 9 September 2021

*Modern Airships* is a three-part document that contains an overview of modern airship technology in Part 1 and links in Parts 1, 2 and 3 to more than 170 individual articles on historic and advanced airship designs. Here are the links to the three parts:

- Modern Airships – Part 1: <https://lynceans.org/all-posts/modern-airships-part-1/>
- Modern Airships – Part 2: <https://lynceans.org/all-posts/modern-airships-part-2/>
- Modern Airships – Part 3: <https://lynceans.org/all-posts/modern-airships-part-3/>

The following consolidated Table of Contents for all three parts should help you navigate this large volume of material.

### **Contents of Modern Airships – Part 1**

#### **1. Introduction**

*Modern Airships – Part 1* begins with an overview of modern airship technology, which is followed by a summary table identifying the airships addressed in this part, and concludes by providing links to 77 individual articles on these airships. Some articles cover more than one airship in more than one category.

- 2. Well-established benefits and opportunities, but a risk-averse market**
- 3. Status of current aviation regulations for airships**
- 4. Lifting gas**

## **5. Types of modern airships**

5.1 Conventional airships

5.2 Semi-buoyant hybrid airships

5.3 Semi-buoyant aircraft

5.4 Variable buoyancy airships

- Variable buoyancy / fixed volume airships
- Variable buoyancy / variable volume airships
- Variable buoyancy propulsion airships / aircraft

5.5 Helicopter / airship hybrids

5.6 Stratospheric airships

5.7 Thermal (hot air) airships

5.8 Hybrid thermal-gas (Roziar) airships

## **6. How does an airship pick up and deliver a heavy load?**

## **7. The scale of large cargo airships**

## **8. Specific airships in Part 1**

- Graphic tables

## **9. Links to the individual articles**

### **Conventional, rigid and semi-rigid airships:**

- Airfloat Transport Ltd.
- Airship Advertising / Laws Corp. - rigid airship
- Airship do Brasil (ADB) – ADB 3-30 & 3-15/30
- Airship Industries – R40/R130 & R150
- CargoLifter - CL160 & Joey
- C.N.R.S. – Titan
- Conrad Airship Company
- Rigid Airship Design (RAD) – RA-180 Holland Navigator
- SAIC - Skybus 1500
- SAIC & ArcXeon International - Airstation UAS Carrier
- Shell / Aerospace Developments - Methane gas transporter
- SPACIAL SA - MLA-24-A, -32-A & -32-B
- Tucker Airships - TX-1

- Wren Skyships Ltd. – R.30 & RS.1
- Zeppelin NT
- Zeppelin ZET

**Conventional, non-rigid airships (blimps):**

- Advanced Airship Corporation – ANR-1
- Aerospace Development – AD-500
- Airship do Brasil (ADB) - ADB 3-X01 & 3-3
- Airship Industries – Skyship 500, 500HL & 600
- American Blimp Corp. – Lightships & Navy MZ-3A
- ATG / HAV – AT-10
- Aviation Industry Corporation of China (AVIC) - AS700
- Goodyear Aerospace – N-Class blimps
- Goodyear Aerospace – Civilian blimps GZ-19, -19A, -20, -20A & GZ-22
- SAIC - Skybus 80K
- Thunder & Colt – GA-42
- US Air Force / Mav6 - Blue Devil Bock II
- US-LTA - Model 138S blimp
- US Navy / Goodyear & Bell Aerospace – Maritime Patrol Airships
- US Navy / Goodyear & Martin Marietta: ANVCE fully air buoyant (FAB) airships
- US Navy / WAI – Sentinel 1000 & 5000
- Vantage Airship Manufacturing Co.- blimps
- Voliris - V900
- WDL – WDL-1

**Variable buoyancy, fixed volume airships:**

- Aeros - Aeroscraft *Dragon Dream*
- Aeros - ML866 / Aeroscraft Generation 2
- S.E.A.B. – Champlain
- Walden Aerospace / LTAS - Lenticular, toroidal, variable buoyancy airships
- Winch Design - Halo

