SEPARATION FLEXIBLE MIXING AND DRYING

HELIX DRYER-TYPE GHD



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ENGINEERED SUCCESS

A high-performance contact dryer for your process

Crucial requirements in modern plants for the production of chemical or pharmaceutical agents are gentle and efficient drying, minimum product loss, high flexibility, contamination-free product handling, and cleaning validation.

The ANDRITZ helix dryer achieves efficient mixing of friable bulk goods but also of sticky pastes by using the helical mixer, a top-driven, central agitator. By heating the vessel wall, and optionally the mixer as well, the GHD (Gouda Helix Dryer) becomes a high-performance contact dryer for thermal solid/liquid separation at low temperatures and under vacuum. The steep vessel wall in combination with central product discharge at the bottom provides fast, easy emptying with minimum product retention.

A variety of different peripheral units, such as an integrated or top-mounted dust filter, isolation valves without dead spots for filling, discharge, and sampling, CIP spraying devices, as well as purge gas systems, are available to meet the most demanding requirments. ANDRITZ helix dryers are mainly operated as vacuum contact dryers, but sometimes also as reactors. The product range contains dryers for all sizes as well as mobile units for laboratory and pilot operation. With this wide product range, we accommodate individual demands and can offer tailor-made solutions.



Mechanical sealing









Application examples, helix dryer

MAIN APPLICATIONS

- APIs
- Antibiotics
- Amino acids
- Fine chemicals

- Food
- Pharmaceutical intermediates
- Agro chemicals
- Dyes, pigments
- Precious metal





Improved product handling

The ANDRITZ helix dryer with a helical mixer offers considerable advantages for gentle and efficient product handling. High thermal transfer, maximum product discharge, and fully automated cleaning have been improved in the latest ANDRITZ helix dryer generation, type GHD. Proven features and patents of the former Krauss-Maffei dryers have been implemented.

GENTLE PROCESSING

Constant lifting of the product at the vessel wall and continuous backflow into the center of the vessel provide efficient and, at the same time, gentle blending. The shear forces arising are minimal with this kind of mixing as the circumferential speed of the agitator is low. The variable speed drive allows maximum flexibility in order to optimize the process for different products.

HIGH THERMAL TRANSFER

The constant movement of the entire product along the heated vessel wall in combination with small clearance between the helical blade and the vessel wall assure high heat transfer to the product and reduce the risk of deposits building up.

PREVENTING LUMP FORMATION

The gentle blending characteristics of the agitator within the bulk product prevent agglomerates from forming. As a result, there is no 'snowball' effect. In any event, a chopper (dissolver) can be installed as an option if requested.

VACUUM CONTACT DRYING

The design makes use of all of the advantages of vacuum contact drying, such as low thermal load in the product, high thermal efficiency, safe processing of explosive substances, and simple solvent recovery.

OPTIMUM DISCHARGE OF PRODUCTS

A central outlet in the lowest section in combination with a steep vessel wall ensures almost complete product discharge by gravity while the mixer is running. In addition, the specially shaped helical coil is designed for minimum product retention throughout the agitator.

NO PRODUCT CONTAMINATION

The shaft seal (lip sealing or mechanical sealing) is located outside the product area so that no crosscontamination or extreme wear is possible. The drive and bearing assembly are completely separated from the process area.

FULLY AUTOMATIC CIP CLEANING

Spray devices in the vessel cover and at the internal fixtures ensure that all internal surfaces are cleaned properly with cleaning fluid.

FASTER FINAL DRYING

When drying down to the ppm range, a carrier gas can be introduced as an option through a special deodorizing nozzle directly above the product discharge.

FULL INSPECTION

Easy access via large manholes in the cover of large dryers. For small units, a hinged cover that can be opened fully, ensuring full and easy inspection of all parts wetted by the product, can be offered optionally.

SAMPLING

A piston valve is located in the lower area so that product samples can be taken during the drying process. The residual moisture can be analyzed in the customer's lab.

EASY MAINTENANCE

Little and easy maintenance as all components are accessible from the outside. Even the shaft seal of the mixer can be serviced without removing the drive unit.



Integrated vapor and dust filter





Flexible operation thanks to multiple design options

The dryer design has been enhanced in cooperation with renowned European pharmaceutical companies to best meet the demanding requirements of pharmaceutical and multi-purpose production plants.



The ANDRITZ helix dryer can be designed accordingly to meet your application needs and plant requirements. Besides special materials of construction, hightemperature and overpressure design, specific features are also available that help to process all kinds of product consistencies.

