



Deichmann Dust-Extraction

Filter systems for efficient dust collection

Application brochure

We move dust in the right direction - efficiently and sustainably

Environmental and health consciousness has risen considerably over the past decades. Industrial companies and commercial enterprise are investing more than ever in modern technologies to meet their important responsibilities. One of the most important tasks here is dust collection. With almost 7 years of experience, our company – Deichmann Filtertechnik – is one of the leading companies in this field throughout Europe.

In the progress of global industrialisation, production plants are in operation everywhere. Many of them of course develop airborne dust, which leads to increasing environmental pollution. From an international viewpoint here, the future of steel – to take just one example – has only begun. Many industrial operations fully realise their responsibilities for their staff and the environment, and they invest efficient technologies, including dust collection. Deichmann Filtertechnik is a preferred partner for this task.

In view of the challenges placed on production engineering on the global level, our customers particularly profit from the experience that we have gained in almost 7 years in conjunction with a great number and variety of dust-collection systems. Deichmann Filtertechnik makes every effort to sustainably direct the creation and collection of dust into the right channels. We have set the course for the future.





Flue-gas cleaning from coal-fired facilities, with residual-material combustion, including additive provision and disposal of airborne dust, is one of our specialties. Total air volume: 165,000 m³ at 160°C operating temperature

Claim

Staying well ahead of limit values and other regulations

In the future, regulations and legislation will become increasingly strict within the context of dangers to human health and safety: and especially those that arise from fine and ultrafine dusts. Deichmann Filtertechnik has set itself the objective of using innovative technology to significantly go far beyond merely conforming with limit values – and to assure the customer a maximum of long-term safety.

From the standpoint of human health, it is not only the pollutant content of dust, but also the size of the dust particulate, that are the crucial parameters. Particles with a diameter of $>10 \mu\text{m}$, coarse dust, is more or less captured by the hairs in the human nose or by the mucous membranes of the nasopharyngeal region. Small and ultrafine dust particles, however, can penetrate deep into the lungs and can lead to serious diseases. As a rule, particle sizes $<10 \mu\text{m}$ (PM10) are referred to as fine particulate, and particles with size $<0.1 \mu\text{m}$, as ultrafine particulate. Depending on the country involved, various regulations and laws apply to industrial operations, in order to reduce the danger for staff and for the general population. We can expect more strict rules and regulations for the future. As a result, it is the objective of Deichmann Filtertechnik not only to observe the existing regulations, but also to go as far as possible in more than satisfying these requirements by offering highly efficient systems. In this manner, we intend to give our customers a maximum of investment security in sustainably protecting the health of their staff.

The handling of fine and ultrafine dust is a very special challenge: one that is met by Deichmann Filtertechnik with its future-oriented customer solutions.

Milestones in a successful strategy

Since its founding in 1947, our company has continuously developed in becoming a technological leader in industrial dust collection. In the almost 7 decades of corporate history since our founding, the company has developed and marketed many pioneering innovations.

Company founding

1947

Hermann Deichmann opens his engineering offices in Bebra, in the West German state of Hesse. Three years later, the young company receives its first orders for maintenance of airtreatment systems.



Deichmann Bag Filter

1953

The company receives a patent for the revolutionary development of the Deichmann Bag Filter. Four more pioneering developments are also patented. The company soon begins with production of complete filter systems.



Deichmann Bag Jet Filter 1980

Development of Deichmann Bag Jet Filters begins in the early years of the 1980s, followed by their production. This innovation enables customers to continually use the filters while they are cleaned, without downtime of their production facilities.



Self-supporting filter elements

1991

The early 1990s see the development and patenting of innovative, self-supporting filter elements, which significantly reduce the material requirements for filter systems. Spiral filter tubes are developed to series production. In addition, a high-performance product was created in the compact-filter range.



From filter supplier to systems provider

2000

At the beginning of the new millennium, Deichmann Umwelttechnik GmbH develops from a filter supplier to a systems provider. A “one-stop-shopping” philosophy provides entirely new possibilities for customers and significantly strengthens the company’s market position. On 1st October 2008, the company was integrated into the distinguished GEA Group. As a part of the renowned worldwide operating group Deichmann continues to expand its international activities as a supplier of complete systems solutions.



Company of clean air 2015

Due to the stronger focus on component business of the GEA group, Deichmann left the GEA Group in autumn 2015 and merged with the CFH Group, a midsize family owned company operating worldwide. Deichmann Filtertechnik's high quality products and individual dedusting solution now complete the product portfolio for surface and underground of the CFH Group and clearly strengthen the CFH Group's focus on clean air and industrial safety.



