ENVIRONMENT

Air pollution control

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Environmental Innovation

We make an Best Alternative Technology
to reduce the boiler stack emission < 30 mg/Nm^3

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Outline :

- ✓ About us
- ✓ Technological Solution
- ✓ Existing Technologies Comparison
- ✓ Layout GA Drawing
- ✓ Erection & Assembly of Equipment
- ✓ Problem Statement
- ✓ Process Technology
- ✓ Product Features and USP
- ✓ Installations

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About Us:

- ✓ Started in 2019, registered in Startup-India Scheme
- ✓ An Startup organisation offering novel innovative concepts to promote environmental friendliness & energy efficiency by Providing advanced industrial emission control system to eliminate wide spectrum of air pollutants and regulated emissions from all types of industrial sources and applications

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Problem:

At present, meeting the stringent pollution emission norms is a critical problem in various industrial process & other combustion source. Complying with emission limits, avoiding the escape of particles to downstream processes or purifying ambient air are the main motivations for clients to reduce particulate matter emissions.

Its time to renew/upgrade the conventional technologies to the advanced technology with the complying the emission norms standards.

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Technological Solution:

IRRA Electrostatic Cyclone

An Advanced Gas-Solid Separation Technology

Work on the principle of Electrostatic particle agglomeration technology to reduce the emission < 30 mg/Nm^3

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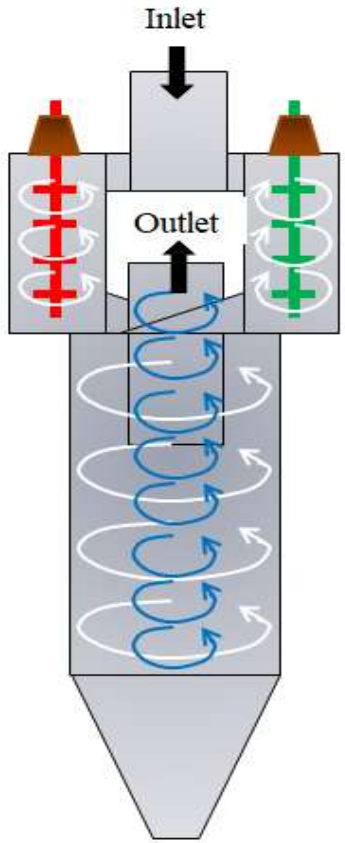

Process Technology:

Composed of centrifugal particle charger integrated with the multi inlet agglomerating cyclone for maximization of particle collection efficiency while maintaining lower pressure drop through particle agglomeration by means of dual polarity DC Electric filed and thereby the particle trajectory motion results in *"Reverse Rotation Effect" which* leads to agglomeration of fine particle through combination of electrostatic force of attraction and centrifugal force.

An ideal low cost emission control solution with more efficient and economical in terms of Operating cost, Capital cost, meet present stringent emission limits and obtain higher particle collection efficiency compared to other conventional Particulate Matter emission control devices which are available in the market.

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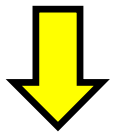
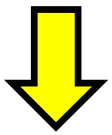
IRRA Electrostatic Cyclone Process:

1. **IRRA Cyclone :** To collect Coarse dust particles from the flue gas



2. **IRRA Reactor:** Dust particle charging by combination of dual polarity DC electric field



3. **Agglomerator chamber :** Fine Dust particle are agglomerated & collected by combination centrifugal force and electrostatic force of attraction

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IRRA Electrostatic Cyclone Video link

https://youtu.be/eRPUSXZ6X6M

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Technology comparison

Comparative study of existing particle separation technologies with proposed ***"IRRA Electrostatic Cyclone system"***

Technology comparision	IRRA Cyclone	Multicyclones	Bag filters	Electrostaic precipitator's	Wet Scrubber
Process operation	Dry system	Dry system	Dry system	Dry system	Wet system
Collection efficiency (%)	95 - 99+	80	98 - 99+	95 - 99+	90 - 98
Outlet Emisson mg/Nm3	< 30	> 300	< 30	< 30	30 - 80
Temperature limitation	No	No	Yes	Yes	Yes
Fire risk	No	No	Yes	No	No
Resistivity sensitivity	Yes	No	No	Yes	No
Capital cost	65/100	30/100	70/100	100/100	50/100
Operation & maintenance cost	Low	Low	High	High	High
Cleaning mechanism	None	None	Compressed air	Rappers	Water spray
Downtime cost	low	Very low	High	Medium	Low
Footprint area	Low	Low	Medium	High	Medium
Pre-seperator required	Sometime	No	Always	Sometime	No

