



Dear Sir,

D.O.Lr.No.03/DGFS/AP/2025, Dated:08.01.2025.

Sub: Andhra Pradesh State Disaster Response and Fire Services Department – Recent Fire Accidents in Solar, Wind Mills, and Pumped Hydro Power Plants – Lessons Learnt and Advisory Fire Safety Measures – Regarding.

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New Year Greetings!

I would like to draw your attention to the following relevant fire accidents in Solar, Wind, and Hydro Electric Power Plants, which have highlighted the need for improved safety measures. The following incidents have raised concern and necessitate immediate attention:

(i) Hydroelectric Power Plant Fire Accident (20th August 2020):

At Srisailem, Telangana, a short circuit in the auxiliary voltage transformer of the fourth unit caused a devastating fire. The incident tragically claimed the lives of 9 individuals, including 5 engineers, while 15 others managed to escape. The fire was contained after several hours of struggle, and the delayed rescue operations were complicated due to thick smoke.

(ii) Wind Mill Fire Accident (26th June 2024):

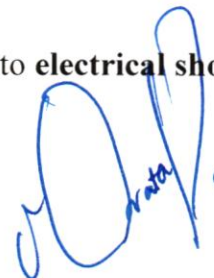
In Kalyanadurg Mandal, Anantapuramu District, a fire broke out in a Wind Turbine Generator (G-97 Model), causing huge damage to the turbine.

(iii) Solar Power Accident (22nd December 2023):

At the 220/33 KV Pooling Substation – 2, Andhra Pradesh Solar Power Corporation, Gani Solar Park, Orvakal Mandal, Kurnool District, a fire resulted in the total damage of the pooling sub-station.

2) Root Causes of Fire:

The primary cause of fire in such facilities is attributed to **electrical short circuits** in electrical panels, battery rooms and transformers.


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3) **Recommended Prevention and Precautionary Measures:**

(a) Ensure Electrical Safety for Electrical Panel Rooms:

- (i) **MCBs (Miniature Circuit Breakers)** be installed to prevent electrical overload.
- (ii) **Aerosol/Clean Agent automatic fire suppression systems** be installed in all electrical panel and in all rooms with electrical equipment.
- (iii) In battery rooms, **thermal ignition, pressure less Aerosol** may be kept to extinguish any battery fires automatically.
- (iv) **Fire Retardant Low Smoke (FRLS)** cables be used to reduce fire risk.
- (v) **Transformer Protection:** To safeguard transformers from fire:
 - **Aerosol Flooding System** for immediate suppression of fire in case of an emergency (or)
 - **N2 (Nitrogen) Injection** to control oxygen levels and prevent combustion in transformers.

(b) Fire Fighting Tools:

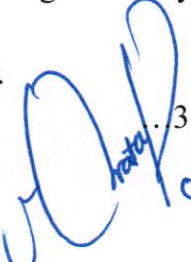
There should be automatic fire detection and alarm system installed throughout the plant especially in the tunnel area.

Do not install automatic water sprinklers in electrical or transformer rooms as they could exacerbate the problem.

Specific Measures for Different Facilities:

(i) Hydro Electrical Power Plants:

- (a) The idea is to provide Safe Smoke free "**Refuge Room**" in each floor in the tunnel area. So that people working there can take refuge in case of any fire emergency. The Refuge room to be equipped with accessible LED lights and 48-hour power backup, large enough to accommodate all personnel. These rooms should be constructed with fireproof materials and double fire-rated doors to prevent smoke intrusion.
- (b) Install **fresh air blowers** powered by an external source to ensure continuous fresh air supply in Refuge rooms.
- (c) Establish a **smoke extraction system** with emergency power backup.
- (d) Install **automatic fire suppression systems** in electrical panels and battery rooms, especially for underground areas.
- (e) **Flammable oils and materials** should not be stored in large quantities inside tunnels; only small, required amounts should be brought in daily basis.
- (f) Ensure **100 Kg DCP trolleys** are available on each floor.


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How the above will help during a fire emergency:

On detection of fire, the alarm gets sounded, alerting all the people working in the plant area. They can rush to the “**Refuge Room**” for safety while the Smoke Extraction System is automatically activated to keep the plant area smoke-free. The system expels smoke and fills the space with fresh air, circulating about 6 to 8 times per minute.

Automatic fire suppression systems in electrical panels, panel rooms, and MCBs can prevent electrical short circuits from escalating into major fires.

Small fires can be extinguished with CO₂ cylinders, while the 100 Kg DCP trolleys can be used to fight fires from a distance. In case of failure, workers have quick access to safe, smoke-free “**Refuge Rooms**”.

(ii) Wind Turbines:

Install **automatic CO₂ flooding systems** or **Aerosol (Non-Pressurized Thermal Ignition)** systems in the turbine area.

(iii) Solar Panels:

Provide **two 100 Kg DCP (Dry Chemical Powder)** trolleys on wheels for the entire solar farm.

(iv) Entire Plant Areas (with more than 100 MW Solar or Wind or Hydroelectric):

Procure a **Multipurpose Fire Tender** with water, foam, and ABC/DCP for the entire plant.

These fire safety measures can be implemented without major alterations to existing facilities, ensuring a safer working environment.

In view of the above, I request you to kindly ensure the implementation of the aforementioned fire safety measures that meets the “**reasonable fire safety criteria**” as envisaged in NBC in your Solar, Wind, and Hydro Electric Power Plants in the larger “**Public Interest**”.

If you experience any undue hardship or practical difficulty in implementing any of the above suggested requirements, please don't hesitate to meet in person without appointment (9441236448), as ensuring fire safety with better and affordable technology is a continuous learning and collaborative endeavor.

With Warm Regards,

Yours sincerely,

[Handwritten Signature]
08/01/2025

(Madireddy Pratap, IPS.,)