



**AIR TECH
SYSTEMS**

A series of white, wavy, horizontal lines that sweep across the middle of the page, creating a sense of motion and fluidity. The lines vary in thickness and curvature, with some appearing as thin outlines and others as thicker, more solid bands.

Innovative Solutions
for Humans and Products.

Innovative Solutions for Humans and Products.



Wolf Hartmann and Ralf Wagner,
Executive Board of LTG Aktiengesellschaft

Always staying one step ahead – that's the motto of LTG Aktiengesellschaft. Because we not only deal with the standard applications for air technology, but also and above all offer customized solutions for out-of-the-ordinary tasks. Our staff can apply the experience gained over decades, the skills acquired from thousands of successful projects and – most important of all – an inventive spirit.

Invention is what made LTG great and is still what we do best. Our technicians and engineers analyse, simulate, measure and develop outstanding solutions for air-conditioning in all kinds of buildings and for various uses of air in industrial processes. Thereby you as our customer with your special requirements and wishes is always standing in our main focus. Many of LTG's products are the result of new and complex customers demands and we don't hesitate to modify them for your projects, or to question them and come up with yet more innovations. That's because we make it our mission to achieve measurable goals, even in projects that go beyond the everyday: air technology solutions with an optimal effect – from thermal comfort and acoustics to production process quality – all at exceptional levels of energy and cost efficiency.

Comfort Air Technology

Air-Water Systems
Air Diffusers
Air Distribution

Process Air Technology

Fans
Filtration Technology
Humidification Technology

Engineering Services

Laboratory Test / Experiment
Field Measurement / Optimization
Simulation / Expertise
R & D / Start-up

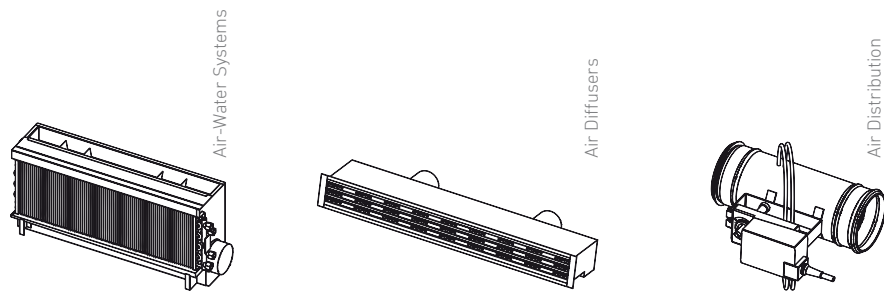
A handwritten signature in blue ink, reading "Wolf Hartmann".

Wolf Hartmann

A handwritten signature in blue ink, reading "Ralf Wagner".

Ralf Wagner

Air conditioning solutions for any room situation. High-performance, efficient, comfortable and silent.



Fresh room air with a pleasant temperature increases well-being at home and at work. LTG offers the technology to create this perfect climate, e.g. with induction units, fan coil units and decentralised ventilation units or with air diffusers and components for air distribution. Standard solutions for office buildings or very special climate control solutions for museums or schools, with technology or design at the focus – almost nothing is impossible.

We meet the highest demands in terms of comfort and efficiency and offer customized air conditioning concepts for any use and installation situation – with optimized performance and best thermal comfort.

This includes innovative approaches with non-stationary (transient) airflow or pioneering control concepts, such as demand-controlled or hybrid ventilation to meet the higher demands for energy efficiency and sustainability.

From the design phase onwards, we consider ourselves your reliable partner and are available for you with advice and support thanks to our know-how. Many years of constructive cooperation with many of our customers proves that this path leads to success.

Are you an architect, consultant or investor and are you looking for a customized solution? Do you want only the best for your building project? Your air conditioning technology will be in good hands with us.

Areas of application in air conditioning

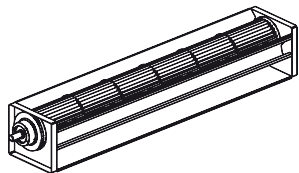
- Offices/hotels
- Schools/universities
- Museums/Assembly rooms
- Laboratories/hospitals
- Industrial buildings
- Shops/commercial centers
- Apartment buildings
- Airport/train stations
- Project-specific applications

Udo Bergmann is responsible for sales of
Comfort Air Technology in Germany.

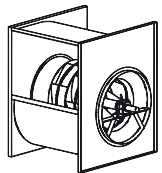


Fans for extreme process conditions. Reliable and efficient solutions for countless applications.

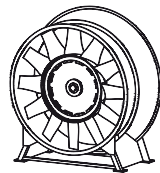
Tangential Fans



Centrifugal Fans



Axial Fans



Whether you are processing steel, aluminium, glass, rubber, foods or pharmaceuticals or whether you are heating, cooling or drying in your application – our fans help to improve product quality and increase process safety. Fans by LTG offer an even airflow and are suitable especially for use under extreme ambient conditions.

