



Specialist Solutions For Waste to Energy Plants and Process Units

Chemical Cleaning & Corrosion Protection

Boiler Services . Air Quality Control Systems . FGD Corrosion Protection

WHY PROTECTION AND CLEANING CAN NEVER BE OPTIONAL

Waste-to-Energy (WtE) plants and process industry facilities operate in some of the most chemically aggressive environments found anywhere in heavy industry. Boilers firing on mixed municipal solid waste, biomass, or process off-gases are exposed to a volatile cocktail of chlorides, sulphur oxides, heavy metals, and moisture — compounds that attack metal surfaces relentlessly and silently. Downstream, Air Quality Control Systems (AQCS) and Flue Gas Desulphurisation (FGD) units face their own corrosion challenge: the very scrubbing liquors and wet slurries that neutralise harmful emissions are themselves highly acidic and abrasive.



THE FOUR CRITICAL CHALLENGES

ASSET INTEGRITY



Accelerated corrosion and deposit build-up

Chloride-bearing flue gases from mixed waste combustion drive high-temperature corrosion on superheater tubes and waterwalls far faster than in conventional fuel boilers. Unmanaged fouling compounds heat transfer loss and creates hot-spot failures.

ENVIRONMENTAL



Emission compliance under regulatory pressure

EU Industrial Emissions Directive (IED), UK EA permits, and equivalent frameworks mandate tight SO_x, NO_x, HCl, and particulate limits. A degraded or fouled FGD absorber cannot meet these thresholds — exposing operators to permit breach, curtailment, and significant financial penalty.

OPERATIONAL



Unplanned downtime and availability loss

Boiler fouling reduces thermal efficiency and ultimately forces unplanned outages. For gate-fee-dependent WtE operators, every hour offline represents direct revenue loss and potential contractual liability to waste suppliers relying on guaranteed throughput capacity.

REGULATORY



Insurance, O&M contracts, and residual life

Plant insurers and long-term O&M contractors increasingly require documented evidence of proactive chemical cleaning and corrosion management programmes. Without them, cover gaps and contract disputes arise — particularly after boiler tube failures or liner damage events.

THE SCALE OF THE CHALLENGE

40%

Typical efficiency loss from fouled boiler heat transfer surfaces before shutdown

3x

Faster corrosion rate in chloride-rich WtE flue gas vs. conventional combustion environments

€2m+

Estimated cost of a single unplanned boiler outage across a mid-scale WtE facility



PROTECTIVE COATINGS & LININGS FOR AIR QUALITY CONTROL SYSTEMS

Corrosion, erosion, and chemical degradation are among the most critical challenges affecting Environmental Control Systems or Air Quality Control Systems (AQCS) in modern thermal power plants and industrial facilities. Equipment in flue gas treatment systems is continuously exposed to aggressive conditions such as acidic condensates, high moisture, abrasive particulates, slurry handling, and fluctuating temperatures, which can rapidly damage unprotected metal and concrete surfaces.

Over the years, Duromar® has played a key role in addressing corrosion and durability challenges across Flue Gas Desulfurization (FGD) systems, absorber vessels, ducting, chimney liners, scrubbers, slurry tanks, slurry pipelines, and gas handling equipment used in air quality control operations.

To effectively protect these assets, Duromar® developed 100% solids, high-performance epoxy and novolac epoxy systems engineered to withstand acidic flue gas condensates, high humidity, slurry abrasion, chemical exposure, and continuous immersion conditions found in wet and dry FGD environments. These advanced coatings and linings provide strong barrier protection, high-build durability, and long-term resistance to corrosion and erosion, helping extend the service life of critical AQCS

Arudra Engineers Pvt Ltd - in technical collaboration with Duromar Inc (USA), is a licensed Manufacturer, Distributor & Applicator of Duromar® range of products.