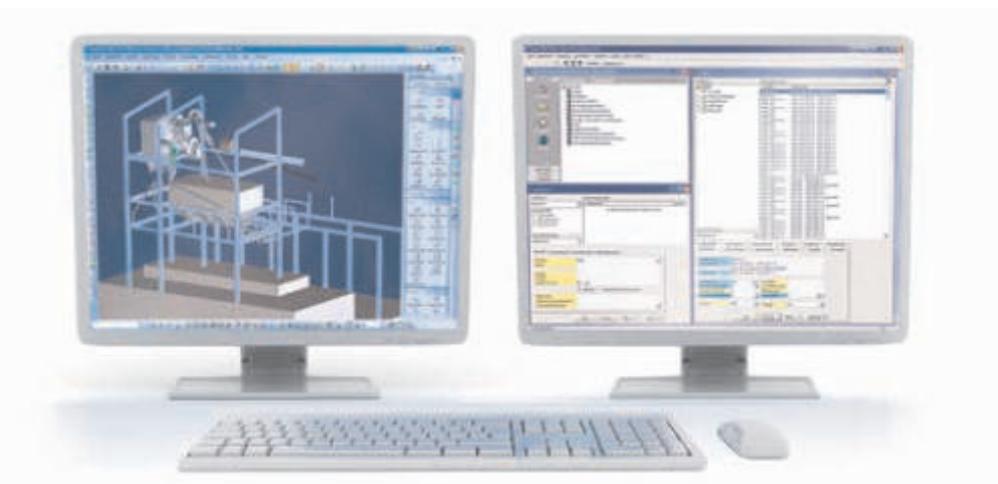
Exact design – performance and prices under control

Whereas under-dimensioning can lead to performance deficits, over-dimensioning gives rise to unnecessary costs. Deichmann Filtertechnik prevents both. Long years of experience and extensive process expertise provide the basis of exact system design.

- Process design, installation planning, and engineering
- Measurement-technology applications
- Analysis of the content of dust in the untreated and the treated gas
- Evaluation of the volume flow
- Analysis of the particle size
- Analysis of gas and dust
- Investigation of existing filter equipment (e.g., filter hoses)
- Design and construction of customised pilot plants
- Investigations of systems, with expert studies

Decades of experience in many and various process sequences now pay off in the exact design of advanced dust-collection systems. The process-engineering prerequisites are well-known, especially the interrelationships in process technology that involve special applications. Experts are accustomed to looking beyond the edges of their plates and to fully consider everything upstream and downstream when they design a filtration system. Whether it's a matter of capturing or processing process gases – or the design of the required equipment assemblies: the process experience of Deichmann Filtertechnik powerfully supports our customers in the customised design of all required components and equipment.

The functioning of a filter system is influenced by many product and operating parameters. This is why all parameters that have an effect on the filter system must be evaluated in advance. A great number of possibilities are available here. The final result is an equipment system that has been exactly adapted to the customer's individual requirements.



For the exact design of a dust-collection plant, extensive process know-how is available to the engineering specialists of Deichmann Filtertechnik.



A whole world of possibilities

Specialist for solutions customized for process technology and specific industrial segments

Filter types:

- Deichmann Bag-Jetfilter
- Deichmann Kompact-Jetfilter
- Vertical and horizontal filter systems
- Explosion pressure-shock resistant filters (ATEX)



Engineering specialists from Deichmann Filtertechnik are capable of trial-running a great number and variety of models. They would then implement the solution that best matches the requirement catalogue of the respective sector or the respective product.

A great diversity of dust-collection problems may be encountered for solution, depending on the industrial segment and the processes being applied. Deichmann Filtertechnik has developed filter systems and equipment plants that are adapted down to the last detail of the specific catalogue of requirements.

Whether chemistry, metalworking, or food and beverages: each sector has its own dust-collecting problems. This situation depends on the starting materials involved. Processes with stone and earth materials, for example, produce entirely different dusts than does the sawing of wood, the rehabilitation of buildings containing asbestos, or the milling of grain. A special source of danger arises with work with asbestos. Deichmann Filtertechnik offers comprehensive solutions for asbestos disposal.

Equipment systems have been developed especially for the cement solidification of asbestos products, and for processing contaminated construction materials. These systems, unlike conventional solutions, are compact and can fit in a mobile 20-foot container. The installed components and monitoring systems reliably prevent uncontrolled release of asbestos fibres. In addition, various processes give rise to various problems. In combustion processes, for example, especially great heat resistance of the filtration systems is essential. Also crucial are further aspects such as hygiene in the processing of food, beverages, and luxury edibles, as well as the recovery of dust: e.g., wood dusts for pellet production.

