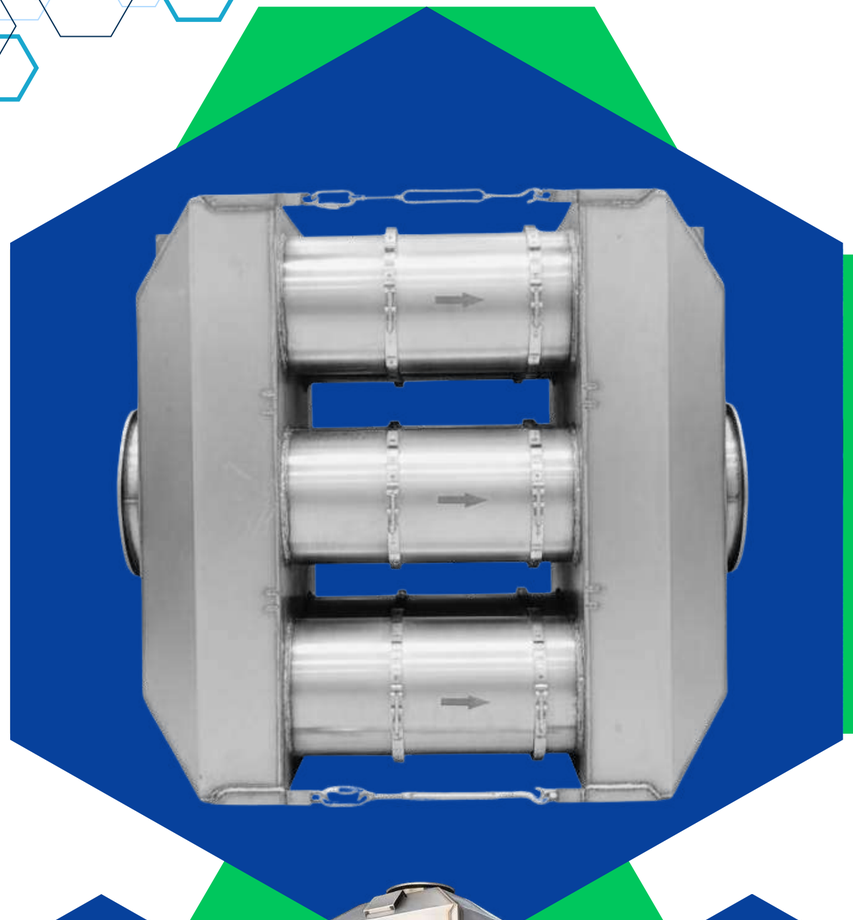

aceget®
REDUCE
POLLUTION

aceget®



Solution for Pollution

How Technology is Shaping Tomorrow's World

Background & Problem Statement

Diesel Generator (DG) sets serve as a dependable backup power source across various sectors, including industrial, commercial, institutional, and residential areas, especially during grid power outages.

However, diesel engines emit several harmful pollutants that are released directly into the atmosphere through exhaust emissions.

Given the extensive use of DG sets, their contribution to air pollution is approximately 16%, according to a report published by the NGT **OA 681 in 2018.**

aceget®

Key Pollutants Emitted by DG Set

These pollutants greatly affect both air quality and public health.

The primary pollutants released from diesel generator (DG) exhaust consist of:

- **Particulate Matter (PM)**
- **Carbon Monoxide (CO)**
- **Hydrocarbons (HC)**
- **Nitrogen Oxides (NOx)**

Available Technologies

Water Scubber:
A water scrubber removes dust and pollutants from exhaust gases using water. The exhaust gas passes through water spray where particles get trapped in droplets. The contaminants mix with water and settle in the collection chamber.
Cleaner gas then exits through the outlet.

