

# AVEPROTECTED

A bald eagle is shown in flight, wings spread wide, flying towards the viewer. It is positioned in the center of the frame. In the background, several high-voltage power lines and their supporting towers stretch across the landscape. The sky is a clear, bright blue. The foreground is a green field.

**Bird protection system  
against electrocution  
(AVIFAUNA)**



The image shows three white storks with black wings and long red beaks standing in a lush green field. In the background, there is a body of water and a line of trees. The text is overlaid on the top left of the image.

# **AVEPROTECTED** **Committed** **to bird safety**

**AVEPROTECTED:** The importance we place on birds is the foundation of our company, and our main mission is to provide them with safe environments where they can live naturally



# Human impact on birds

## BIRD DEATHS DUE TO ELECTROCUTION ON HIGH-VOLTAGE TOWERS

- Recent studies have estimated that between 11,000 and 33,000 birds of prey die annually due to power lines. It is the leading cause of death for several species, including the endangered Spanish Imperial Eagle, Bonelli's Eagle, and the Great Bustard.
- Human activity is responsible for 78% of injured or dead birds.
- High-voltage towers are responsible for 40% of bird injuries or deaths

## ADMISSIONS TO WRC

WILDLIFE RECOVERY CENTERS (WRC)

<b>Collisions with power lines</b>	<b>31%</b>
Illegal capture	17%
<b>Electrocution</b>	<b>9%</b>
Roadkill	8%
Poisoning	4%
Shooting	3%
Others	28%

Source: SEO/Bird Life

**40%** are related to power lines

## SPECIAL PROTECTION AREAS FOR BIRDS (SPA)

This is Directive 79/409/EEC on the conservation of wild birds and their habitats (OJEC, 1979). This directive, and its implementation in Spain following Spain's entry into the EU in 1986, led to the designation of a large number of protected areas known as Special Protection Areas for Birds (SPA), with the sole purpose of preserving the populations of listed bird species and their habitats. The Spanish SPA network comprises more than 600 areas, covering over 20% of the national territory. These areas are proposed by the respective competent authorities and, along with Special Areas of Conservation (SAC), form the Natura 2000 network.

## EUROPEAN REGULATIONS

The Birds Directive 2009/147/EC of November 30, 2009, on the conservation of wild birds, amending Directive 97/49/EEC, aims to protect, manage, and regulate wild bird species in European territory, including their eggs, nests, and habitats. To achieve this, a protection system based on habitat conservation and regulation of exploitation and commercialization is established.

## SPANISH STANDARD. AENOR EA 0058 OBJECTIVE AND SCOPE

This specification defines the requirements and testing methods applicable to coverings intended to insulate components of overhead electrical distribution lines, primarily to prevent bird electrocution due to electrical contact.

**This specification applies to coverings used on overhead electrical lines with a nominal voltage:**

- Greater than 1 kV and up to 3 kV
- Greater than 3 kV and up to 66 kV



# Effects of bird electrocution on high-voltage towers

## Loss of BIODIVERSITY



The different forms of life on Earth, in all their expressions and interactions, ranging from genes to animal and plant species, populate all the diverse habitats on Earth, adapting to extremely harsh conditions in deserts, oceans, mountains, forests, and frozen regions.

The interaction of these various forms of life is one of the fundamental reasons why the planet itself has remained a living and habitable organism for billions of years, functioning in perfect balance, which humans are now destroying.

In this perfect animal puzzle, birds play an essential role in pollination, pest control, and species regulation—roles we cannot afford to lose:

**“Without biodiversity, there is no future for humans”**

(Source: David Macdonald, zoologist at the University of Oxford).

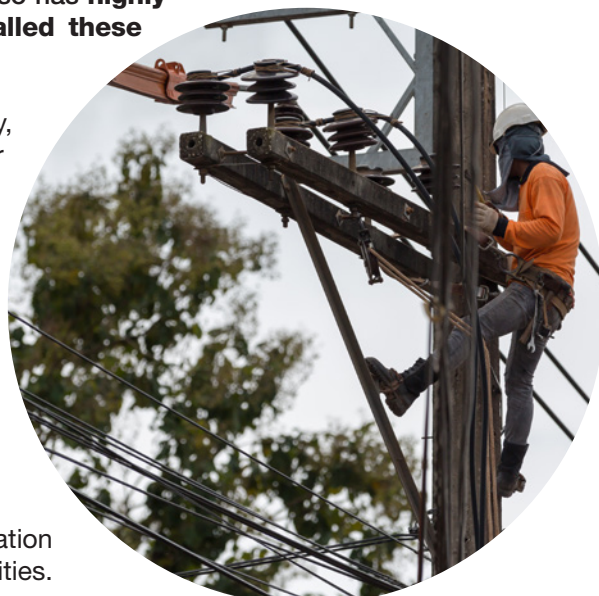
In the relentless race for progress and heavy dependence on electrical energy, humanity has filled forests, grasslands, deserts, and all habitats where birds live with high-voltage towers.

