

# AyraScrub™



Air pollution control and odor treatment  
**Wet chemical scrubbers**  
Industries & municipalities



John Cockerill Air & Gas



# AyraScrub™: wet scrubbing, a proven and effective solution for air and odor treatment

## Protecting human health and the environment

Omnipresent in industries (food, aeronautics, semi-conductors, surface treatment, etc.) and the municipal sector (water treatment plants, waste sorting centers), pollutant emissions and odors need to be treated sustainably and effectively to ensure regulatory compliance, improve air quality and preserve our environment.

A proven technology, John Cockerill's **AyraScrub™** wet chemical scrubbers remove airborne contaminants through chemical or physical absorption of the pollutants molecules into an aqueous solution.



**AyraScrub™** is an effective process for removing acid gases, VOCs and other pollutants from off-gases.

## AyraScrub™: expertise & efficiency

The **AyraScrub™** solutions developed by John Cockerill are based on the principle of selectively dissolving undesirable components present in a gas in a suitable washing liquid.

The choice of washing liquid depend on the pollutant to be removed and the specific process conditions. Water is commonly used as the scrubbing liquid, but other liquids such as alkaline or acidic solutions can be used to bind, neutralize or destroy the pollutant.

Due to the diversity of parameters characterizing gaseous and liquid flows, a preliminary study may be proposed to qualify the effluents and thus refine the treatment in order to guarantee process efficiency, optimize operating parameters and ensure plant durability.

**AyraScrub™** solutions are widely used in a variety of industries to remove corrosive and aggressive gaseous pollutants, such as sulfur and nitrogen compounds, chlorine / fluorine compounds, suspended particles, volatile organic compounds, etc.

## AyraScrub™ offers important benefits



Highly effective on a very broad spectrum of pollutants: cyanides, chlorine, phosphates, fluorine, acids, chromium, bromine, sulfides, nitrates, alkalis, sulfur compounds, nitrogen compounds, VOCs, etc.



Processed flow rate up to 130,000 m<sup>3</sup>/h



Optimized configuration of the solution in function of:

- layout constraints: vertical or horizontal design,
- the nature of the pollutants or the treatment capacity required: spray or packed scrubber columns



Pre- and post-treatment solutions



Low maintenance requirement

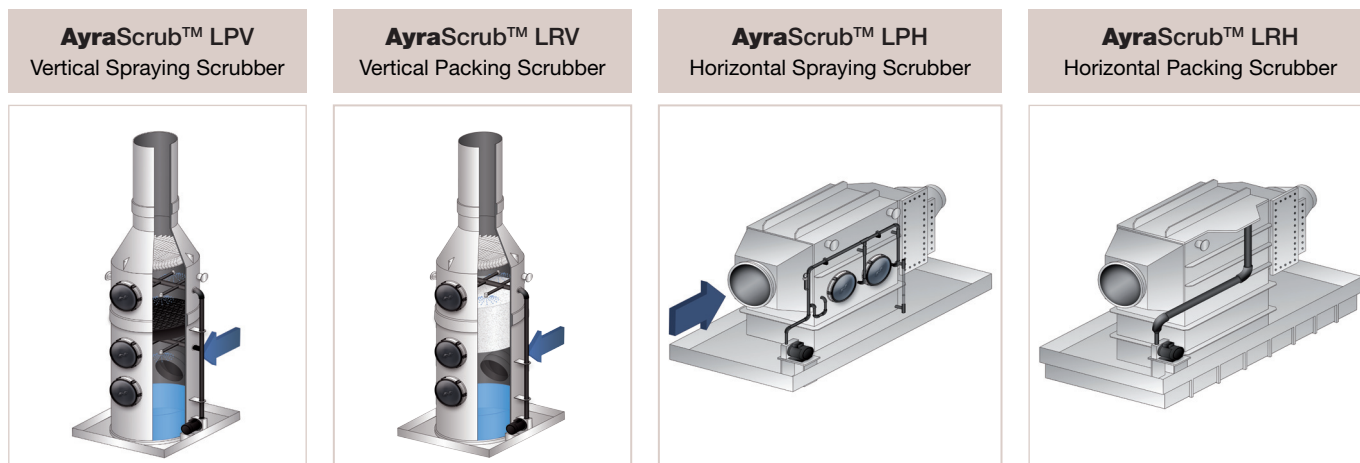


4.0 facility management through connected equipment: **AyraSmart™** Steering, an innovative continuous remote monitoring system for data collection and analysis.

# A complete range for every need

The **AyraScrub™** range of **vertical and horizontal scrubbing columns** developed by John Cockerill, made from corrosion-resistant materials such as PPH, HDPE, PVDF and Hastelloy, adapts perfectly to the specific requirements of the treatment process. For efficient contact between the gaseous and liquid phases, John Cockerill scrubbers can combine two solutions to guarantee optimum contact surface and residence time:

- **spraying:** the washing liquid is sprayed in fine droplets at the top of a column through which the gas to be treated flows.
- **packing:** the washing liquid is distributed over a lining and flows by gravity, forming a large-surface film.



Depending on the problem to be solved and the conditions encountered in the field, **pre- or post-treatment steps** may be required to optimize the process:

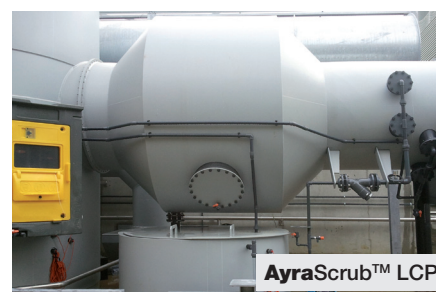
- by preparing the air for more effective treatment by the physico-chemical washing process,
- or by completing the treatment process by eliminating residual contaminants.

## **AyraScrub™ LCP** Centrifugal Spraying Scrubber

Used for gases that are laden with solid or liquid particles, the LCP is the optimum solution for applications that combine dust with corrosive or odorous gases in humid environments.

## **AyraScrub™ QP** Spraying Quench

Installed upstream of the scrubber, the Quench cools and humidifies the hot gases before treatment in a scrubber column.



## **AyraScrub™ LV** Venturi scrubber

Used to remove high pollutant loads upstream of the main treatment column, the Venturi promotes mixing between the contaminated gas and the scrubbing liquid.

## **AyraScrub™ EJ** Ejector

Recommended for use in ATEX zones and for suctioning flows heavily laden with dust, hydrocarbons or solvents, the Ejector enables washing liquids or chemical reagents to be efficiently introduced into the gas flow to be treated.



## **Droplet separator & Radial Demister:** SGL & DR

Droplet separators (SGL) and radial droplet removers (DR) recover up to 99.9% of droplets larger than 15µ. They can be installed upstream or downstream of scrubbers, or at the end of chimneys.

## **Co-product valorisation and energy recovery**

John Cockerill has developed solutions for energy recovery as well as for the recovery of co-products such as metals, nitrogen and phosphorus, as well as the possibility of equipping its plants with an energy recovery system.



## John Cockerill Air & Gas

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## John Cockerill Environment solutions support the ecological transition and circular economy

Because protecting natural resources and developing green energy production is a vital concern for us and future generations, John Cockerill Environment is committed to contributing its long-established historical experience, solid technological expertise, and innovative boldness to water, air and waste treatment systems.

Its Air & Gas Business Line offers adapted and effective solutions for the treatment of corrosive, harmful and odorous gaseous effluents, as well as the recovery of valuable solvents and energy.

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