HARTER
drying solutions

# Dry today,
# Benefit tomorrow –
# Ensure future readiness.

PERFECT SURFACES START WITH DRYING.
DRYING OF COATING, ADHESION MOISTURE & CLEANING
WITH AIRGENEX®PAINT DEHUMIDIFICATION TECHNOLOGY

ENERGY-EFFICIENT · NO EXHAUST AIR · RELIABLE · SUBSIDIZED

FOR MAXIMUM PERFORMANCE AND PROCESS STABILITY

OUR WAY OF DRYING
COATINGS IS SPECIAL:

**VERY SAFE.**
**VERY FAST.**
**VERY GENTLE.**
**VERY EFFICIENT.**

## HARTER DRYING SOLUTIONS –
## COMPETENCE IN ALL ASPECTS OF DRYING.

- Gentle drying at temperatures between 30 °C and 75 °C
- High energy efficiency through targeted dehumidification technology
- Significantly reduced energy consumption and $CO_2$ emissions
- Uniform and reproducible drying results for highest surface quality
- Drying in a closed system (no exchange with ambient air – preventing dust or contamination, no dependency on climate conditions, and consistently high coating quality with emission-free drying)
- Customized system concepts tailored to components, coatings, and processes
- Reliable process stability, even with varying parts and geometries
- Clean, emission-free drying – ideal for demanding surface treatment processes

# FAST AND RELIABLE DRYING

Coated surfaces, powder-coated parts, and cleaned components dried gently, energy-efficiently, and with maximum process reliability – this is exactly what our Airgenex®paint condensation drying system was developed for. The process not only improves the drying step itself but also sustainably stabilizes the entire coating and finishing process.

Whether it is drying after cleaning, residual moisture removal, or drying of water-based or solvent-based coatings: our systems ensure uniform, spot-free surfaces and reproducible results – even for geometrically complex components.

Drying takes place in an air-closed system. This prevents any unwanted exchange with ambient air. Climate and seasonal influences no longer play a role, ensuring stable and reliable processes. At the same time, cycle times can be maintained or significantly reduced, and existing production lines can be optimally supplemented or expanded.

## PRODUCT QUALITY AND PROCESS RELIABILITY

- » Short drying times and consistent, reproducible results
- » Process-reliable drying – even for complex geometries (bores, undercuts, blind holes)
- » Perfect surface quality – ideal for high-performance coating systems
- » Low drying temperatures to ensure gentle coating treatment

**Drying systems individually tailored to each product and process:**

- » Maintaining cycle times – often significantly reducing them
- » Seamless integration into existing production lines
- » Increased production capacity

**Drying in a closed-loop air system:**

- » No exhaust air
- » No exchange with ambient air
- » Reliable drying, independent of climatic and seasonal conditions


*Paint dryer with Airgenex®paint dehumidification module*



# OUR DRYING TECHNOLOGY ADVANTAGES

## VERY FAST

Compared to conventional drying methods such as hot air systems or basic ventilation techniques, Airgenex®paint condensation drying enables time savings of up to 79 %. This allows a substantial reduction in drying times and increases process efficiency.

## VERY GENTLE

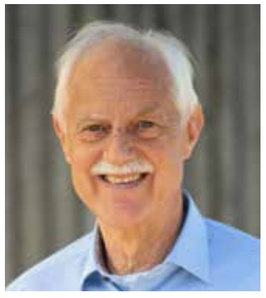
Airgenex®paint dries products and materials at low temperatures within a defined range of 30–75 °C, depending on the application. The low-temperature drying process ensures that materials and components remain as cool as possible. ing process ensures spot-free results. Looking to increase your capacity? With our technology, you are perfectly equipped for that as well.

## VERY RELIABLE

The dehumidification process takes place in an air-closed system. This means that, with our drying technology, you are independent of climate and weather influences. At the same time, your reject rate can be significantly reduced, as our dry-

