



YOUR RELIABLE PARTNER

Chemical Cleaning Services



YOUR CHALLENGES

When physical access is not possible, chemical cleaning is the preferred method for removing undesirable substances from polluted surfaces. Chemical cleaning covers a wide range of applications, from new construction to ongoing maintenance activities. Selecting the right chemical cleaning process is governed by a wide variety of factors – safety, effectiveness, corrosion rate, treatability of the effluent, disposal options, required heat input, local availability of chemicals, availability of the required utilities and cost.

OUR CHEMICAL CLEANING SERVICES

With unrivalled experience in this field, CR Asia can recommend the most suitable solution for your specific needs. Our chemical cleaning services fall into three categories:

- Process cleaning removes pollutants caused by operating processes such as waterborne scale, excess magnetite, cuprous oxide, polynuclear aromatics, iron sulphide, heavy tar and others.

- Pre-commissioning cleaning prepares newly installed piping and equipment for its intended purpose. This covers the removal of loose and potentially loose matter while retaining the passivation of metal surfaces that require corrosion-resistant properties. As part of this process, we also perform (hot) oil-flushing as well as steam- and air-blowing.
- Decontamination or de-gassing for the elimination of explosive gases (L.E.L.), H₂S, Hg, benzene and pyrophoric material for plant shutdown.

HOW WE SUPPORT YOUR BUSINESS

CR Asia offers complete chemical cleaning solutions. Our holistic approach includes safety management, all mechanical work, engineering, custom-made equipment operated by skilled staff, on-site analysis, hydro-jetting, joint integrity management with controlled bolting, leak testing and on-site wastewater treatment. As part of our commitment to service excellence, we take into account all aspects of the chemical cleaning process driven by safety and the environment, quality, scheduling and cost efficiency.

THE CR ASIA DIFFERENCE

CR Asia's large in-house team of highly trained technicians is subject to regular audits and a stringent safety passport scheme. We invest heavily in the latest equipment and SMART systems to maintain our reputation as the region's leading one-stop provider of specialised maintenance services.



Innovative technology

CR Asia, in collaboration with technology partners and suppliers, has developed a number of proprietary products to, for example, combat mercury and polynuclear aromatics. We have also developed water-based products utilising the extraordinary properties of dipentene and amine oxides, amongst others. For pre-commission cleaning of relocated plants, we combine hydrostatic testing of piping and heat exchangers. This cost-saving practice has been successfully applied at relocated EDC/VCM and ammonia plants and refineries.

Stringent QHSE processes

Every evaluation begins with an unwavering focus on ensuring the safety of people, property and the environment. The choice of chemicals is paramount in this respect. We always pay close attention to handling safety, corrosion rates, process safety, emissions and wastewater treatability.

YOUR BUSINESS BENEFITS

Benefit from a holistic approach – that combines mechanical services with cleaning and testing.

Minimise environmental impact – with industry-leading cleaning processes that utilise non-toxic biodegradable chemicals. Our approach minimises emissions and enables wastewater to be treated onsite in accordance with the most stringent environmental standards.

Save time and costs – through our in-depth familiarity of all issues related to chemical cleaning and our ability to deploy world-class solutions via local resources quickly and cost effectively.

CR ASIA – YOUR RELIABLE PARTNER

CR Asia is the leading provider of highly specialised pre-commissioning and maintenance services to the Oil, Gas, Chemical, Power and other heavy industries throughout Asia. As your reliable partner, we provide the safest and most efficient solutions to the maintenance, repair and overhaul challenges facing your business. **To learn more, visit www.crasia.net**

Unrivalled experience

CR Asia offers holistic packages that carry the best practices and experiences gained in one discipline over to the next. Since 1991, we have successfully performed over 1,000 chemical cleaning projects involving power station boilers, heat recovery steam generators, waste heat boilers (Compac Unit), hydraulic & lube oil systems, shell & tube heat exchangers, plate & frame heat exchangers, printed circuit heat exchangers, plate bundle and Texas tower CFE, cooling water jackets & systems, condensers & fin fans, urea strippers, slug catchers and stainless steel systems (ASTM A-380).

