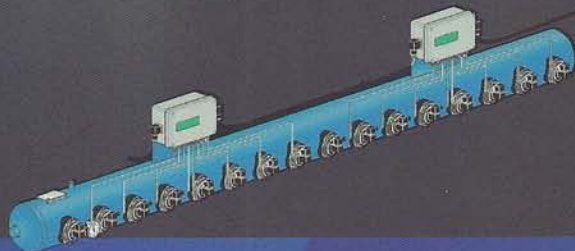


GOYEN

mecair

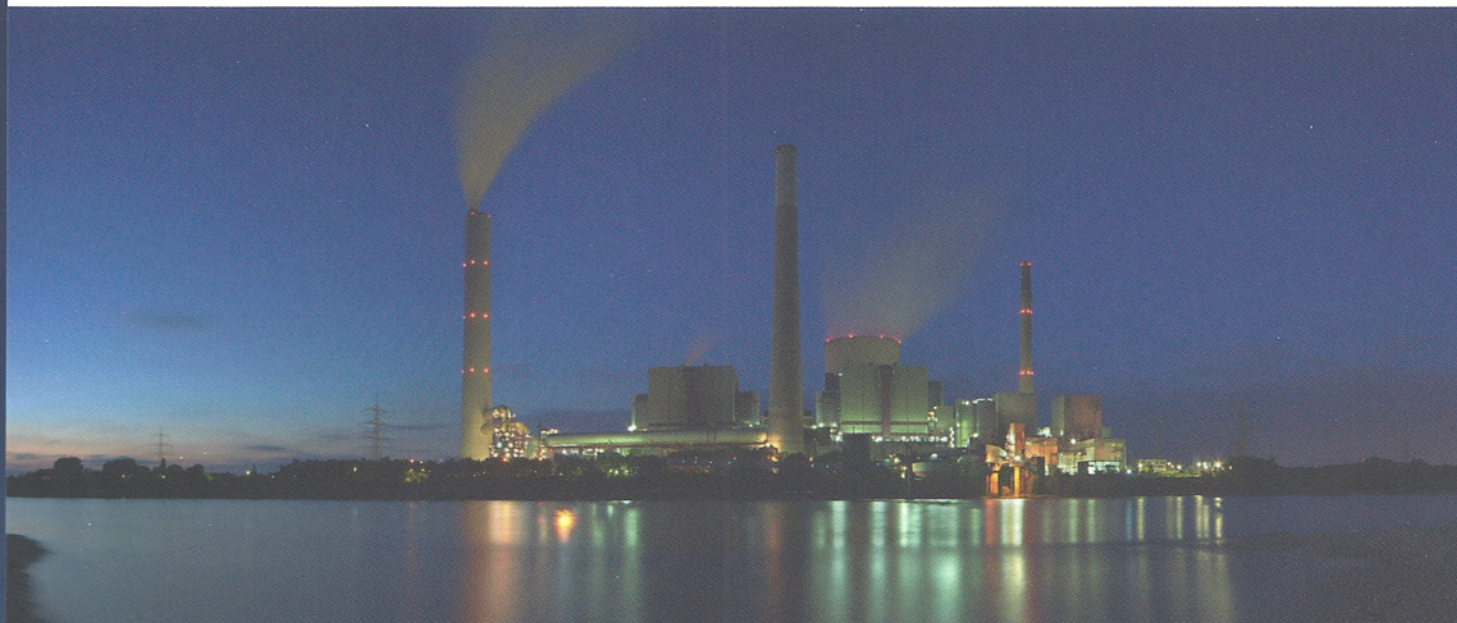
Integrated, innovative environmental solutions for power generation.



Environmental Controls & Monitoring Equipment

tyco | Flow Control | **Environmental Systems**

Powerful capabilities for a global market.



Renowned brands that provide trusted solutions.