## VERY EFFICIENT

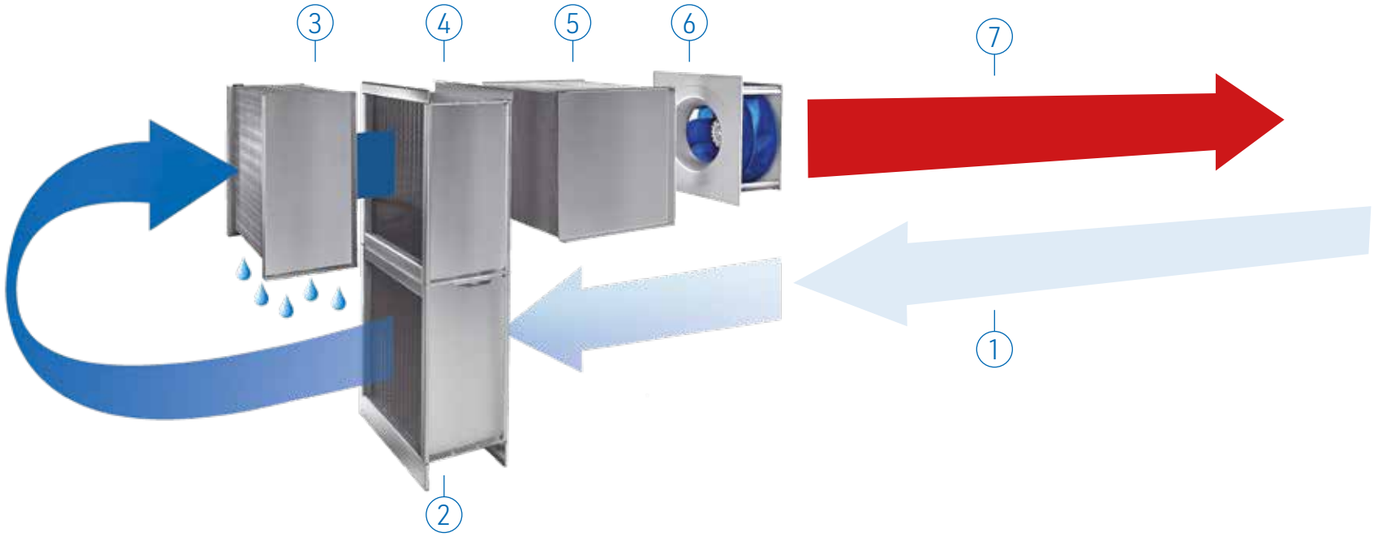
The heart of our drying systems is a highly efficient dehumidification technology based on heat pump technology. It is equipped with high-quality components, some of which have been specially developed for us, as well as premium materials. We combine our air dehumidification with a sophisticated air management system. After all, even the driest air is only effective when it is directed precisely to where it can absorb moisture. Only through the perfect interaction of these two elements – air dehumidification and air guidance – does our drying system achieve its full performance.



Energy efficiency has always been a core focus of our work. From the very beginning, this commitment has driven the development and continuous advancement of our drying technology. The growing awareness of energy consumption and finite resources is an important and necessary development – and a key prerequisite for a sustainable future.

*Reinhold Specht, Managing Director, Harter GmbH*

# AIRGENEX® – THE PROCESS





With our energy-efficient drying systems, products of all types are dried quickly and reliably. The use of heat pump and heat pipe technology significantly reduces energy consumption.

1. Interface Airgenex®paint dehumidification module / dryer: moist air is extracted from the drying chamber and fed to the dehumidification unit.

2. The pre-cooler, as part of the heat pipe, pre-cools the air in an initial stage without

3. Moisture condenses on the air cooler fins and is removed from the drying system via the condensate tray and drainage outlet.

4. The pre-heater, integrated into the heat pipe system, provides passive preheating of the cooled, dehumidified air without external energy input.

5. The air heater heats the air to the specified process temperature.

6. The process air fan ensures the required air circulation between the Airgenex®paint dehumidification module and the drying chamber.

7. The dry, unsaturated air is subsequently supplied to the drying chamber.

This completes the closed-loop system.

*Airgenex®paint dehumidification module*

# STANDARD AND CUSTOM SOLUTIONS – SUITABLE FOR ALL PROCESS TYPES

We design drying systems tailored to the specific requirements of your coated components and surfaces, and integrate them seamlessly into your coating and cleaning processes. In doing so, we apply our comprehensive expertise and experience gained from numerous coating and surface treatment applications to every system design.

Our drying technology is a flexible solution that can be combined with a wide range of coating and cleaning processes. Whether drying after aqueous cleaning, removal of adherent water, drying of water-based or solvent-based coatings, or integration into continuous production lines – each application places specific demands on temperature control, airflow management and process time.

This is where our expertise excels.

By precisely coordinating all relevant parameters with the component, coating type and conveying system, we create a highly efficient, stable drying process with consistently high surface quality and outstanding results.

## DRYING AFTER CLEANING

After industrial cleaning processes, reliable, residue-free drying is a critical factor for the quality and efficiency of all subsequent process steps. Especially for coated components, complex geometries and sensitive surfaces, conventional hot air or blower systems are often no longer sufficient.

