



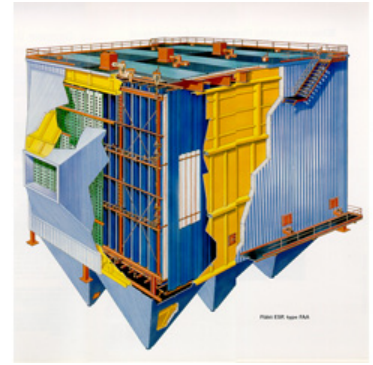
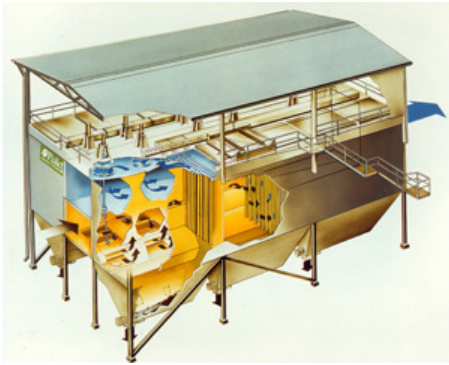
ENVIRONMENTAL SOLUTIONS



ACTOM

An **ALSTOM** technology partner

ENVIRONMENTAL SOLUTIONS



Through our technology partners, Alstom Power Europe and Wahlco USA, JOHN THOMPSON brings you a World of Experience in Clean Air Solutions with more air pollution control experience and a larger installed base across a wider range of industries than any other SA company. This unparalleled level of expertise serves our customers to meet their ongoing particulate, gaseous and heavy metal emissions compliance needs

JOHN THOMPSON offers:

- Wide range of customized air pollution control (APC) solutions for new plants as well as retrofits
- Reliable and robust systems based on more than 80 years of experience
- Compliance with the current regulations, contributing to reduce your plant's environmental impact
- Excellence in project execution with dedicated project teams
- Worldwide network of engineering and execution centres, utilising local knowledge & support
- In-house R&D programs for emerging technologies

ESP - Technology

JOHN THOMPSON's ESP designs are flexible to incorporate both rigid frame spiral electrodes or rigid discharge electrodes. Our principals can also offer clients a choice between tumbling hammer rapper systems or magnetic impulse gravity impact (MIGI) rapping systems, both for new and retrofit projects.

For ESP control, our principals can offer the power industry the most advanced microprocessor controls and power supplies available in the marketplace. The EPIC III control system is flexible, incorporated with the most advanced control algorithms to vary charging ratios in response to changing conditions in the ESP and address difficult operational conditions such as Back Corona.

The Switched Integrated Rectifier (SIR) uses high frequency electronic power processing techniques and is capable of delivering more power in a compact integrated package versus traditional Transformer Rectifier Systems.

FTA ESP Design (Rigid Discharge Electrode)

One of Alstom's latest design developments is the "FTA" ESP. This ESP design configuration has been carefully engineered to provide an arrangement that is simple to construct, cost effective, reliable, easy to operate and maintain; to meet the rigorous availability standards required by the power industry. The design feature of the FTA ESP makes it one of the most efficient ESP designs in the market today.

Fabric Filter - Technology

Pulse Jet Fabric Filters

In a Fabric Filter, also referred to as a bag filter or bag house, the ash-laden gas is taken through a sieving textile media. The ash is collected on the surface of the media, and the deposited layer of ash becomes an integral part of the sieve. The pore size of the composite media/ash-layer sieve is very small, typically in the range of 10-30 micrometers

Due to the sieving effect, the collection efficiency is high. The separation efficiency is, among other things, a function of the porosity of the media, the ash properties, and the cleaning technique. In general terms, the smaller the pores, the higher is the collection efficiency.

Pulse Jet and Low Ratio Designs

There are two major design concepts of Fabric Filters, the difference being whether the ash is collected on the inside of the bags (the Low Ratio design), or on the outside of the bags (the Pulse Jet or High Ratio design). For the Pulse Jet design, the soft and flexible bags are supported on the inside by a steel wire cage. Irrespective of the type of filter, the deposited ash-layer must periodically be cleaned off the bags, in order to control the pressure drop over the filter.

Both Pulse Jet and Low Ratio filters are normally divided into a number of compartments. Each compartment is equipped with shut-off dampers in the inlet and outlet, and can thus be isolated.