Tyco Environmental Systems is a manufacturer and supplier of a suite of renowned products and services totally focussed on the provision of environmental control and monitoring solutions to industry. At Tyco Environmental Systems we work closely with our customers to provide the best solution for the application, integrating products and expertise to deliver real and measurable outcomes. From components to complete and integrated turn-key solutions Tyco Environmental Systems is positioned to meet all needs. Globally.

Solutions driven by Innovation, Expertise and Engineering.

Tyco Environmental Systems does not take shortcuts to provide a sharp price. We understand that in the Power industry, risk of systems failure is the most expensive liability. We provide value by minimising risk. Our state of the art filter cleaning test laboratories and computational fluid dynamics skills provide unique insight into applications and systems designs and are focussed on optimising solutions. In combination with more than 35 years industry experience and our unique Goco cleaning systems application modelling tool, we can provide high quality answers and short circuit months of customer testing and research activity. Our insightful answers are relied upon every day by key players in the Power Generation industry for real and measurable outcomes – such as data availability for monitors, or intervals between filter changes and component services for dust collector systems.

Wherever your systems go, Tyco Environmental Systems can be there.

Air Pollution Control markets, particularly in the Power Generation market are international markets. Tyco Environmental Systems reaches around the globe with manufacturing locations or offices in Australia, USA, China, UK, Germany, Italy and Malaysia. A network of distributors extends out reach throughout all of South America, Mexico, Canada, throughout Europe, Japan, Korea, Hong Kong, throughout South East Asia, South Africa and New Zealand. In combination we provide outstanding reach for sales, service and expertise.

Real world manufacturing for best value.

Tyco Environmental Systems is an ISO 9001 Quality Systems accredited manufacturer. Our systems ensure that we provide dependable, market leading product and service quality. We not only talk about environmental solutions, it is inherent to our business – Tyco Environmental Systems is accredited to ISO14001, Environmental Management Systems.

Our quality and expertise ensures that the components and systems supplied by us will provide dependable service at the highest performance. We provide outcomes that are real, measurable, and focussed on eliminating risk.

This is achieved through outstanding facilities. These include the world's largest header tank manufacturing plant providing over 1000 ASME or CE (PED) certified filter cleaning systems per month to our customers for global destinations. Through design and manufacturing our products meet a range of safety requirements including CSA, UL, CE, ATEX.

Innovative solutions for reverse pulse jet dust collectors.

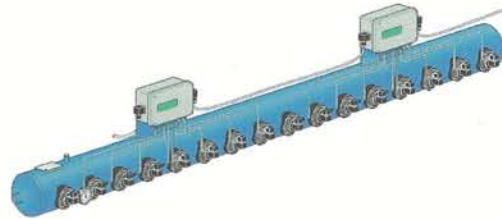
Experience + Expertise = Dependable Outcomes.

Our expertise is our difference, and coupled with industry benchmark products in the Goyen and Mecair brands, Tyco Environmental Systems offers the best and most efficient reverse pulse jet filter cleaning systems solutions for coal fired boilers and gas turbine intake filters available today.

Our filter cleaning systems products and expertise have been in continuous development since the early 1970s. These products are globally renowned for their performance, quality, reliability, innovation and ease of installation. We specialise in tailored solutions for the Power Generation industry. ASME or CE (PED) certified pulse cleaning manifolds, in carbon or stainless steel complete with pulse jet valves and control systems are offered, designed to suit the application at hand. Cleaning system controllers designed for network integration, blowtubes and pulse jet nozzles complete the offering – all designed to provide dependable, consistent, and optimised filter cleaning.