Quality, Safety & Compliance





Air Quality Control System Applications

1 Wet FGD Systems

- Absorber
- Outlet Duct / Bypass duct

2 Dry FGD Systems

- Bag Houses/Bag Filters

3 Chimney Stacks

4 Storage Tanks

5 Slurry Pumps

Stop the costly cycle of frequent repairs and premature equipment replacement in your Air Quality Control Systems (AQCS). Duromar® protective coatings and linings provide a high-performance solution for rehabilitating and extending the service life of critical steel and concrete components, engineered to withstand the demanding conditions of flue gas treatment environments—including acidic corrosion, slurry erosion, particulate abrasion, and chemical attack.

By selecting Duromar® advanced polymer systems, plant operators can restore and protect FGD absorbers, ducting, chimney liners, scrubbers, slurry tanks, slurry pipelines, and gas handling equipment, while creating a seamless, impermeable barrier that prevents chemical ingress and ensures long-term durability of air pollution control infrastructure.

Wet & Dry Flue Gas Desulphurisation (FGD)

Flue Gas Desulfurization (FGD) systems—both Wet and Dry—in thermal power plants operate under extremely demanding service conditions involving high temperatures, abrasive fly ash particles, acidic flue gases, and continuous gas flow velocities.

In wet FGD systems, equipment is exposed to corrosive slurry environments containing chlorides, sulfates, and acidic condensates, leading to severe chemical attack and under-deposit corrosion. In dry FGD systems, components face a combination of abrasive fly ash, dry sorbent residues, and acidic gases such as SO₂ and SO₃, resulting in intense erosion, corrosion, and particulate abrasion.

Across both systems, critical components—including absorber towers, ducting, reactors, bag filters, and gas handling structures—are highly susceptible to material degradation. The continuous interaction of corrosive media and abrasive particles leads to surface wear, coating failure, and progressive metal thinning.

Without proper protection, these harsh conditions can cause reduced operational efficiency, increased maintenance frequency, gas leakage, and unplanned shutdowns—ultimately impacting the reliability and performance of the entire emission control system.



Wet Flue Gas Desulphurisation(FGD)

Wet FGD systems play a critical role in reducing SO₂ emissions from thermal power plants by using limestone slurry to scrub flue gases. However, these systems operate under highly aggressive conditions involving continuous exposure to acidic environments, high moisture, chlorides, and abrasive slurry mixtures. Key components such as absorber towers, slurry tanks, filtrate tanks, ducts, and chimneys are prone to severe corrosion, erosion, and chemical attack, leading to coating failure, leakage risks, and increased maintenance costs.

Absorber

Complication:

FGD absorbers are critical components in thermal power plants, designed to remove sulfur dioxide (SO₂) from flue gases using limestone slurry (wet FGD) or dry sorbent injection systems (dry FGD).

These systems operate under highly aggressive conditions. In wet FGD absorbers, internal surfaces are exposed to acidic slurry, chlorides, high moisture levels, and elevated temperatures, leading to severe corrosion, erosion, and chemical attack. In dry FGD systems, equipment faces abrasive fly ash, dry sorbent residues, and acidic flue gases, resulting in intense erosion-corrosion and particulate wear.

Solution:

Rebuild worn areas using Duromar® SAR and protect with HPL-2131 and/or EXP for high-build resistance to severe chemical and temperature exposure in FGD service. Prepare the surface by removing deposits and abrasive blasting to Sa 2.5.

Product Details:

Duromar® EXP

DUROMAR® EXP is a higher chemical and temperature resistant version of the EAC used in the most aggressive of chemical environments. It's used to resurface heat exchangers, valves, or pump internals.

Duromar® SAR

DUROMAR® SAR is an easy-to-use rebuilding putty with excellent abrasion and chemical resistance, heavily filled with aluminum oxide and suitable for restoring pump casings, slurry tanks, weld seams, and worn metal components.

Duromar® HPL-2131

Duromar® HPL-2131 is a trowellable material, which is designed to rebuild and/or protect tanks subject to severe erosion and corrosion. It is best applied using a mastic or grout pump.

- High-build material designed to rebuild and/or protect tanks subject to severe erosion and corrosion.
- Can be easily be applied to a thickness of up to 250 mils in a single coat.
- Used extensively within wet and dry FGD systems.