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Product Features:

- ✓ Very low emissions: < 30 mg/Nm3
- ✓ Customized designs (single or parallel arrangement)
- ✓ Low pressure drop: < 90 mmWC
- ✓ No temperature restrictions
- ✓ Robust construction with no moving parts

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Unique Selling Proposition

- Dry air filtration
- Simple operation with easy integration
- Near zero maintenance and lower downtime costs
- Very low operating cost
- Lower foot print area required for installation

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Installations of IRRA Electrostatic Cyclone

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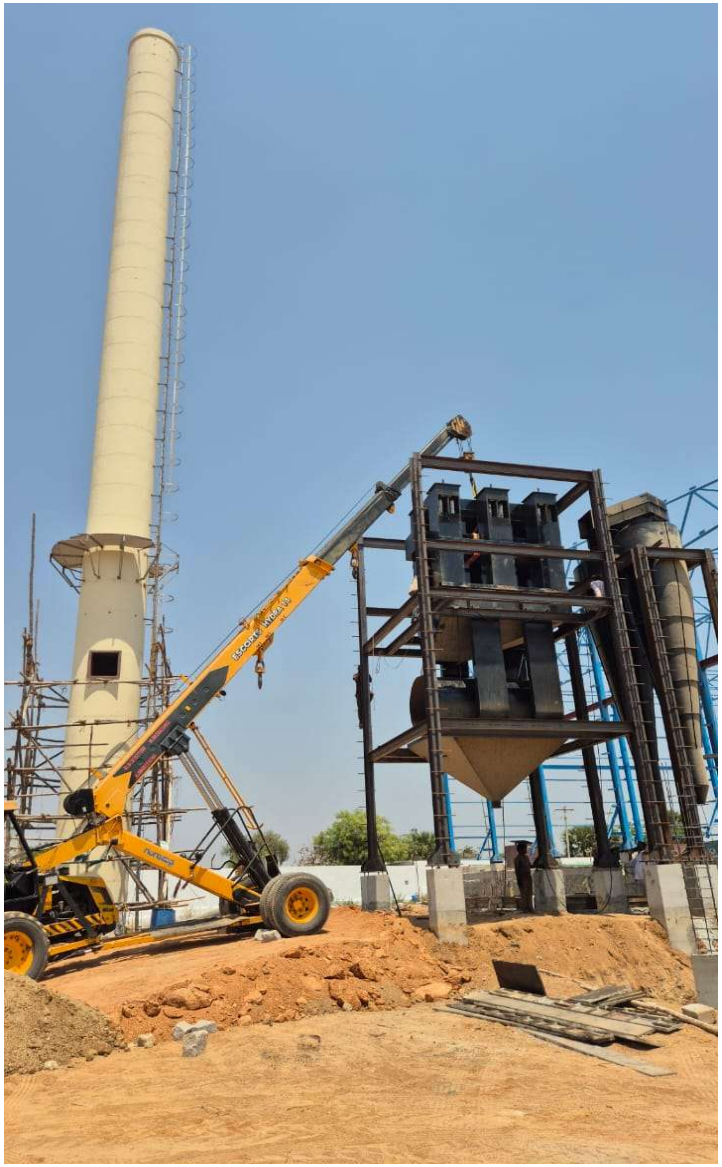
Erection & Assembly of Equipment



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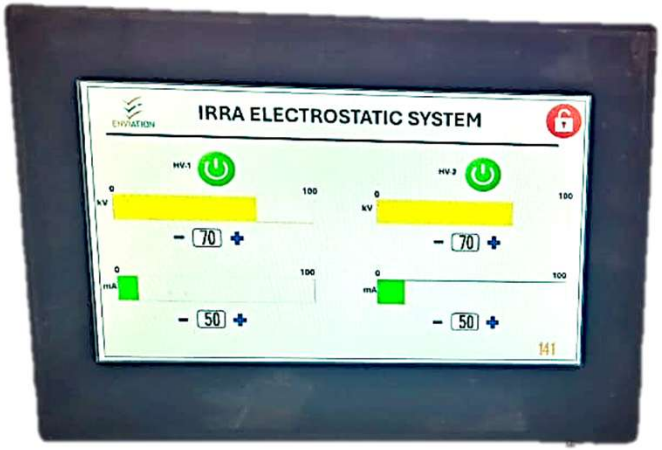
IRRA Electrostatic Cyclone controls



