HUGO PETERSEN
Verfahrenstechnischer Anlagenbau

GAS CLEANING
New Dimensions for Environmental Technology

www.hugo-petersen.de

The company

HUGO PETERSEN GmbH located in Wiesbaden, origins from the renowned engineering company Hugo Petersen founded, in 1906 in Berlin. HUGO PETERSEN is part of the Chemieanlagenbau Chemnitz (CAC) group, and as such can provide full support and security for the development and implementation of small to large scale installations.

Pic. 1:
Hugo Petersen 1906

Initially using the expertise gained in the classical production of sulphuric acid, from off-gases generated in the refining of metallurgical ores, the company HUGO PETERSEN specialized in the field of manufacture of sulphuric acid, hydrochloric acid and gas cleaning.

HUGO PETERSEN has as TECHNOLOGY LEADER over 60 years of experience in the design and operation of Gas Cleaning Equipment and Plants. Today, HUGO PETERSEN offers a vast range of technology, to this industry. The design, whilst incorporating HUGO PETERSEN's extensive experience, has been developed and optimised through a comprehensive research program, conducted using HUGO PETERSEN's own pilot plant facilities.

Gas cooling and gas conditioning, de-dusting of off-gases, absorption of acidic pollutants, removal of heavy metals and precipitation of finest mists and dust aerosols are demanding tasks. For every challenge, HUGO PETERSEN has developed its own technology with its expertise, know-how and creativity, for a vast range of applications.

Pic. 2: DSA
(Drucksprungabscheider)

1962 HUGO PETERSEN, in persona Dr. Gerd Petersen, dedicated himself to environmental protection, focusing on air pollution control. Everything started with the invention of the **DSA (Drucksprungabscheider)**. Many other inventions followed, like the **ZA (Zentrifugalabscheider), PTA (Petersen Turbo Agglomerator), PES (Petersen Electrostatic Separator)**, to name only a few.

Today, the engineering company, HUGO PETERSEN, is in a position to supply the design and the construction of single components, as well as turnkey gas cleaning plants of various sizes and capacities.

The know-how in the areas of process engineering, chemistry and plant construction, available here in Wiesbaden, has been upgraded systematically and defines the profile of our dedicated, team oriented staff.

About 50 well trained process technologists and engineers contribute their knowledge and expertise in the fields of mechanical and electronic engineering, as well as material science, to their design work.

Accurate Planning - the basis for our work

The scope of the tender for a custom designed plant, is solely defined by the task, operating requirements and the requirements of our customer.

The thorough evaluations of the ecological and economic factors ensure the best plant specific solution. Proven technology, combined with HUGO PETERSEN´s site specific developments, leads to the construction of a plant suitable for the respective application.

HUGO PETERSEN has installed more than **650 turnkey plants** and plant components for the cleaning of waste air, waste gas and flue gas. Every plant is unique and all plant components have to be finely adjusted. Hence, it is of great advantage when a single company designs all components.