Outlet Duct / Bypass duct

Complications

Flue Gas Desulfurization (FGD) ducts and gas handling components in both wet and dry systems operate under highly aggressive conditions; wet FGD involves moisture, acidic condensates, and chlorides causing corrosion, while dry FGD faces fly ash, sorbent particles, and acidic gases leading to erosion-corrosion. These conditions result in material degradation and coating failure, making durable, chemical-resistant lining systems essential for reliable performance and long-term service life.

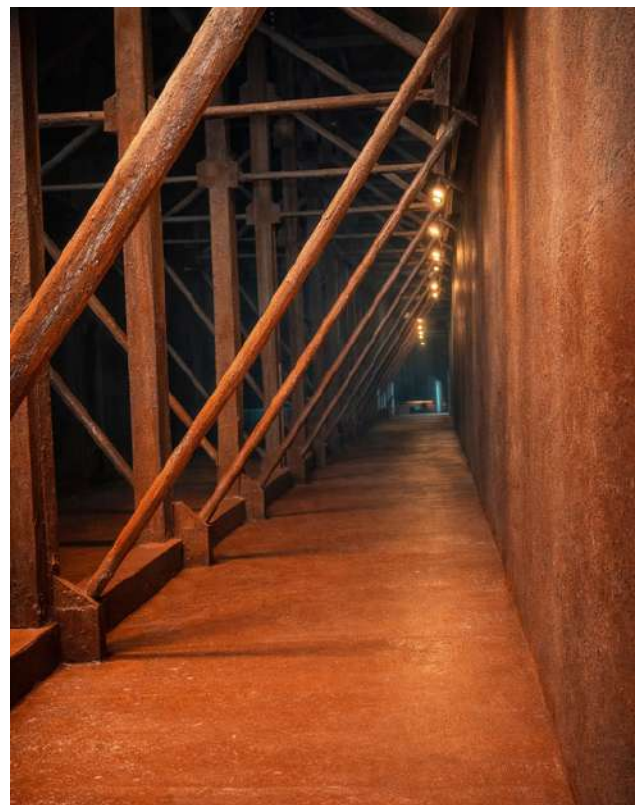
Solution:

Apply Duromar® HPL-4320 (novolac) to protect against acidic condensates, chlorides, fly ash, and temperature variations in duct areas. Prepare the surface by abrasive blasting to Sa 2.5.

Product Details:

Duromar® HPL-4320

DUROMAR® HPL-4320 is a high functionality, 100% solids novolac material, designed for concentrated sulfuric acid and other inorganic acid service. It can be applied by hand, but it is most efficiently applied over large areas by plural component airless. Requires elevated temperature cure. Used on high temperature process equipment, electrostatic precipitators and mineral acid storagex



Dry Flue Gas Desulphurisation(FGD)

Dry FGD systems play a crucial role in controlling SO₂ emissions from thermal power plants by injecting dry sorbents such as hydrated lime into the flue gas stream. However, these systems operate under demanding conditions involving high temperatures, dust-laden gas flow, and the presence of abrasive and chemically reactive particulates. Key components such as absorber vessels (spray dryer absorbers), ducting, baghouses, hoppers, and chimneys are exposed to continuous erosion, abrasion, and localized chemical attack. These harsh conditions can lead to material degradation, surface wear, leakage risks, and increased maintenance frequency, making reliable protective lining systems essential for long-term performance.

Bag Houses/Bag Filters

Complications

FGD bag houses and bag filters—across both wet and dry systems—in thermal power plants operate under harsh conditions; in dry FGD, they are exposed to acidic dust, fine abrasive particulates, high gas velocities, and temperature fluctuations, while in wet FGD, high moisture, acidic condensates, and slurry carryover contribute to corrosion and deposition. These environments lead to erosion, corrosion, dust buildup, and coating degradation on internal steel surfaces, resulting in reduced filtration efficiency and increased maintenance, making durable, chemical- and abrasion-resistant coating systems essential for reliable long-term performance.

Solution:

Apply Duromar® HPL-2221 to provide flexible protection against abrasion and impact under acidic dust and fine particulate exposure. Prepare the surface by dry cleaning and abrasive blasting to Sa 2.5.