Our tangential fans with their even airflow over large areas have proven themselves optimally at process temperatures of -180°C to $+800^{\circ}\text{C}$. Our centrifugal fans expand the industrial usage range – in low-, medium- or high-pressure design with different configurations and drive types, they are used in all thermal applications.

In addition to their high efficiency, LTG fans have very good acoustic properties. They also meet high demands in terms of explosion protection and are resistant to chemically aggressive environments.

Based on the wide LTG product range and with the help of our engineers, we will create the perfect solution for your application as well. With our technology and experience we face the most challenging tasks – especially if you need perfect air distribution at extreme temperatures and very small installation spaces. Selecting a suitable fan we do not only observe the technical design parameters, but we think ahead as well. You can profit from the high process safety, outstanding product quality, and economic efficiency even after several years in use.

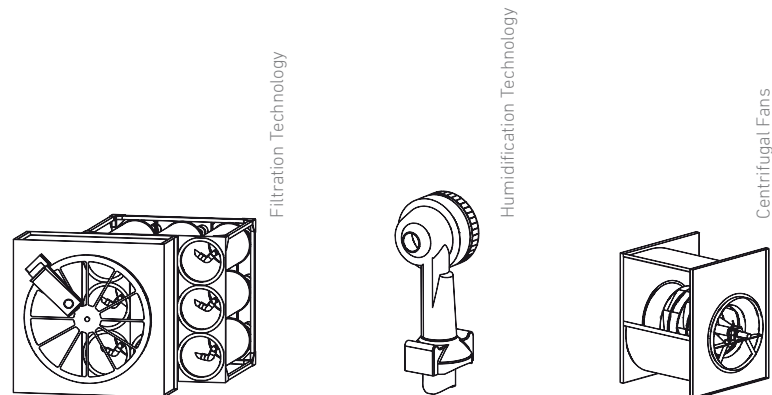
Possible applications in thermoprocessing/process engineering

- Industrial furnaces
- Cooling sections
- Drying machines/processes
- Heat treatment
- Converting
- Component cooling
- Process exhaust air
- Raw materials
- Medicine/pharmaceuticals

Norbert Franke is responsible for product management and engineering.



Customized filtration and humidification solutions. For clean processes and healthy working conditions.



The possible applications for LTG filters are almost unlimited. They separate solids of different origins and conditions and have particularly proven in the (technical) textiles and nonwovens processing as well as in manufacturing of construction and insulation materials. By the interaction of our perfectly coordinated products, our filter systems help increase product quality, lower production costs and recover valuable raw materials.

Fibres or dusts, granulates or chips, gross or fine particles – different filter stages permit effective separation and further processing of the raw material. The continuous self-cleaning of the filters ensures operation without pressure or volume flow variation. Your advantages are continuous process conditions and high productivity.

At the same time, you can comply with environmental protection standards and create clean air for healthy employees.

In the next step the filtered particles are compressed and separated with our fibre and dust compactors or our cyclones. This way, the material recovered can be returned to the production process or disposed. The loaded and clean air is conveyed by LTG fans, that are carefully selected and dimensioned according to your process. If necessary LTG humidification solutions are used to provide certain humidity conditions.

Trust in LTG Filtration Technology and select from our extensive product range. We arrange customized solutions for you – our modular system and our technical competence are at your disposal.

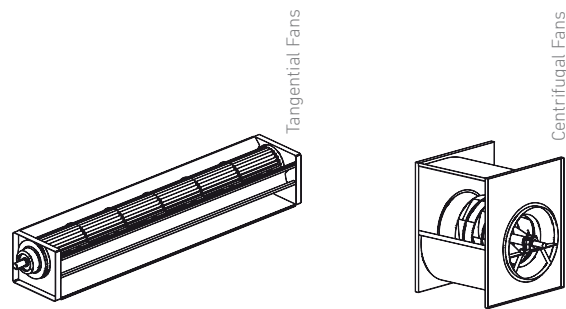
Possible applications in textile/nonwoven industry

- (Technical) textiles
- Nonwoven industry
- Paper/cellulose processing
- Hygiene/medical technology
- Building/insulation materials production

Ralf Buck is supervisor in Process Air Technology production.



Air technology solutions for highest pleasure. High-class technology for sensitive processes.



For your sensitive processes, LTG offers air-conditioning concepts combined with sophisticated technology. Regardless of which foodstuffs or stimulant you produce, whether grain, tobacco, meat, sausage, bakery or pasta, when it comes to uniform and gentle heat treatment or drying of food of any kind, LTG fans help to further perfect your demanding production facility.