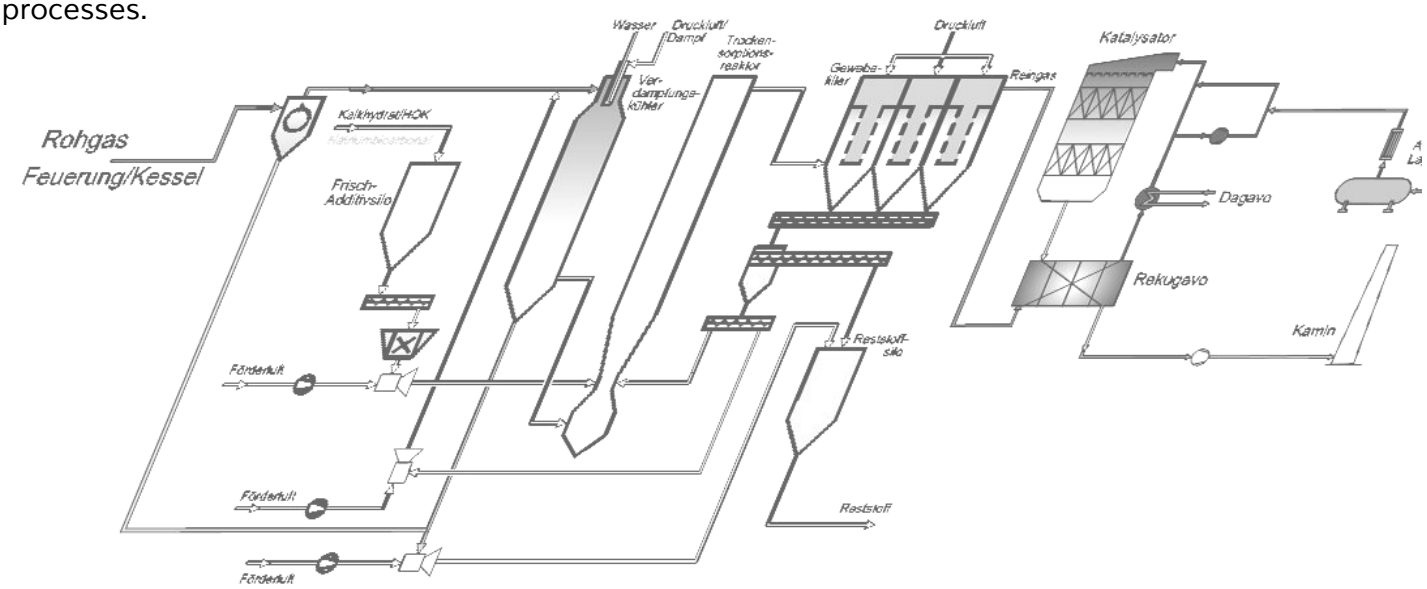
As plant designer and constructor, we assume the full responsibility for the reliability and performance of our plant design. Individual fabrication and selection of the right materials are a matter of course, as well as the timely supply, erection and commissioning, of the plant.

Qualified personnel supervise the erection of our plants, down to the last detail, prepare the final documentation and provide long-term post-implementation support to our clients.

The quality and quantity of noxious substances in the exhaust gas, determine the design of a separation plant. The flow rate of the exhaust gas, the annual service time of the installation, as well as the purchase and operating costs, have an influence on the design of the process. The removal of mono-products, with or without recycling, requires an approach that is completely different from the cleaning of flue gas, downstream of an incineration plant for domestic or hazardous waste. The optimisation of existing separation stages varies completely, from the design of a new installation.

Our specialists handle every customer's inquiry individually. The engineering company, HUGO PETERSEN, is free to select processes and measures to be taken for each application.

Apart from the application, the various gas cleaning processes can be divided into wet and dry gas cleaning processes.



Wet gas cleaning processes

Quench Cooler and Absorption Towers	Reliable gas cooling by evaporation and well-controlled absorption of noxious gas components by chemisorption
Jet-Scrubbing	Simultaneous Dust-Removal and Absorption
Petersen Spray Absorber	Reverse Jet Scrubbing with highest Efficiency for dust removal along with self-adapting to flow variations
Wet Electrostatic Precipitator	Aerosol-Separation with maximum efficiency and minimum operating cost
Pressure-Jump Separator	Well-proven aerosol-separation stage for mists and noxious gas components
Multiventuri-System	High performance separation stage for dust and aerosols, adjusted to even the highest gas flow rates
Petersen Turbo Agglomerator	Self-conveying aerosol separator for new installations and revamping
Tail Gas Scrubbing-Processes	SUPER^{OX} and SUPER^{CO} SO_2-Removal to H_2SO_4

HUGO PETERSEN plants and components, whether installed as a single unit or combined in a process chain, always comply with the locally required emission standards. Guaranteed emissions and plant availability, adjusted for gas flow rates from 500 to 500.000 Nm^3/h, are convincing arguments, for HUGO PETERSEN´s quality.