For all these interests and problems, Deichmann Filtertechnik has the appropriate solution for filtration, de-dusting of filters, and dust transport. Our engineering specialists will be glad to advise you. On the basis of your catalogue of requirements, they will sound out all possibilities for each of their potentials, until an optimal solution is ready.

Explosion protection

Explosion protection must be taken into account in many application areas. The new ATEX Directive has meant that stipulations placed on user companies have become considerably more strict. Deichmann Filtertechnik offers dust-collection systems with explosion pressure-shock resistant models, for processes with explosion-hazard dust and dangerous gas mixtures.



So that performance capability remains unbroken.

In mining, in industries involving stone and earth materials, and in construction, mineral dusts represent the primary dangers for the health and safety of staff.

Although research on the effects of stone dusts has made progress over the past years, and despite new scientific insights that have been gained, the fact remains that the dangers posed by stone dusts are still being underestimated. Or, after a few years of progress, they are once again being underestimated. If actual operations in plants are inspected, it is hard to ignore the impression that – despite the employment of latest technology on the one hand – the simplest rules of combating dust are often being neglected. Even though it is highly apparent that technology of the twenty-first century has significantly influenced the performance of machines and control systems, dust-collection technology in some cases is still at the level of the mid-twentieth century.

Deichmann Filtertechnik offers systems for dust disposal. The product portfolio covers dust removal in limekilns and grain mills, and extends to dust collection from conveyor systems.

Deichmann Filtertechnik supports the following segments:

- Calcium carbonate plants
- Cement plants
- Quarries and crusher systems
- Asphalt plants and asphalt mixers
- Mining systems



Air-suction exhaust for a crusher system, in a limestone plant.



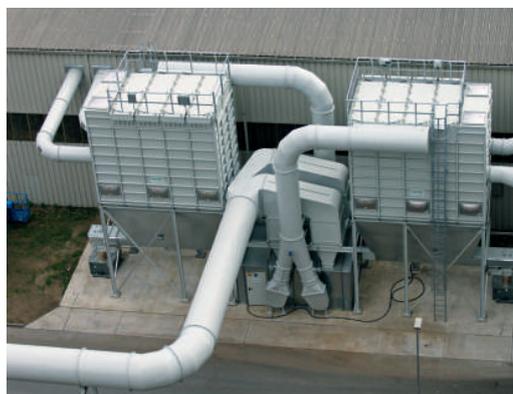
Dust collection in tunnel construction, for better working conditions.

Protecting staff and recovering valuable materials



Eliminate dangerous dusts and recover valuable raw materials: Special systems from Deichmann Filtertechnik fulfil both functions reliably.

A stand-alone industry has become established involving recycling and waste processing. Deichmann Filtertechnik supports this new industry with its special systems. The objectives of our efforts are protection of the health of our staff, as well as the systematic recovery of valuable raw materials.



Dust collection in a storage building for SDS waste.

When waste is sorted, various types of dust and light fractions are captured and must be collected. It is particularly the collection of dust that demands special expertise – which makes dust-collection systems by Deichmann Filtertechnik your first choice. An additional area of use is metal-scrap recycling, in which dangerous metal dusts mix with all dusts occurring from other materials. Here as well, systems from Deichmann Filtertechnik provide comprehensive solutions. In dust collection from incineration-waste shafts (where delivery vehicles dump their cargoes into waste incineration plants), unpleasant odours develop in addition to the dust. Activated carbon filters installed downstream of the dust-collection stage can effectively remove these odours.



Storage area in a waste-metal recycling plant: these operations also produce dangerous metal dust that can be effectively eliminated by Deichmann Filtertechnik systems.

In addition to the elimination of dust and odours, Deichmann Filtertechnik has also developed systems for recovery of valuable material. These solutions not only benefit recycling companies, but also all manufacturing operations in which surplus material arises from production: e.g., rejects, saw waste, and milling waste. Earlier, these materials were disposed at high cost and were not further exploited. Now, they can be systematically captured, collected, transported, and used for further applications.

Aktuelle Einsatzbeispiele:

- Waste sorting
- Metal-scrap recycling
- Incineration-waste shafts
- SDS (optional, with odour elimination by activated carbon)
- BioBed containers

Safety down to the last grind

Increasingly nowadays, the operators of metalworking plants take measures to effectively handle metal dust, in order to protect the health of their staff, and to generally enhance operating safety.