Product Detail:

Duromar® HPL-2221

DUROMAR® HPL-2221 is a medium viscosity product with outstanding abrasion resistance, impact resistance, and flexibility. It can be used for rail cars, ash hoppers, slurry tanks, secondary containment, traveling water screens, or anywhere requiring flexibility, abrasion and chemical resistance. It is designed to be applied by hand or with plural component spray equipment.



Chimney Stack

Complications

Chimney stacks in wet and dry FGD systems are exposed to hot gases, acidic components, moisture, and particulates, leading to corrosion and erosion; these harsh conditions can damage internal surfaces, making durable, chemical-resistant coatings essential for safe operation and long-term reliability.

Solution

Repair damaged areas using Duromar® SAR, resurface with EAC, and apply HPL-4323 for chemical resistance and thermal shock protection in stack service. Prepare the surface by removing deposits and condensate residues, followed by abrasive blasting to Sa 2.5.

Product Details:

Duromar® EAC

DUROMAR® EAC is a brush-applied maintenance material offering excellent resistance to acids, caustics, and abrasion, ideal for resurfacing tanks, heat exchangers, and pump or valve components.

Duromar® SAR

DUROMAR® SAR is an easy-to-use rebuilding putty with excellent abrasion and chemical resistance, heavily filled with aluminum oxide and suitable for restoring pump casings, slurry tanks, weld seams, and worn metal components.

Duromar® HPL-4323

DUROMAR® HPL-4323 is a flexible version of the HPL-4320 used for secondary containment, ductwork, process vessels or anywhere requiring better flexibility with extremely good chemical resistance. It also has good resistance to thermal shock.



Filtrate Tanks

Complications

Filtrate tanks in FGD systems handle process water containing fine suspended solids, dissolved salts, and residual chemicals under continuous circulation. These aggressive conditions lead to coating degradation and substrate corrosion, increasing the risk of leakage and frequent maintenance. Hence, the use of durable, high-performance protective lining systems is essential to ensure long-term reliability and extended service life.

Solution

Apply Duromar® HPL-2131 or HPL-2132 for high-build protection against abrasion, erosion, and wet-service corrosion; prepare the surface by desludging, degreasing, and abrasive blasting to Sa 2.5.

Product Details:

Duromar® HPL-2131

Duromar® HPL-2131 is a trowellable material, which is designed to rebuild and/or protect tanks subject to severe erosion and corrosion. It is best applied using a mastic or grout pump.

- High-build material designed to rebuild and/or protect tanks subject to severe erosion and corrosion
- Can be easily be applied to a thickness of up to 250 mils in a single coat
- Used extensively within wet and dry FGD systems

Duromar® HPL-2132

Duromar® HPL-2132 is a 100% solids, highly filled trowel-applied lining with excellent chemical resistance. It can be applied up to 250 mils in a single coat, providing strong abrasion resistance and protection against water permeation.



Limestone Tanks

Complications

Limestone tanks in FGD systems store and handle finely ground limestone slurry used for SO₂ removal. Continuous exposure to abrasive particles, high solids content, moisture, and alkaline conditions leads to erosion, abrasion, and surface degradation of the tank internals. This results in coating failure, increased maintenance, and reduced equipment life, making robust protective lining systems essential for long-term performance.

Solution

After desludging, degreasing, and abrasive blasting to Sa 2.5, worn areas were rebuilt using Duromar® SAR to provide abrasion resistance. A Duromar® HPL-4320 epoxy novolac lining was then applied to create a durable chemical-resistant protective barrier.

Product Details:

Duromar® SAR

Duromar® SAR is a high-build rebuilding putty with excellent abrasion and chemical resistance. Filled with aluminum oxide, it can be applied up to 1 inch thickness for restoring worn metal surfaces such as pump casings, slurry tanks, and weld seams.

Duromar® HPL-4320

Duromar® HPL-4320 is a 100% solids epoxy novolac lining designed for concentrated sulfuric acid and inorganic acid service. It is typically applied by plural component airless spray and requires elevated temperature curing, making it suitable for high-temperature process equipment and acid storage systems.