The disposal of by-products, the physical-chemical treatment or evaporation of wastewater and the recovery of valuable materials, complete our product range, which is in accordance with the philosophy of HUGO PETERSEN:

Gas Cleaning – Custom Made

Dry gas cleaning processes

Dry-Sorption	Separation stage for dust removal and adsorption HM and neutralization of acidic impurities
SCR-Process	Catalytic process for denitrification and oxidation of dioxines and furans
SNCR-Process	Noncatalytic process for denitrification by injection of ammonia or urea into the boiler
N_2O-Oxidation	Catalytic Reduction of N_2O
CO-Oxidation	Catalytic oxidation of CO
Activated Coke Filter	Adsorption stage for dioxins, furans and heavy metals

HUGO PETERSEN gas cleaning systems are not limited to a certain plant size. Our engineering department supplies concepts and solutions equally suitable for small and medium size enterprises. The customer profits from the experience of HUGO PETERSEN, gained from engineering, erecting, commissioning and supervising many large-scale gas cleaning units. Constant attention to quality and reliability of our gas-cleaning units, in operation, certifies the high standard of our products.

HUGO PETERSEN´s expertise ranges from powerful single components to complex technology combined in turnkey plants.

Evidence that counts

With this brochure, we want to provide you with an overall view of the wide spectrum of HUGO PETERSEN products. For more detailed information on our individual products and processes, please contact us.

At this point, we would like to present you with a selection of typical HUGO PETERSEN solutions that have been supplied to customers all over the world. This shows you that our process technologists and engineers are a group of dedicated people, who love to work at the highest technological level and on various demanding projects. Technically, as well as economically, our plants and components for gas cleaning are leading the way ahead.

If you are interested in special applications, operating data or more information first hand, we will gladly present you with our references. Our customers will be glad to confirm the reliability and quality of our products, as well as our positive cooperation with the customer.

Wet gas cleaning

Turbulence Scrubber, Wet-Electro-Static-Precipitator

Pic. 3: Cleaning off gases by means of absorption and aerosol removal downstream of pyro-metallurgical processes in non-ferrous industries.

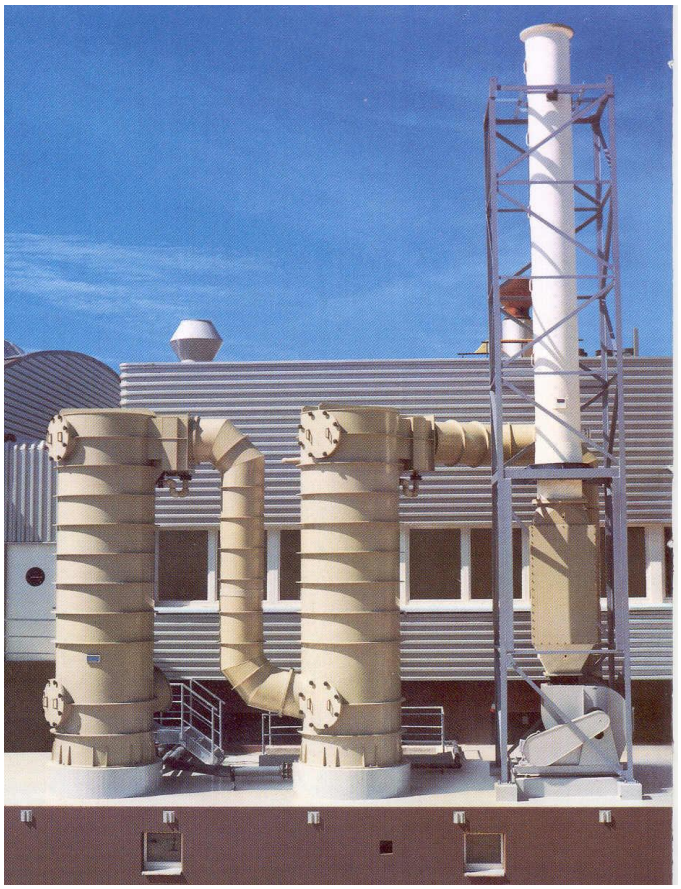
Pic. 4:

Gas Cleaning in a Regen Plant The high-performance PES - wet electrostatic precipitator is used for the removal of aerosols and dusts.

Pic. 5: Complex multistage wet scrubbing unit installed at a metallurgical plant.