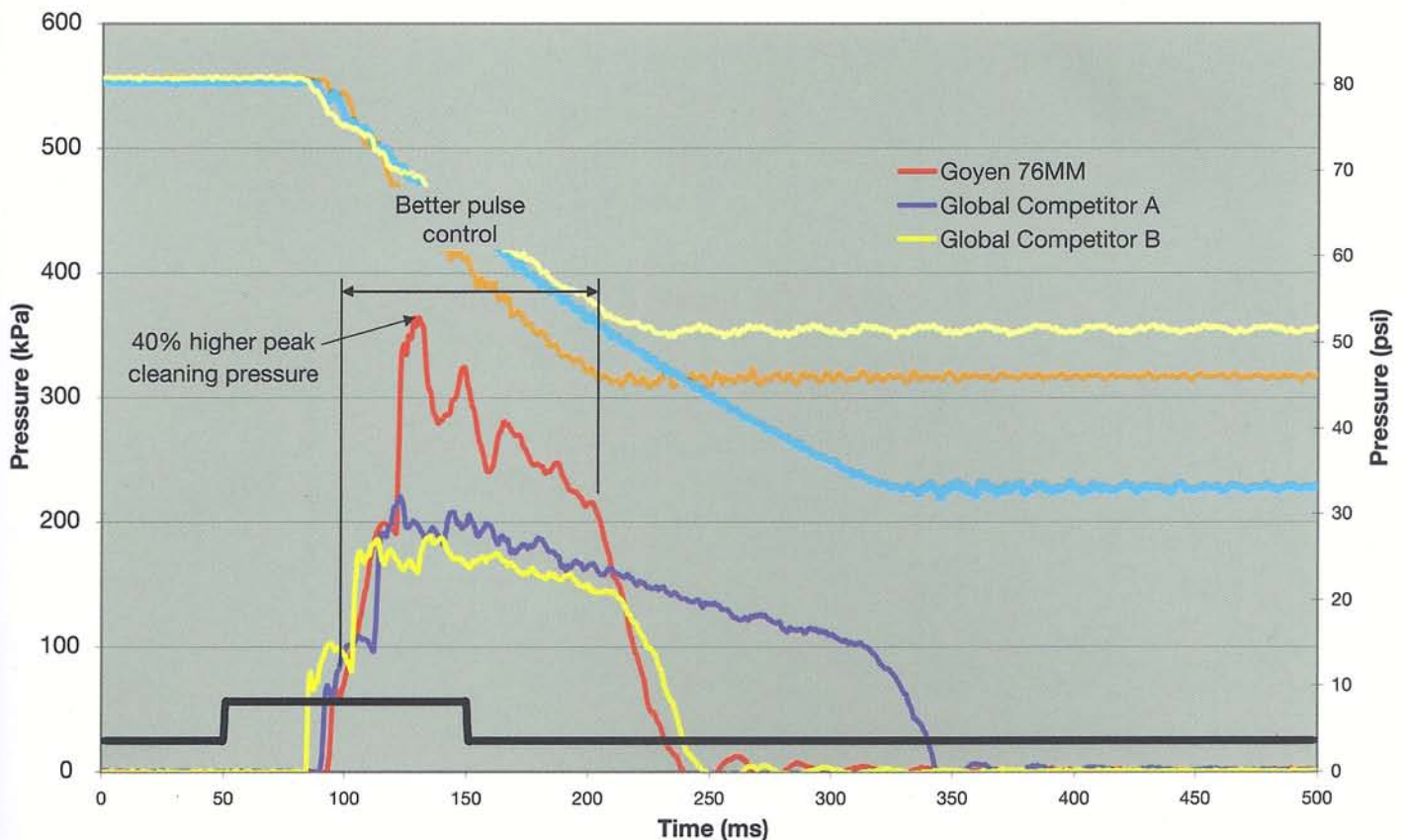
Quality + Know-how = Reliability.

Tyco Environmental Systems offers filter cleaning systems and components built for endurance under the tough working conditions of power generation applications. Stainless steel castings and viton seals are offered alongside the standard diecast aluminium and nitrile components for special applications, such as waste-to-power systems.



Greater cleaning energy. Less air consumption.

Thanks to their optimised designs, the Goyen and Mecair 3" and 3.5" pulse valve systems deliver up to 40% more cleaning energy into each filter than by any other competing diaphragm valve of a comparable size. This performance provides excellent flexibility to clean greater filter area, clean at higher differential pressures, or to clean against higher filtration velocities. The choice is yours.