Our Airgenex®paint dehumidification module provides a modern and robust solution: it enables gentle and energy-efficient drying directly after washing, rinsing or degreasing, creating the ideal conditions for subsequent coating processes.

A key advantage of Airgenex®paint technology is its ability to completely dry even critical areas such as bores, cavities, undercuts and internal structures.

Through targeted airflow management and low process temperatures of approximately 30–75 °C, residual moisture is reliably removed without thermal stress or impact on surface appearance. This protects sensitive surfaces from stress cracking, deformation or loss of gloss, while ensuring spot-free results that are immediately ready for further processing – without rework or manual post-drying.

Another advantage of Airgenex®paint drying is its flexible integration into existing cleaning processes. The system can be directly connected to existing cleaning equipment or implemented as a standalone downstream station – either as a fully automated line or as a customized solution.

*Continuous dryer after cleaning process*

The closed-loop system with heat recovery significantly reduces energy consumption, offering a sustainable and economically advantageous alternative to conventional hot air drying systems.

With these features, Airgenex®paint ensures that cleaned components are not only dry, but also of consistently high quality, process-reliable and ready for subsequent production steps – whether coating, assembly or packaging.

*Our technology also allows for easy integration of a cooling stage into the drying process, if required by the application.*



## PAINT DRYING

In coating and finishing processes, temperature stability, consistent conditions and process reliability place particularly high demands on downstream process steps. Different coating systems, sensitive surfaces and complex component geometries react sensitively to process fluctuations. Even minor deviations can have a visible impact on appearance, adhesion and reproducibility of coating surfaces.

The Airgenex®paint system is specifically designed to meet these requirements in industrial coating applications. The closed-loop, exhaust air-free process creates constant conditions within the system – independent of external influences such as climate, seasonal variations or ambient air. This ensures high process stability and consistent results across different materials, coating thicknesses and surface types.

Another key advantage is the gentle and controlled process management, specifically tailored to high-quality coating finishes. Sensitive coatings are treated uniformly, surface defects are avoided and consistently high quality is ensured. This is particularly important for visible parts and demanding surfaces, where it significantly enhances the value of the final product. At the same time, the closed-loop system with heat recovery makes a significant contribution to the energy efficiency and sustainability of the coating process. Energy losses are minimized, operating costs are reduced and a stable, economically efficient process is ensured – without compromising on quality or reliability.

*Drying chamber for coated components*

## DRYING OF WATER- AND SOLVENT-BASED COATINGS

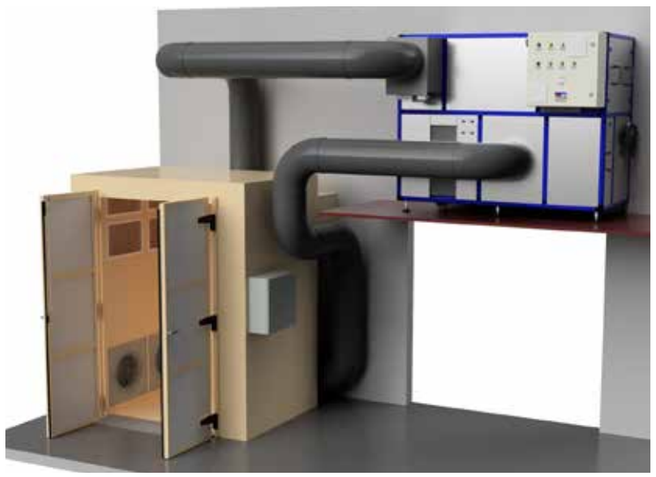
In industrial coating processes, different coating systems are used, each with specific requirements. Water-based and solvent-based coatings differ in their drying behavior and react sensitively to process fluctuations.

A future-proof drying solution must therefore reliably and flexibly accommodate both systems. The Airgenex®paint system enables precise adjustment of process parameters to the respective coating type. Extremely dry process air and stable, reproducible conditions ensure uniform and controlled drying of coating layers – regardless of the coating system used. This maintains consistent surface quality, process reliability and cycle times, even under changing requirements.

## SOLVENT CONDENSATION

When processing solvent-based coatings, safe and controlled handling of solvents is of critical importance. The Airgenex®paint process operates in a closed-loop air system, in which solvents are selectively condensed out of the process air and safely discharged.

The exhaust air-free operation significantly reduces emissions and enhances workplace safety. At the same time, process conditions remain stable and reproducible. Complex exhaust air treatment systems can be minimized or eliminated, while the quality, efficiency and sustainability of the coating process are significantly improved.