**Variable buoyancy, variable volume airships:**

- Voliris - V901, V902, V930, V932 NATAC & SeaBird

**Helistats (airship / helicopter hybrid):**

- Aerolift Inc. – Cyclocrane & Cyclo-Cruiser
- Aérospatiale – Hélicostats
- Aérospatiale – Obélix
- All American Engineering – Aerocrane
- Bothe – Helitruck & semi-buoyant hybrid aircraft
- Goodyear Aerospace – Dynastats
- Goodyear Aerospace - Quad-rotor heavy-lift helistats
- Piasecki - Quad-rotor heavy-lift helistats & PA-97
- Skyhook International / Boeing - SkyHook JLH-40
- Other helistats

**Semi-buoyant hybrid aircraft:**

- Aereon Corp. - Aereon III
- Aereon Corp. - Dynairships & Aereon 26
- Megalifter Co. - Megalifter
- Ohio Airships - Dynalifters DL-100 & Patroller, Freighter & Cruiser, Drone Runner
- Tumencotrans – BARS & Bella-1

**Semi-buoyant hybrid airships:**

- Advanced Hybrid Aircraft Ltd. – Patroller 3
- ATG - SkyKitten & SkyCat
- ATG / HAV – Condor
- Boeing Vertol – Helipsoid
- DARPA - Project Walrus
- EERM – Dinsaure & Dino 2
- GNSS / NSS / ENSS – StarShadow
- Goodyear - Dynamic lift airship
- Hybrid Air Vehicles / Northrop Grumman - HAV-3 & HAV-304 (LEMV)
- Hybrid Air Vehicles - Airlander 10 & 50
- Lockheed Martin - Aerocraft
- Lockheed Martin - P-791
- Lockheed Martin - SkyTug & LMH-1
- S.E.A.B. – Alcyon
- US Navy / Goodyear – SABV

- US Navy - HULA program
- Vantage Airship Manufacturing Co., Ltd. - CA-60T & CA-200T

#### **Stratospheric airships:**

- Airship do Brasil (ADB) – SAGA
- ATG - StratSat
- C.N.R.S. Pégase
- DARPA / Lockheed Martin - ISIS
- Japan Stratospheric Platform (SPF) & SkyNet
- Lockheed Martin - HALE-D
- Lockheed Martin - High-Altitude Airship (HAA)
- South Korea Stratospheric airship VIA-200
- SwRI - HiSentinel
- US Navy / GNSS - StarLight
- Walden Aerospace / LTAS - S.O.S.C.S.

#### **Thermal (hot air) airships:**

- APEX Balloons - thermal airship
- GEFA-Flug (Impacto Aereo) - AS-105GD/4 & AS-105GD/6
- Skyacht - Personal Blimp

#### **Aerostats:**

- CargoLifter - CL75 AC (AirCrane)

### **Record of revisions to Modern Airships Part 1**

**Original *Modern Airships* post, 26 August 2016:** addressed 14 airships in a single post.

**Expanded *Modern Airships* post in three parts, 18 August 2019:** Part 1 included 22 linked articles.

**Part 1, Revision 1, 21 December 2020:** Added 15 new articles, split the existing Aeros article into two articles and updated all of the original articles. Part 1 now had 38 articles.

**Part 1, Revision 2, 3 April 2021:** Updated the main text and 10 existing articles, expanded and reorganized the graphic tables. Part 1 still had 38 articles

**Part 1, Revision 3, 26 August 2021:** Added 34 new articles, split the existing Helistat article into five articles and the Aereon article into two articles, and expanded and reorganized the graphic tables. Also updated 23 existing articles. Part 1 now has 77 articles.

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## **Modern Airships – Part 2**

### **1. Introduction**

Modern Airships – Part 2 begins with a summary table identifying the airships addressed in this part, and concludes by providing links to 64 individual articles on these airships. Some articles cover more than one airship in more than one category.