Grinding steel, for example, can create a tremendous shower of sparks – which could easily start fires in an air-exhaust system. Dangerous dust also occurs, for example, while cleaning or sand-blasting metal surfaces.

Shopfloor workers in metallurgical plants, as well as process mechanics, are especially endangered by dust, smoke, and gases in metal production, foundry work, and in steel forming – involving thermal processes such as hard soldering, soft annealing, metal spinning, or deep drawing. The dangerous substances produced here are especially quartz dust, heavy-metal dust, and soot smoke, which contain polycyclic aromatics and carbon monoxide. These conditions especially call for effective countermeasures.

In its product portfolio, Deichmann Filtertechnik has systems for temperature ranges up to 260°C. The optimal choice of filter material is then made in accordance with the field of application. The particular filter material can be delivered if required as pressure-shock resistant models, with the required explosion-pressure-release features.

Deichmann Filtertechnik supports the following metallurgical processes with its products:

- Smelting
- Casting
- Form removal
- Suction of dry swarf
- Grinding and work with slab ingots



Hot-slab-ingot grinding system in Belgium, with volume flow of 300,00 Bm³/h.



In support of the metalworking industry, Deichmann Filtertechnik offers solutions for work in temperature ranges up to 260°C



Thermal processes

Dust removal with a cool head

Dust-collection systems from Deichmann Filtrertechnik assure high air-flow rates and effective particle removal in the removal of dust from the air at work places for welding, flame cutting, electrical cutting of metals, and thermal surface finishing.



Dust-collection system with a thermal surface-finishing system, with heat recovery, and with air-volume of 2 x 15,000 Bm³/h.



Plasma cutting involves work at extremely high temperatures – dust-collection systems of Deichmann Filtrertechnik are designed to handle these conditions.

In metal processing, thermal processes such as welding, flame cutting, and electrical cutting play an essential role. Thermal surface-finish processes are also being more frequently applied. In thermal spray coating, the required surface-finish materials in the form of wire or powder are heated by various processes to high temperatures, and are sprayed onto the processed components. Sometimes enormously high temperatures are involved here, depending on the technology. In the plasma-flame process, for example, a plasma arc up to 20,000°C deposits ceramic material onto the workpieces. In almost all areas of technical work, thermal coating can be highly effective, especially in giving a material special physical properties that it would otherwise not have. In a great number of fields – for example, the automobile industry, textile processing, chemistry, medicine, machine tool construction, and aviation – Deichmann Filtrertechnik can, thanks to the high temperature resistance of its systems and their compact design, offer dust-collection systems that provide high airflow rates and effective particle removal.

Dust collection for thermal processes:

- Welding
- Laser cutting
- Plasma cutting
- Electrical cutting
- Flame cutting
- Thermal surface finishing



Combustion processes

Flue-gas problems vanish into thin air

The combustion of wood, coal, waste, and recyclable materials can produce many and various pollutants with a great potential of danger. Deichmann Filtertechnik dust-collection systems produce results that are considerably within the legally stipulated limit values.

The combustion of wood is divided into 3 phases: drying, de-gasification (pyrolysis), and combustion. With respect to the efficiency of combustion and pollutant emission, special attention must be directed to oxidation. Wood is a long-flame fuel. Approximately 70% of the energy chemically bound in wood is released during oxidation of the gases of combustion. If this process does not take place optimally, this leads to exhaust gases with great amounts of pollutant. This also produces organic substances that are not readily volatile: e.g., soot and tar, which must be filtered out of the air.

Flue gas is also a problem. It occurs in the processes of combustion in power plants and in waste incineration plants, and in industrial production processes. The exhaust gases contain pollutants such as carbon monoxide, nitrogen oxides, hydrocarbons, soot, and heavy metals. These toxic substances can be bound with the aid of additives and can be filtered.

The supply of air of combustion plays a major role in determining the quality of combustion and the efficiency of plant operations. Cyclone air filters, in the form of single or multiple units, are often used for the removal of dust from flue gases. Filtration separators (for example, fabric bag filters) are also used for this purpose. Deichmann Filtertechnik delivers systems with filter media that resist temperatures up to 260°C, and that are not sensitive to sparking. Residual dust contents are minimal. These solutions satisfy limit values of the new versions of the German Technical Regulations for Air-Pollution Control (TA- Luft), without the need for further technical measures.

Dust-collection systems for combustion processes:

- Incineration of waste and residual substances
- Coal-fired furnaces
- Combustion of straw and wood
- Separation of dioxin and furane
- Undesired residue materials encountered in the recycling of waste-paper products



Flue-gas dust-collection, at the Zülpich paper plant.