To bake bread rolls evenly brown on all sides, smoke sausages perfectly through, make pastry rise quickly and evenly or separate the wheat from the chaff: food that meets highest customer requirements place highest demands to air conditioning, air routing and homogenous distribution in production. In crafts or industry – whenever you want to achieve end products in consistent top quality, concurrently

high productivity and energy efficiency, we can help optimize your high-quality production system with perfect air technology.

From processing the raw materials to various interim products or other refining stages to the finished food, we develop the matching air-technology solution for any process step. Sensitive handling and protective processing, the shortest possible process times at high production output and compliance with hygienic standards for a safe end product are at the focus.

For your individual tasks we use our innovative power as well as our vast experience in all areas of air technology and we accompany you from customized conception to the final start-up.

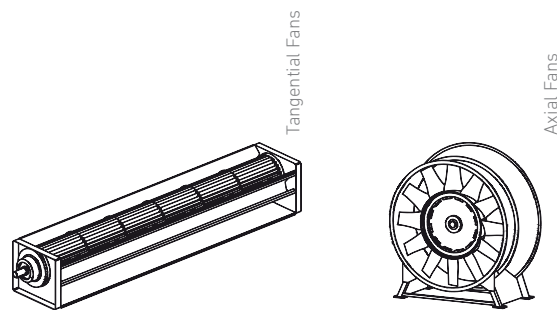
Possible applications for food/tobacco

- Drying
- Baking
- Fermenting
- Cooking
- Heating
- Frosting
- Cooling
- Smoking
- Roasting
- Screening/separating

Simone Muehtlich works in sales and marketing in Process Air Technology.



Airflows as requested. Reproducible at any scale.



Generate airflows in a lab as close to real conditions as possible with LTG Wind Simulators. To ensure products reliable and functional at all times, tests during development or quality assurance are indispensable. This way, outer environmental influences such as wind and rain can be simulated in the lab with manageable effort for reliable and reproducible results for an optimal product.

Our systems are widespread around the world in the automotive industry. Most leading manufacturers use them for emission measurements according to latest standards like WLTP. Besides they are used in environmental simulation chambers, where the effects of moisture, salt spray mists, sand, UV radiation or extreme temperatures on varnish and plastic parts are tested. Other areas of use include aerodynamic and acoustic measurements at vehicle

parts such as door seals, outer mirrors, decorative strips or spoilers.

Realistic simulation of the airflow as well as the heat and material transport processes is also decisive when developing sports items, clothing, outdoor equipment or building facades for which we create customized solutions. Our wind simulation systems meet high requirements to give you accurate and reliably reproducible measuring results at all times: The airflow is consistent across a large area and has neither turbulences nor fluctuations in terms of speed or density.

With the help of CFD-simulation and based on decades of experience, our engineers will design whatever is physically feasible for you as well.

Possible areas of use for automotive/wind simulation

- Quality assurance
- Exhaust measurements
- Rain simulation
- Aerodynamic measurements
- Acoustic measurements

Ralf Widmann is sales manager in Process Air Technology.



Competence and creativity. Our most important skills for your customized solution.

Are you looking for an air control solution that is highly efficient, provides thermal comfort or is absolutely quiet? Do you want to convey heat as efficiently as possible or transport material using air? And have conventional solutions failed to offer what you need? Then LTG is the right partner for you! We even have developed solutions to air condition the streets of Mecca and we have simulated airflow under weightlessness in our lab for the International Space Station.

Our technicians and engineers have a wealth of experience gained from numerous out-of-the-ordinary projects. They prepare studies and expert's reports contribute creative suggestions and develop innovative approaches – it only has to be about air. For optimum air-conditioning in rooms or for a particular air-related solution in mechanical engineering, for energy and power station technologies, for traffic or medical technology, for material and surface treatment and much more besides.

Although customer-specific solutions can only be found by leaving the beaten path, we always approach our task methodically and directly. Laboratory studies by LTG Engineering Services often point the way. Here we can even simulate large-scale flow processes. Before we implement a solution for you, we optimize it by means of computer simulations or experiments to achieve the perfect function, the minimum consumption of resources and the lowest lifecycle costs.

Our inventiveness in taking new paths is also documented by our above-average number of patents. We like to go to the limits of physics for our customers, and to set new standards. We will also support you in the implementation of your customized solution and validate your results in actual operation.