### **2. Specific Airships in Part 2**

- Graphic tables

### **3. Links to the individual articles**

#### **Conventional, rigid and semi-rigid airships:**

- Airstar - Alpha / LTA Corp. - Alizé - lenticular airships
- Augur RosAeroSystems (RAS) - DZ-N1 & MD-900
- Buoyant Aircraft Systems International (BASI)
- Flying Whales - LCA60T
- Hamilton Airship Company (THAC) - HA-44, -80 & -140
- Lightspeed USA Inc. - Lightships LS-12 & -60
- SkyLifter Ltd. - Flying Crane, SL150, SL50, SL25 & SL20
- Solar Flight - Sunship
- SolarAirShip - High-Speed Solar Airship (HSSA)
- TP Aerospace - Atlas 80

#### **Conventional, non-rigid airships (blimps):**

- 21<sup>st</sup> Century Airships - Voyager
- 21<sup>st</sup> Century Airships & Techsphere - spherical blimps
- A-NSE - A-N400
- Atlas LTA Advanced Technology - Atlas-6 and -11
- Augur RosAeroSystems (RAS) - Au-11, -12M & -30
- Augur RosAeroSystems (RAS) - SOKOL
- Blackwater Airships / Guardian Flight Systems - Polar 400 / 450 & Polar 600
- E-Green Technologies (EGT) - Bullet 125 & 580

- Project Sol'R - Nephelios
- Worldwide Aeros Corp - Aeros 40 Sky Dragon

### **Semi-buoyant hybrid airships:**

- Airship-GP - AeroTruck, AeroBoat & AeroYacht
- Dirisolar - DS 0.6, DS 12, DS 900, DS 1500 & DS 30
- Flying-Yacht
- Magnus Aerospace Corp. - LTA 20-1 spherical Magnus effect airship
- Millennium Airship - SkyFreighter SF20T, SF50T & SF500T
- Nautilus SpA - Elettra Twin Flyers (ETF)
- Turtle Airships

### **Semi-buoyant hybrid aircraft:**

- Egan Airships - PLIMP Model D drone & Model J
- Solar Ship - Caracal, Wolverine & Nanuq

### **Hybrid thermal-gas (Rozier) airships:**

- Aerosmena (AIDBA) - A20, A-60, A200 & A600
- Boeing - hybrid thermal airship
- Design Bureau Thermoplan - Thermoplane ALA-40 & -200
- LocomoSky - LokomoSkyner
- Thermo-Skyships Ltd. (TSL) - Thermo-Skyship

### **Thermal (hot air) airships:**

- Augur RosAeroSystems (RAS) - Au-29, -31, -35 & -37

### **Variable buoyancy, fixed volume airships:**

- AeroVehicles, Inc. (AVI) - Minicat, Aerocat R-12 & R-40
- Airship-GP - "Super Hybrid" AeroTruck, AeroBoat & AeroYacht
- Atlas LTA Advanced Technology - ATLANT 30, 100 & 300
- Augur RosAeroSystems (RAS) - ATLANT
- Euro Airship - Corsair & DGPAAtt
- Global Airships - Atlas
- Imaginative - Alert, Invitation & Kugaaruk
- LTA Aerostructures - 10T & 70T
- Skylite Aeronautics - GeoShip
- Varialift Plc. - ARH-PT, ARH 50 & 250



### **Variable buoyancy, variable volume airships:**

- A-NSE tri-lobe airships & aerostats
- Dynapod
- EADS - Tropospheric Airship

### **Variable buoyancy propulsion airships:**

- Hunt Aviation - Gravity Plane
- New Mexico State University - Advanced High-Altitude Aerobody (AHAB)
- Phoenix
- Solomon Andrews - Aereon I & II (1863)
- Walden Aerospace / Lighter Than Air Solar (LTAS) - Variable buoyancy propelled airships / aircraft HY-SOAR B.A.T & VAMPIRE

### **Stratospheric airships:**

- Atlas LTA Advanced Technology - Propulsion Assisted High Altitude Platform (PAHAP)
- Augur RosAeroSystems (RAS) - HAA Berkut
- Beijing Aerospace Technology Co. & BeiHang - Yuanmeng stratospheric airship
- ESA / Lindstrand - High-Altitude Long-Endurance (HALE) aerostatic craft
- EU CAPANINA
- NASA 20-20-20 airship challenge
- Sanswire / WSGI - Stratellite One & Argus One
- Sceye Inc. - stratospheric airship
- SkyStation International Inc. - Sky Station
- StratXX - X-Station
- TAO Group - SkyDragon
- Thales Alenia Space - Stratobus
- Worldwide Aeros Corp. - G2R high altitude airship

### **Electro-kinetically (EK) propelled airships:**

- Festo - b-IONIC Airfish
- Walden Aerospace / Lighter Than Air Solar (LTAS) - XEM-1, EK-1 & BBD

