



Fin Fan Optimisation Services



YOUR CHALLENGES

Air cooled heat exchangers (ACHE) are used extensively throughout the Oil, Gas, Refining, Chemical, Power and other heavy industries. As a potentially critical component of your production process, ACHE performance is essential. Under the motto 'We Deliver Cooling Capacity', CR3's comprehensive portfolio of maintenance, cleaning and advisory services supports your production processes by delivering sustained or enhanced ACHE performance.

OUR FIN FAN OPTIMISATION SERVICES

Various factors can influence cooling capacity, with cleaning being just one of many potential solutions to improve ACHE performance. For this reason, our cleaning solutions are performed together with an elaborate monitoring programme that enables us to investigate the full spectrum of possible causes for reduced efficiency. We also provide monitoring and data analyses to document efficiency gains by measuring the air velocity, plenum pressure differential, temperature and energy consumption before and after cleaning.

HOW WE SUPPORT YOUR BUSINESS

As part of our comprehensive consultative approach, we investigate all possible issues associated with ACHE efficiency including hot air recirculation; the condition of the plenum; fan performance; energy consumption of the fan drive; vibration and noise levels, etc. Once the situation has been fully assessed, our experts propose the necessary corrective actions to resolve all issues.

To restore ACHE cooling capacity, we clean the inside as well as the external tube surface. Depending on your specific requirements, CR3 employs a range of methods such as foam cleaning, mechanised hydro-jetting and soda blasting (dry-cleaning) for the external surface. We carry out internal tube cleaning by high-pressure water jetting using automated techniques such as tube lancing equipment (TLE). TLE cleaning with flexible lances and rotating nozzles is suitable for narrow platforms so that extensive scaffolding is not required. Chemical cleaning can be used to remove H₂S, FeS and/or sticky pollutants that present challenges for hydro-jetting applications. Both methods enable us to achieve an optimal result in the shortest possible time while maintaining the highest safety standards.

THE CR3 DIFFERENCE

CR3'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

We use TLE techniques to clean tube interiors safely and efficiently. For the external tube surface, soda blasting (dry cleaning) is performed online in 95 per cent of all cases. Working in cooperation with our technology partner, MCO Team B.V. from the Netherlands, new solutions are developed for those interested in permanent cleaning installations and online continuous performance monitoring.

Stringent QHSE processes

CR3 has a proven ability to restore cooling capacity to original design levels through online cleaning alone, using non-

hazardous, environmentally friendly sodium bicarbonate, which is also used as a food ingredient in baking powder. Naturally, all local laws and regulations pertaining to the blasting process are adhered to.

Unrivalled experience

Based on our extensive experience, we recognise that approximately 85 per cent of all heat transfer issues at ACHE arise from fouling of the outer surface of the tubes, where debris accumulates on and in between the fins. By using foam cleaning, mechanised hydro-jetting or (online) soda blasting (dry cleaning), we can confidently offer the best solution for 'Delivering Cooling Capacity'.

Exceptional service

To ensure minimal downtime, the majority of our cleaning services are performed online and our team is capable of cleaning some 70m² per shift. We check all aspects of fin fan performance to ensure cooling capacity is delivered. By providing consultancy and monitoring support together with an array of cleaning options, CR3 offers a comprehensive service package.



OUR SOLUTIONS

- Cleaning of the external tube surface by foam cleaning, mechanised hydro-jetting or soda blasting (dry cleaning)
- Online cleaning of the external tube surface for the majority of ACHE
- Cleaning of the internal tube surface with semi-automated lancing equipment (TLE technique)
- Monitoring and troubleshooting for performance enhancement

YOUR BUSINESS BENEFITS

Gain certainty – by relying on tried and tested maintenance, cleaning and advisory services from CR3. We have an impressive track record of delivering sustained or enhanced ACHE performance over the course of hundreds of successful projects.

Increase efficiency – with fin fan optimisation services that provide excellent results and a high return on investment. Our comprehensive portfolio of online ACHE cleaning and monitoring services can help to minimise downtime from unplanned maintenance activities.

Minimise environmental impact – with our non-hazardous, environmentally friendly solutions. Beyond ensuring all relevant laws and regulations are adhered to, our experts can help you reduce your carbon footprint.

CR3 is a leading provider of energy engineering solutions. Established in 1991, we provide specialised maintenance, plant upgrade, revamp and engineering services with a sharp focus on **Energy** Efficiency, **Engineering** Excellence, and Sustainable **Solutions**. **To learn more, visit CR3.Group**

CR3 IN ACTION

The challenge

A refiner in Southeast Asia was being forced to perform frequent flaring due to reduced efficiency of the iC5 Fin-Fan Overhead Condensers.

The solution

CR3 carried out online cleaning of the tube exterior by soda blasting in seven day-shifts.

The outcome

Following cleaning, a 136 per cent improvement in average airflow was measured. This resulted in an increase of 4.1 MW and an iC5 reflux increase of 55 m³/hour.

Leading one-stop provider of specialised maintenance services

CR3 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 Solutions

We offer a comprehensive portfolio of maintenance services that are grouped into six 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 can deliver multiple shutdowns concurrently.

Related services:

- Static & Rotating Equipment Maintenance
- Industrial Scaffolding
- Mechanical Services
- Column Modifications & Repairs
- Total Heat Exchanger Maintenance
- Flare Tip Replacements & Repairs
- Cleaning & Decontamination Services
- Mercury Management Services
- Catalyst Handling Services
- Nitrogen Services
- Waste Handling
- Decommissioning Services
- Insulation Services
- Valve Maintenance
- Storage Tank Cleaning & Maintenance

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.

Related services:

- Static Equipment Maintenance
- Rotating Equipment Maintenance
- Specialist Cutting Services
- Online Leak Sealing
- Controlled Bolting
- Reactor Repairs & Maintenance
- Plant Change & Piping Modifications
- In-situ Flange Facing & Machining
- Industrial Scaffolding
- Insulation Services
- Valve Maintenance
- Continuous Plant Maintenance
- Storage Tank Cleaning & Maintenance

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
- CR3 Decoking Technology (CDT)
- Decontamination Services
- Waste Handling

We deliver projects safely, on time and on budget by ensuring single-source control through our multi-disciplinary approach and project management capability.

Related services:

- Process Revamps, Rejuvenations & Retrofits
- Construction & Constructability Reviews
- Engineering, Procurement & Commissioning Services
- Operations & Maintenance
- Dismantling, Demolishing & Removal of Equipment
- Fabrication of structural, Carbon Steels & Pipe Systems
- Fabrication of Stainless Steels & Special Alloys
- Installation of Large Equipment & Pipe Systems
- Welding
- Hot & Cold Cutting
- Scaffolding & Insulation



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Contact us today to learn more

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