

ENERGY

WE ENERGIZE
THE WORLD

MARKER BALLS

POWER LINE MARKING AND
INSTALLING RETHOUGHT



SPHERA® & LINEFLY™

The Power Line Marker
Made in Austria

SHORTEST ASSEMBLY TIME

VISIBLE SUPERIORITY

SIGNAL

MORE THAN PRACTICABILITY

THOUGHTFUL DOWN TO THE SMALLEST DETAIL

BENEFITS

02

70% Reduced assembly time

Sphera® has redesigned the aircraft warning marker ball and fundamentally simplified its assembly process. Our sphere stands out from the competition by reducing installation time by 70%, thus saving costs. The latest generation of Sphera® is assembled using the LineFly™ robot and drone, which offers numerous additional advantages.



Area of Application

A wide range of application and versatile possibilities – these are the hallmarks of the MS Design aircraft warning marker ball. One primary application is the marking of high-voltage overhead lines. Different sphere sizes are used at varying altitudes. Sphera® serves as a marker for aircraft and other structures on elevator support lines, mountain railways and ship masts.

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Advantages at a glance

- Automatic, precise, fast and safe installation with the FulcrumAir Marker Ball LineFly™
- Modular clamps for different conductor diameters
- Optional integration of transponders inside the ball
- Fully dyed base material with UV surface protection ensures long-lasting colour stability
- Various RAL colors available
- No detachable parts, resulting in increased accident prevention
- Significantly increased safety due to robotic and drone installation
- Environmentally friendly, resource-saving work processes increase ground crew safety and reduce CO₂ emissions
- Rubber inserts reduce mechanical stress on the cable
- No time-consuming installation of protective helicals required



EASY ASSEMBLY

THANKS TO UNMANNED ROBOTS

LINEFLY

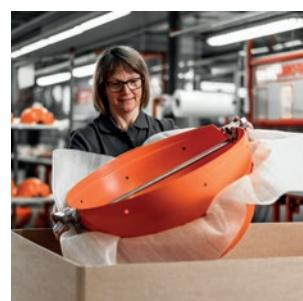
SPHERA® & LINEFLY™

THE SYSTEM

DRONE

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Key Facts



-  Eliminates dangerous helicopter or line work
-  Enables installation on ground wire and OPGW without interrupting operation: Fast and simple robotic removal for maintenance
-  Modular system, compatible with 300, 600 and 900 mm marker balls
-  Installation time approx. 5 minutes per marker ball
-  Extremely weather- and UV-resistant, dimensionally stable, solid-colored material, attached with pre-assembled clamps with no loose parts to unmanned robot
-  Excellent visibility



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Process and installation

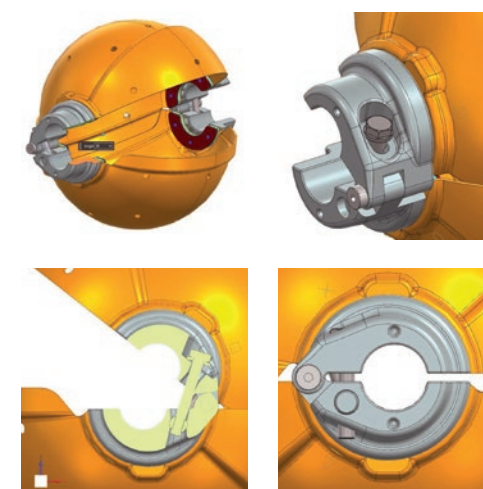
The LineFly™ robotic system sets new standards in aviation safety and installation efficiency.

The Sphera® aircraft warning marker balls were developed for excellent visibility and sustainability, improving safety for aviation, wildlife and infrastructure along overhead lines, cableways, airports and environmentally sensitive regions.

Through cooperation with FulcrumAir, these aircraft warning marker balls can now be robotically installed using the LineFly™ System, deployed via the FulcrumAir™ E-Drone. This innovative method eliminates the need for helicopters, bucket trucks, or line carts. Crews remain safely on the ground and with robotic installations there is no systems downtime – the LineFly™ can install on live lines.