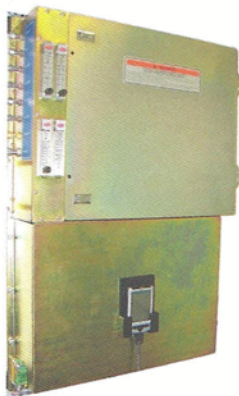


Comparison of 3" pulse jet diaphragm valves, pulsing 23 filters each through 14mm orifices. Electrical pulse time of 100ms and system pressure of 80 psi (550 kPa). 218L (7.73 cuft) manifold volume.

Dependable solutions for gas and continuous emissions monitoring.

The **UltraCEM** system is a five (5) channel close coupled outdoor field mount continuous emissions monitoring system enclosed in a NEMA 4X environmentally controlled enclosure.

The **UltraCEM-P** or **UltraCEM-PD** systems are five (5) channel Indoor wall mount powerful and cost effective Gas and Continuous Emission Monitoring Systems (CEMS) for applications where instrument shelters are required. The system is simply installed on the wall of the room/shelter reducing shelter size and installation costs. It is an innovative approach to gas monitoring, fabricating all of the components into a seamless easy to reach panel mount package that is very simple to service and maintain.



The **UltraCEM** is designed for process type applications (O₂, CO, CO₂, NO_x, SO₂, NH₃ and THC). This monitoring system relies on proven sample handling techniques for dependable gas monitoring to assure accurate readings: EPA approved Paramagnetic, NDIR, Chemiluminescent, UV and FID detector technologies. These measure from low ppm levels to percent levels. The UltraCEM utilises the semiconductor industry standard PC104 electronics platform for maximum measurement, communications and processing capabilities. The UltraCEM provides a wide variety of networking and diagnostic functions through a web browser interface using TCP/IP and USB protocols.

Custom System Integration Solutions are offered, utilising a variety of available analyser technologies to meet every application requirement that the industry may require. These include Dry Extractive, Dilution technology sampling techniques to Mercury Monitoring. Many probe, sample handling, analyser and electronic designs are available to provide the optimum measurement technique for each specific application. Whatever the application; 40 CFR 60 or Part 75 or the Clean Air Mercury Rule (CAMR), Tyco Environmental Systems offers tailored solutions to serve the need of the industry and its regulations.

Typical applications for Goyen Gas and Particulate Monitoring solutions:

Location	Purpose of monitoring	Gas type	Typical range	Product
Coal storage	Alarm of hazardous condition	CO	0 – 5000 ppm	UltraCEM
After coal pulverisor	Monitor false air entry	O ₂	0 – 10%	UltraCEM
At boiler exit	Combustion optimisation	CO	0 – 1000 ppm	UltraCEM
	Combustion optimisation	O ₂	0 – 10%	UltraCEM
Inlet to SCR / deNO _x facility	SCR inlet	NO _x	0 – 500 ppm	UltraCEM
	FGD Inlet	SO ₂	0 – 1000 ppm	UltraCEM
Outlet from SCR / deNO _x facility	deNO _x outlet	NO _x	0 – 50 ppm	UltraCEM
	FGD outlet	SO ₂	0 – 100 ppm	UltraCEM
	deNox NH ₃ slip	NH ₃	0 – 10 ppm	Insitu
At dust collector exit	Broken filter bag detection	Particulate	0 – 20 mg/cu.m	Tribo,OPAL
Stack	EPA reporting	NO _x	0 – 500 ppm	UltraCEM
	EPA reporting	SO ₂	0 – 1000 ppm	UltraCEM
	EPA reporting	O ₂	0 – 20%	UltraCEM
	EPA reporting	CO	0 – 1000 ppm	UltraCEM
	EPA reporting	CO ₂	0 – 20%	UltraCEM
	EPA reporting	Opacity	0 – 100% opacity	Opal

Solutions for opacity and particulate monitoring.