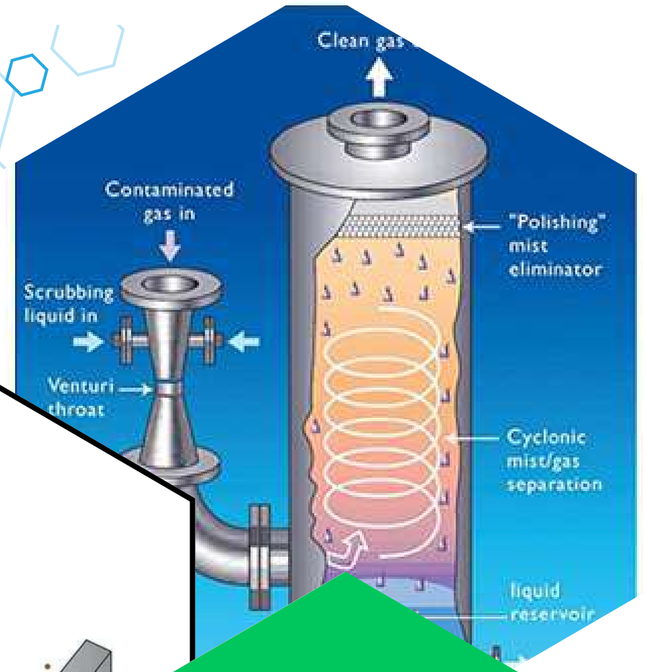
⚠ **Caution:** Water Scrubber technology is not permitted for DG Sets

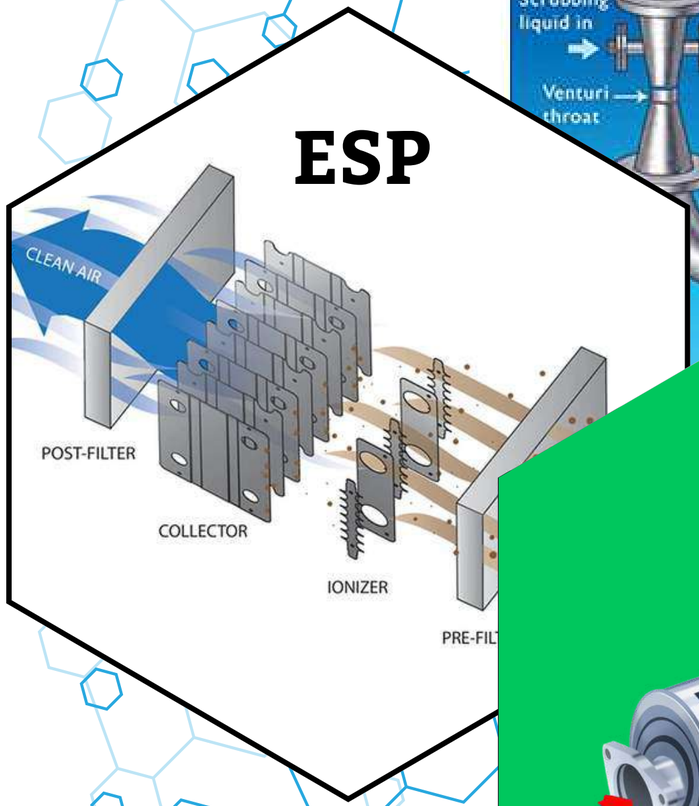
Electrostatic Precipitator (ESP):
Electrostatic Precipitator (ESP) is a pollution control device that removes particulate matter from exhaust gases using electrically charged plates.
Dust particles are electrically charged and then collected on oppositely charged plates before the cleaned gas exits.