When a bird is electrocuted on a high-voltage tower, the primary and most significant consequence is the tragedy of losing something irreplaceable. However, it also has **highly negative effects on the society that installed these towers:**

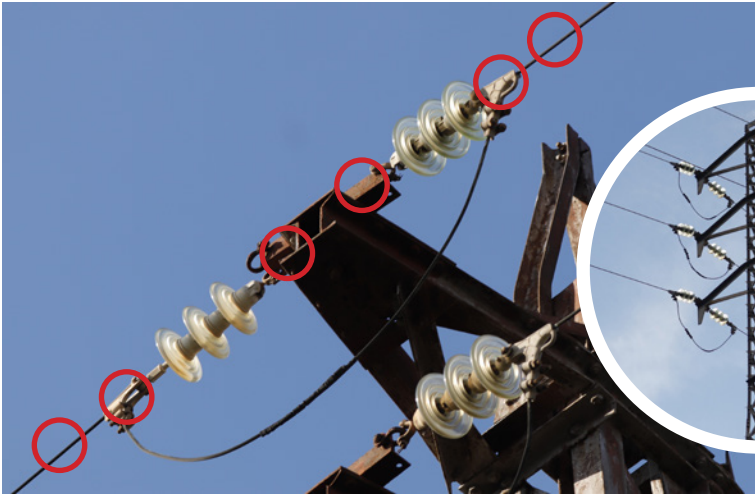
- **For citizens:** Interruption of electricity supply, resulting in the loss of comfort provided by air conditioning, elevators, or watching TV.
- **For companies:** Disruption of the production process, leading to economic and reputational losses.
- **For the electric utility company:** It must intervene to resolve the issue, addressing complaints from citizens, companies, and insurance firms, resulting in high costs and severe reputational damage.
- **For public administrations:** They will be unable to guarantee the continuous operation of essential services such as public transportation (electric: metro, trains), hospitals, and universities.

## SOCIETY

### Interruption of the electricity supply



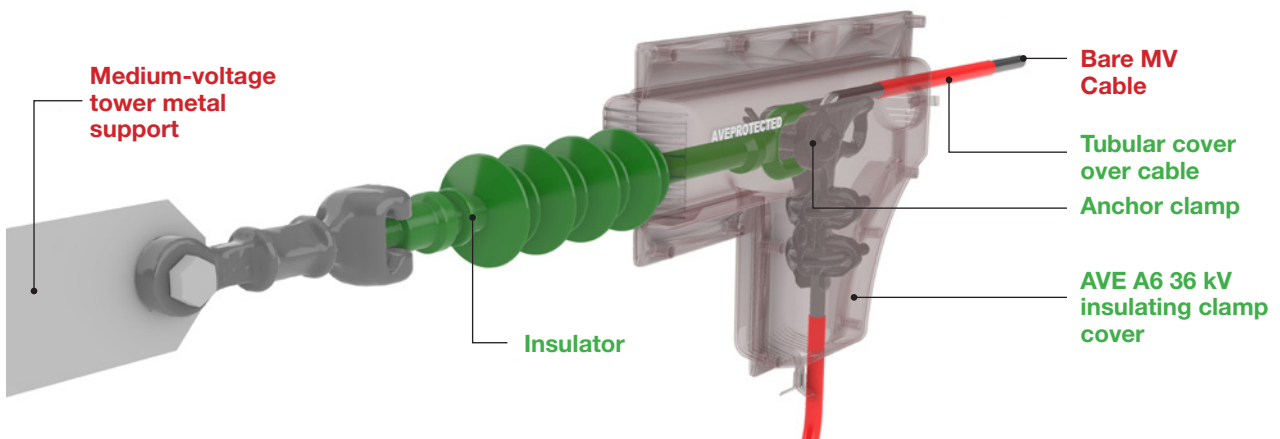
# What is the solution?



Bird electrocution occurs when a bird touches a cable and a metallic part of the tower, or two different cables, with its wings or feet. At that tragic moment, the animal is instantly electrocuted, losing its life.