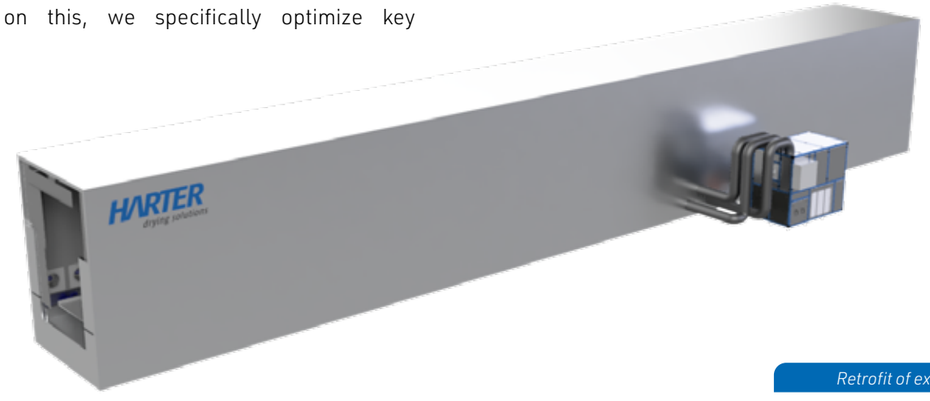


*Drying system for solvent condensation*

## RETROFIT OF EXISTING DRYING SYSTEMS

Many existing drying systems have evolved over time and were originally designed to meet earlier requirements. However, rising energy costs, changing processes and increasing demands for quality and process reliability often result in suboptimal performance. A complete replacement is not always necessary or economically viable.

As part of a retrofit, we conduct a comprehensive analysis of the existing drying process. Based on this, we specifically optimize key factors such as air dehumidification, airflow management and control systems. These measures enable shorter drying times, significantly reduced energy consumption and improved process stability. Existing systems are thus technically upgraded and adapted to current and future requirements – with a manageable investment and minimal impact on ongoing production.




*Retrofit of existing drying system*



## INTEGRATION OF THE AIRGENEX®PAINT DEHUMIDIFICATION MODULE INTO EXISTING DRYERS

The Airgenex®paint dehumidification module can be integrated as a high-performance upgrade into existing drying systems. The existing mechanics, conveying systems and overall plant design remain unchanged, while the drying process is significantly improved through highly efficient dehumidification and a closed-loop air system.

This integration creates constant, reproducible process conditions that operate independently of external influences such as ambient climate or seasonal variations. At the same time, energy is used efficiently and retained within the system, resulting in a substantial reduction in energy consumption. In this way, the performance of existing dryers can be significantly enhanced and a modern, exhaust air-free drying process can be realized – without the need to replace the entire system.


*Integration of the Airgenex® dehumidification module*

## AIRGENEX®PAINT CUSTOM SOLUTIONS

Every drying task is as individual as the production process itself. That is why we develop customized drying solutions precisely tailored to your specific requirements.

From the design of drying parameters and integration into existing production lines to the consideration of spatial and infrastructural conditions – we engineer systems that integrate seamlessly into your processes.

Key factors such as available space, material flow, existing peripherals, safety requirements and climatic conditions are carefully taken into account.

Based on our many years of experience and modular system design, we deliver customized, future-proof solutions that ensure maximum process stability, energy efficiency and product quality – even for complex or specialized applications.

# INNOVATION AND TEST CENTER

Test series conducted in our technical center provide reliable insights and process security. We evaluate your product with regard to temperature, time, moisture content, air velocity and air volume flow. Particular attention is also given to airflow within the dryer, as it is a key factor for successful drying. For this purpose, we operate several multifunctional dryers that our engineers adapt to the specific application.

In some cases, the solution is already clear after a single test series. In others, multiple test runs with different configurations are required. This is where our experts come in – applying creative and alternative approaches to always find the best possible solution.

Since 1991, we have conducted thousands of drying tests in our technical center. The experience and expertise gained form a valuable knowledge base – one that directly benefits your application.

## A DAY BEYOND TECHNOLOGY

You are welcome to participate in the test runs. See for yourself the performance of our heat pump dryers and the innovative solutions we develop.
We provide valuable insights into drying technology tailored to your specific product. At the same time, we place great importance on professional support and a welcoming atmosphere – ensuring your visit is both pleasant and productive.

## OUR SPECIAL SERVICE

If required, drying trials can be conducted directly at your site using our rental equipment. Larger-scale pilot setups can also be realized in coordination with your requirements.



