



**REDECAMGROUP**



# **AIR POLLUTION CONTROL LEADER**

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# WHO WE ARE



- Began 30 years ago as a family business
- Started with air filtration solutions for big names in cement industry.
- Diversified 15 years ago into FGT and other sectors
- Continue to expand, abreast of new technologies and needs
- Consistently lead the market with reliable, top quality, customized products

## INDUSTRIES SERVED:

Cement & Lime  
Metals & Mining  
Coal & Oil Power  
Waste-to-Energy & Biomass Power  
Biomass & Pulp and Paper

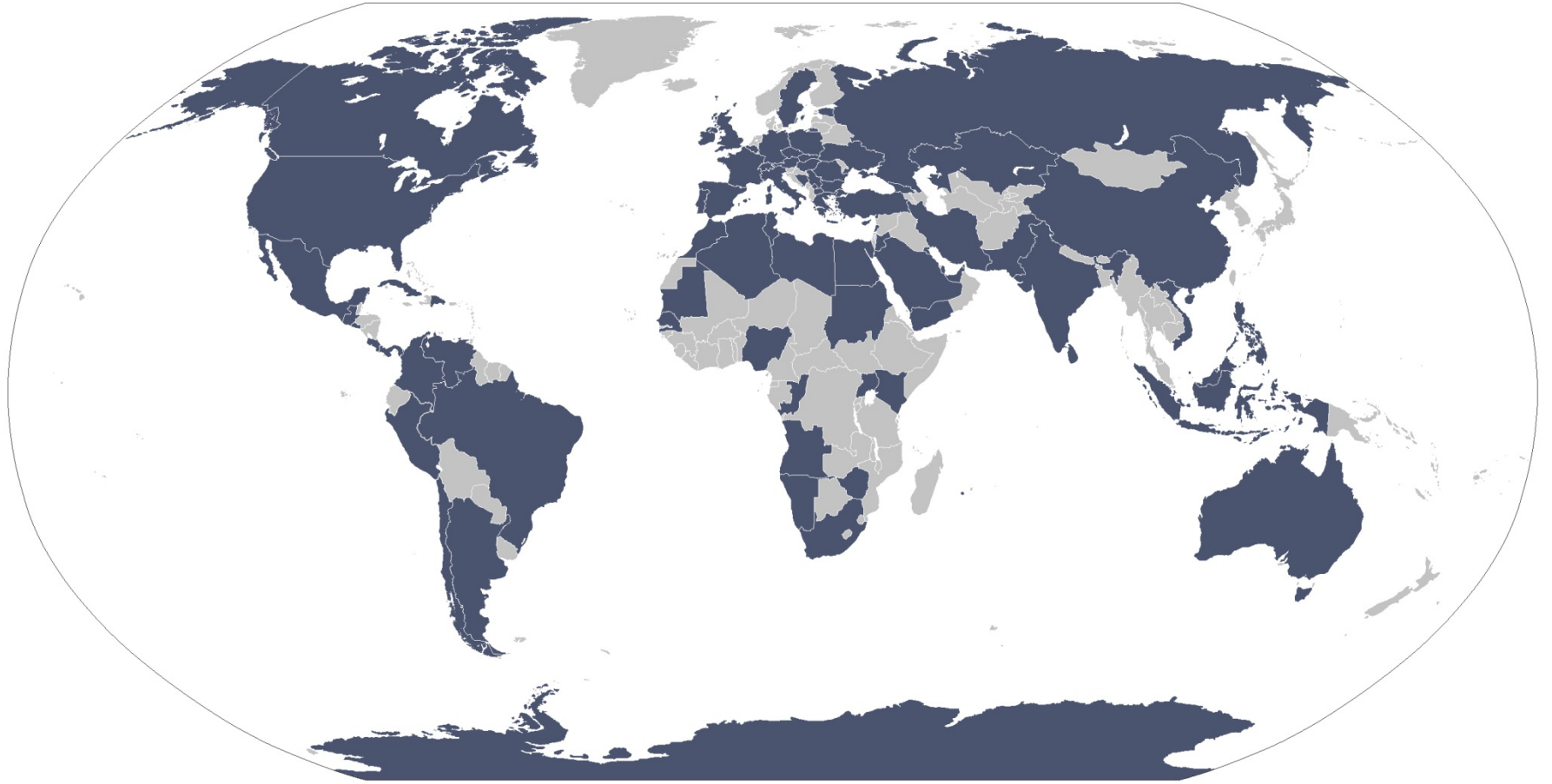
Our founding idea – that innovation can offer better solutions –  
still holds true today

# OUR GLOBAL REACH



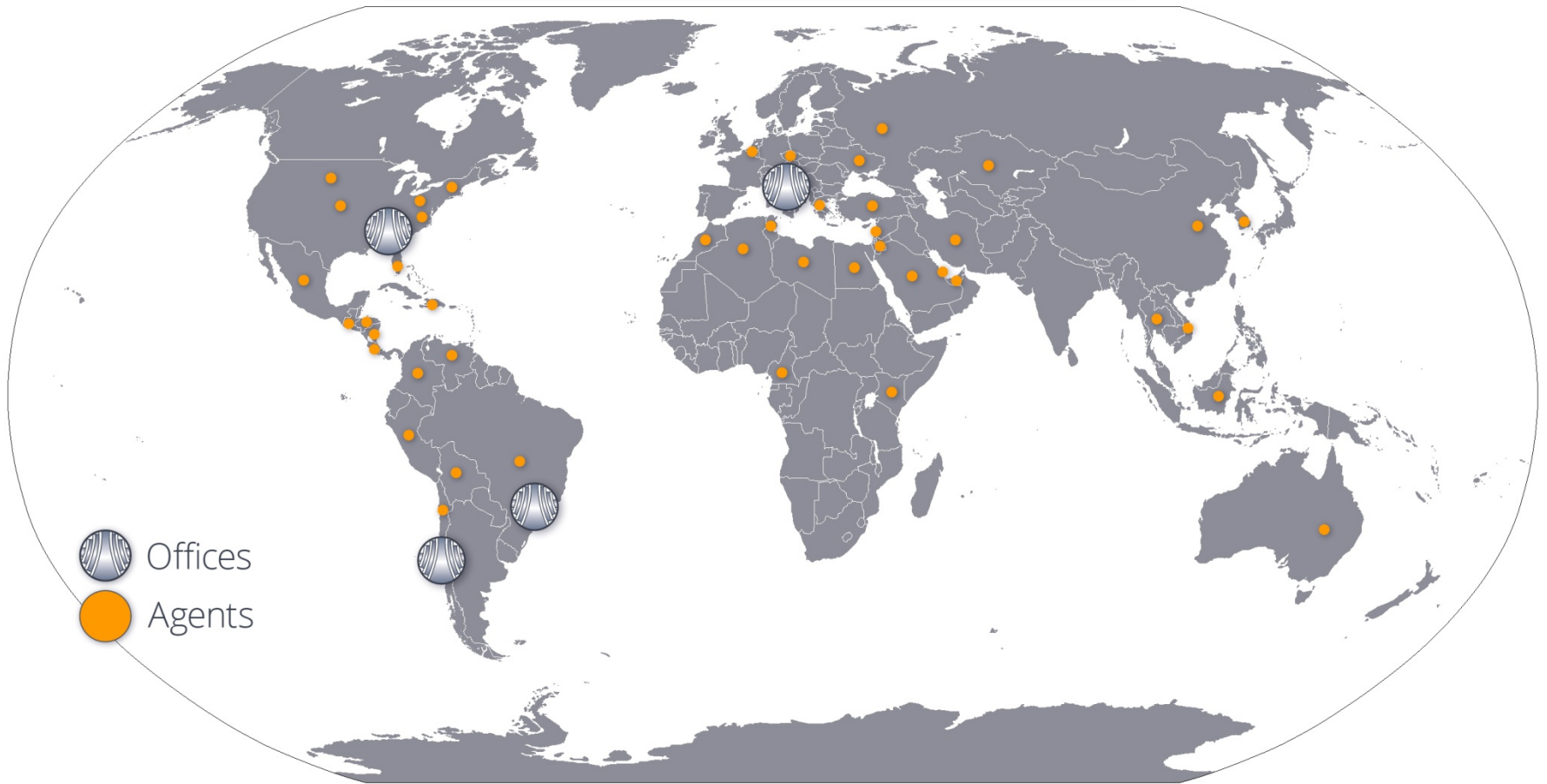
2,000 customers, including major players