- HMI display for controls with Password Protection
- HV ON/OFF Control
- Voltage kV and Current mA Settings
- Rotary Airlock Valve controls
- Rapper Controls System

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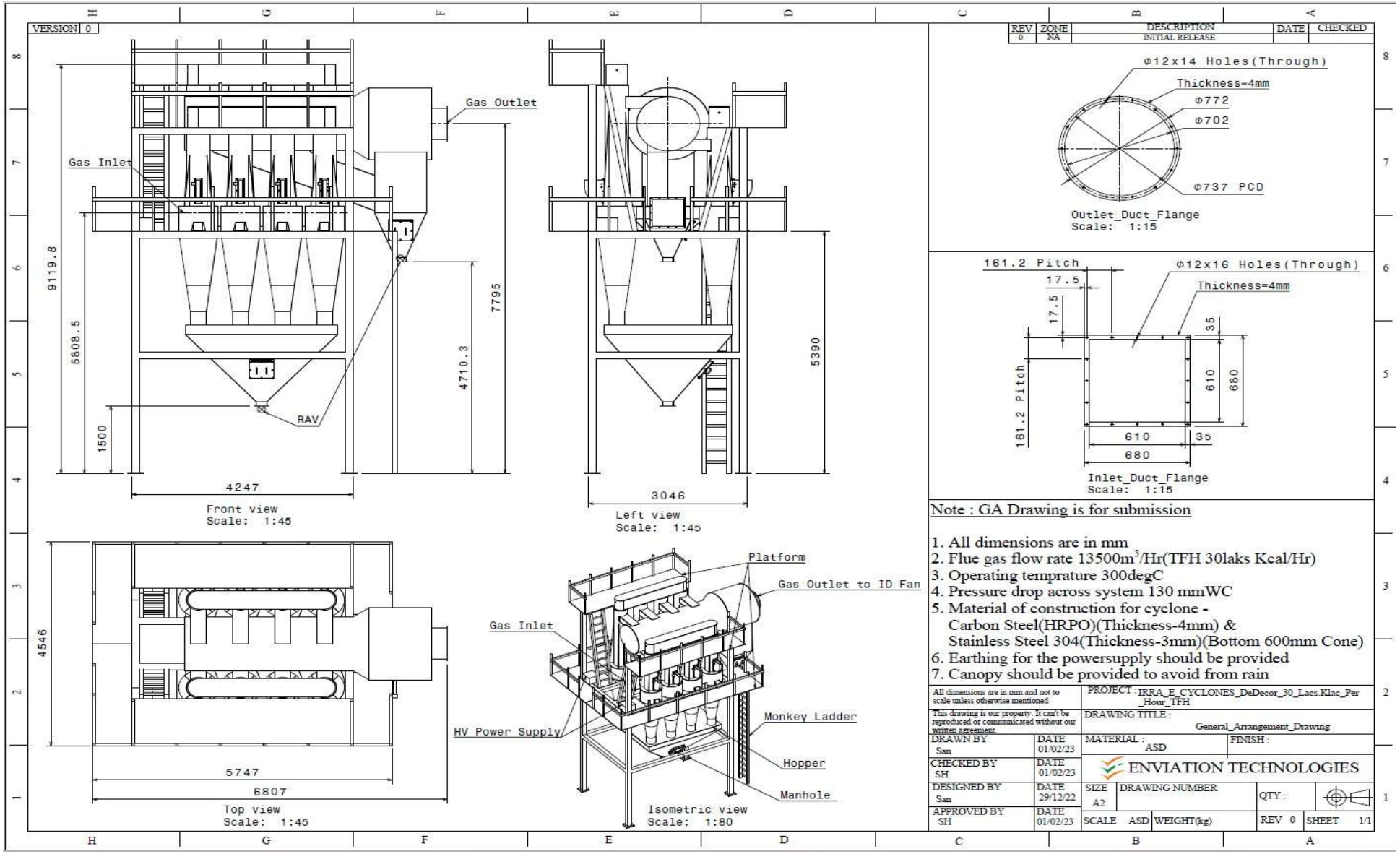
Layout GA Drawing of IRRA E Cyclone



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Reference videos of IRRA E Cyclone

1. YouTube link : https://youtube.com/shorts/ewO3rGD3scc
2. YouTube link : https://youtu.be/ZaflIGX9Uf0
3. YouTube link :https://youtu.be/jKL78hgJHNM

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Enviation website link

https://www.enviation.com/

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Thank You!!!

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