



**ANDRITZ Gouda disc pastillator**  
Uniform free-flowing pastilles

# History

## Developed to meet demands

The ANDRITZ Gouda disc pastillator offers all the features you have requested.

### CONTENTS

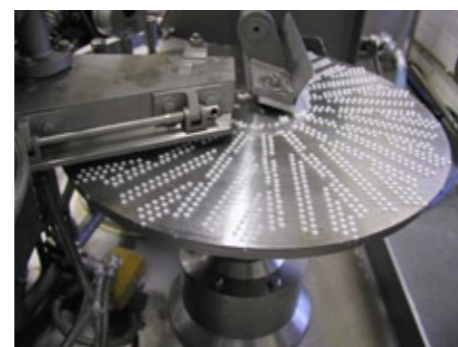
History	02
The process	03
The patented disc pastillator	04
Machine description and options	06
Applications	12
ANDRITZ Gouda pilot plant	14
Worldwide service 24/7	16
Dimensions	18



▲ Disc pastillator, type DP20/2

ANDRITZ Gouda began development of its disc pastillator in the early 1990s, to meet industry's repeated demands for a machine able to make solid pastilles from molten products. The design brief was rigorous. The machine should be equipped with a closed cooling system. This would eliminate the detrimental effect of water or other coolant vapor in the processing environment – as well as the risk of coolant pollution.

Gas-tight construction would be required: the facility to inertize the process using gas would prevent product oxidization and guarantee quality. Size was an important

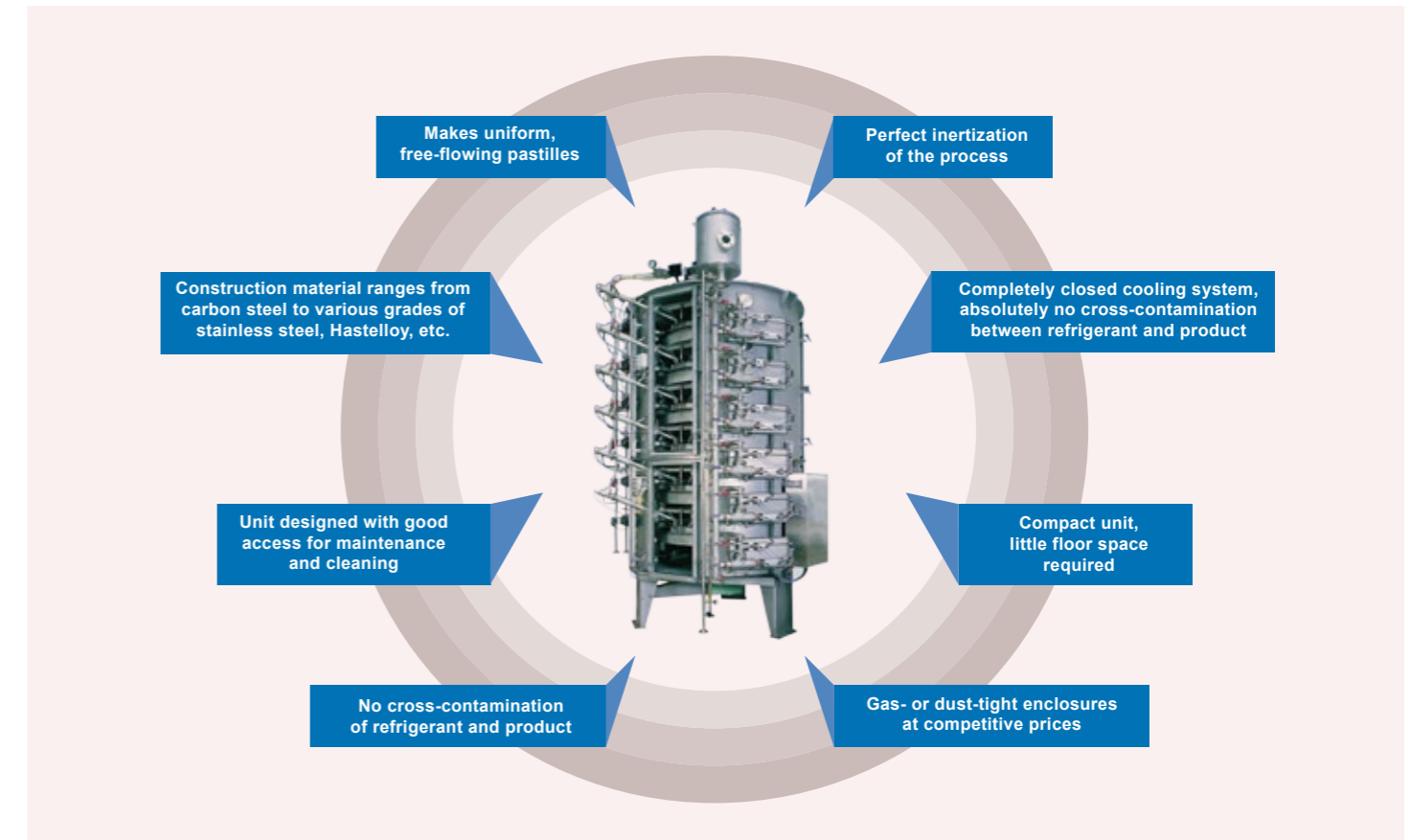


consideration too. In some cases, the pastillator would be replacing flaking machines in existing production lines, so floor space would be limited. The result is everything you have requested: the ANDRITZ Gouda disc pastillator.