Exceptional service

As the region's leading multidisciplinary service provider, CR Asia knows the complete production process better than anyone. We also understand the challenges our customers face. So, for example, when we take up a platformer unit, our solution encompasses catalyst handling, cleaning of air preheaters, cleaning of combined feed/effluent heat exchanger and cleaning of fin fans.



OUR SERVICES

- Pre-commissioning cleaning in the power and process industries combined with oil-flushing
- Chemical cleaning of power station and utility boilers
Plant decontamination (de-gassing)
- Mercury decontamination
- Chemical cleaning of all types of heat exchangers
- Slug catcher cleaning and servicing

CR ASIA IN ACTION

The challenge

A refiner in Southeast Asia was experiencing an unacceptably high Hot Approach Temperature (HAT) of the Combined Feed / Effluent Heat Exchanger in the platformer unit. The lack of efficiency appeared to be caused primarily by polynuclear aromatics and magnetite.

The solution

CR Asia applied a multistep chemical cleaning process that involved the circulation of various aqueous chemical mixtures, ensuring a positive pressure at the feed side at all times.

The outcome

The HAT dropped from 54°C to 40°C with a total cleaning time of less than four shifts.

Your Reliable Partner

Asia's leading one-stop provider of specialised maintenance services

CR Asia supports your business with extensive contracting experience in the delivery of catered service packages, 'blind to blind' jobs and turnkey maintenance services during major shutdowns and turnarounds. Our business upholds a culture and track record of integrated management systems that are certified to multiple international standards.

Our Services

We offer a comprehensive portfolio of maintenance services that are grouped into five business lines. Our experts deliver these services – onshore and offshore – on time and on budget.

Our complete 'blind to blind' solution ensures more streamlined and efficient projects, as we maintain direct, single-source control of all critical path elements. We cater to projects of widely varying scope and complexity, and have the capacity to deliver multiple shutdowns concurrently.

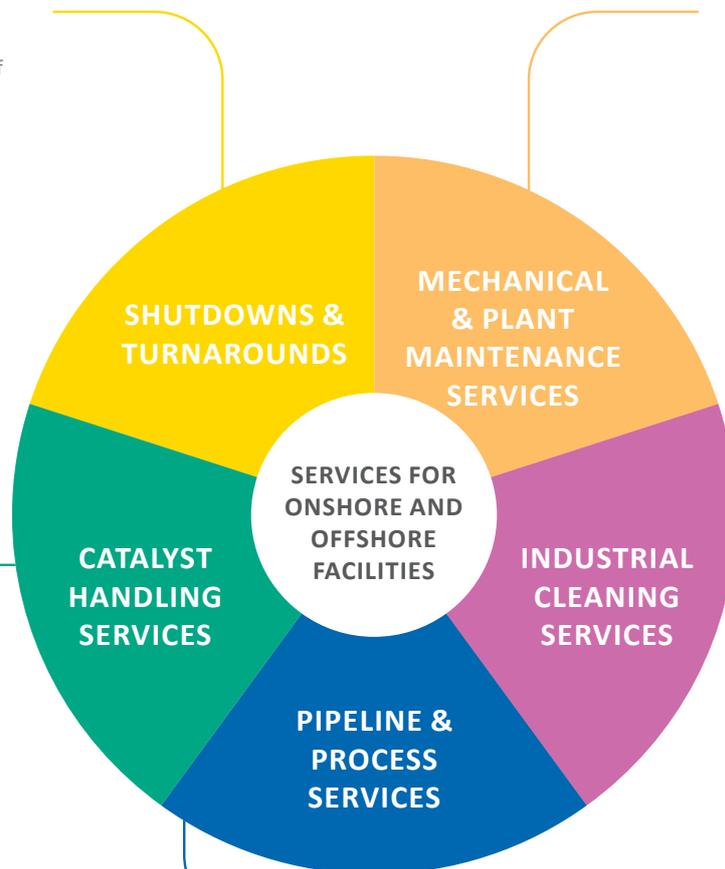
Related services:

- Mechanical Services
- Column Modifications & Repairs
- Total Heat Exchanger Maintenance
- Flare Tip Replacements & Repairs
- Cleaning & Decontamination Services
- Mercury Management Services
- Catalyst Services
- Nitrogen Services
- Waste Handling
- Decommissioning Services

Our experts meet your demands for shorter change-outs, leaner project teams and superior quality standards for all reactor types with end-to-end solutions that reduce downtime and increase profitability.