# OUR GLOBAL REACH



Projects in over 85 countries and on every continent

# OUR GLOBAL REACH



Redecam local agents around the world

# TYPES OF PROJECTS



## NEW BUILDS:

- Extensive project management experience
- Rapidity
- Flexibility
- Budget consciousness

## RETROFITS, TRANSFORMATIONS AND UPGRADES:

- Performance of a new system
- Lower CAPEX
- Compliant with emissions regulations
- Rapid

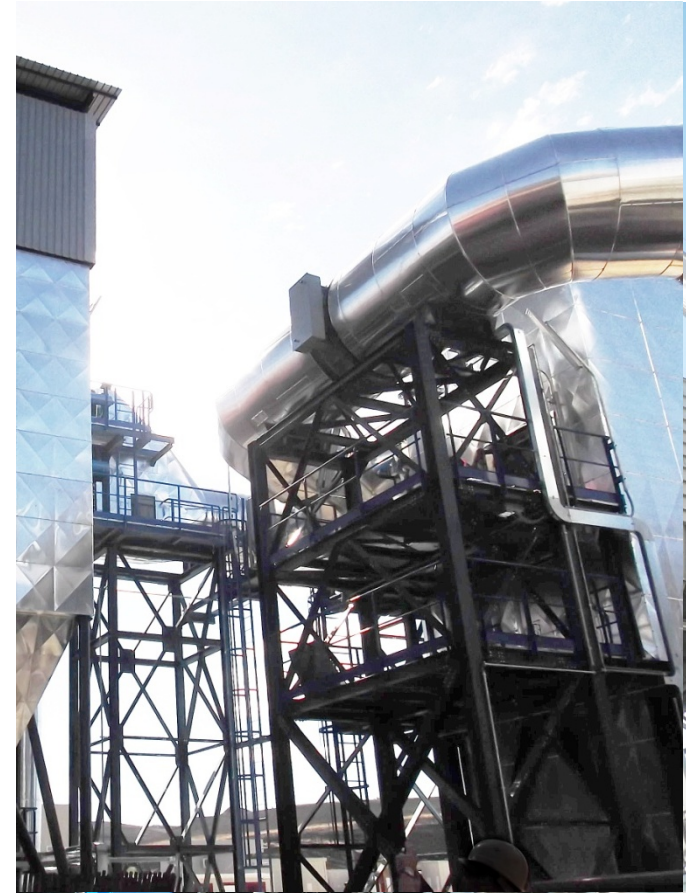


We're a one-stop shop in terms of air pollution control

# WHAT WE OFFER



- **A comprehensive portfolio:** complete air filtration and flue gas treatment solutions
- **Unsurpassed performance:** we have installations operating at  $< 2.5 \text{ mg/Nm}^3$
- **Turnkey solutions:** from design through commissioning, even in remote areas
- **Innovative systems:** we ensure our products constantly lead the industry
- **Technical support and services:** from Long-Term Service Agreements (LTSA) to on-site training



We tailor the right solution to suit your needs... including your budget



# OUR PRODUCTS



## AIR FILTRATION

- Bag Filters (baghouses)
- Electrostatic Precipitators
- Dual-Action Filters
- Dual-Input Integrated Systems
- Extreme High Temperature Bag Filters
- Nuisance Filters
- Cyclones

## GAS CONDITIONING

- Gas Conditioning Towers
- Gas-to-Air Heat Exchangers
- Water Injection Systems
- Mixing Chambers

## TRANSPORTATION, HANDLING AND STORAGE

- Screw Conveyors
- Pneumatic Transport Systems
- Hoppers
- Silos

## FLUE GAS TREATMENT

- DeNO<sub>x</sub>
  - Selective Catalytic Reduction (SCR)
  - Selective Non-Catalytic Reduction (SNCR)
  - Hybrid (SCR/SNCR)
- Dry Injection Desulfurization
- Mercury Adsorption System

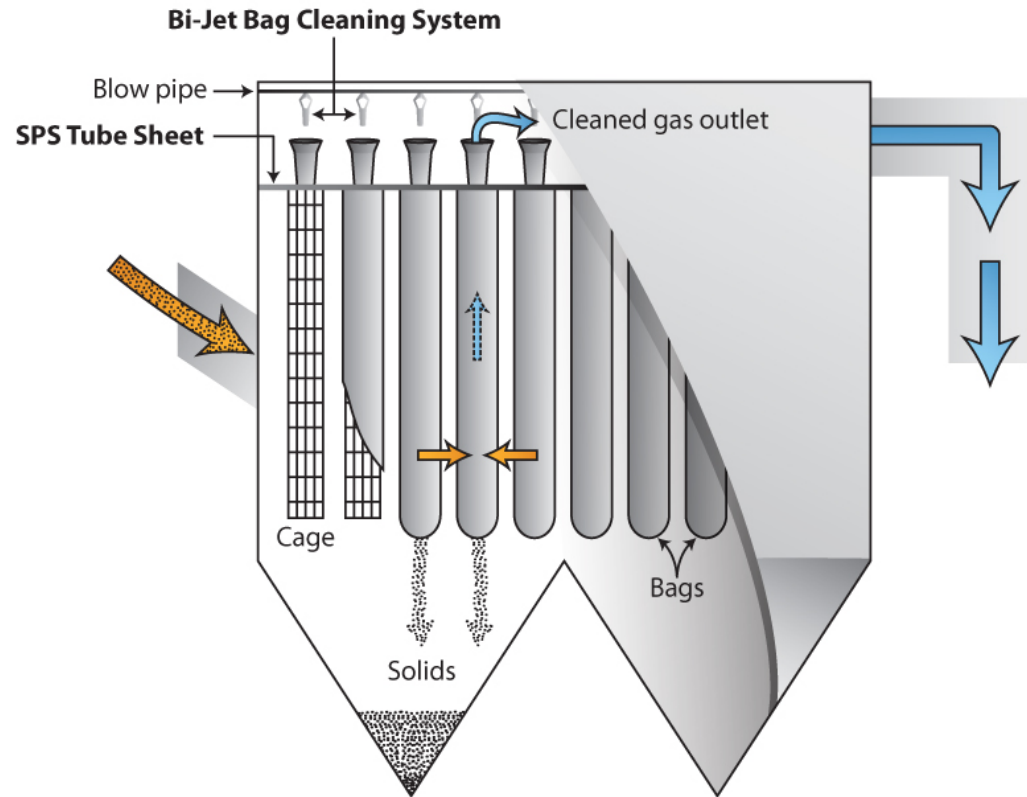
We develop the highest quality air pollution control products available

# BAG FILTERS (BAGHOUSES)



Why our Bag Filters?