Slurry Pumps

Complications

Slurry pumps play a vital role in thermal power plants by transporting highly abrasive mixtures of ash, limestone, and water. Operating under conditions of high solids concentration, turbulent flow, and chemically aggressive media, these pumps experience intense abrasion, erosion, and corrosion of internal components, making robust protective linings critical for dependable performance and long service life.

Solution:

Protect against severe abrasion using Duromar® HAR and resurface with Duromar® EAC for corrosion and chemical resistance in ash or slurry service. Prepare the surface by degreasing and grit blasting to Sa 2.5.

Product Details:

Duromar® HAR

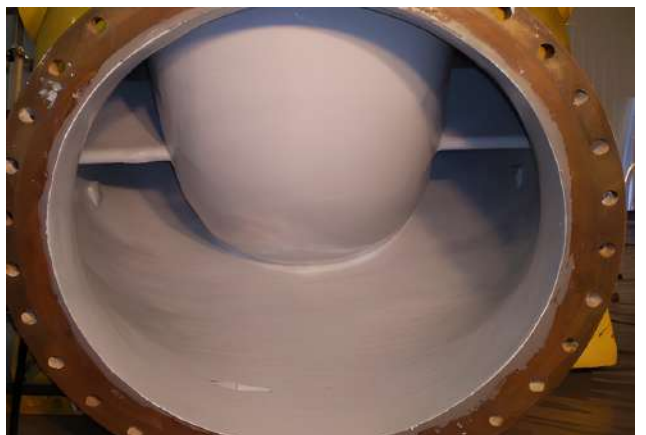
DUROMAR® HAR is a carbide-filled trowelable wear-resistant putty. It is a more abrasion-resistant product than SAR, with similar working characteristics. It is used primarily in areas requiring more resistance to fine slurries either in liquid or powder form.

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Duromar® EAC

DUROMAR® EAC is a brush-applied maintenance material offering excellent resistance to acids, caustics, and abrasion, ideal for resurfacing tanks, heat exchangers, and pump or valve components.

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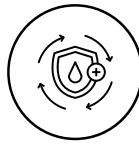


Application	Resurface	Rebuild	Lining
Absorbers	EXP	SAR	HPL-2131
Outlet Duct / Bypass duct	EXP	EXP-Thixset	HPL-4320
Bag Houses/Bag Filters	EAC-FE	SAR	HPL-2221
Chimney Stacks	EAC	SAR	HPL-4323
Filtrate Tanks	EAC-FE	SAR	HPL-2132
Limestone Tanks	EAC	SAR	HPL-4320
Slurry Pumps	EAC	HAR	HPL-2221

DUROMAR® PRODUCTS KEY FEATURES



**Superior Corrosion
Resistance**



**Exceptional Erosion &
Abrasion Protection**



**High Chemical & pH
Tolerance**



**Thermal Stability &
Cycling Resistance**



**Seamless, Non-
Permeable Protection**



**Extended Asset Life &
Reduced Maintenance**



**Cavitation Damage
Resistance**



**Strong Adhesion to
Steel & Concrete**



Chemical Cleaning Services

- 1 Boiler Chemical Cleaning – Pre-Operation & Post-Operation**
- 2 Steam Blowing Services**
- 3 Condenser, Heat Exchanger & Cooler Cleaning**
- 4 Auxiliary Boiler Services – Boiler Rental Solutions**
- 5 Process Pipeline Chemical Cleaning Solutions**

Stop the costly cycle of efficiency loss, unplanned shutdowns, and premature pipeline degradation. Our advanced chemical cleaning services provide a reliable solution for restoring process pipelines by removing scale, corrosion products, hydrocarbons, biofouling, and process deposits.

With a scientifically controlled cleaning approach, we ensure improved flow, reduced pressure drop, and enhanced system efficiency. Post-cleaning neutralization and passivation create clean, stable metal surfaces, helping extend pipeline life and ensure long-term reliability across power, oil & gas, petrochemical, and process industries.



