

Christof Group

trust in solutions



CHRISTOF GROUP SERVICES, INSPECTION & AFTER SALES [SIAS]

critical process equipment



Please note:

For reasons of readability we are not using gender distinctions in our text, although female, male as well as diverse users are being addressed.





Introduction

The evolution of the Fertilizer market has been changing the structure of the product value chain which is now involving and heavily dependent upon several new factors such as efficiency constraints, production targets, operational flexibility, volatile operating costs and increasing environmental concern.

As global leader manufacturer, Christof Group is very well aware of this scenario and has translated these market characteristics into a value proposition offering all the experience gained in decades of manufacturing, installation and service.

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World's leading specialist at the Fertilizer market

Christof Group is world-renowned for high-quality pressure equipment required for fertilizer production, the urea and ammonia synthesis processes as well as for its extensive knowledge and use of cutting-edge materials, such as Safurex®, Safurex® Star and Safurex® Degree. Similarly, clients worldwide rely on Christof Group's top-quality equipment for highly-concentrated nitric acid and critical melamine equipment.

1966

Established in

5

Production facilities

>95%

Export ratio

>100

Total countries supplied

3.500

International projects

>440.000

Annual production hours

145.310 m²

Total size of production area

Service Portfolio

Christof Group SIAS' comprehensive portfolio of products includes:

1. Repair

It is common experience that many failures of shell-and-tube heat exchanger tubing occur within the first few centimeters of the bundle. Main reasons for such tube end damage are erosion, impingement attack, stress corrosion cracking and pitting/crevice corrosion all of which can ultimately lead to leakage and tube failure.

Below are listed possible repair processes applicable to HP equipment:

- > Shortening of tube bundle to remove damaged/consumed tube portions
- > Re-tubing of bundle
- > Tube plugging

Plugging of tubes needs dedicated repair procedures and adequate welding techniques.

Plug design and plugging procedures have to be evaluated considering the tube material and status, tube-end protrusion and joint configuration, service and root cause of failure.

The plugs usually have a conical shape and the material is compatible with that of the tubes. Plugging of tubes can be approached in different ways and in particular case, reaming down of tube-ends, tube's puncturing and simulation mock-up welds can be effective.

Other possible repair activities:

- > Fluid re-routing by partition plate modification
- > Modification of internals including liquid distributors, ferrules, grids, supports and trays



2. Relining

- › Relining to ensure the required corrosion protection.
Relining - partial or total - by liner on liner or replacement techniques
- › Replacement of liner with different materials





3. Inspection

Performed by experienced engineers including visual inspection, corrosion inspection, eddy current testing, ultrasonic testing, magnetic induction testing.

Test results are comprehensively analyzed to determine whether the equipment can operate safely in the next operating cycle. Using computer technology and mathematical statistics methods to conduct comprehensive statistical analysis of the inspection data, understand the distribution of tube wall thickness corrosion, defect location and depth, carbon steel pipe plate corrosion degree, corrosion resistance layer thickness, etc.

Our inspection report will determine the cause and extent of the failure to help developing the right equipment maintenance plans and preventive maintenance repair plan, predict equipment reliability and service life.

4. Ammonia Tank Corrosion Inspection

Ammonia inspection will be performed to detect potential degradation mainly due to SSC and detect it before it becomes a threat.

It will include:

- › Definition of the most appropriate inspection methods
- › Determination of the most appropriate tank monitoring requirements
- › Establishment of prevention and mitigation steps to minimize the risk of failure event



5. Training

Christof Group SIAS can provide training courses on site on technical and operational topics.

Specific needs of the plant will be addressed and customized with the customer.

All training material will be provided by our staff.

Possible training topics:

- › Technical maintenance aspects of static urea equipment and high-pressure piping, valves and accessories
- › Integrity risks of static urea equipment and how to avoid these
- › How to do repairs
- › Corrosion inspection in urea plant
- › Corrosion control in boiler feed water and steam systems







6. Engineering

Mechanical, thermal and detail engineering, design calculations and 3D modelling, using state-of-the-art software

7. Revamp

Revamps to modernize, adapt or modify equipment to boost efficiency and productivity levels or lower the environmental footprint in line with applicable rules and regulations

8. Supervision of Installation

Supervision of on-site installations of critical and high-pressure equipment

9. Spare Parts

Fast supply chain, flexible stock management and most up-to-date engineering are the key elements of Christof Group

Christof Group is committed to satisfying the most demanding customer requirements in terms of efficiency, reliability, availability and life cycle costs

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