- Unsurpassed filtration
- Incomparable life expectancy
- Innovative solutions
- Guaranteed casing tightness
- Reduced energy costs



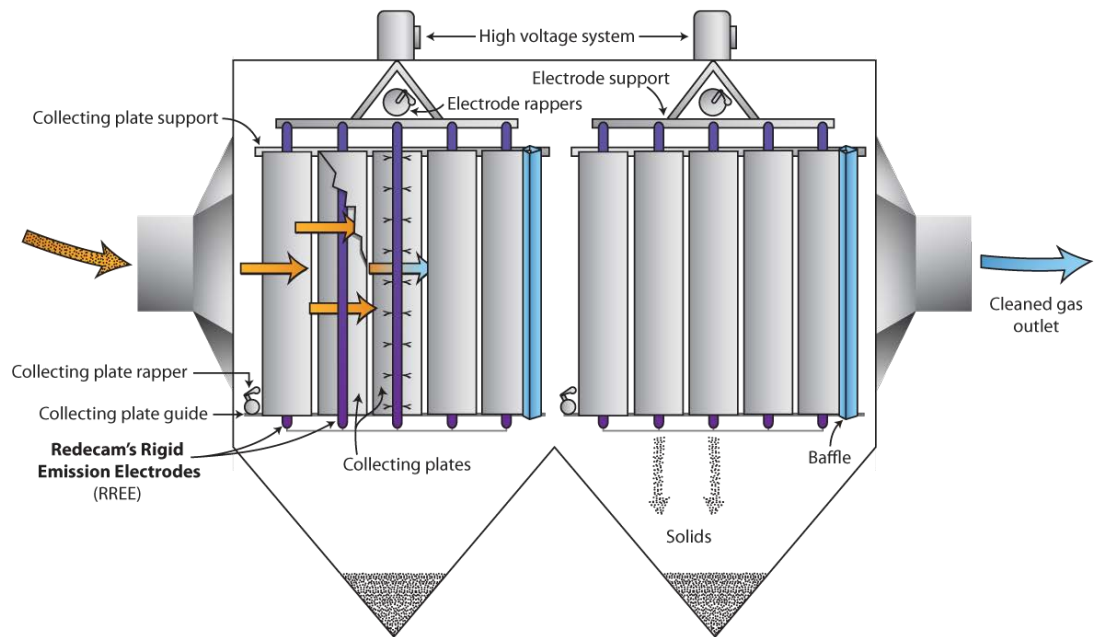
Our Bag Filters offer the highest particulate removal efficiency on the market, exceeding the most stringent emissions requirements

# ELECTROSTATIC PRECIPITATORS



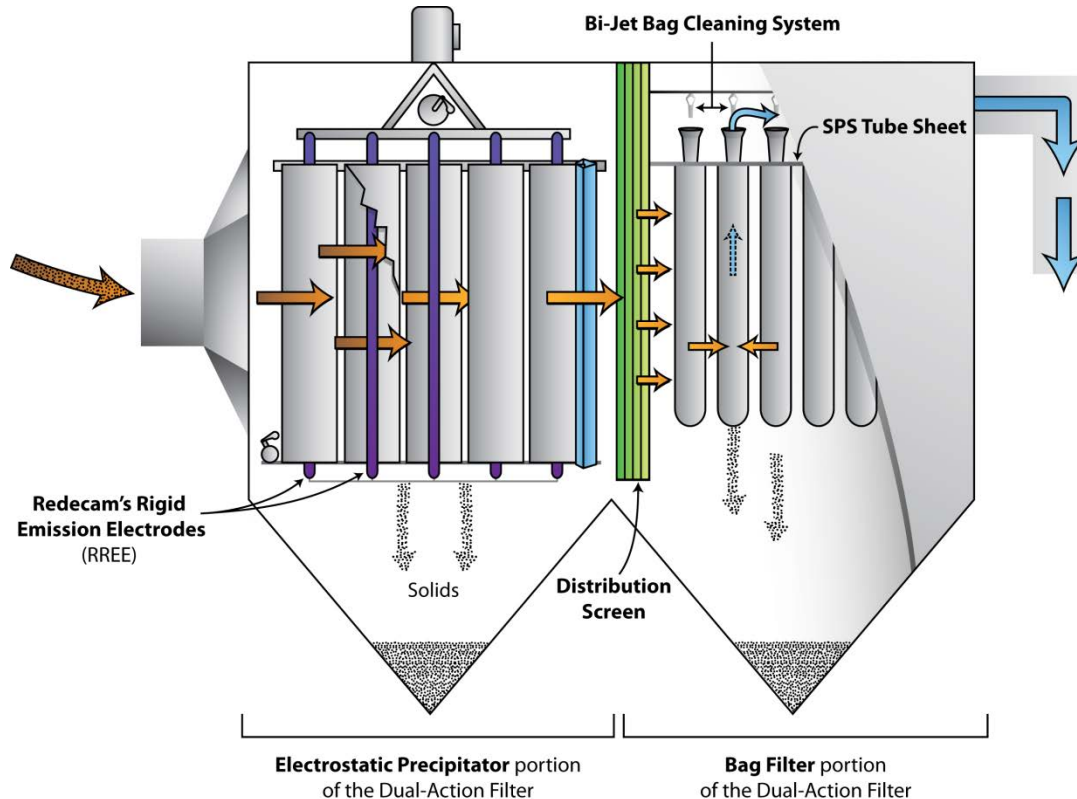
Why our Electrostatic Precipitators (ESPs)?

- Unparalleled reliability and longevity
- Optimized performance
- Improved efficiency
- Reduced dust re-entrainment
- Perfect alignment



Our "Electrode - Suspension - Rapping" technology = highest reliability and efficiency in dust collecting

# DUAL-ACTION FILTERS



Why our Dual-Action Filters?

- Highly effective
- Lower CAPEX
- Lower OPEX
- Low levels of emissions for a longer time
- Homogeneous gas distribution
- Transformation solutions

Optimal particulate removal efficiency  
Less expensive to install • Lower operating costs

# EXTREME HIGH TEMPERATURE BAG FILTERS

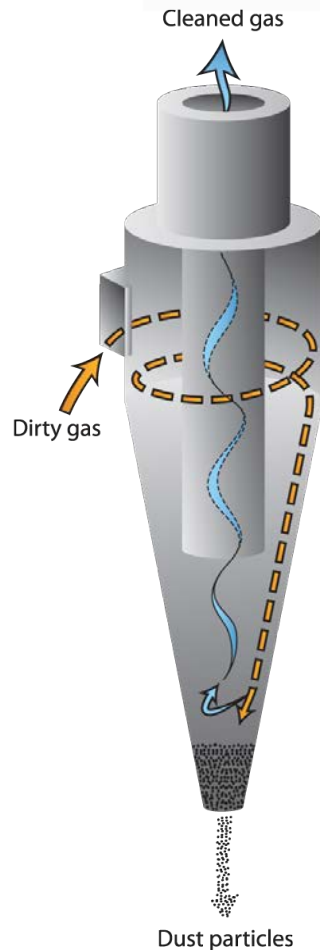


Why our Extreme High Temperature Bag Filters?

- Optimal performance:  $\geq 1 \text{ mg/Nm}^3$
- Resistant
- Lower CAPEX & OPEX
- Saves on energy costs
- Safe
- Easy installation and maintenance

Withstands temperatures of up to  $1000^{\circ}\text{C}$  ( $1832^{\circ}\text{F}$ )

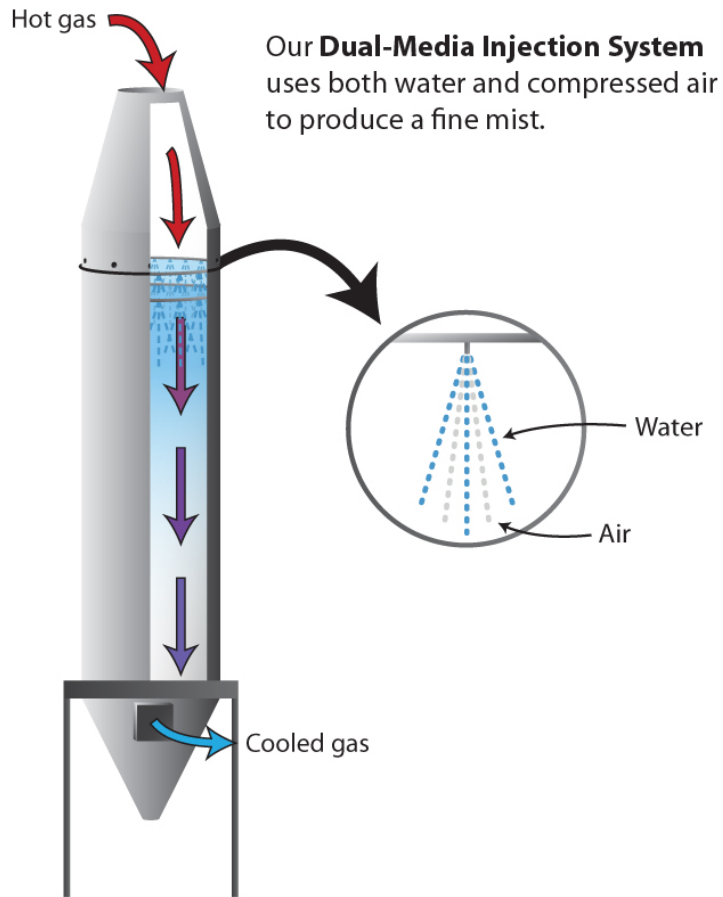
# CYCLONES



## Why our Cyclones?

- Superior particulate removal
- Cost-effective
- Multiple options
- Durable
- Maintenance-free
- Easy installation