CHEMICAL CLEANING SERVICES

Arudra is a global leader in industrial chemical cleaning services, delivering comprehensive turnkey solutions for power plants and process industries. With a strong foothold in India and a steadily expanding presence across Asia, Africa, and Central Asia, Arudra has successfully executed complex cleaning and pre-commissioning projects in countries such as Oman, the Philippines, Indonesia, Bangladesh, and beyond. Our growing international footprint reflects our ability to adapt to diverse operating environments while maintaining consistent quality and performance standards.

Backed by a team of experienced engineers, chemists, and field specialists, Arudra offers end-to-end services including system study, chemical selection, customized cleaning methodologies, on-site execution, waste handling, and final system passivation. We specialize in cleaning of boilers, condensers, heat exchangers, pipelines, storage tanks, and critical process equipment, ensuring optimal efficiency, safety, and extended asset life.

Our reputation as a trusted partner is built on delivering high-performance results with a strong focus on cost efficiency, minimal downtime, and strict adherence to environmental, health, and safety (EHS) regulations. By leveraging advanced chemical formulations, modern equipment, and proven methodologies, Arudra ensures thorough removal of scale, rust, oil, and contaminants without damaging base materials.

With a commitment to innovation, sustainability, and customer satisfaction, Arudra continues to set benchmarks in industrial cleaning by offering reliable, safe, and environmentally responsible solutions tailored to the evolving needs of global industries.

Quality, Safety & Compliance



Boiler Chemical Cleaning – Pre-Operation & Post-Operation

Boiler internal surfaces, whether newly fabricated or long in service, accumulate a wide range of unwanted materials — including mill scale, oil residues, welding flux, corrosion products, oxides, and silicates. Over time, these deposits significantly impair heat transfer efficiency, increase fuel consumption, promote localized overheating, and accelerate under-deposit corrosion, ultimately impacting reliability and safety.

Arudra's advanced chemical cleaning protocols, developed over 40+ years of global field experience, are designed to systematically remove these contaminants and restore boiler internals to a clean-metal condition. Using carefully selected chemicals, controlled circulation methods, and monitored parameters, we ensure effective cleaning without damaging base materials. The result is improved thermal efficiency, reduced emissions, enhanced system reliability, and extended equipment life—enabling plants to operate at peak performance from the very start or after prolonged service.



Arudra

Pre-Operational Chemical Cleaning

New boiler systems often carry assembly and fabrication residues that must be thoroughly removed before commissioning to ensure safe and efficient operation. Arudra ensures system readiness with:

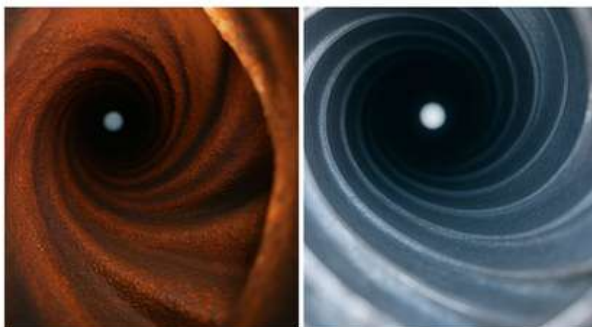
- Comprehensive contaminant removal: Effectively eliminates grease, oil films, silica dust, welding slag, grit, rust, and hydrotest scales from internal surfaces.
- System protection: Ensures clean, passive metal surfaces that support safe initial firing, prevent early-stage corrosion, and enhance long-term operational performance and reliability.

Post-Operational Chemical Cleaning

Boilers accumulate iron oxides, copper deposits, and hard scale over time, leading to reduced heat transfer efficiency, increased fuel consumption, and potential tube failures. Arudra's tailored solutions effectively address these challenges through:

- Customized cleaning strategies: Including two-stage cleaning, copper stripping, and online cleaning methods that can be executed without complete system shutdown.
- Performance validation: Conducted through metal concentration analysis, boroscopy, and detailed visual inspections to ensure cleaning effectiveness and system integrity.