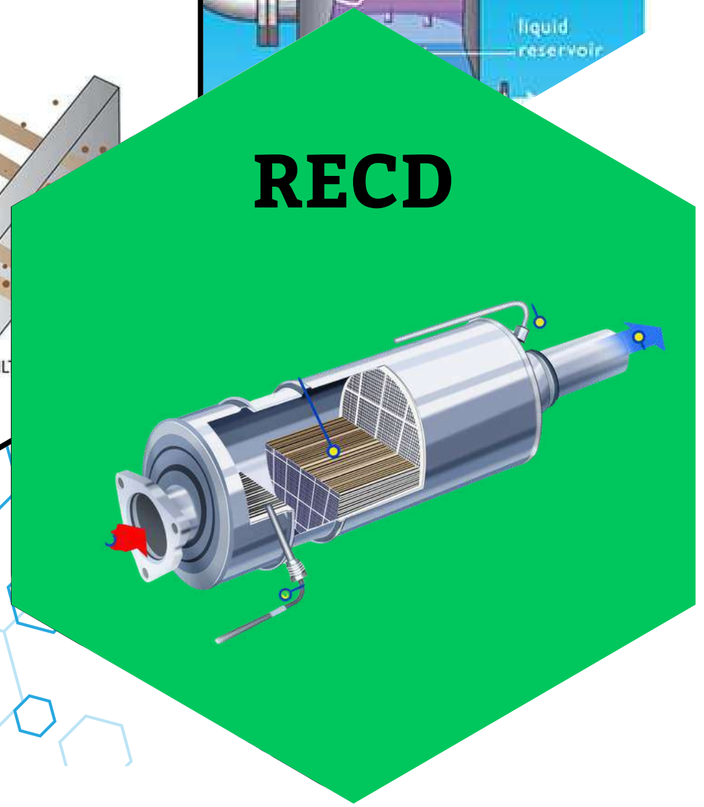
Efficiency: Reduces 75-80 of PM particals only.

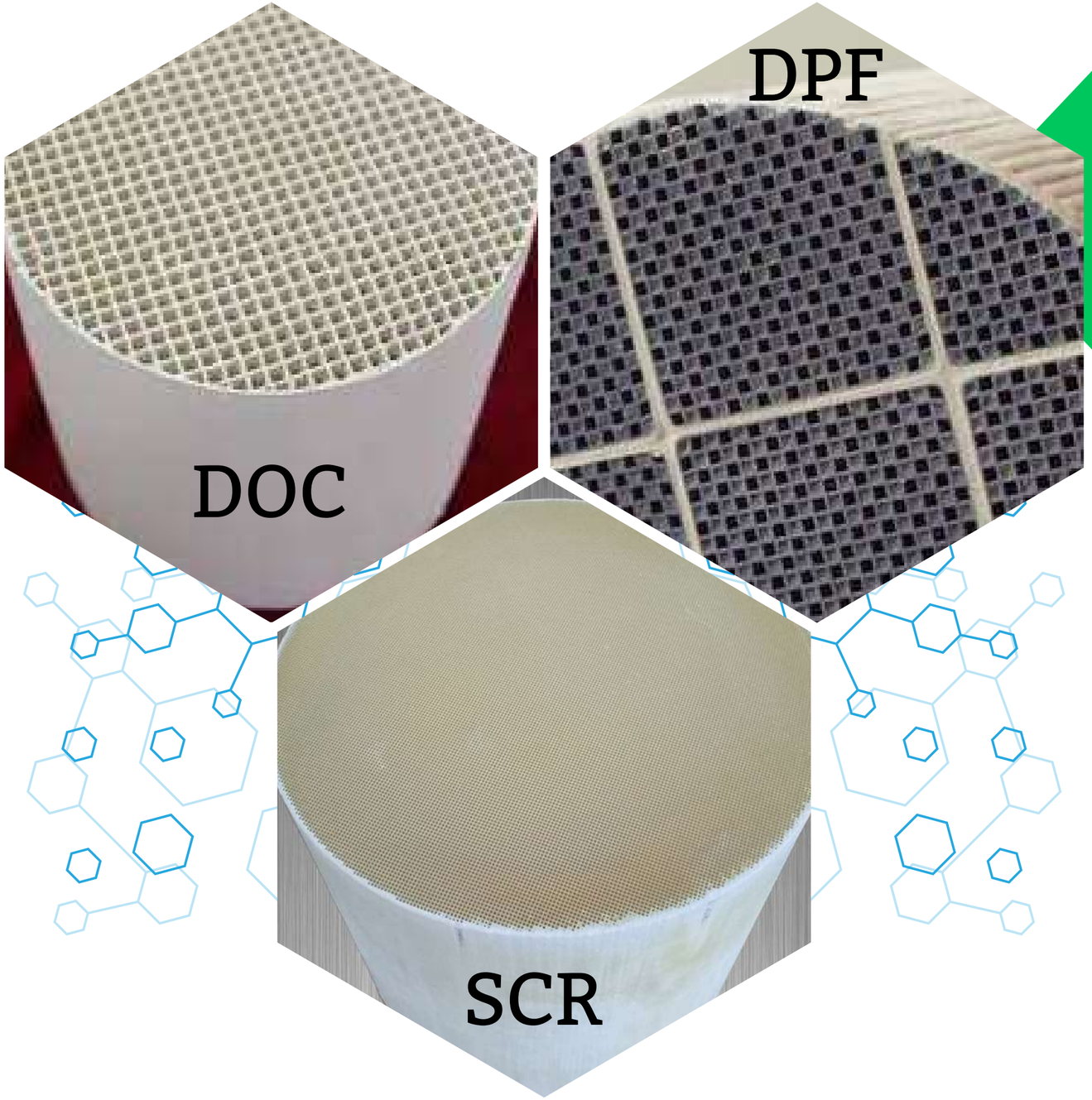
Retrofit Emission Control Device (RECD):
A RECD is a combination of a DOC and a DPF, serving as an exhaust after-treatment system designed to manage diesel engine emissions. The DOC works to oxidize CO and HC, whereas the DPF captures and eliminates PM (soot) from the exhaust gases.
Together, this combination greatly diminishes harmful emissions produced by diesel engines.