# GAS CONDITIONING TOWERS



## Why our Gas Conditioning Towers?

- Even mixing
- Smaller tower size
- Optimized control system
- Reduced energy costs

## Two models:

- Spillback Injection System
- Dual-Media Injection System

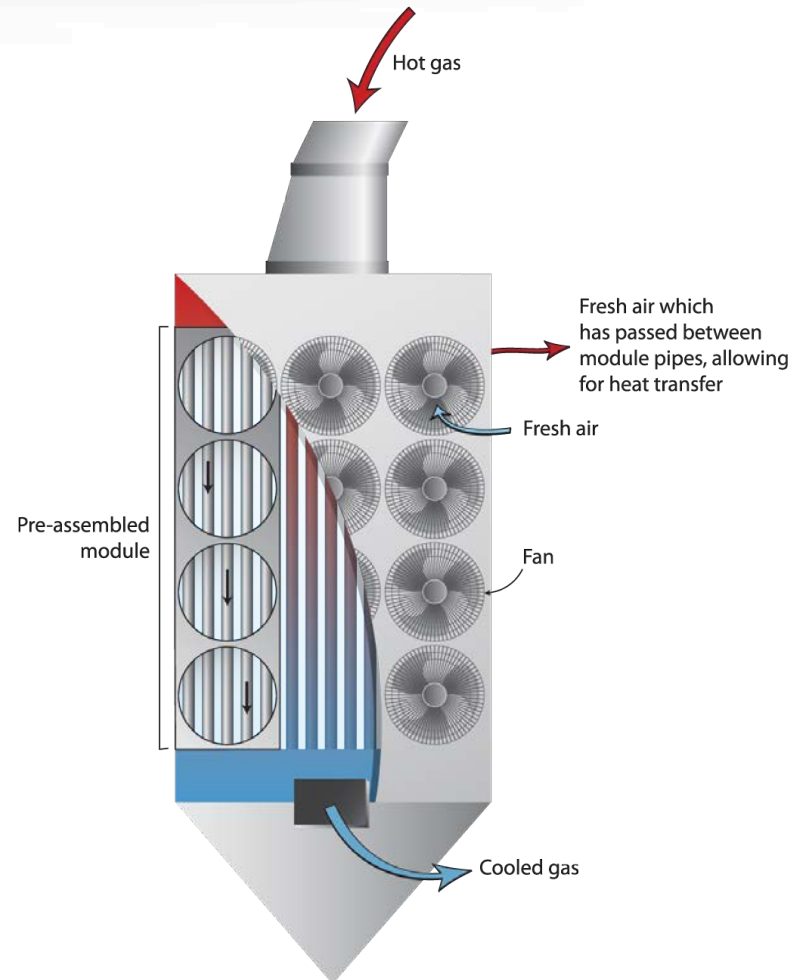
We use model tests and computer simulations to optimize timing and gas distribution

# GAS-TO-AIR HEAT EXCHANGERS



Why our Gas-to-Air Heat Exchangers?

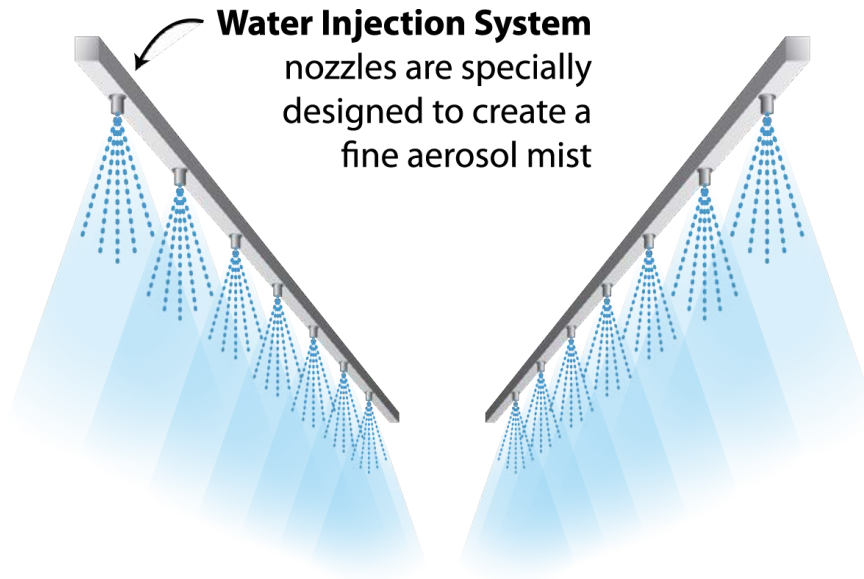
- Enhanced heat exchange
- Perfect seals
- Reduced equipment costs
- Reduced power consumption
- Increased pressure stability
- Easily transportable for less costly delivery



Initial cost-savings • Enhanced plant operation • Reduced operating costs



# WATER INJECTION SYSTEM

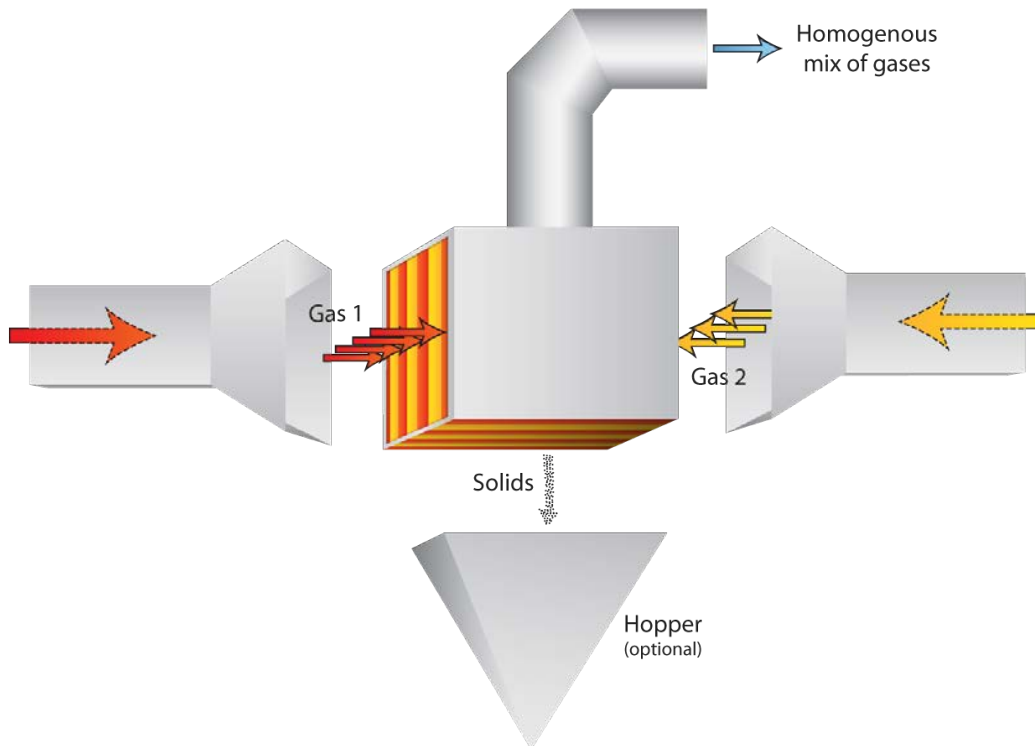


## Why our Water Injection System?

- High evaporation rates
- Homogenous temperature distribution
- Allows for compact layout
- Suitable for retrofits
- Reduced energy consumption