Boiler Tube Cleaning



Before

After

Our Standard Cleaning Sequence Includes:

- Degreasing / Alkaline Cleaning: Removes oils, lubricants, and organic films that hinder acid action.
- Acid Pickling: Inhibited mineral acids dissolve oxides, mill scale, and rust.
- Chelation / Citric Rinse (Optional): Used for sensitive materials like stainless steel.
- Neutralization: Adjusts pH to neutral to prevent further acid attack.
- Passivation: Creates a protective oxide layer to resist future corrosion.

Steam Blowing Services

Steam blowing is a critical pre-commissioning activity that safeguards turbines, steam lines, and HRSG units by effectively removing welding slag, mill scale, rust, and other loose debris. At Arudra Engineers Pvt. Ltd., we specialize in delivering high-velocity, controlled steam blowing solutions that ensure system cleanliness, operational safety, and full regulatory compliance prior to first firing.

Each operation is carefully engineered based on system design, metallurgy, and contamination levels. We offer both hot and cold steam blowing methods, selecting the most suitable approach to achieve optimum cleaning efficiency while protecting system integrity. Our team also defines key parameters such as target velocities, blowing cycles, and acceptance criteria (plate tests) to ensure measurable results.

In scenarios where in-house steam generation is unavailable, Arudra provides complete support through rental boilers or portable steam generators, enabling seamless execution at site. With a focus on safety, precision, and minimal downtime, our steam blowing services help ensure reliable start-up and long-term performance of critical steam systems.



Our core strengths include:

- Target Plate Analysis: Visual confirmation of debris removal using A, B, C grading standards.
- Real-Time Monitoring: Continuous tracking of pressure, temperature, and blow efficiency to validate performance.
- Temporary Systems: Use of engineered piping, silencers, and separators to control noise and discharge.
- Engineering Expertise: Support from planning through execution, including documentation for handover.
- Our steam blowing services comply with international standards including EPRI, ASTM, and VGB guidelines.

Decades of Proven Experience:

With successful execution in over 200+ thermal and process plants, our track record demonstrates both technical depth and timely delivery under pressure.

Custom Design for Each Application

We perform detailed engineering assessments before mobilization, ensuring compatibility with metallurgy, pressure ratings, and steam volumes required for effective cleaning.

Low Impact, High Efficiency

Our silencers and exhaust setups minimize noise and thermal stress, making steam blowing safe even in sensitive environments.

Safety-First Approach

All operations are conducted under strict safety protocols, including isolation checks, controlled pressurization cycles, and regular safety briefings, ensuring a safe work environment throughout.

End-to-End Execution

From mobilizing equipment and personnel to providing final performance reports and cleanliness certificates, Arudra ensures a complete solution—ready for commissioning handover.

Condenser, Heat Exchanger & Cooler Cleaning

Heat exchangers, condensers, and coolers are highly prone to fouling from scale, biological slime, corrosion products, hydrocarbons, and suspended solids. Even a millimeter-thin layer of deposit can reduce thermal efficiency by up to 20%, leading to higher energy consumption, reduced process output, and increased operational costs. In severe cases, fouling can also cause flow restrictions, pressure drops, tube blockages, and localized corrosion, further compromising equipment reliability and safety.

If left untreated, these deposits can accelerate material degradation, increase maintenance frequency, and even lead to premature equipment failure or unplanned shutdowns. In industries such as power, oil & gas, and chemical processing, such inefficiencies directly translate into production losses and higher lifecycle costs.

With rising energy costs and increasingly stringent emission norms, maintaining clean heat transfer surfaces is no longer just a routine maintenance activity — it is a critical factor in ensuring process efficiency and overall plant profitability. Regular and effective cleaning not only restores heat transfer performance but also improves fluid flow characteristics, reduces pumping energy requirements, and stabilizes process parameters.

Adopting a proactive cleaning strategy—through scheduled shutdowns, online cleaning, or condition-based maintenance—helps extend equipment life, reduce downtime, and improve operational efficiency.



