

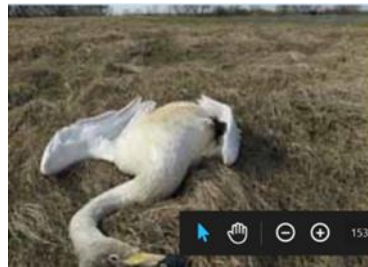
NAME : NITESH KUMAR SINHA  
 COUNTRY : INDIA  
 REGISTRATION NUMBER : 6810

GROUP REF. : SC B2  
 PREF. SUBJECT : Joint PS3 B2&C3  
 QUESTION N° : 3.9

**BIRD DIVERTERS**

**A. INTRODUCTION**

While there are many man made reasons which may endanger local and migratory birds, power transmission towers spotted near waterbodies/forest etc may sometimes put our birds in danger and they may collide with the wire installed at top of the transmission structure. It may happen that birds may collide with the earth wires/OPGW installed at the top of transmission lines, as it is less visible and smaller in diameter. Bird small in size may manoeuvre their trajectory to avoid earthwire/OPGW when seen from a smaller distance , however bigger size bird sometimes lack this ability and may collide with earth wire/OPGW. Many of birds may be vulnerable in the said cause.



Removal of the earth wire/OPGW would reduce bird collisions , however this is rarely a viable option since the earth wires/OPGW protect the power-line installation from lightning strikes in addition to providing a telecommunication path for internal as well as third party communications. Removal of Earthwire is only possible only in areas where there is very low lightning and to a limited extent. Where the earth wires/OPGW cannot be removed, line marker devices / bird reflectors should be used in sufficient numbers to deflect the birds to take alternate path.



**STATUTORY GUIDELINE/PROVISIONS:-**

- (i) Ministry of Environment Forest and Climate Change (MoEF&CC) constituted an inter-ministerial Task Force comprising of officers of the Ministry of Power, POWERGRID, Central Electricity Authority and MoEF&CC for suggesting various measures for avoiding death of the birds and other animals due to electrocution and collision with the power transmission lines in compliance to Hon'ble Supreme Court direction .
- (ii) An inter-ministerial Task Force comprising of officers of the Ministry of Power, POWERGRID, Central Electricity Authority (CEA) and MoEF&CC constituted by Ministry of Environment Forest and Climate Change (MoEF&CC) recommended various measures for avoiding death of the birds and other animals due to electrocution and collision with the power transmission lines. In respect of bird protection measures, following was recommended for implementation by the Electricity Supply Units, PGCIL, CEA, and SEB.

*“Birds frequently collide with the earth wires (less visible wire) installed at the top of transmission lines, as it is less visible and smaller in diameter. Removal of the earth wire would reduce bird collisions however this is rarely a viable option since the earth wires protect the power-line installation from lightning strikes. This is only possible in areas where there is very low lightning and to a limited extent. Where the earth wires cannot be removed, line marker devices / bird reflectors should be used in sufficient numbers to deflect the birds to take alternate path”*

In view of the above regulatory requirements and also considering the repeated failure of installed bird diverters / deflectors by different regions to comply with clearance conditions a broad technical parameters/ specification of bird diverters/deflectors was framed based on review of different type of bird diverters available in market & their performance and international best practices etc to facilitate procurement of such device.

**C. TECHNICAL SPECIFICATION: -**

Bird diverters shall be placed in identified stretches as per the conditions stipulated by forest authority to avoid the chances of collision of birds with transmissions lines. These bird Diverters shall be placed on Earth wire/OPGW in Transmission line having two or more bundle conductor in each phase and conductors also in case of Transmission line having single conductor in each phase. Suspended type dynamic Bird flight Diverters shall be used and Both LED and Non LED type Bird Diverters in staggered manner.

The BIRD-FLIGHT Diverter shall be lightweight( weight not more than 500-800 gms each), shall offers little wind resistance and should be easily installed by hand or by hot stick or by any other suitable method. The bird diverters should retain good physical characteristics within a range of extreme temperatures i.e from -15 deg celcius to 85 degree Celsius

**COMPONENT OF BIRD DIVERTERS: -**

Bird flight Diverters shall have one warning disc which shall be attached to the wire through spring loaded clamp.



### **WARNING DISC**

- I. Should be made through injection moulding of UV stabilized plastic
- II. Warning disk of Bird Flight Diverter must swing, sway and rotate and should have different colored sun and moon light reflectors on both faces.
- III. Warning disk must glow in dark.
- IV. All suspension hardware which are directly exposed (moving or static) must be corrosion free.
- V. Bearing swivel shall be made of stainless steel and should allow free spinning in minimum wind speed of 1 km/hour.
- VI. Dia should not be more than 150 mm, if quadrilateral side shall not be less than 90 mm.
- VII. Minimum total surface area =15000 Sq, mm. Minimum reflective area on each face not less than 3500 sq mm.

### **CLAMP**

- I. It shall be capable of supporting the Bird flight diverter during installation and prevent damage or chaffing of the wire during erection or continued operation.
- II. The clamp shall have smooth and permanent grip to keep the Bird flight diverter in position on the wire without damaging the strands or causing premature fatigue failure of the wire under the clamp and should not slip by horizontal force of 250 N
- III. The clamp groove shall be in uniform contact with the wire over the entire clamping surface.
- IV. The Clamp shall have strong grip on earth wire.
- V. All exposed metal parts of clamp shall be corrosion free
- VI. Should be of UV stabilized engineered composite plastic or metal or carbon fiber.
- VII. Should be bad conductor of electricity.

### **D, TEST ON BIRD DIVERTERS**

Vibration test.  
Temperature Cycle test.  
Corrosion resistance test.  
Heat Cycle test.  
Corona and RIV test.  
Ageing Test.