### **Small LTA drones:**

- Aerotain AG - Skye spherical blimp
- Airship Surveillance - R&D1 blimp & Airship Manufacturing - Sky Sentinel blimp
- BAK - EM50 blimp
- Blackwater Airships / Guardian Flight Systems - RC-36 blimp
- DDBA (aka DKBA) - DP-27 & -29 airships
- Galaxy Unmanned Systems - GC-35, -60 & -75 blimps
- TAO Group - Lotte airship

## **Record of revisions to Modern Airships Part 2**

**Original *Modern Airships* post, 26 August 2016:** addressed 14 airships in a single post.

**Expanded *Modern Airships* post in three parts, 18 August 2019:** Part 2 included 25 articles

**Part 2, Revision 1, 21 December 2020:** Added 2 new articles on Walden Aerospace. Part 2 now has 27 articles

**Part 2, Revision 2, 3 April 2021:** Added 35 new articles, split the original variable buoyancy propulsion article into three articles, and updated all of the original articles. Also updated and reformatted the summary graphic table. Part 2 now has 64 articles.

**Part 2, Revision 3, 9 September 2021:** Updated 7 articles. Added category for “thermal (hot air) airships” and added pages for them in the summary graphic table. Part 2 still has 64 articles.

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## **Modern Airships – Part 3**

### **1. Introduction**

Modern Airships – Part 3 begins with a summary table identifying the airship concepts addressed in this part, and concludes by providing links to 33 individual articles on these airship concepts. Some articles cover more than one airship in more than one category. Many of the design concepts in Part 3 are quite exotic in comparison to the more utilitarian airships that dominate Modern Airships – Parts 1 & 2.

### **2. Specific Airships in Part 3**

- Graphic tables

### **3. Links to the individual articles**

#### **Cargo & multi-purpose airships:**

- Airship Archangel large, multi-purpose airship
- Airship One medium, hybrid airship / semi-buoyant aircraft
- Cloudea large, multi-purpose airship
- KNAAR heavy-lift cargo airship for wind turbine components
- Rediscovery Presidential airship

#### **Mass transportation airships:**

- Airbia suburban passenger ferry airship
- Flight 2.0 basic air transportation
- Imaginative Aerostratos regional passenger transportation
- KLM WB-1010 Spruce Whale large buoyant passenger aircraft

#### **Flying hotel airships:**

- Aircruise luxury airship hotel with land dock
- Airship Traveling luxury airship hotel
- Avalon Airships Aether luxury airship hotel
- Dassault Systems commercial flying cruise liner
- Hydrogenase bio-hydrogen airship / building with land dock
- Manned Cloud luxury airship hotel

**Touring airships:**

- Airmotion scenic touring airship
- Avalon Airships Hemera luxury tourist ferry
- Stalker exploration airship
- Walden Aerospace LTA-1701-D & Klingon Bird of Prey LTA entertainment airships

**Flying yacht airships:**

- Aeolus personal airship yacht
- Aerolabe solar-powered airship / ornithopter hybrid
- Aeromodeller II personal hydrogen airship yacht
- Eunoia luxury airship yacht
- LZ-73 small luxury airship
- Renault Zep'lin solar-powered racing airship
- Strato Cruiser luxury airship yacht
- Wolke7 personal airship yacht / flying home

**Stratospheric airships & stations:**

- Walden Aerospace - Earth Station One, Silver Dart shuttle & Vertical Exploration System (W.A.V.E.S.)

**Remotely-piloted special purpose airship:**

- Avalon Airships EOS autonomous police support vehicle

**Personal airships:**

- Sky Voyage hybrid personal airship / glider
- Escape hybrid personal airship & land vehicle

**Thermal (hot air) airships:**

- Sunrise solar-powered thermal airship
- Sterling solar-powered thermal airship
- Tensairity thermal airship

**Other novel designs:**

- Imaginative Medusa and Cubozo
- Imaginative Templar

### **Record of revisions to Modern Airships Part 3**

**Original *Modern Airships* post, 26 August 2016:** addressed 14 airships in a single post.

**Expanded *Modern Airships* post in three parts, 18 August 2019:**  
Part 3 included 32 articles

**Part 3, Revision 1, 21 December 2020:** Added 1 new article on Walden Aerospace. Part 3 now has 33 articles.