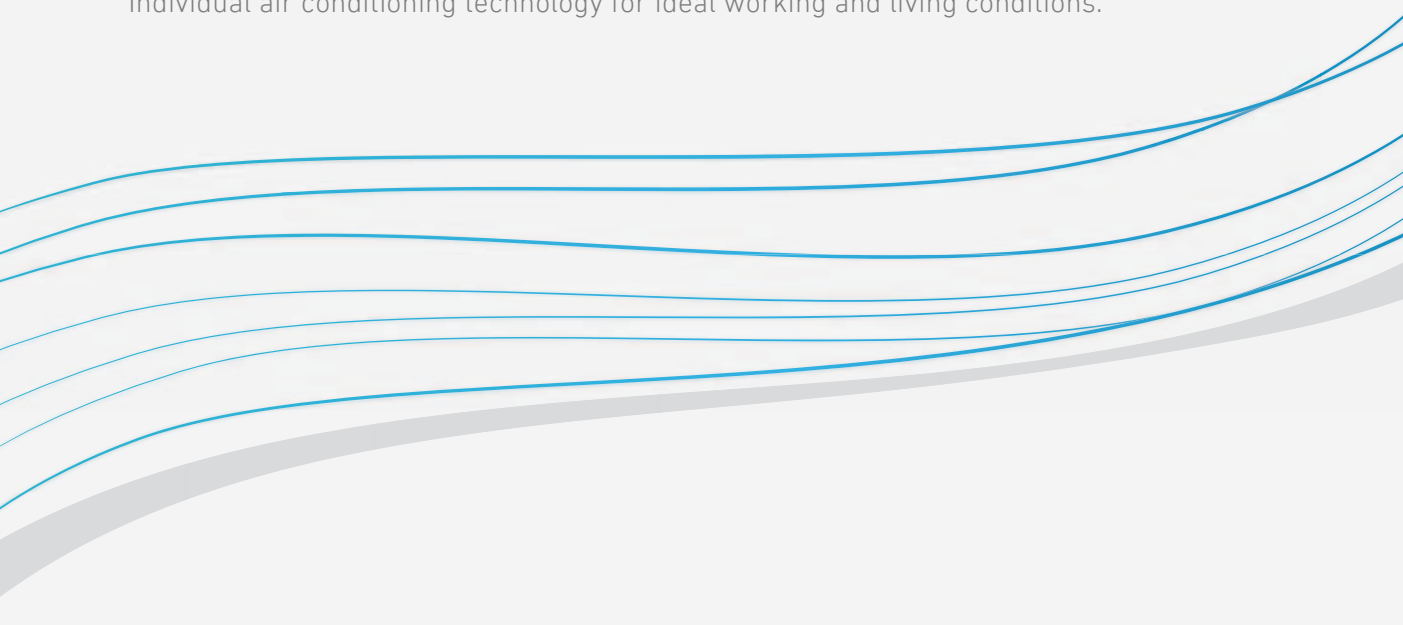
LTG competences for customized solutions

- Airflow tests/acoustic measurements
- Experimental flow optimization (measurement/visualisation)
- Measurements under real application conditions
- System/product optimization (energy-efficiency/output, comfort und acoustics)
- Simulation of highly complex flow processes
- Product development/solutions for air-technology problems
- Energetic enhancements/optimization of processes
- Commissioning/implementation of our suggestions, validation of target values

Florian Kenner works in R&D and Engineering Services Comfort Air Technology.

LTG Comfort Air Technology

Individual air conditioning technology for ideal working and living conditions.



LTG Comfort Air Technology products permit the most efficient creation of an ideal room climate and often offer additional benefits, like the LDB linear diffuser with its unique LTG System clean®, which considerably reduces contamination at the wall and ceiling near the diffuser.

Induction technology, invented about a hundred years ago by our company founder Dr. Albert Klein, is also full of innovation. Our latest induction units with the patented SmartFlow system ensure a very comfort and quiet, demand-controlled and energy-saving air conditioning. Our latest development turns out to be extremely effective as well: the pulsating, breathing decentralised façade ventilation concept PulseVentilation.

LTG products also contribute to energy savings in buildings with central air conditioning. Among them are our flow rate controllers with map control that ensure precise measurement and control even at low air speed (System ActiveControl) or our new diffusers for demand controlled ventilation of halls (LTG IntelligentIndustry).

These unique solutions are the ideal basis for implementing a perfect room climate: An atmosphere that you will love. We will support your path there – from the request to detailed design.

AIR-WATER SYSTEMS

Customized air conditioning concepts result from our wide-spread range of air-water systems. Induction units with the latest technology, classic and energy-saving fan coil units and decentralised ventilation and air conditioning units meet high demands in new construction and the wish for lower energy consumption in refurbishment projects. With flexible solutions for the ceiling, wall or floor, we also meet the framework conditions for technical concepts and architectural demands.