The LineFly™ System reduces installation time by up to 70% with the robot requiring only around 5 minutes per marker ball.

Clamp



INSTALLATION

THANKS TO UNMANNED ROBOTS

SPHERA

SPHERA® & LINEFLY™

THE SYSTEM

DRONE

06

Service

Installation by LineFly™

- Fast, safe, precise
- Installs 30+ Sphera® marker balls/robot/day
- Deploy additional robots for greater productivity
- 90% less carbon emissions than helicopter installs
- Reduced land disturbance: 2 km coverage/launch site
- No power outage – can install on energized system
- 20-degree wire slope capable
- Post-installation QC data reports available



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Process and installation



FulcrumAir's Marker Ball LineFly™ delivers a fast, safe and highly precise installation process for aerial line markers on energized transmission lines. Each robot can install 30+ Sphera® marker balls per day with the ability to deploy multiple units for accelerated project timelines. Operating without the need for outages, the system reduces risk while maintaining continuous service.

With up to 2 km of coverage per launch, minimal land disturbance and the ability to handle wire slopes up to 20 degrees, LineFly™ provides unmatched flexibility in the field. The process is also environmentally responsible, producing up to 90% fewer carbon emissions compared to traditional helicopter installations. Post-installation, detailed QC data reports ensure accuracy and accountability.

SERVICE

PROVIDED BY FULCRUMAIR

LINEFLY

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Installation by LineFly™

- Fast, safe, precise
- Installs over 30 Sphera® marker balls per robot per day
- Multiple robots for higher productivity
- 90 % fewer CO₂ emissions than helicopter installations
- Lower ground impact: 2 km coverage per launch site
- No power outage required – installation possible even on live systems
- Suitable for cable slopes up to 20°
- Quality control reports available after installation



FulcrumAir Leasing and Certification Program

FulcrumAir's leasing program empowers our team to take control of robotic installation projects with full support and certification. We provide comprehensive training to certify your crews in operating our robots and drones, along with all required devices and accessories.

The program includes ongoing project management support, as well as maintenance and repair services to keep operations running smoothly. Designed for flexibility and scalability, our leasing solution enables utilities to build in-house capabilities while maintaining access to FulcrumAir expertise. All equipment and services are NDAA compliant and SAM registered, ensuring alignment with regulatory and procurement requirements.

FulcrumAir Full-Service-Installation

FulcrumAir offers turnkey installation services led by our certified robotics team, ensuring every project is executed safely, efficiently and to the highest standard. From planning and mobilization to deployment and post-installation reporting, our experts manage the entire process. By leveraging advanced robotic systems, we eliminate the need for outages, reduce environmental impact and minimize ground disturbance – all while delivering consistent, high-quality results. Our service provides utilities with a reliable, low-risk solution that maximizes productivity without the complexities of traditional installation methods.

DETAILS

ABOUT SPHERA® MARKER BALLS

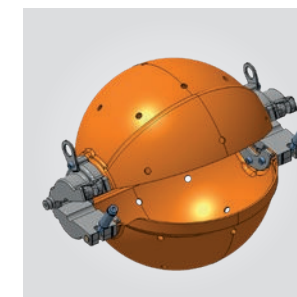
SPHERA

09

300 mm

Small and robust

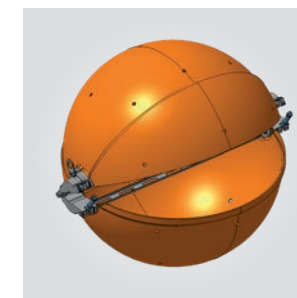
The compact version of the marker ball measures 300 mm in diameter and is easy to handle. The clamps are produced in one standard size. Weight: 2,621 g



600 mm and 900 mm

Eye-catching

Our 600 mm and 900 mm marker ball stands out, and not just in the sky. Ball diameters: 600 mm and 900 mm. Clamps remain the same size; in the large version they are connected with an internal brace. Weights: 5,144 g (600 mm), 6,867 g (900 mm)



INDIVIDUAL PROCESSING

MEET YOUR NEEDS

INDIVIDUAL

LONG SERVICE LIFE

DUE TO OPTIMAL CONDITIONS

STRUCTURE

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Variants

The Sphera® aerial marker ball is available in three sizes and standard colours. On request and with a minimum order quantity of 200 pieces, any colour is possible. Individual customizations, special samples or prototypes can be produced in all sizes with any clamping diameter from 10 mm to 45 mm through our customization program. The spheres are suitable for various conductor diameters, thus offer a wide range of applications.