No competitor achieves our evaporation rates

# MIXING CHAMBERS



## Why our Mixing Chambers?

- Customized design
- Ideal when water is not available
- Double as a dust pre-separator
- Effective emergency backup
- Can act as a spark arrestor

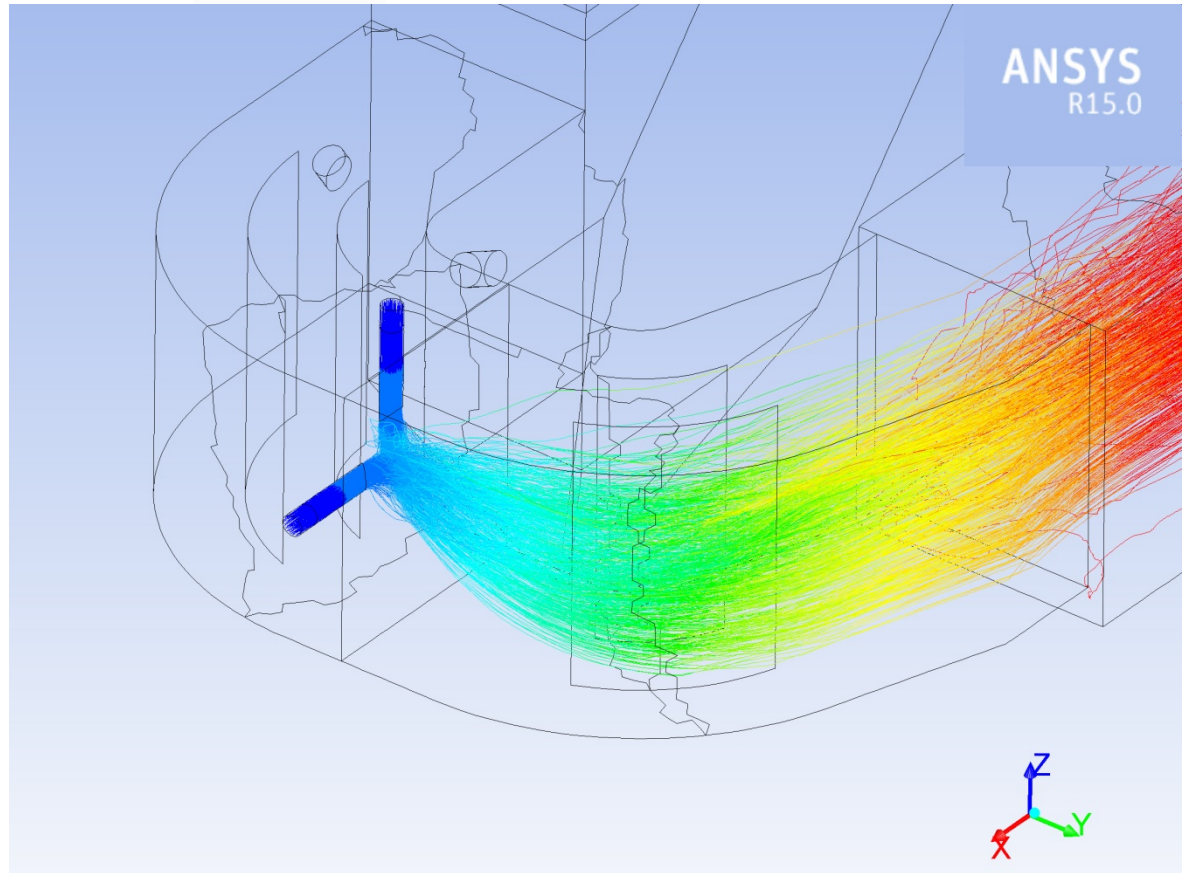
We tailor each of our Mixing Chambers based on your duct layout and process flow

# FLUE GAS TREATMENT



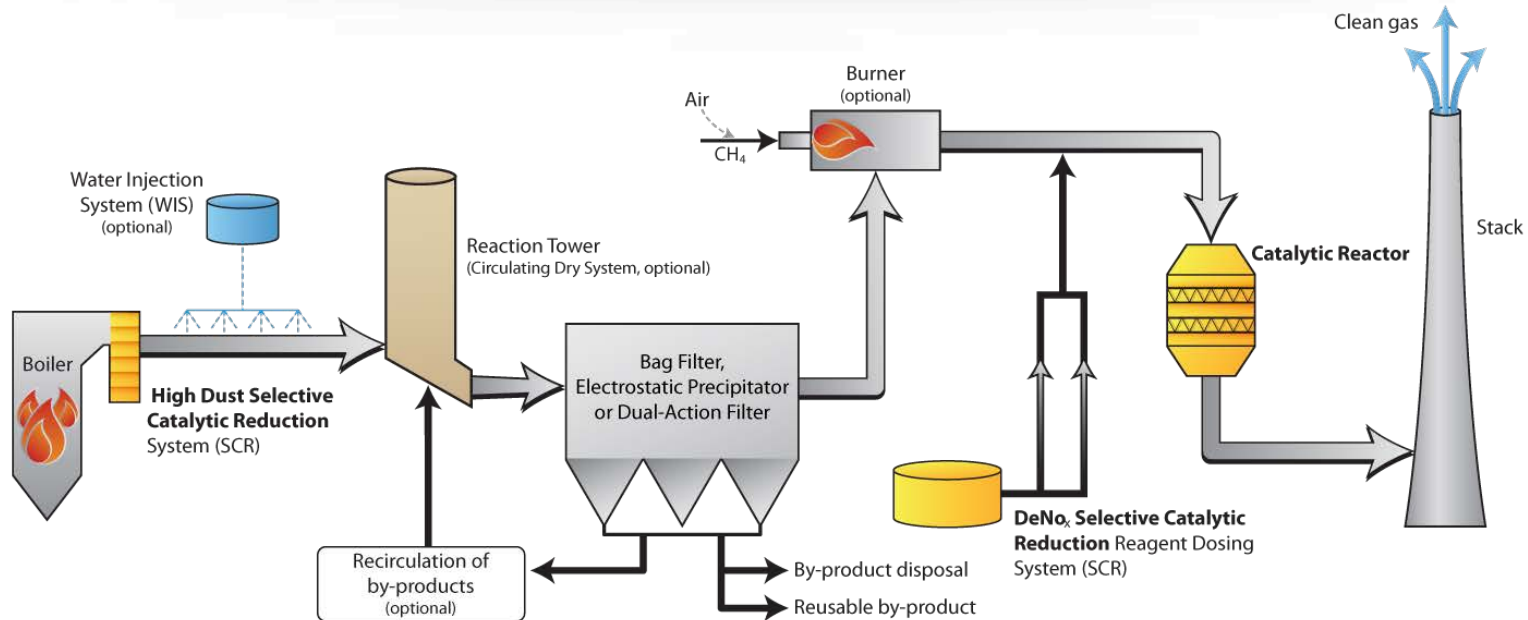
Our flue gas treatment offers:

- Perfected timing
- Optimized mixing technology
- Efficient injection points
- Reusable by-product
- Low sorbent consumption



Our One-Step Cleaning Solution is a cost-effective way to adhere to all environmental legislation.