Efficiency: Reduces PM+HC+CO by 85 to 95%









Aceget TECHNOLOGY
Catalytic Converter

Up to 800 kW DG Sets

For DG sets 15 kW to 797 kW capacity, the emission control system uses DOC + DPF.

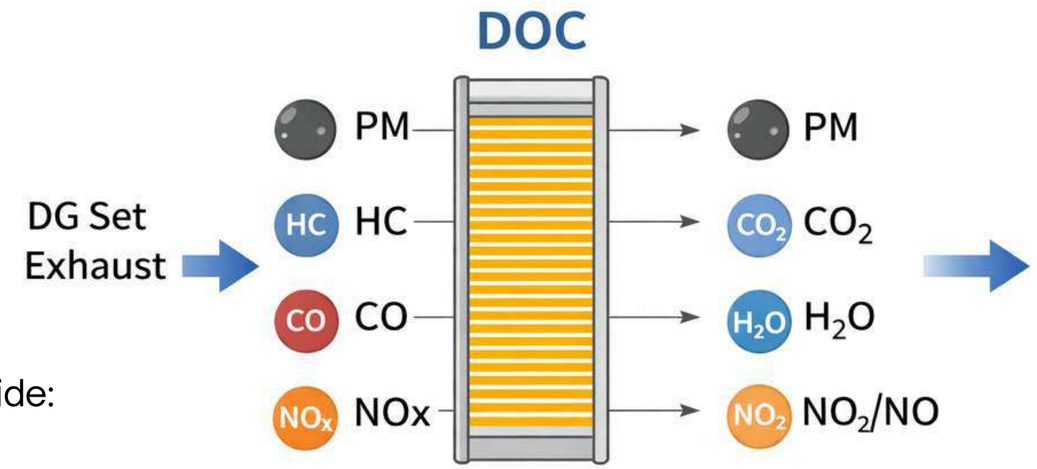
- The DOC (Diesel Oxidation Catalyst) converts CO and HC into H_2O & CO_2,
- DPF (Diesel Particulate Filter) captures and removes Particulate Matter (PM/soot) from the exhaust stream.