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Process advantages: Patented vessel design and optimized helical mixer

Do you want to increase your throughput? Or intensify your process? Or perhaps reduce your energy costs? Regardless of the demands placed on your production, we can help you lower your operating costs and improve your product quality.

OPTIMUM BLENDING

Areas with poor blending characteristics in the lower part of the vessel are eliminated by using a conical-conical vessel shape. The special agitator shape also allows the processing of products with poor rheological properties.

REDUCED CRUSTING

Compared to traditional helix dryers, the GHD series offers a shorter mixer shaft, providing a more robust design, which is helpful when mixing sticky products. Thus, clearance between the mixer and the vessel can be kept to a minimum.

MINIMUM PRODUCT RETENTION

The combination of a steeper vertical inclination of the helix blade as well as a 90° inclination towards the vessel allows the dried product to slide better off the helix blade during discharging – even products with strong bridgebuilding characteristics.

LESS SPACE REQUIRED

The overall height of the dryer is reduced significantly with the patented conical-conical vessel shape. Compared to conventional conical dryers, a height reduction of ~ 25% is achieved, which simplifies installation in rooms with limited space.

INCREASED HEAT TRANSFER AREA

As an option, the upper helix blade and the shaft can be heated to enlarge the overall heat transfer area and to avoid condensation on parts that are above the product filling level.

MIXING OF PASTY PRODUCTS

Installation of flow baffles or fast-rotating choppers in the lower area allow processing of pasty products.



Improved agitator design



Flexible and multi-purpose usage thanks to mobile helix dryers from ANDRITZ



Filling, transport, and product discharge with a mobile dryer

Separation processes require independent mechanical and thermal separation devices to achieve the best possible product quality. However, a lot of space is required when processing product batches like this in series. In addition, the transfer of product from one process step to the next results in product loss and a risk of contamination.

The benefit of using a mobile helix dryer is the flexible process set-up because the dryer can also be used as a transport vessel able to be used at different locations for feeding, drying, and discharge. As an option, the cover of mobile units can be supplied with a hinge in order to open the lid fully, which enables full inspection of all parts wetted by the product.

A typical process set-up is as follows: The mobile helix dryer is connected directly to the solids discharge of a peeler centrifuge. After charging the dryer, the closed vessel is moved on wheels or via fork-lift truck from the centrifuge to a central drying station. Here, the dryer is docked to the drive unit, the vacuum skid, and the heating/cooling unit. Due to the individually adjustable height of the dryer mounting frame, the product can be discharged directly into drums after drying. Mobile dryers are available up to a useful volume of 150 liters. Only mobile units can be designed with a hinged cover and a mounting frame.

MAIN ADVANTAGES

- Flexible operation Mobile design is available for fork-lift transport or for manual transportation on wheels.
 Filling, drying, discharging, and cleaning can be performed at different locations if so required by the plant layout.
- Product handling without contamination and losses The use of special containment docking systems prevents any contamination of the product or the environment. As the dryer can also be used as a transport vessel, product losses are reduced because fewer process steps and less equipment are needed.
- Full inspection
 Simple and full inspection
 of all parts in contact with
 the product is possible if the
 hinged-cover design is chosen.
 can also be bolted to the vessel.



Turn-key solutions to reduce interfaces and clients' costs

ANDRITZ sizes and delivers all peripheral units that are necessary to operate ANDRITZ helix dryers, such as vacuum skids, heating/cooling units, and solids handling systems, in a modular design. As ANDRITZ can provide complete solution packages for mechanical and thermal separation tasks, the engineering costs incurred by our clients are reduced, and the time needed for installation and commissioning is shortened by reducing avoiding the number of interfaces. ANDRITZ is your single contact for the entire system.



Process automation to increase performance

Sophistication in process engineering requires perfection in process automation. The superior performance of our process equipment is based on perfecting the interface between equipment hard- and software, electrical components, programming, and process know-how to create an all-encompassing, customtailored solution. By using intelligent sensors and state-of-the-art communication systems, we control and monitor our machines on a result-oriented basis.

AUTOMATION OF MACHINES

We provide full automation for our dryers and their peripherals. The local control system is able to communicate with the DCS of the site. Integrated modem access ensures fast support from our automation experts if support or advice is needed. A graphic operator panel ensures easy dryer operation and provides a chart showing all process parameters for the previous batches.

SERVICES

Based on your quality assurance program, we prepare all the required documents for validation and qualification of the automation software and hardware. Our extensive know-how, profound experience, and innovative drive qualify us as your partner for equipment to meet your production needs.