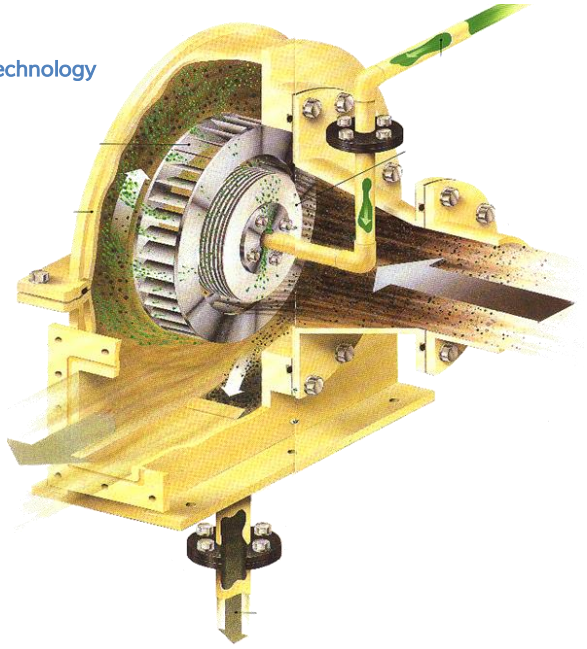
Absorption Tower and Pressure-Jump Separator

Pic. 6:
Scrubbing plant for the absorption of noxious gas components and the removal of acidic mists and salt aerosols downstream of multiple-hearth furnaces for the production of inorganic raw chemicals



Pic. 7:
Gold dust separation for gold refining complex

Pic. 8:
Gas Cleaning Plant downstream a clinical waste incineration using PTA-Technology



Pic. 9:
Schematic of the Petersen Turbo Agglomerator

Dry Gas Cleaning

SCR-denitrification

Pic. 10:
SCR process for a retrofitted unit in the municipal waste incineration. Low dust denitrification of the flue gases.

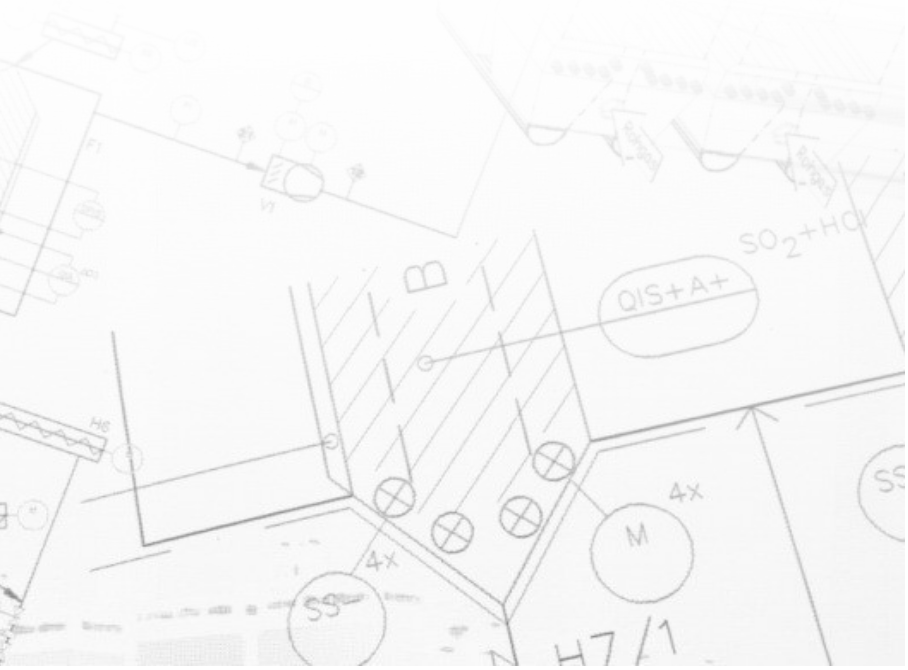
Dry-Sorption

Pic. 11:
Separation of dust removal, adsorption and neutralization of noxious substances icl. The elimination of Dioxins/Furans, CO and Hg.

Special Processes

Tail-Gas Scrubbing

Pic. 12:
SUPER^{ox}-Process downstream sulphuric acid plants



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ENGINEERING IS OUR PASSION