10 mm ↔ 45 mm

Clamping range available for cable diameters incl. spiral from 10–45 mm

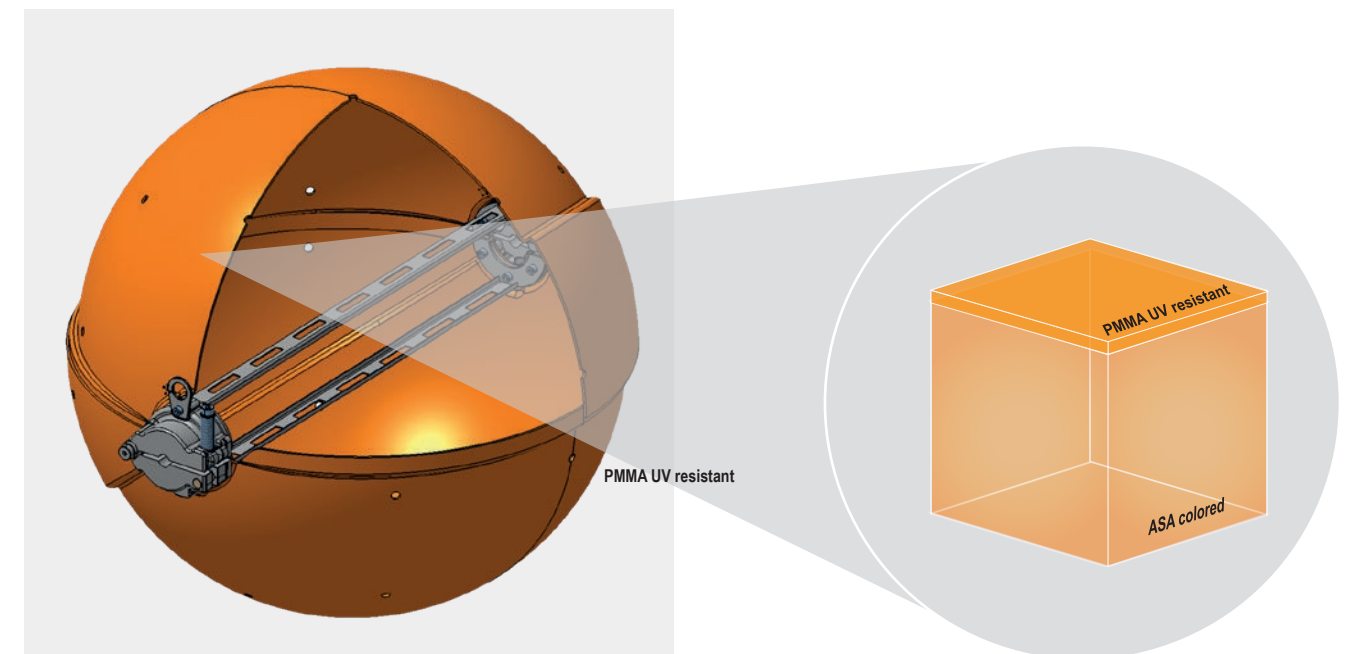
Variable cable diameters

Different clamping ranges allow the use on different conductor diameters. The diameter of the clamping range extends from 10 mm to 45 mm. Even with larger diameters, the size of the clamps remains consistent. This avoids additional costs due to having to use more material. The tension generated by tightening the locking mechanism prevents the aircraft warning marker ball from slipping on any conductor diameter.

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Layer structure

Thanks to the use of through-dyed material, we guarantee a long service life despite all weather conditions. The materials used have already been recycled and therefore offer the best prerequisites for a green future. The main component of our panel (97%) consists largely of recycled, dyed ASA. The surface is protected from weathering by a UV-resistant layer (3%) made of PMMA.