Tyco Environmental System's range of Goyen AC coupled tribo-electric particulate monitors and OPAL opacity particulate monitors provide dependable and affordable solutions to meet the specifics of any particulate monitoring application from broken bag detection to EPA compliance monitoring.

Opal 200 Opacity Monitor

Double pass opacity and dust concentration monitor. The OPAL 200 is fully certified to the USEPA PS-1 opacity standard and is also compliant for USEPA PS-11 dust concentration monitoring applications.

Utilising high power modulated green LED lamp source and digital servo drive test mechanics for smooth operation, the OPAL series offers high accuracy and low maintenance. A full range of options are available including purge air blowers, failsafe shutters and audit test filter kits.



Tribo-electric particulate monitoring

All TES tribo-electric particulate monitors utilise AC tribo-electric technology to ensure dependable accuracy and repeatability across the range of measurement.

BBD (Broken Bag Detector): A two part emission monitor for use in dust collector broken bag detection. Comprising of simple operator interface and relay output for connection to control system for alarming.

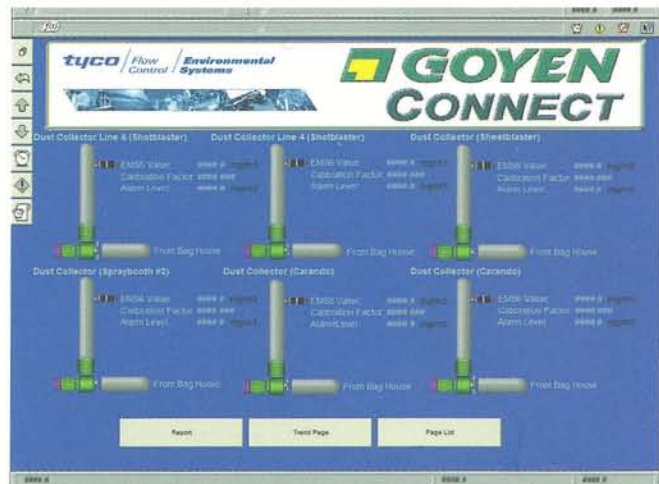


EMP (Emission Monitoring Probe): Two part emission monitor for use in dust collector broken bag detection / continuous particulate monitoring (mg/m^3 or mg/s). Comprising of simple operator interface, relay output for alarm indication, 4 – 20 mA and a 0 – 10VDC continuous output for connection to data control devices.

EMS6 (Emissions Monitoring Sensor): Modbus RS485 enabled emission monitoring system providing the ability to "multi drop" up to 29 sensors on the one network. When used with the Tyco Connect Software the EMS6 network becomes a complete monitoring solution.

EMP7 (Emission Monitoring Probe): All in one emissions monitor for use in dust collector broken bag detection / continuous particulate monitoring (mg/m^3 or mg/s). Comprising of a looped powered 4 – 20mA, and logarithmic output for continuous output to data collection system.

Connect Software: SCADA software for emissions monitoring, and reporting with ease. These systems are designed to meet the individual requirements of the application taking advantage of the hundreds of third party drivers available to provide the complete monitoring/control solution.