AIR DIFFUSERS

Good air diffusers are essential for health and well-being. They enable air conditioning and ventilation systems to best distribute treated air in the room or effective discharge of thermal loads. Our linear, swirl and customized diffusers meet the highest demands and set standards in their classes. Examples from this area include the new outlets of the LDBhome series, specifically developed for

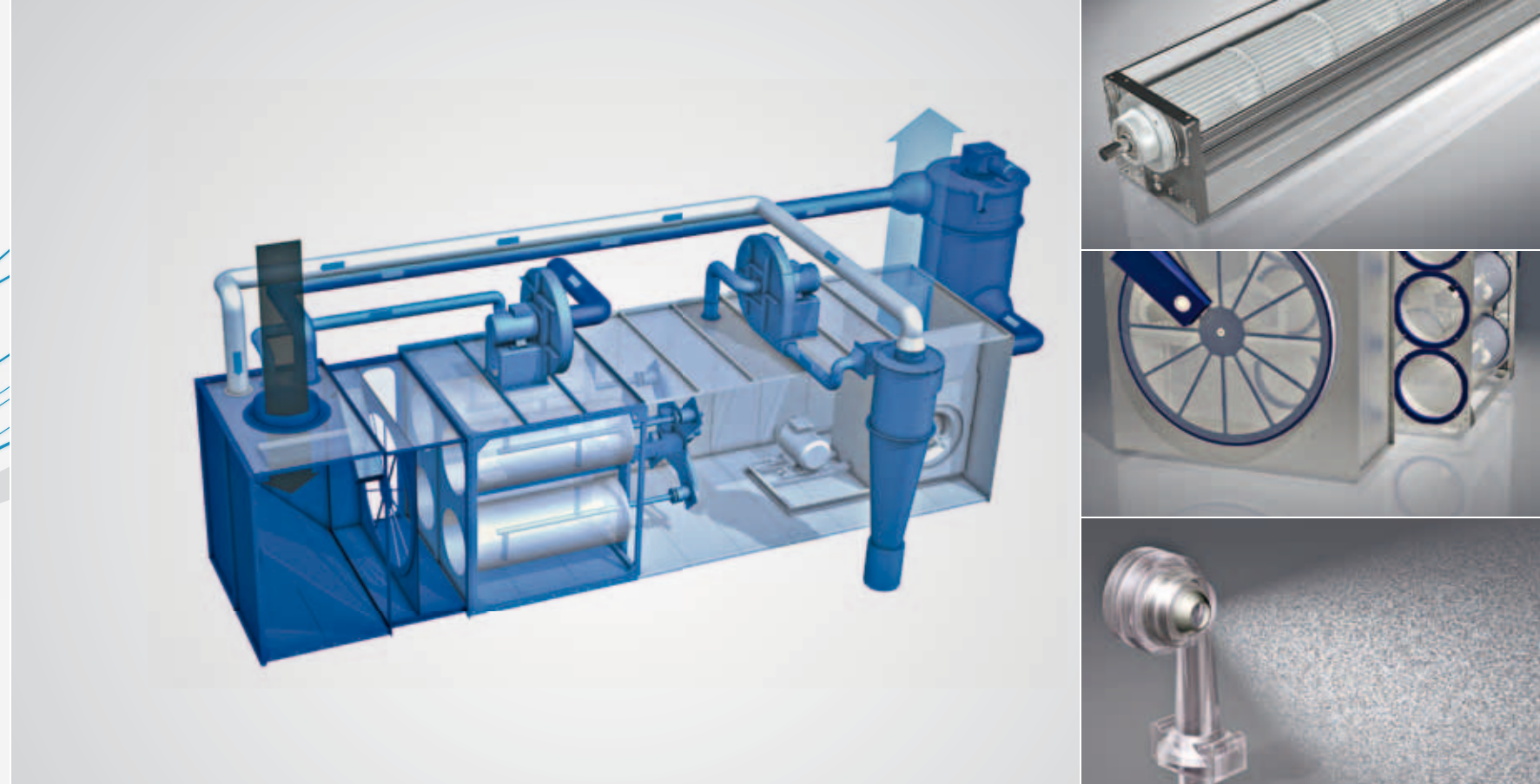
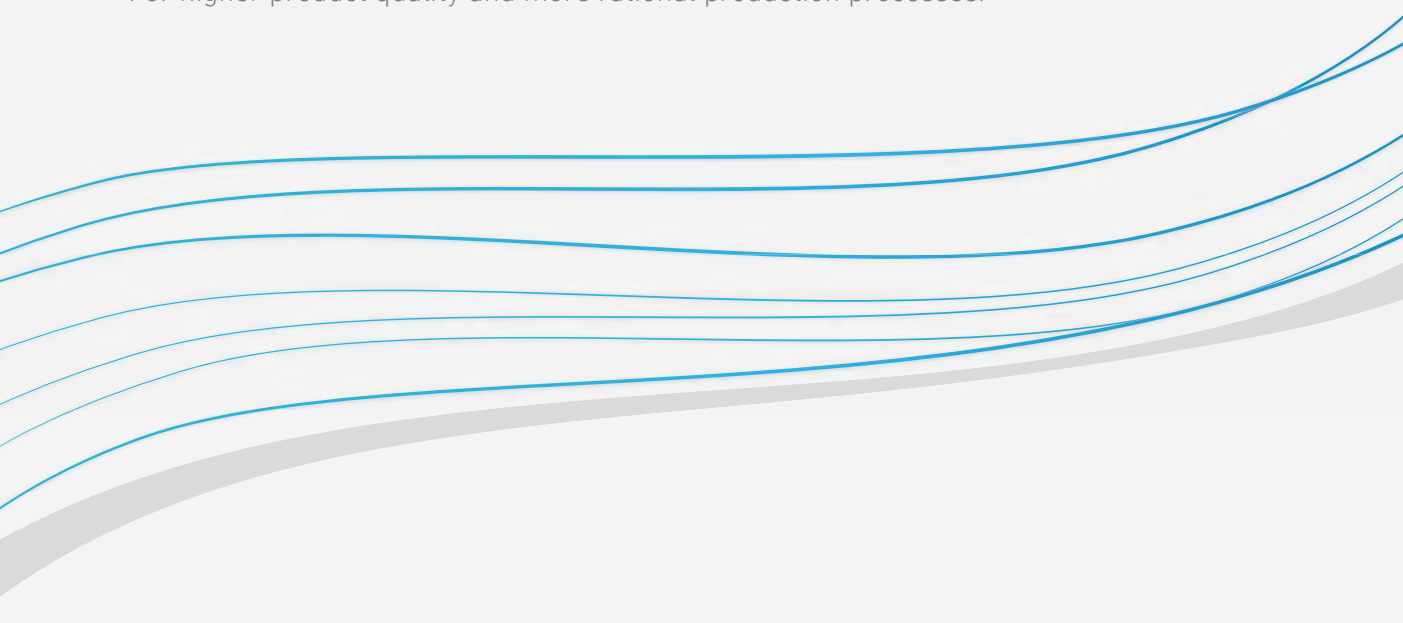
residential space ventilation or our ceiling air diffusers system DSAAirPanel, which is integrated into acoustic ceilings virtually invisibly. Our displacement diffusers ensure a pleasant, draft-free distribution of air in halls.