Dust collection from 600-kW straw combustion.



Where dust collection falls under purity regulations



In many plants dedicated to the processing of flour, coffee, sugar, salt, grain, and cacao powder, dust is created that must be eliminated within the context of purity regulations and health and safety legislation. Dust-collection systems by Deichmann Filtertechnik are ideally suited for commercial hygiene.



In the processing of cacao powder and other dust-intensive foods, the integration of a dust-collection system is of crucial importance.

When two elements coincide – a pathogenic factor (such as fine dust) and an organism reacting to it – illness can develop. For this reason, it is not possible to individually predict whether a person will develop baker's asthma or dust allergy. One aspect is certain, however: the more dust, and the longer the exposition, the greater the danger. Staff who sweep out a bakery, clean an oven with a brush, or use compressed air to clean bakery machines are exposed to dust, carbon particles, and aggressive microbes that penetrate into respiratory passages. Large-scale bakeries can process, for example, far more than 100 metric tonnes of flour annually. The amount of dust produced is therefore great. Operations in production and processing plants for coffee, cacao powder, and sugar, furthermore, require the use of effective dust-collection systems. In addition to preventing health risks for staff, conforming with the stipulations of purity is also essential here. For decades now, Deichmann Filtertechnik has supplied bag jet, compact, and cartridge jet filters with manual or fully automatic pressure-pulse cleaning, and with the required dust-removal systems for the food and beverage industries. All systems conform to European Directives for Quality Assurance in the Production of Food and Beverages, and have additionally received official approval from the US Food and Drug Administration (FDA).



Climate control of a 50,000-metric-tonne sugar silo with dust-collection system, for the conveyor sections, during the installation phase.

Support for industrial segments especially prone to dust pollution:

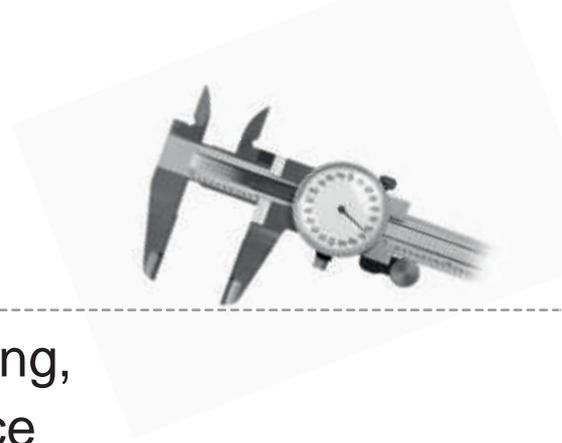
- Production and processing of cacao powder
- Milling of grain
- Sugar factories
- Salt mining and processing
- Production operations according to GMP directives

Eine komplette Anlage umfasst auch:

- High-performance cyclone systems, and cyclone units as pre-precipitators
- Compact dust collectors and industrial vacuum cleaners

Services

We support you – with engineering, consulting, and after-sales service



Engineering and consulting

The long decades of experience and the great process expertise of Deichmann Filtrertechnik pay off in the exact design of a dust-collection system. We have a wide selection of possibilities for customized design, in the analysis of all product and operational parameters that can affect a filter system. For the collection and the treatment of process gases, and the design of the required equipment assemblies – we will gladly provide you with consulting and support.

Pre- and after-sales services

Perfect technology is not everything. Deichmann Filtrertechnik supports you additionally with comprehensive services. These include supply of original spare parts, training of your staff, and disposal of exhausted filter elements.

Readiness to provide services, from A to Z:

- Inspections
- Maintenance and service contracts
- Exchange of filter bags
- Repair of filters and pipes
- Filter alterations and upgrading
- Optimisation of existing filter systems
- Expert disposal of exhausted filter elements as per legal regulations
- Initial startup and staff training
- Modernization of filter control systems

Accessories and spare-parts service

We can of course help you in selection and supply of air-filtration accessories. Pre-dusting agents, rotation air showers, venturis, diaphragm valves, time or Delta-P controls are all included in our range. We can provide you with information about technical issues and spare parts for our filter equipment. We would be glad to furnish you with information on technical issues and spare parts involving our filter systems.

Do you need a change of air?

The uninterrupted purification of your process air, and other air, is a key part of our comprehensive and systematic service. If you already have Deichmann Filtrertechnik filters in service, simply get in touch with us if you have any questions. The same of course also applies for filtration systems from other manufacturers: we would be glad to examine the safety and the service life of these systems.





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