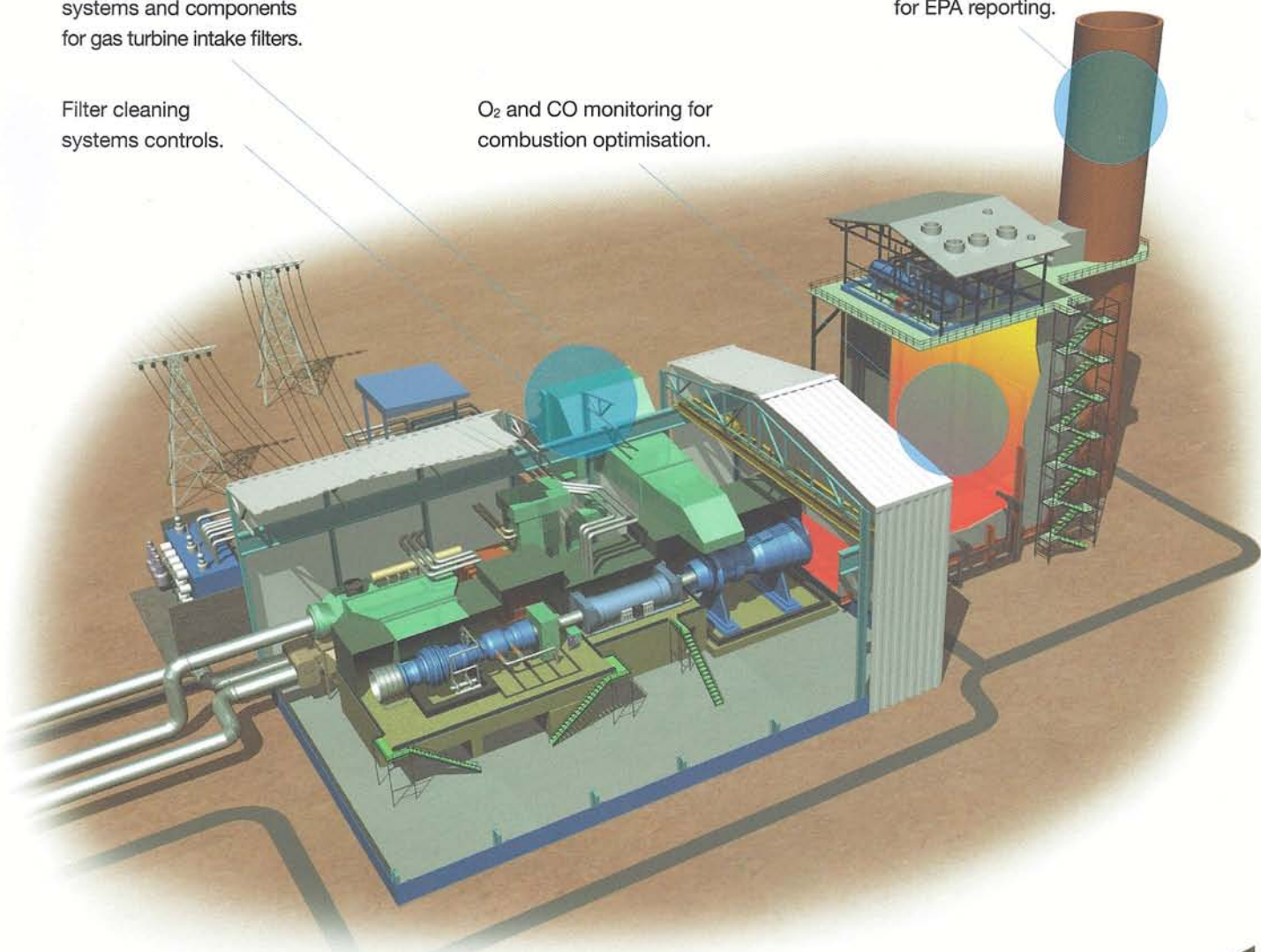
Combined Cycle Gas Turbine

Pulse jet filter cleaning systems and components for gas turbine intake filters.

Filter cleaning systems controls.

O₂ and CO monitoring for combustion optimisation.

NO_x, O₂, CO, CO₂ for EPA reporting.



Pulse jet valves



Solenoid controls



Pulse jet nozzles



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Integrated, innovative environmental control and monitoring solutions... for power generation.

Tyco Environmental Systems manufactures and supplies components and integrated solutions focussed on the requirements of the power generation market.



Cleaning Controls



UltraCEM Gas Monitoring



AC Tribo
Particulate Detection



Opacity Monitor