SYSTEM AND STRUCTURE

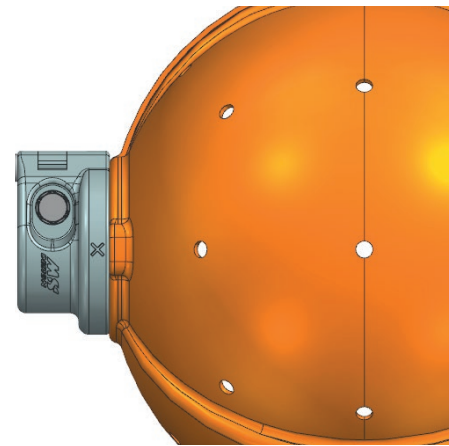
SIMPLE AND FUNCTIONAL

SYSTEM

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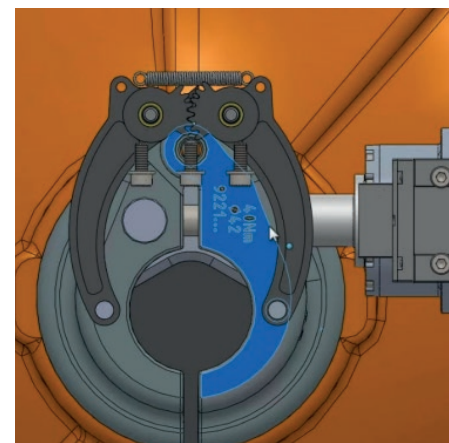
Draining holes

Draining holes allow collected rainwater to run off, preventing condensation and avoiding added weight from frozen water.



Robotic installation and removal

The GPS-controlled drone flies the robot to the pre-defined installation or removal point. Mounting or dismantling takes place fully automatically within seconds.



COLOR SCHEME

STANDARD OR INDIVIDUAL

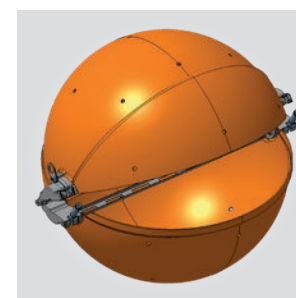
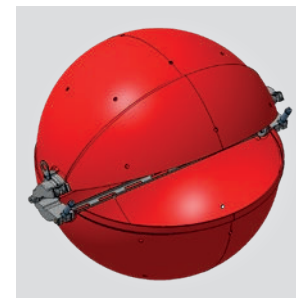
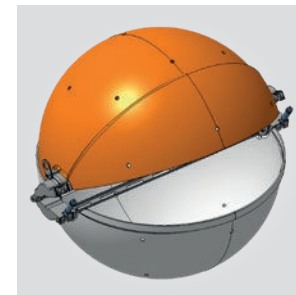
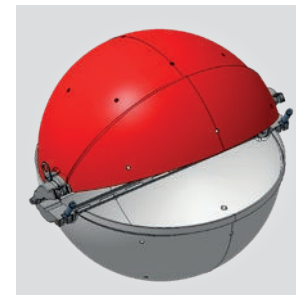
INDIVIDUAL

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Individual color selection

The Sphera® aerial marker ball is available in five standard colour variants in sizes Ø 300 mm, Ø 600 mm and Ø 900 mm. This means that we cover the common requirements in the aviation and shipping sectors. All spheres are made exclusively from dyed-through material.

If none of the standard colors meet your requirements, we will be happy to provide you with a virtually unlimited color spectrum through our customization program.



Stand-colours
Dyed material throughout.
From 1 to unlimited. Suitable for any quantity.