Above 800 kW DG Sets

For DG sets above 800 kW, an advanced system DOC + DPF + SCR / NOx Trap is used.
DOC controls CO & HC,
DPF removes PM, and
SCR/NOx Trap reduces Nitrogen Oxides (NOx), ensuring higher emission control efficiency for large-capacity diesel generators.

DOC: Diesel Oxidation Catalyst

Aceget DOC is a flow-through catalytic device coated with **Platinum (Pt)** catalyst on a ceramic honeycomb substrate. The platinum coating promotes oxidation reactions that convert harmful exhaust pollutants into less harmful gases.



Carbon Monoxide Oxidation (CO)
Carbon monoxide is oxidized in the presence of oxygen to form carbon dioxide:
$CO + O_2 \rightarrow CO_2$

Hydrocarbon Oxidation (HC)
Unburnt hydrocarbons from incomplete combustion are oxidized to carbon dioxide and water vapor:
$HC + O_2 \rightarrow CO_2 + H_2O$

Nitrus Oxide Oxidation (NOx)
A portion of nitric oxide (NO) present in the exhaust is oxidized to nitrogen dioxide (NO_2):
$NOx + O_2 \rightarrow NO_2$

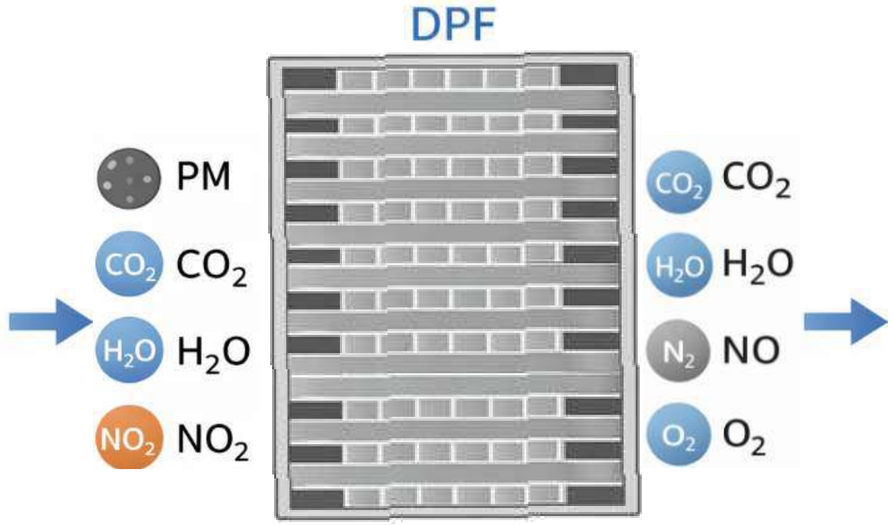
These catalytic oxidation reactions significantly 92-95% reduce CO and HC emissions and improve overall exhaust quality before further treatment.

DOC

DPF: Diesel Particulate Filter

Diesel Particulate Filter (DPF)

The **Aceget DPF** is a porous particulate filtration system made from **Silicon Carbide (SiC)** substrate, known for its high thermal conductivity and durability under high exhaust temperatures. The filter is coated with **Palladium (Pd)** and **Titanium (Ti)** based catalytic materials, which enhance soot oxidation and support continuous regeneration. The porous SiC channels trap Particulate Matter (PM) and soot, while cleaned exhaust gases pass through the filter walls.



Main Reactions (Soot Oxidation):

Oxygen Oxidation

Captured carbon particles react with oxygen at elevated temperature:

- $C + O_2 \rightarrow CO_2$

NO_2 Assisted Oxidation

Nitrogen dioxide oxidizes soot at relatively lower temperatures:

- $C + 2NO_2 \rightarrow CO_2 + NO$

These catalytic reactions enable efficiently 99% soot removal and continuous Regeneration.