# DENO<sub>x</sub> SYSTEMS: SELECTIVE CATALYTIC REDUCTION (SCR)



## Why Our SCR?

- Optimum effectiveness, reducing NO<sub>x</sub> ≤ 95%
- Reagent flexibility
- Customized catalytic chambers
- Catalytic layers are extruded titanium dioxide (TiO<sub>2</sub>)
- Can install and commission during regular downtime

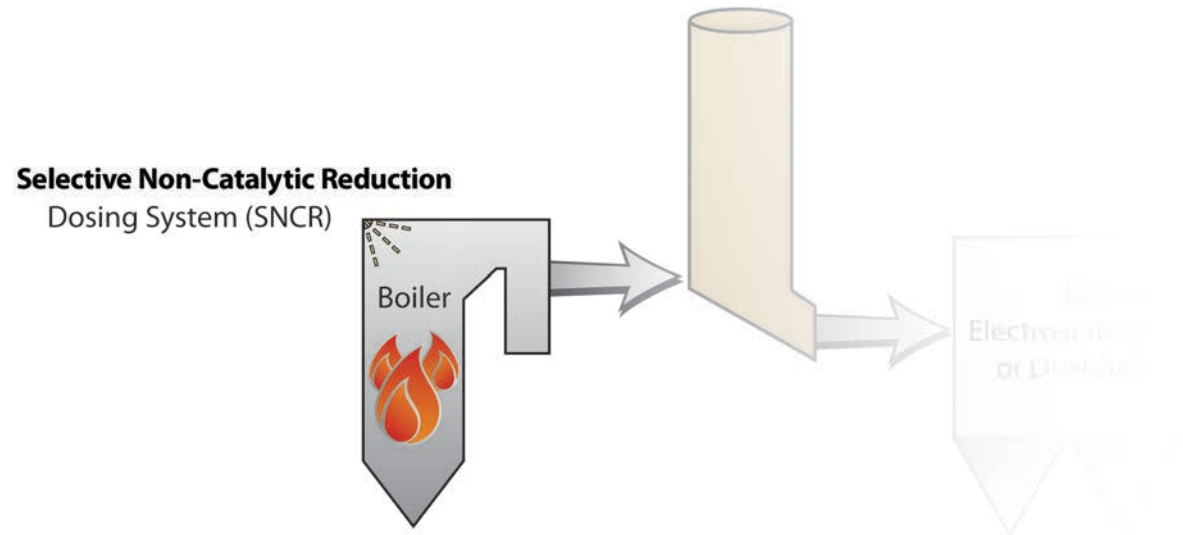
Our SCR offers optimal effectiveness

# DENO<sub>x</sub> SYSTEMS: SELECTIVE NON-CATALYTIC REDUCTION (SNCR)



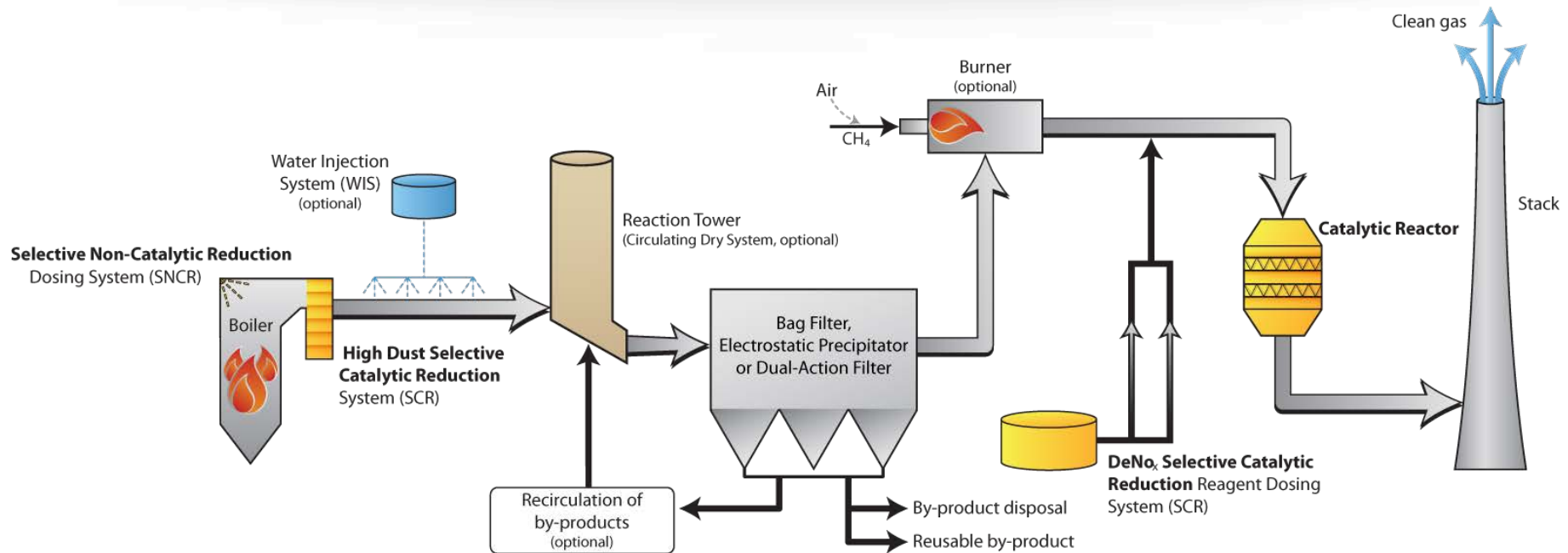
## Why Our SNCR?

- Effective,  $\leq 65\%$
- Lower CAPEX
- Optimized use of reagent
- Low maintenance
- Fast installation



Our SNCR is the cost-effective DeNO<sub>x</sub> option

# DENO<sub>x</sub> SYSTEMS: HYBRID SNCR/SCR

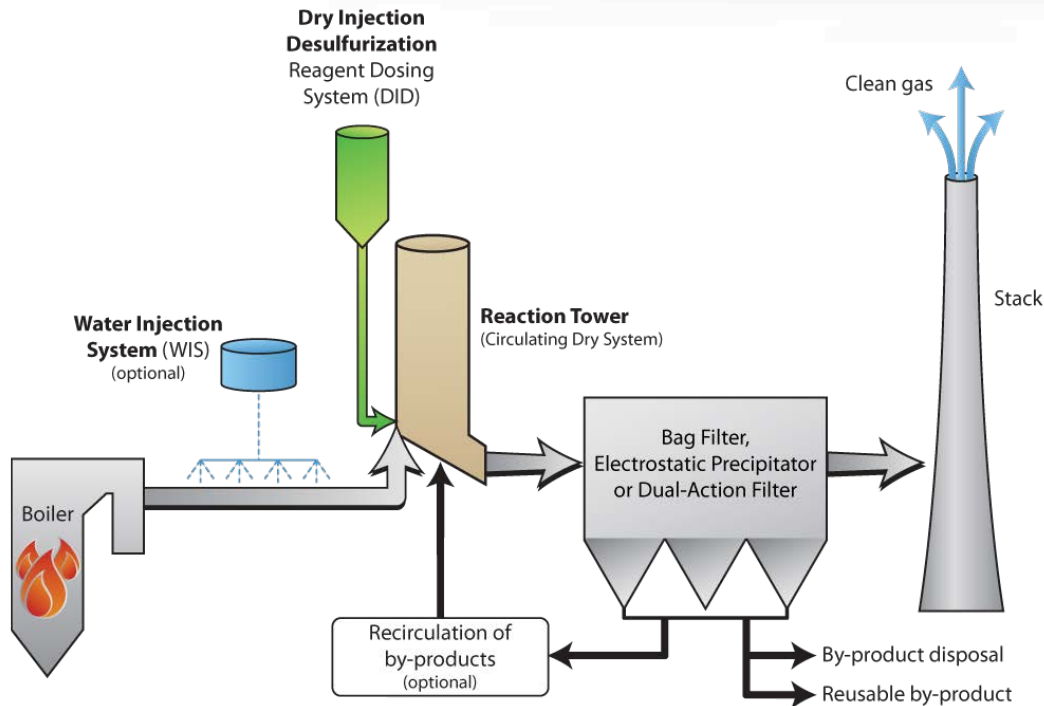


## Why Our Hybrid SNCR/SCR?

- Highly effective,  $\leq 90\%$
- Lower CAPEX
- Lower OPEX
- Compact

Our hybrid is a newer technology, often an ideal choice

# DRY INJECTION DESULFURIZATION



Removes:

- SO<sub>2</sub>
- SO<sub>3</sub>
- HCl
- HF

Why our DID systems?

