

WASTE GAS AND COMBUSTION TECHNOLOGY



INNOVATION

ENGINEERING

OPTIMIZATION

Adapted environmentally compatible solutions for treating your waste and waste air flows

Our service ...

As an interdisciplinary team of technicians, engineers and chemists, we can offer a very wide range of services supporting you in the process selection, planning and engineering of new facilities and the re-vamping and optimization of existing plants. We focus particularly on the following areas:

- thermal incineration of gaseous, liquid, paste-like and solid (hazardous) waste;
- chemical, physical and biological processes for treating polluted air streams, flue gases and process gases;
- (online) measurements for recording all the relevant parameters of gas flow;
- flow rate measurements (gas, liquid and multiphase flow) for a large number of applications.

Our expertise is based on many years of experience in fluid dynamics, environmental and incineration technology. We objectively assess the process options, taking into account technical feasibility and cost-effectiveness. To do this, we have at our disposal extensive experimental facilities for laboratory, pilot plant and on-site tests. We also have a large number of computeraided simulation tools for dealing with a variety of tasks and for designing apparatus.

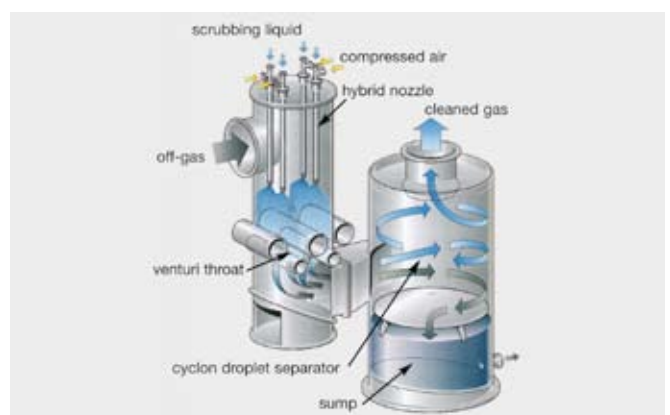
... is your gain.

As our customer, you will benefit directly from our know-how and the many years of experience of our experts. Cost and quality are key criteria as we search for the best solution for you. We attach particular importance to:

- economic solutions through better utilization of existing resources;
- a holistic consideration of processes;
- giving advice on the selection of optimal design and manufacturer.

Flexibility is one of our strengths. Our concepts can be quickly implemented, making it possible for you to quickly overcome bottlenecks in processes and to respond promptly to changes in market requirements. Special demands often require special solutions. We are happy to take up the challenge: we tackle each problem individually, offering customized solutions in each case.

Our work will provide you with a sound basis for making decisions in matters of procurement, expansion and the optimization of facilities or individual components.



Gas scrubbing and particle separation in a patented Bayer-Reither-Venturi scrubber



Bayer Technology Services
Powering Your Performance

Our approach

To meet your requirements, we have modern state-of-the-art equipment for carrying out both laboratory and pilot plant tests and plant assessments:

Flow measurement technology:

- pressure, temperature and volumetric flow rate;
- particle image velocimetry;
- laser Doppler anemometry;
- hot-wire anemometry;
- laser light sheeting.

Concentration and emission measurement technology:

- a large number of online measurement devices for analyzing gas composition (humidity, CO, CO₂, O₂, organic C, NO, NO₂, N₂O, SO₂);
- sampling probe for dioxins/furans and heavy metals, determination of PAH, PCBs, PCN and other individual organic components;
- devices for determining the particulates content;
- cascade impactor to determine particle size distribution e. g. PM 2.5 or PM 10;
- pilot filter to test filter media and for separation tests;
- jet and Venturi scrubbers for up to 1,000 m³/h off-gas.

At the same time, we use computer-aided methods to support process development and optimization and apparatus design. These include:

Calculation and simulation tools:

- engineering calculation methods;
- conventional reactor simulation (gPROMS, ASPEN PLUS);
- Computational Fluid Dynamics (CFD).

References

Among the large number of projects we have handled which have ended in practical application including:

Off-gas technology:

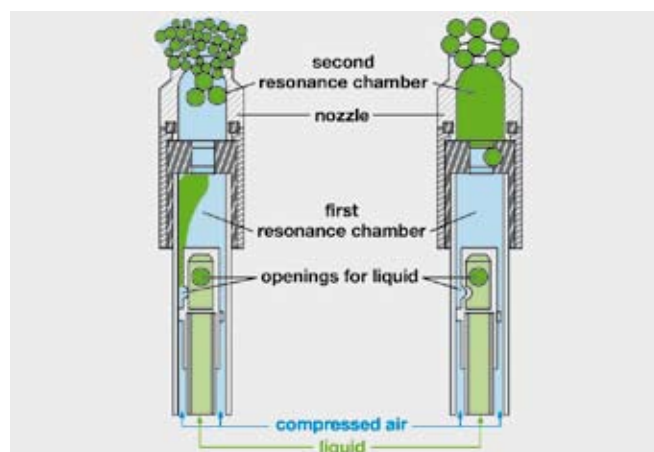
- absorption of chlorine in sodium hydroxide solution, e. g. for a membrane process involved in chlorine manufacture;
- off-gas treatment in thionyl chloride plant;
- gas scrubbing and particle separation in a Bayer-Reither-Venturi scrubber developed by Bayer Technology Services.

Flow technology:

- optimization of air flow in a clean room (model trials/CFD simulations)
- reduction of deposits in sludge tanks utilizing the "teacup effect";
- design and optimization of supersonic nozzles for fluid atomization;
- design of cyclones, scrubbers, injectors and nozzles.

Incineration technology:

- selective non-catalytic NO_x reduction in hot flue gases;
- optimum incineration of solid and liquid waste through optimum furnace configuration and injection technology (hybrid nozzle);
- use of the latest injection technology (hybrid nozzle) in the incineration of liquid residues;
- sulfuric acid incineration;
- incineration of spent acids.



Operation of the hybrid nozzle (left: 1st operating state: twophase nozzle; right: 2nd operating state: one-phase nozzle)