AIR DISTRIBUTION

Components for air distribution such as flow rate and pressure controllers are decisive for economically efficient operation of air conditioning and ventilation systems: they distribute supply and exhaust air and check or control the airflows from the ventilation centre to the room – just as you need it and are therefore protecting resources and increasing comfort. Our wide-spread product range includes not only a complete range of round and square controllers, but also shut-off dampers as they are used in labs, ships and hospitals, as well as accessories such as silencers and reheaters.

LTG Process Air Technology

For higher product quality and more rational production processes.



Process Air Technology is a traditional field of activity of LTG. Our air technology solutions are being used in a wide range of industries and are installed in machinery of all kinds. Thanks to our wealth of experience and engineering expertise, we can offer products that are perfectly matched to the given applications, such as our wide-spread range of fans in all common types of construction. They convince not only by their good function, but also enjoy an excellent reputation thanks to their high quality and functional safety. On dynamometers in the automotive industry our Fahrtwind-Simulators produce realistic and reproducible airflows.

LTG filter systems have also become established on the market thanks to their reliability and high filtration efficiency at small footprint. In combination with our humidifier solutions, they make a decisive contribution to best production processes. Their use provides clean production environments at maximum recovering of valuable materials and thus ensures high resource efficiency.

No matter which air-technology challenges your processes have: we will gladly meet the task. In many cases, our established and tested standard products achieve outstanding effects – or we will produce a customized system for you. Many of our solutions in the area of wind simulation, textile and nonwovens technology, heat treatment and drying, as well as in food processing, medical technology and many other applications, have resulted from new tasks.

FANS

Our wide product range includes tangential, axial and centrifugal fans for any kind of flow pattern in many different applications. Profit from our know-how, which is reflected, amongst others in the LTG fans for pure gas, hot gas, conveyor, combustion or exhaust air. With our competence and our production options, we are able to design individual customer solutions and implement them in large or small editions.

FILTRATION TECHNOLOGY

Perfectly combined, our pre- and fine filters, separators and compactors not only improve the production process but also clean the air in the production hall to contribute to the health of your employees. While developing our filter-technical solutions, our engineers always keep an eye on performance and