DPF

NOx Trap

800 kW & Above DG Sets

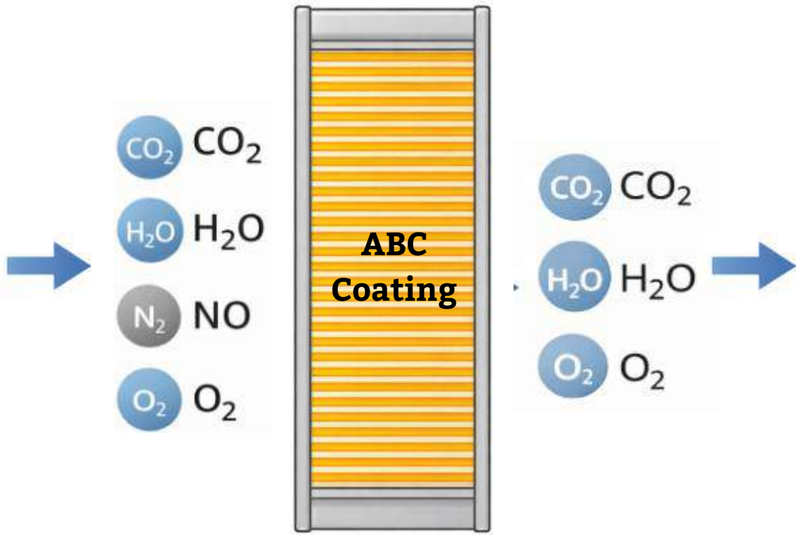
The **NOx Trap** (NT) catalyst is used to reduce Nitrogen Oxides (NOx) in diesel exhaust without the use of urea dosing. Under lean exhaust conditions (excess oxygen), NOx is first oxidized and then stored on the catalyst surface in the form of nitrates using alkaline storage materials (ABC).
During operation, nitric oxide (NO) is oxidized to nitrogen dioxide (NO_2), which reacts with the storage material and forms stable nitrates:

- $NO + ABC \rightarrow ABC + CO_2$

Through this cyclic process of NOx storage and catalytic reduction, the NOx Trap system effectively reduces NOx emissions and improves overall exhaust emission performance.

These catalytic reactions enable efficiently 65% NOx removal

NOx Trap



NOx Trap

USP's: Aceget RECD/PCD

Advanced multi-stage technology **(DOC+DPF)** and high-temperature **SiC substrates** to validated testing, structured documentation, and inspection-ready support. Our approach ensures actual compliance, long-term reliability, and reduced regulatory risk, rather than temporary or paper-based solutions.

- **Engineered in full alignment with CAQM, NGT, CPCB, and SPCB regulatory frameworks.**
- **Engineered in full alignment with CAQM, NGT, CPCB, and SPCB regulatory frameworks.**
- **Multi-stage emission control system integrating DOC, DPF, and NOx reduction catalyst.**
- **High-efficiency SiC (Silicon Carbide) substrate for superior thermal durability. Sustain up to 1100°C**
- **Supported with testing and validation through NABL-accredited laboratories.**
- **Robust SS 409 fabricated enclosure for high-temperature resistance and long service life.**
- **Optimized design with controlled back pressure to protect DG engine health.**
- **Suitable for continuous and intermittent DG set operations.**
- **Compliance-driven solution to minimize regulatory risk and environmental compensation charges.**
- **High cutting-edge touchable control panel equipped with advanced monitoring features for real-time system status, operational safety, and user-friendly interface.**

Comparision

aceget®

Parameter	Silicon Carbide (SiC)	Cordierite
Material Type	Advanced ceramic	Ceramic
Thermal Conductivity	**Very high** (better heat dissipation)	Low
Thermal Shock Resistance	**Excellent**	Moderate
Maximum Operating Temperature	**~2700°C**	~1200–1400°C
Regeneration Capability	Handles **high temperature regeneration** safely	Risk of cracking during high-temp regeneration
Mechanical Strength	**Very strong and durable**	Relatively brittle
Filtration Efficiency	High PM filtration	Good filtration
Pressure Drop across	Lower	Higher
Cost	**Higher cost**	Lower cost
Application	**High load DG sets**	Light duty diesel engines like goods Vehicles

Silicon Carbide substrates offer superior thermal stability and durability compared to Cordierite, making them more suitable for high-temperature diesel particulate filtration systems.