Machinery directives, ATEX, and hazardous area requirements – there are many regulations to be met at your site. We are there to serve as your knowledgeable advisor for the safety of your plant.

MAIN ADVANTAGES

- Enhanced equipment performance
- Consistent, high product quality
- Safe operation
- Optional status diagnostics





Full automation





ANDRITZ Gouda pilot plant for reliable upscaling

Determining new process technology viability and success.

A unique feature and part of ANDRITZ Gouda's R&D program is the pilot plant. The pilot plant is a valuable test center for simulating production processes with a view to testing or optimization of a process before implementation. The pilot plant is also used to investigate the feasibility of a desired process. Combined with state-of-the-art manufacturing technologies, ANDRITZ Gouda offers an integrated approach for the setup of processing lines, contributing to significant cost saving (for the customer) on the production process. ANDRITZ Gouda has several pilot plants available to test new materials, generate design data, and provide representative product samples. The proven calculation model for scaling up to industrial size ensures successful application in real-life processing.





Dimensions and models

The following dryer models are available to cover a wide range, from lab equipment to pilot units to industrial machines.



HELIX DRYER TYPE GHD

	Size (liter)	Diameter [m]	Height [m]	Heating surface [m²]	Drive power** [kw]	Weight [kg]
Pilot*	8	0,40	N/A	0.16	0.35	120
	50	0,68	N/A	0.56	1.5	600
	100	0,90	N/A	0.84	2.2	800
	150	1.00	N/A	1.11	3	1,000
Industrial	200	1.10	0.65	1.41	3	1,100
	300	1.20	1.05	1.75	5.5	1,200
	500	1.40	1.25	2.53	7.5	2,100
	800	1.60	1.42	3.46	9	2,500
	1,000	1.75	1.50	4.1	11	2,800
	1,500	1.95	1.55	5.41	15	3,000
	2,000	2.10	1.60	6.61	18.5	3,300
	3,000	2.40	1.60	8.55	30	4,800
	4,000	2.60	1.78	10.2	37	6,300
	6,000	2.90	2.00	13.4	55	7,300
	8,000	2.90	2.00	16.3	75	8,200
	10,000	2.90	2.00	19.3	90	9,400

*) available in mobile and stationary design

**) heavy duty range available onto request

Please note: All stated data are just an idication and might change project specificly





full-service provider

ANDRITZ

With ANDRITZ Separation, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation systems, including such well-known brands as 3Sys Technologies, Bird, Delkor Capital Equipment (Pty) Ltd., Escher Wyss dryers, Frautech, Guinard Centrifugation, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters, Lenser, Netzsch Filtration, Rittershaus & Blecher, Royal GMF Gouda, Sprout Bauer, and Vandenbroek.

Whether you need spare parts, rentals, local service, repairs, upgrades, or modernization of your equipment, ANDRITZ Separation is your true full-service provider. From initial consulting through to service agreements, process optimization, and training programs, we are always looking for ways to minimize downtime and increase predictability in operations while raising your overall production efficiency. Wherever you operate, our network of 550 service specialists and global service centers ensures we'll always be there to support you for many life cycles to come. Let's sit down and see how we could take your operations to the next level.



LOCAL SUPPORT Responsive local service centers and field service technicians



REPAIRS & UPGRADES Optimization of machine and process performance, repair work, retrofitting, and modernization



OEM SPARE PARTS Filter cloths, spare and wear parts from OEMs or with OEM level quality, all readily available



SERVICE AGREEMENTS Preventive maintenance, contracts for spare parts, maintenance, inspections, repairs, upgrades, operation, and equipment monitoring 45

SECOND-HAND & RENTALS Certified second-hand and rental machines



PROCESS OPTIMIZATION Automation tools and process expertise to boost your profit



Operator training and tailored seminars for operating and maintenance personnel



LAB AND ON-SITE TESTS Lab and testing capabilities for process optimization and machine upgrades





WHAT'S YOUR SEPARATION CHALLENGE?

ANDRITZ Separation is the world's leading separation specialist with the broadest technology portfolio and more than 2,000 specialists in 40 countries. For more than 150 years, we have been a driving force in the evolution of separation solutions and services for industries ranging from environment to food, chemicals, and mining & minerals. As the OEM for many of the world's leading brands, we have the solutions and services to transform your business to meet tomorrow's changing demands – wherever you are and whatever your separation challenge. **Ask your separation specialist!**

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