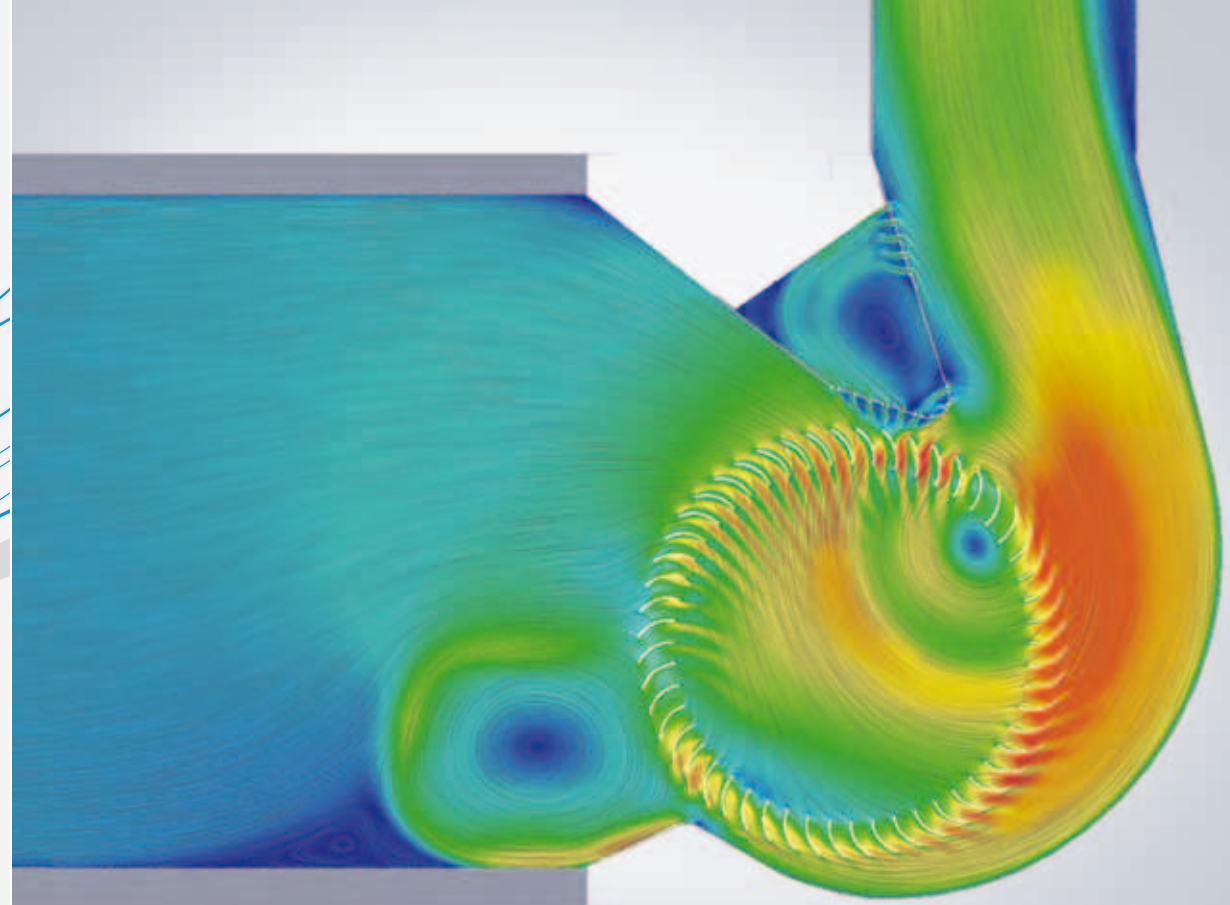
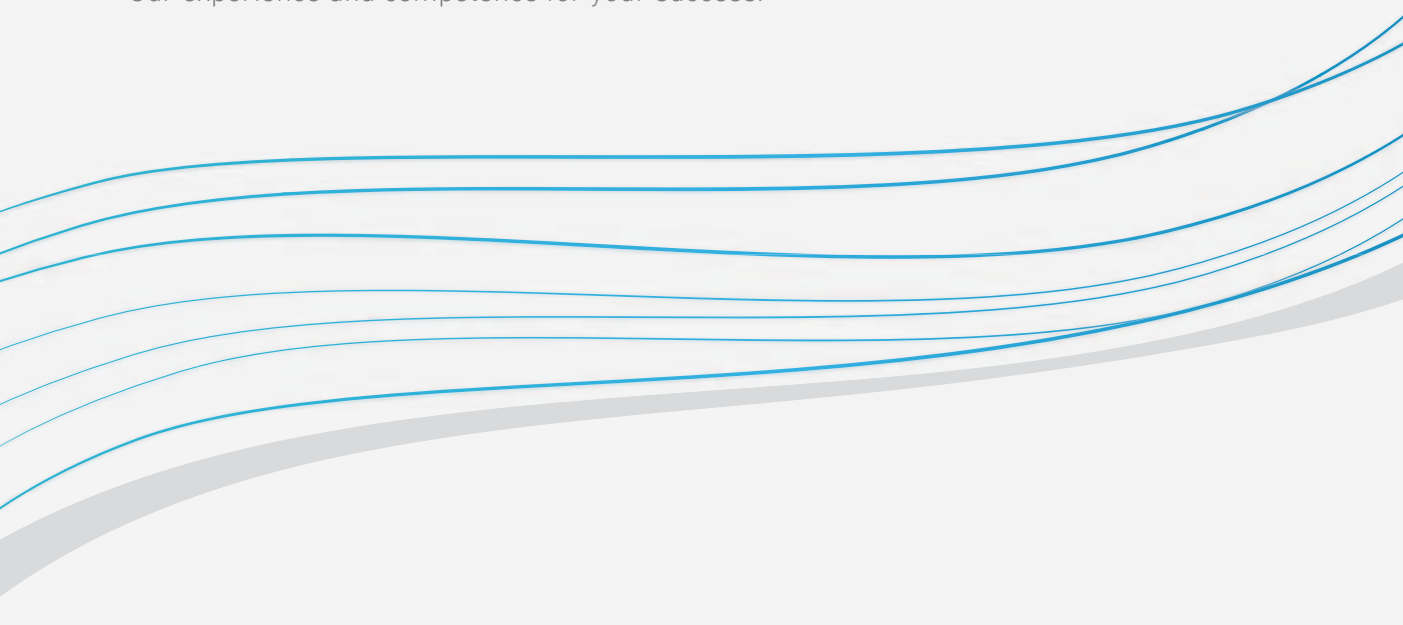
reliability in addition to best effect: Automatic cleaning, quick filter changes or other construction features ensure efficiency in your production process.