Comparision

aceget®

Parameter	SS409 (Stainless Steel 409)	Mild Steel (MS)
Material Type	Ferritic stainless steel	Carbon steel
Corrosion Resistance	**High**	Low (prone to rust)
High Temperature Resistance	**Excellent (675–800°C)**	Moderate
Oxidation Resistance	**Very good**	Poor
Durability	**Long service life**	Lower life due to corrosion
Weight	Slightly lighter	Slightly heavier
Maintenance	**Low maintenance**	Requires painting / coating
Suitability for Exhaust Systems	**Highly suitable**	Limited suitability
Cost	Higher	Lower

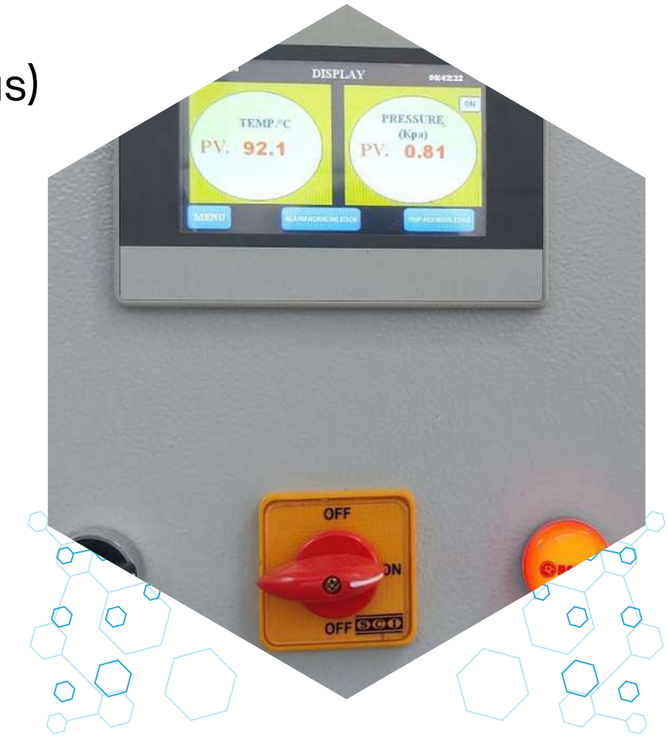
SS409 is preferred for RECD and exhaust systems due to its superior corrosion resistance, high-temperature stability, and longer operational life compared to mild steel.

Control Panel

A high cutting-edge control panel designed for RECD systems with advanced monitoring and automation features. The panel enables real-time system monitoring, remote operation, and cloud connectivity for efficient performance management.

Key Features:

- Remote control capability for operation and diagnostics
- Cloud-based monitoring for real-time data access and analytics
- Live parameters tracking (temperature, pressure drop, system status)
- Automated alerts and fault notifications
- User-friendly interface for easy control and monitoring



Easy to Install

The system is designed with a plug-and-play architecture, allowing quick and hassle-free installation without major modifications to the existing DG exhaust system. It ensures easy integration, minimal installation time, and simplified commissioning, making deployment fast and convenient.

- Plug-and-play design for quick integration with existing DG exhaust systems
- No major structural modification required at site
- Fast installation and commissioning
- Compact and modular construction
- Minimal downtime during installation

Contact Us

aceget®

For detailed information on Aceget RECD, Dual Fuel Systems, compliance support, and technical solutions, feel free to get in touch with our team.
We are committed to providing reliable, compliant, and technology-driven environmental solutions tailored to your operational needs.

+91 - 767 847 8710

www.aceget.in

connect@aceget.in

Plot No - C35, Sector - 65, Noida, Uttar Pradesh - 201301, INDIA


TIME
FOR
CHANGE