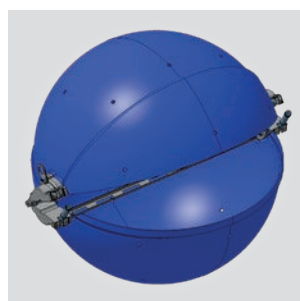
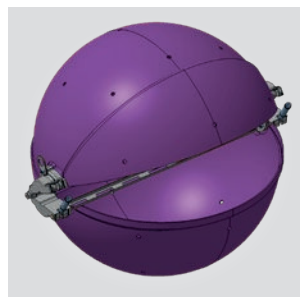
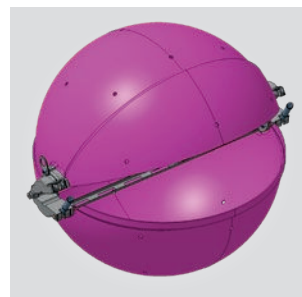
INDIVIDUAL PROGRAMS

ACCORDING TO CUSTOMER REQUIREMENTS

FLEXIBLE

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Prototypes



According to the customer's wishes, individual models, suitable for demonstration purposes, can be implemented as samples, especially by means of painting. In this way, our product range covers possible prototype requests and individual implementations and yet remains completely flexible.

The Sphera® marker ball can be ordered in both sizes in the individual programme. Depending on your requirements, you can compile individual packages with varying quantities for different applications.

Our recycled panels are also used in the individual programme. As with the standard variants, these are already coloured. This means that small quantities can also be produced in an environmentally friendly manner, while retaining UV resistance.

ENVIRONMENTAL AWARENESS

A TRUE CIRCULAR PROCESS

SUSTAINABLE

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Cradle to Cradle

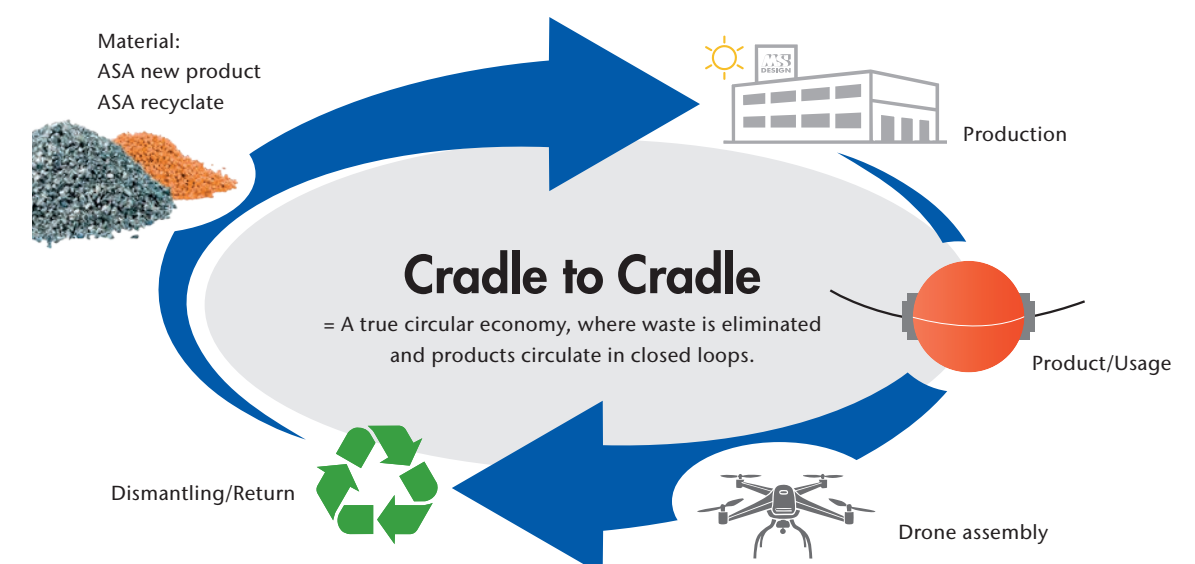
Key Facts

- no CO₂ emissions
- no noise emissions
- 100 % recyclable
- true circular economy

As an internationally operating system supplier, Sphera® places great emphasis on sustainability to remain at the forefront of innovation. Even in the production of our aircraft warning marker balls, we ensure that we meet the demands of both the environment and society.

By using renewable energies and intelligent heat recovery systems, we guarantee climate-friendly material processing. Furthermore, our products are manufactured and assembled exclusively at our Tyrolean site, adhering to the highest quality standards.

The partnership with FulcrumAir and the LineFly™ system has significantly reduced installation time. At the same time, we avoid unnecessary CO₂ emissions and reduce noise pollution.



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