HUMIDIFICATION TECHNOLOGY

Perfect air conditioning often includes production of a consistent humidity, e.g. with our high-pressure humidifiers and air washers. They have already proven their worth in many industrial processes when humidifying, cooling, washing and filtering.

LTG Engineering Services

Our experience and competence for your success.



Comfort Air Technology — More safety for your investment

Even before implementation of a room-air system or air conditioning concept, our team will supply you with reliable statements on function, effect and costs. With the first draft design, our employees will perform experiments and simulations to determine detailed data and facts and optimize them. You as an investor, builder, architect or consultant will thus achieve design and calculation safety.

Process Air Technology — Our knowledge to solve your tasks

Whether your project refers to the air technology in a production system or within a machine – benefit from our decades of experience: in our state-of-the-art test and development lab, our specialists have the best prerequisites to simulate, analyse, and optimize process air technology systems for you and to solve your individual task.

LABORATORY TEST/ EXPERIMENT

- Realistic mock-up of typical office situations in the dedicated flow lab and simulation of all project-relevant air conditioning load scenarios; examination of large airflows in the model scale
- Optimization of thermal comfort through adjustment of the air-conditioning technical components and control evaluation according to common ISO and EN standards

- Experimental flow examinations in customer machines under defined lab conditions, including visualization, recording and optimization
- Optimization of acoustics of flow-technical products and installation situations, as well as improving energy efficiency of air-technology processes in machines
- Calorimetric output measurement of heating and cooling units and local ventilation devices, recording characteristic curves and energy evaluation of flow machines
- Examination of the filtration performance of cyclones, filter systems, etc. with customer-specific input material

FIELD MEASUREMENT / OPTIMIZATION

- Validation of thermal comfort in customer projects; measuring technical recording and quantification of problems of thermal and acoustic discomfort, development and evaluation of solution concepts
- Data recording in the project as a basis for energy restoration concepts

- Measurement of air conditions, temperatures and load in production systems and machines as well as sound pressure measurements near the machines
- Visualization of flows in the actual customer application
- Integration of a mobile filter unit into the customer's process to optimize the filtration performance, energy efficiency and filter service life

SIMULATION / EXPERTISE

- Mobile dynamic building simulation, computer-aided flow simulation and analysis of highly resilient components with the finite element method
- System comparison for air conditioning concepts, holistic evaluations for flow and renovation concepts
- Development of energy-efficient flow concepts with evaluation and recommendations

R & D / START-UP

- Development of customer-specific products, applications and special solutions with verification of the target values at the prototype and validation in series
- Support in system commissioning and system service



**TRADITIONAL OR HIGH-TECH –
MANY REFERENCES PROVE OUR COMPETENCE**

A lot of experience collects across a corporate history of over 90 years. The range of our references is accordingly wide, reaching from renovation of the air conditioning technology of monument-protected old buildings to air conditioning units for pioneering buildings or solutions for highly technological production processes. We ensure good air even in Egyptian pyramids or in space flight.

What many of these projects have in common is an unusual task that can only be mastered with lots of commitment, know-how and creativity. This was the case even in the early days of LTG, when founder Dr. Klein designed the first air conditioning systems, and this will continue to characterise our company in future. We continue development where classic concepts end.

Challenge us and become our future reference. Our experts in comfort air and process air technology will gladly develop a concept for you that will not only meet your requirements, but also convince you with energy efficiency and investment safety.



**AIR TECH
SYSTEMS**

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