Dry FGD - Technology

Alstom has proven performance in DFGD systems

With over 80 years of worldwide experience in air pollution control technologies, Alstom is the only company offering both Spray Dryer Absorber (SDA) and Flash Dryer Absorber (FDA) Dry Flue Gas Desulphurisation (DFGD) technologies. The many years of diverse experience of Carborundum, Flakt, Combustion Engineering, Rockwell International and Alstom have been distilled into the current generation of Alstom DFGD technology. Over 23 gigawatts of Alstom DFGD systems are in operation worldwide. These customers have found that ALSTOM provides a cost-effective solution to their air pollution control needs.

JOHN THOMPSON provides you with a complete and well-proven range of APC solutions to abate harmful emissions such as:

Particulate matter	Heavy metals, incl Hg
Sulphur dioxide	Nitrogen oxide
Hydrochloric acid	Hydrofluoric acid
Dioxins & Furans	Carbon Monoxide

Project execution capabilities:

Our implementation and project execution capabilities include:

- Engineering
- Procurement
- Supply
- Construction and erection
- Commissioning
- Compliance testing
- Maintenance and service

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Precipitator



Sulphur common plant



TR set with earthing device

Wet FGD - Technology

Alstom has outstanding experience and innovation in Wet FGD technologies

Alstom's experience with lime/limestone wet flue gas desulphurisation (Wet FGD) began with pilot studies in the mid-1960's. The first commercial installations took place in 1968 at Union Electric's Meramac station and Kansas Power & Light's Lawrence station. Since that time the Alstom Wet FGD technology has been applied to over 37,000 MW of electrical generating capacity at over 50 plants.

Alstom has used open spray tower designs since 1973 and placed the first one in commercial service in 1975. The tower's design provides reliable service while minimising pressure drop. Alstom has created an unparalleled database of performance and operating statistics based upon more than 30 years of experience in the industry. The extensive database enables ALSTOM to design wet FGD systems for a variety of fuels, reagents, and operating conditions.

Alstom continues to dedicate revenue and resources to the research and development of the Wet FGD system technology and design-providing customers with the most advanced technology to meet their needs. Recent focus has been aimed at developing and introducing a new scrubber design: the FLOWPAC turbulent bed absorber.

Air Pollution Control for Multi Fuel Boilers

Our efficient and economical APC solutions meet the strictest particulate, gaseous and heavy metal

emission regulations across a wide variety of fuels and sludges

An Alstom Power Air Pollution Control system for Multifuel Boiler represents state-of-the art solutions for the Pulp and Paper industry. By carefully analysing fuels, burning conditions, and local environmental legislation, we can provide the most efficient and economical Pollution Control solution.

For several years we've been designing solutions for the emissions associated with multifuel boilers: particulate, gaseous, and heavy metals (co-incineration). Our experience with a variety of boilers and fuels, such as bark, oil, peat, paper waste, coal, gas, and sludges originating from waste-water-treatment and de-inking plants, allows us to meet the most stringent emission limits.

In addition to over 200 ESP installations for Multifuel Boilers, ALSTOM Power offers a wide range of APC products.

- Mechanical Pre-collectors
- Electrostatic Precipitators
- Fabric Filters
- Lime and Active Carbon Injection

Systems

- SOx control systems such as , Wet Scrubbers, Dry Absorption Systems and Novel Integration Desulphurisation(NID).

Products for the Refinery industry

In response to the tightening global emission regulations, ALSTOM offers an extensive portfolio of solutions for controlling NOx, SOx, and particulate emissions from refineries and petrochemical plants.

For reducing SOx emissions we can offer:

- Wet Flue Gas Desulphurisation (WFGD)
- Dry Flue Gas Desulphurisation (FDA)
- Seawater Flue Gas Desulphurisation

To control NOx emissions we can offer

- Selective Catalytic Reduction (SCR)
- Low NOx Burners

In order to reduce particulate emissions, we offer the choice of:

- Fabric Filters (FF)
- Electrostatic Precipitators (ESP)

JOHN THOMPSON is able to draw from an extensive knowledge base across all product lines, in order to find the lowest total cost solution for our customers.

Knowledge of each of the air pollution control technologies, as well as integrating them to provide a complete package, and experience in optimising solutions for individual retrofit applications, are just some of the benefits we are able to provide.

JOHN THOMPSON serve a wide range of industries, including

- Power
- Aluminum
- Refineries
- Pulp & paper
- Iron & Steel
- Waste Incineration
- Non-ferrous Metallurgy
- Cement
- Glass