Arudra Offers:

- **Chemical Descaling:** Utilizes inhibited acid or alkaline formulations, carefully selected based on deposit type and metallurgy, to dissolve scale, oxides, and fouling without damaging base materials.
- **Gel-Based Cleaning:** Thickened chemical systems adhere to vertical or inverted surfaces, ensuring extended contact time — ideal for air-cooled heat exchangers and plate-type exchangers.
- **High-Pressure Hydro Jetting:** Operates in the range of 400 to 1200 bar to effectively dislodge stubborn deposits and fouling from shell-and-tube exchangers and pipelines.
- **Online Cleaning Techniques:** Suitable for lightly fouled exchangers, allowing cleaning to be carried out without interrupting process operations, thereby minimizing downtime.



Key Features

- Improves heat transfer efficiency and system performance
- Reduces energy consumption and operating costs
- Minimizes downtime with effective cleaning strategies
- Prevents corrosion, fouling, and tube blockages
- Extends equipment life and reliability
- Supports compliance with environmental and emission standards

Auxiliary Boiler Services – Boiler Rental Solutions

Plant delays, shutdowns, or capacity shortfalls shouldn't halt operations. Arudra's Auxiliary Boiler Rental Division offers ready-to-use mobile boiler units for immediate deployment. Our rental fleet supports operations ranging from short-term testing to long-term steam supply for critical processes.

Our Boiler Rental Services Cover:

- Startups & Commissioning: Generate clean steam for line flushing, steam blowing, or system trials.
- Planned Turnarounds: Maintain process continuity during shutdowns.
- Emergency Failures: Temporary backup during major outages or repairs.
- Steam Augmentation: Handle peak load requirements or seasonal demands.

Technical Highlights:

- Boilers from 0.5 TPH to 25 TPH
- Fuel options: Diesel, FO, LDO, or dual-fuel
- Operating pressures: Up to 30 kg/cm²
- Mounted on skids, trailers, or ISO frames for plug-and-play installation
- Integrated accessories: Feedwater tanks, fuel systems, blowdown tanks, safety valves, and PLC-based controls



Trained Boiler Operators



Fuel Management



On-Site Support

This integrated support framework enhances operational continuity, maximizes equipment efficiency, and upholds the highest standards of plant reliability throughout the rental lifecycle.

Process Pipeline Chemical Cleaning Solutions

Process pipelines in industrial systems are highly susceptible to fouling, scaling, corrosion products, hydrocarbons, and microbial deposits. Over time, these contaminants restrict flow, reduce heat transfer efficiency, increase pressure drop, and lead to higher energy consumption and unplanned shutdowns. Without proper cleaning, pipeline integrity and process reliability are significantly compromised.

Our specialized chemical cleaning solutions are designed to restore process pipelines to optimal operating conditions. Using scientifically formulated cleaning agents and controlled procedures, we effectively remove scale, rust, deposits, oil residues, and biofouling from internal surfaces without damaging the base metal.

Technical Highlights:

- **Comprehensive Deposit Removal:** Effectively removes scale, corrosion products, hydrocarbons, biofouling, and particulate deposits from process pipelines.
- **Customized Chemical Formulations:** Cleaning chemicals selected based on metallurgy, type of fouling, and operating conditions.
- **Controlled Cleaning Process:** Optimized parameters for flow rate, temperature, concentration, and contact time ensure uniform and efficient cleaning.
- **Circulation & Flushing Techniques:** Suitable for both closed-loop circulation and high-velocity flushing depending on pipeline configuration.
- **Pre-Commissioning & Maintenance Cleaning:** Supports both new pipeline commissioning and shutdown maintenance requirements.
- **Corrosion-Inhibited Cleaning:** Use of inhibitors to protect base metal during acid or alkaline cleaning operations.
- **Neutralization & Passivation:** Post-cleaning treatment to stabilize metal surfaces and prevent flash corrosion.
- **Online Monitoring & Control:** Real-time monitoring of pH, iron content, conductivity, and temperature for process control.
- **Environment & Safety Compliance:** Safe handling, effluent neutralization, and disposal as per regulatory standards.
- **Quality Assurance & Documentation:** Detailed reports including before/after parameters, cleaning efficiency, and inspection records.





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– Industrial Coatings

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SCAN ME