- High performance,  $\leq 98\%$  effective
- Cost-effective - CAPEX
- More compact
- Lower installation costs
- Lower maintenance costs
- Captures more pollutants
- Minimizes production of NO<sub>x</sub> (greenhouse gases)

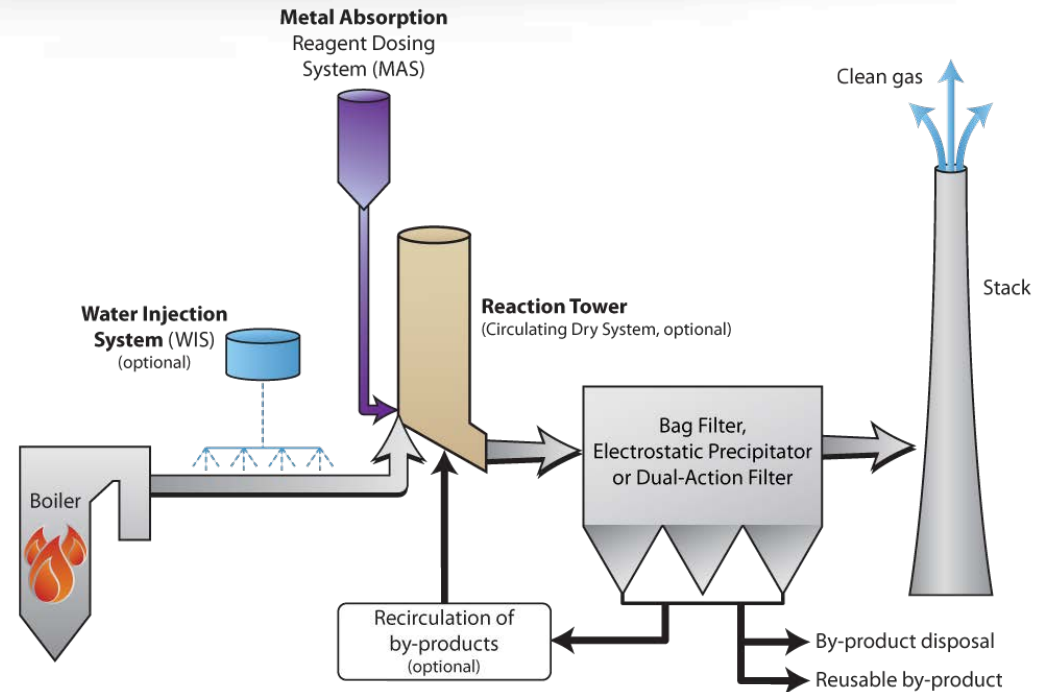
Our DID system is high performance, cost-effective and compact

# MERCURY ADSORPTION SYSTEM



## Why our Mercury Adsorption System?

- Proven technology,  $\geq 90\%$  effective
- Reduced CAPEX option
- Low reagent consumption
- Expertise choosing right adsorbent
- Flexible operations system
- Low maintenance



### Removes:

- Mercury
- Lead
- Chromium
- Furans
- Cadmium
- Manganese
- Dioxins
- Arsenic
- Other metals

Our MAS cost-effectively and efficiently helps you surpass your mercury and metals reduction targets



# HANDLING PRODUCTS



Our handling products:

- Withstand high capacity loads
- Offer low power consumption

Amongst our offering:

- Screw conveyors
- Redlers
- Bucket elevators
- Pneumatic transport systems
- Silos
- Hoppers



We can provide all ancillary equipment, offering you a complete air pollution control system

# TECHNICAL SUPPORT & SERVICES



We can:

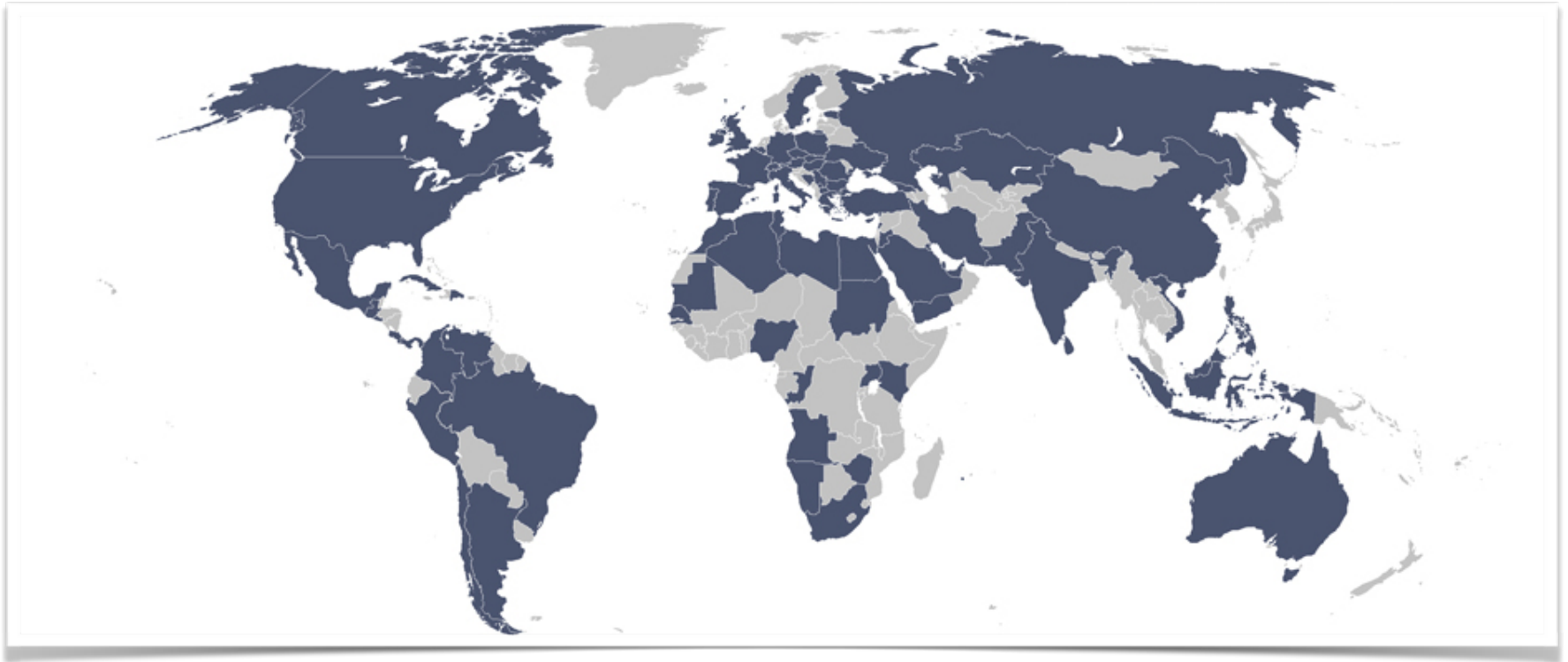
- Lower your operating costs
- Improve your system's performance
- Extend the life of your equipment
- Avoid unforeseen, expensive shutdowns

We offer:

- Long Term Service Agreements (LTSAs)
- Maintenance
- Inspection Expertise
- APC Performance Optimization
- Troubleshooting
- Spare Parts
- Upgrades, Retrofits and Transformations
- On-Site Training



We offer LTSAs, but are also available on short-notice



# OUR GLOBAL PORTFOLIO

- CEMENT
- METALS & MINING
- BIOMASS & WTE POWER
- LIME
- COAL & OIL POWER
- BIOMASS & PULP AND PAPER



CEMENT



# ROANOKE CEMENT COMPANY PLANT



Our Client: Titan America

Country: USA (Virginia)

Turnkey, transformation and upgrade

We transformed the existing ESP into a Redecam Bag Filter and added a Gas-to-Air Heat Exchanger to ***adhere to the most stringent NESHAP rules*** and ensuring **emissions were under 10 mg/m<sup>3</sup>**.