## AVEPROTECTED

The solution is to insulate these active parts of the cable to prevent birds from coming into contact with them. This is done by installing insulating “COVERS”.





# AVEPROTECTED STANDARD PRODUCTS

## Anchors

AVE A2-36 KV



AVE A3-36 KV



AVE A4-36 KV



AVE A5-36 KV



AVE A6-36 KV



AVE A7-36 KV



AVE A8-36 KV



## Suspension

AVE S1-36 KV



AVE S2-36 KV



AVE S3-36 KV



AVE S4-36 KV



AVE S5-36 KV



## Conductors

AVE C1P-36 KV



18 mm

AVE C2P-36 KV



22 mm

AVE C2P-36 KV



27 mm

## Insulators

AVE Ais MX-36 KV



AVE Ais 2 24 a 66 KV



AVE Ais 3 24 a 66 KV



AVE Ais 4 24 a 66 KV



AVE Ais Vidrio



## Fittings

AVE H - Horquilla H



AVE H - Anilla B



AVE H - AI / Rótula 1



AVE H - Grapa Amare T1



AVE H - Suspensión T1

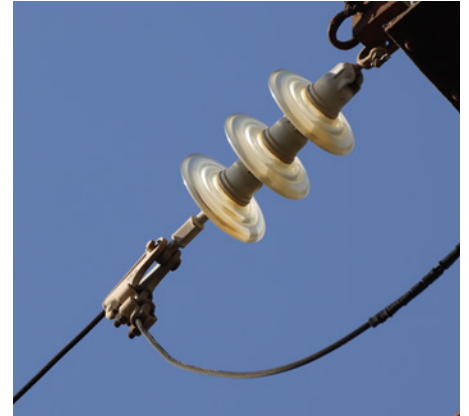


# AVEPROTECTED SPECIAL PRODUCTS CUSTOMIZED

At AVEPROTECTED, we have a highly qualified technical team with extensive experience in the development and manufacturing of all types of applications. Additionally, we have state-of-the-art technical resources, such as CNC machines, injection molding machines, lathes, 3D printers, and a testing laboratory. All these resources enable us to successfully tackle any project.

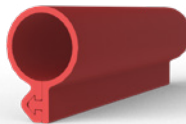
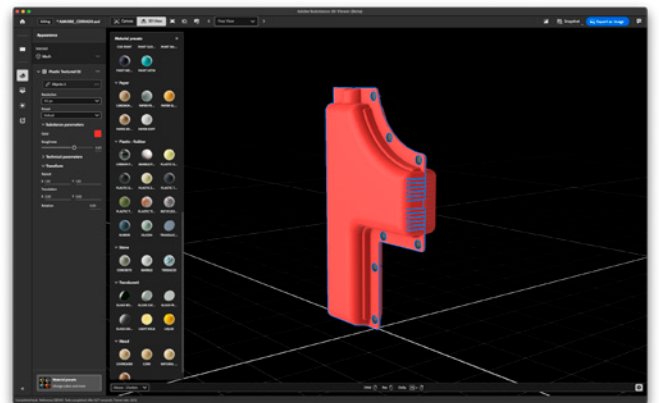
## Project Study

- Analysis of project characteristics
- Dimensional data
- Electrical data (voltage/cable Ø/...)



## Customized technical proposal and technical datasheet for the solution and its components

- Engineering
- Mold design
- 3D Prototypes
- Detailed manufacturing budget
- Optional installation budget



## Production

### PROTOTYPES

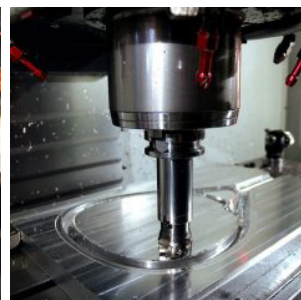
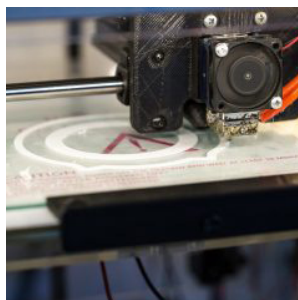
- Plan development
- 3D printing
- CNC machining

### MOLDS

- Standard or special machining

### INJECTION

- Verification
- Quality control
- Multi-materials





A condor is shown in flight, wings spread wide, against a backdrop of a deep mountain valley. The valley floor is covered in dense green forest, and the surrounding mountains are rugged and partially covered in snow. The sky is a clear, deep blue. The overall scene conveys a sense of wilderness and natural beauty.

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bird protection**