Related services:

- Catalyst & Adsorbent Handling Services
- Tubular Reactor Services
- Dense Loading
- 'Blind to Blind' Mechanical Services
- Reactor Internals Replacement & Repairs
- Nitrogen Services
- Waste Handling



We clean and inspect virtually all plant vessels, columns, drums and piping systems, both onshore and offshore, with services that can be tailored to requirements.

Related services:

- Pre-Commissioning & Commissioning Services
- Nitrogen Services
- Pipeline Cleaning (Chemical & Mechanical)
- Pipeline Flooding
- Pressure Testing
- Dewatering
- Drying
- Purging

Our investment in training, equipment and SMART systems combined with our focus on safety and rigorous planning, preparation and execution of work underpins our track record as a leading provider of mechanical & plant maintenance services. The knowledge and experience gained from each job is channelled into the next generation of solutions.

Related services:

- Static Equipment Maintenance
- Specialist Cutting Services
- Online Leak Sealing
- Controlled Bolting
- Reactor Repairs & Maintenance
- Plant Change & Piping Modifications
- In-situ Flange Facing & Machining
- Continuous Plant Maintenance

Recognised as Asia's leading 'one-stop shop' solution provider, our extensive portfolio of cleaning services sets the benchmark in terms of technical, environmental and safety standards.

Related services:

- Chemical Cleaning Services
- Mercury Management Services
- Fin Fan Optimisation
- Hydro Jetting Services
- CR Asia Decoking Technology (CDT)
- Decontamination Services
- Waste Handling

Our Business

25



4



4000⁺



Our Partners

CR Asia has established long-term alliances with a number of key strategic partners. This collaborative approach ensures our customers always benefit from having access to the most appropriate tools and technologies on any given project. We recognise our industry is constantly evolving. That's why we are continuously looking to expand our network of strategic alliance partners.



CR Asia – Your Reliable Partner

CR Asia is the leading provider of highly specialised pre-commissioning and comprehensive maintenance services to the Oil, Gas, Chemical, Power and other heavy industries throughout Asia. As your reliable partner, we provide the safest and most efficient solutions to the maintenance, repair and overhaul challenges facing your business.

Contact us today to learn more

CR Asia Group

17th Floor, Unit 1706,
Two Pacific Place Building,
142 Sukhumvit Road,
Klongtoey, Bangkok 10110, Thailand
Tel: +66-2-653-3913-5
Fax: +66-2-653-3916
Email: crag@crasia.net

CR Asia Singapore

4 Tuas Avenue 2,
Singapore 639444
Tel: +65-6268-0255
Fax: +65-6268-3369
Email: cras@crasia.net

CR Asia Thailand

15/1 Moo 3, Bankoh - Mabkha Road,
T.Mabkha, Nikompattana
Rayong 21180, Thailand
Tel: +66-38-698-399
Fax: +66-38-698-398
Email: crat@crasia.net

CR Asia India

802 Windfall, Sahar Plaza,
J B Nagar, Andheri (East),
Mumbai – 400 059, India
Tel: +91-22-6288-1000
Email: crai@crasia.net

CR Asia Malaysia

Lot 1, PT 8250-1,
Teluk Kalong Industrial Area,
24000 Kemaman, Terengganu Darul Iman,
Malaysia
Tel: +60-9-863-2325 to 26
Fax: +60-9-863-2328
Email: cram@crasia.net

Or visit www.crasia.net