Our Solution:

- Bag Filter
- RF-Model Gas-to-Air Heat Exchanger

# AONCHOND CEMENT PLANT



Our Client: Holcim

Country: Vietnam

Retrofit

We successfully **used the existing support structure to lower costs.** Our air filtration solution drastically reduced the average dust concentration to **3-7 mg/Nm<sup>3</sup>.**

Our Solution:

- New Bag Filter using existing support structure
- Reduced average dust concentration from 40-50 mg/Nm<sup>3</sup> to 3-7 mg/Nm<sup>3</sup>





LIME



# BLACK RIVER & GRAND RIVER LIME PRODUCTION FACILITIES



Our Client: Carmeuse

Country: USA (Kentucky & Ohio)

Retrofits

We replaced the entire air filtration systems at both plants. At Black River, we **used the existing support structure to minimize costs.**

Our Solution:

- Bag Filters
- At Black River, replaced obsolete U-tube heat exchanger with a Redecam Double-Passage Heat Exchanger





# METALS & MINING



# TRAVI E PROFILATI DI PALLANZENO



Our Client: Duferdofin-Nucor

Country: Italy

Upgrade at existing plant

We improved the system's **effectiveness and efficiency** by adding Cyclones and a Gas Conditioning Tower designed to **avoid mud clogs** and speed air filtration.

Our Solution:

- Cyclones
- Gas Conditioning Tower



# ALUMINIUM DE GREECE PRODUCTION FACILITY



Our Client: Aluminium de Greece

Country: Greece

Turnkey improvement to air filtration system

Instead of replacing the existing ESP, we added a Bag Filter, offering **flexibility to run cost-effectively** and ensuring a **longer filter bag lifespan.**

Our Solution:

- Bag Filter
- Mixing Chamber





# COAL & OIL POWER



# TOCOPILLAS COAL-FIRED POWER PLANT



Our Client: GDF Suez

Country: Chile

Turnkey, transformation, APC

We engineered **solutions for 4 lines** and added flue gas treatment to comply with new regulations. ***Installation and commissioning were completed in 30 days.***

Our Solution:

- Transformed 4 existing ESPs into Bag Filters
- On 2 of 4 lines, added 2<sup>nd</sup> Bag Filter
- 4 Dry Injection Desulfurization systems

# MEJILLONES COAL-FIRED POWER PLANT



Our Client: GDF Suez

Country: Chile

Turnkey, transformation, APC

We transformed existing ESPs into Bag Filters, providing higher efficiency and installed a flue gas treatment system to comply with new regulations... ***all in 35 days.***

Our Solution:

- Transformed 2 existing ESPs into Bag Filters
- 2 Dry Injection Desulfurization systems



# BIOMASS & WTE POWER



# ENNA BIOMASS INCINERATION POWER PLANT



Our Client: FriEl Green Power and RWE

Country: Italy

Turnkey, APC, greenfield

We designed an air pollution control solution that was **cost-effective and compact**, offering flexibility for future uses.

Our Solution:

- Bag Filter
- Dry Injection Desulfurization with hydrated lime
- Mercury Adsorption System
- DeNO<sub>x</sub>: Selective Catalytic Reduction (SCR) with ammonia
- ID fan
- Stack





# US NAVY HOSPITAL THERMAL REDUCTION SYSTEM



Our Client: Pennram Diversified Manufacturing Corp.

Country: USA, product for Guantanamo Bay, Cuba

Turnkey, APC, greenfield

Our supplied high performance Bag Filter, as well as our **Mercury Adsorption** and **DID system**, *exceed all emissions requirements.*

Our Solution:

- Bag Filter (fully pre-assembled to reduce on-site installation time and costs)
- APC system with reactor and recirculation
- Mercury Adsorption System
- Dry Injection Desulfurization - hydrated lime
- Auto feed system
- Manual ash removal via vacuum



# BIOMASS & PULP AND PAPER



# OYKA PULP AND KRAFT PAPER PLANT



Our Client: Oyka Paper Packing

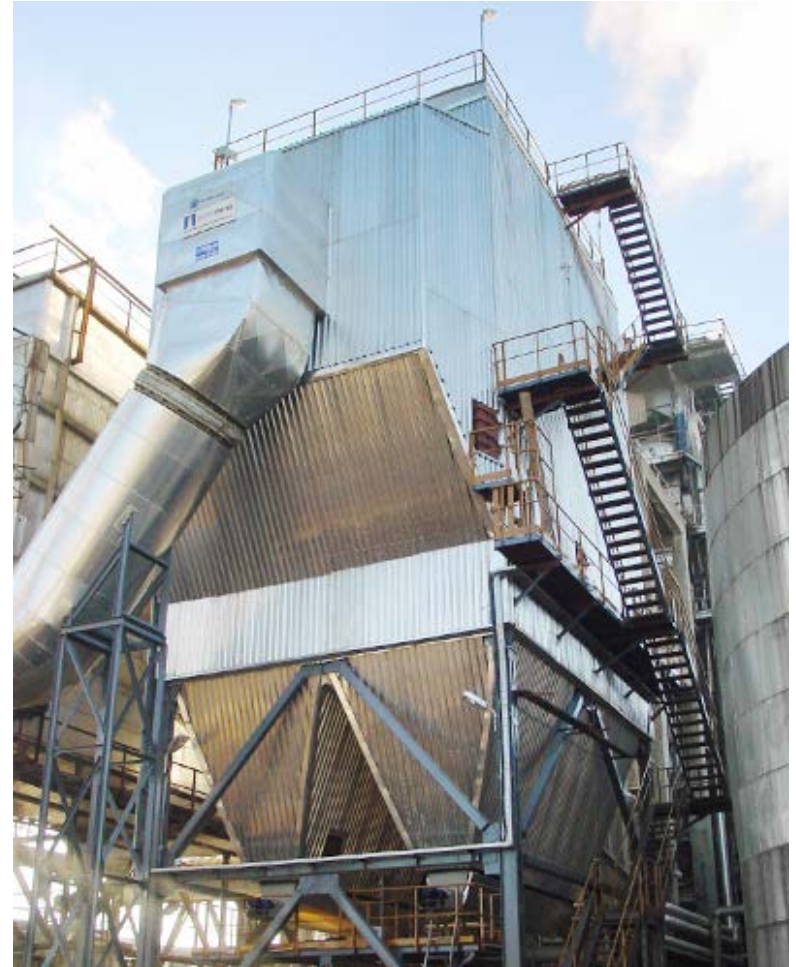
Country: Turkey

New system at existing plant

We improved air pollution emissions with our ESP that consistently **ensures the highest reliability and efficiency**, even when at maximum capacity.

Our Solution:

- ESP
- Oversight and assisted with installation



# ADM'S RONDONÓPOLIS BIODIESEL PLANT



Our Client: ADM

Country: Brazil

Turnkey greenfield

We suggested and provided a **turnkey air filtration solution**, including our **innovative** Electrostatic Precipitator (ESP) system that would offer **high efficiency** while being **cost-effective**.

Our Solution:

- ESP

# WHY CHOOSE REDECAM?



Our outstanding products



Our air pollution control portfolio



Our flexibility



Our global reach



Our rapidity



Our customer focus

We develop customers *for life*