# WHERE DRYING BECOMES AN EXPERIENCE

## ARE YOU A MANUFACTURER LOOKING FOR A BETTER DRYER?

Do you already process coated components and operate an existing cleaning or coating line, but are not satisfied with your current drying results?

Are surface quality issues occurring, or are drying times and energy consumption no longer economically viable?

Perhaps you are planning a process change – such as switching to aqueous cleaning or new coating systems – and are unsure whether our technology meets your requirements?

To answer these questions, our technical center is at your disposal. Together, we define the required drying conditions – after cleaning, during adherent water removal or within the coating drying process – and carry out targeted test trials. Based on these results, we develop the optimal solution for your process.

In many cases, drying times can be significantly reduced, processes stabilized and surface quality noticeably improved – even for demanding components and high-quality coating finishes.

## PLANNING SOMETHING NEW BUT NOT YET SURE HOW?

Are you planning to switch from alcohol-based to aqueous cleaning? Or will you be using exclusively water-based coatings in the future? Perhaps you intend to discontinue the use of solvent-based adhesives or introduce a completely new product?

Whatever your requirements may be, we are happy to support you. Identifying the optimal drying solution is our core expertise. During test trials, our engineers quickly determine which process configuration delivers the best drying results.

For particularly demanding products, we apply proven technical solutions and specialized approaches to achieve the optimal outcome.

## ARE YOU A SERVICE PROVIDER WITH A VARYING PRODUCT PORTFOLIO?

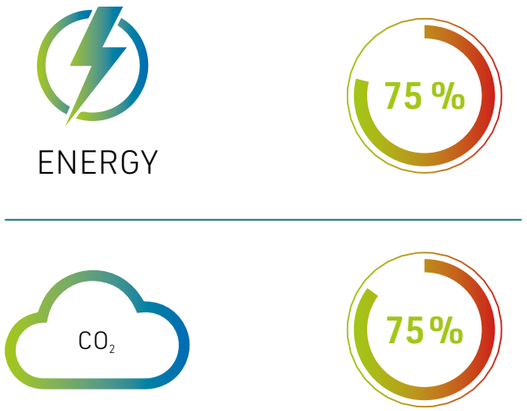
As a service provider in coating and surface treatment, you work with a wide variety of components, geometries and requirements. Future product variations are often difficult to predict. Our test trials are therefore specifically designed around the most demanding components and deliberately include a safety margin. This ensures that our drying solution reliably covers not only your current requirements, but also your future product portfolio.

# INCREASING PROFITABILITY THROUGH DRYING

Our Airgenex®paint dehumidification module offers not only ecological but also significant economic advantages:

- Improved product quality
- Increased process reliability
- Reduced operating costs
- Lower resource consumption
- Independence from fossil energy sources and climatic influences

## SAVINGS POTENTIAL




# ASSESS FUNDING OPPORTUNITIES

In many countries, funding programs are available to support investments in energy-efficient technologies.

Whether and to what extent funding is available for your project depends on location, application, and specific conditions, and should be carefully evaluated in advance. We are happy to support you with our experience in assessing your opportunities.

Our $CO_2$- and energy-efficient drying technology was recognized as a future-proof solution in the D-A-CH region as early as 2017. Since then, many of our customers have successfully applied for and received government funding. Explore your available funding opportunities.

*Regina Mader, Managing Director, Harter GmbH*



# ON THE SAFE SIDE LATER ON – OUR AFTER-SALES SERVICE

Do you want your drying system to consistently deliver optimal results for your product over the long term?

We provide the highest quality systems – and maintaining this performance is in your best interest. For this purpose, we offer a comprehensive service package.


## PERFORMANCE SERVICE

Unlock the full potential of your system.

As part of regular maintenance, our technicians inspect all system components for reliability and performance.
If required, key parameters are precisely adjusted to ensure that the full performance of your dryer is consistently maintained.

## COSTOM SERVICE

If requirements change.

Have components, formats or coating systems changed? Are you looking to reduce drying times, increase throughput or stabilize processes? Regardless of your objectives, our experienced team supports you in optimizing, modifying and upgrading existing drying systems.

## EXPERT SERVICE

Do you require technical support?

Is your dryer not performing as expected? For all urgent issues, our ASS team is your first point of contact. You will receive competent assistance from our technical support, including remote diagnostics with direct evaluation where necessary.

## LIFETIME SERVICE

To ensure consistent quality at all times.

Long-term, continuous operation inevitably leads to wear, even on high-quality components. We ensure high availability of spare and wear parts, enabling reliable production throughout the entire lifecycle of your drying system.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