# The process

## Uniform, free-flowing pastilles

Each disc is provided with a pneumatically operated dosing unit.



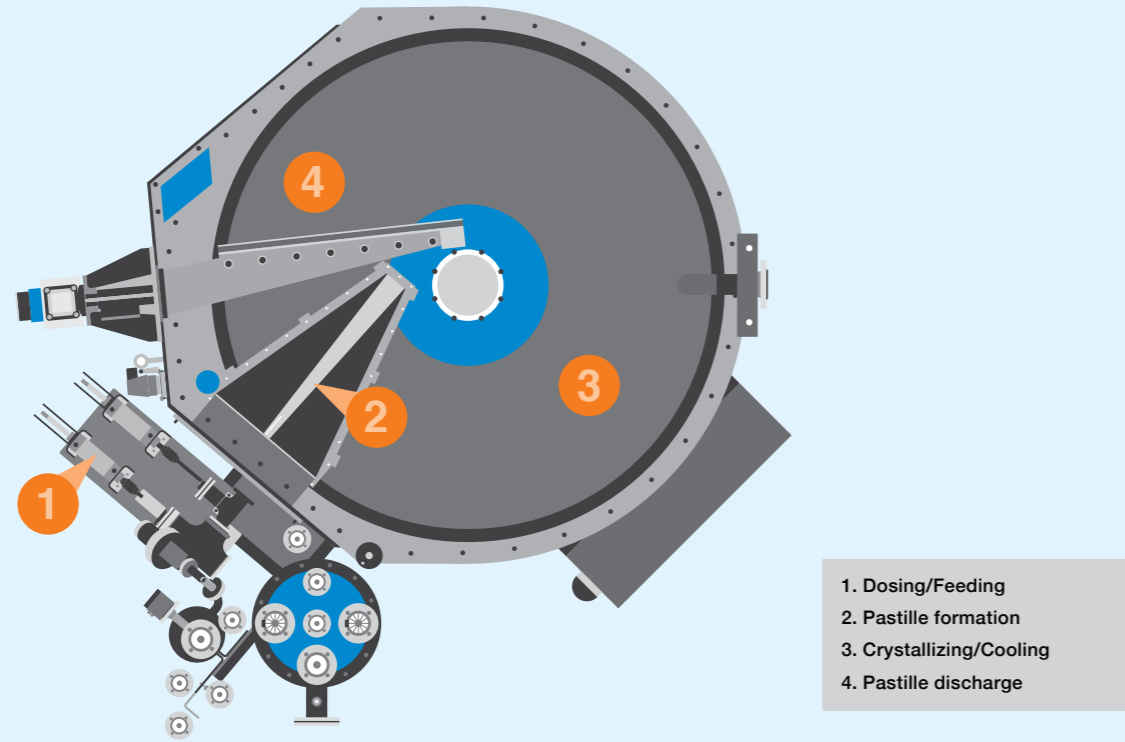
The ANDRITZ Gouda disc pastillator enables processing of molten products into excellent quality pastilles. A unique feeding system for the molten product provides for the uniform, free-flowing characteristics of the pastille product. The molten product is dosed via a stationary dosing head placing droplets onto an intermittent rotating disc. The moment the product touches the disc, it starts to solidify. The process of dosing, pastillating, and solidifying is completed in less than one rotation of the disc. The process results in easily transportable pastilles, uniform in shape and quality.



# The patented disc pastillator

## How it works

The molten product is solidified on a cooled disc and converted into pastilles.



The disc pastillator consists of one or more horizontal jacketed discs, depending on the required capacity. A hollow, vertically driven shaft connects the cooling discs. Rotation of the shaft, and consequently the circumferential speed of the discs, is infinitely adjustable by a variable speed drive.

As drops are fed onto the cooling disc, synchronization is achieved between disc and feed system to provide for perfect shaping of the pastilles. A heavy-duty holder contains an assortment of knives for removing the pastilles.

Refrigerant feeds and discharges in a closed circuit via a single central rotary joint connected to the hollow shaft. A constant temperature from the inner diameter of the discs is ensured by a counter-rotating flow pattern in the water coolant. Molten product is processed through a feeding device designed to create the pastilles: size and quantity are determined by the number and type of dosing nozzles selected.

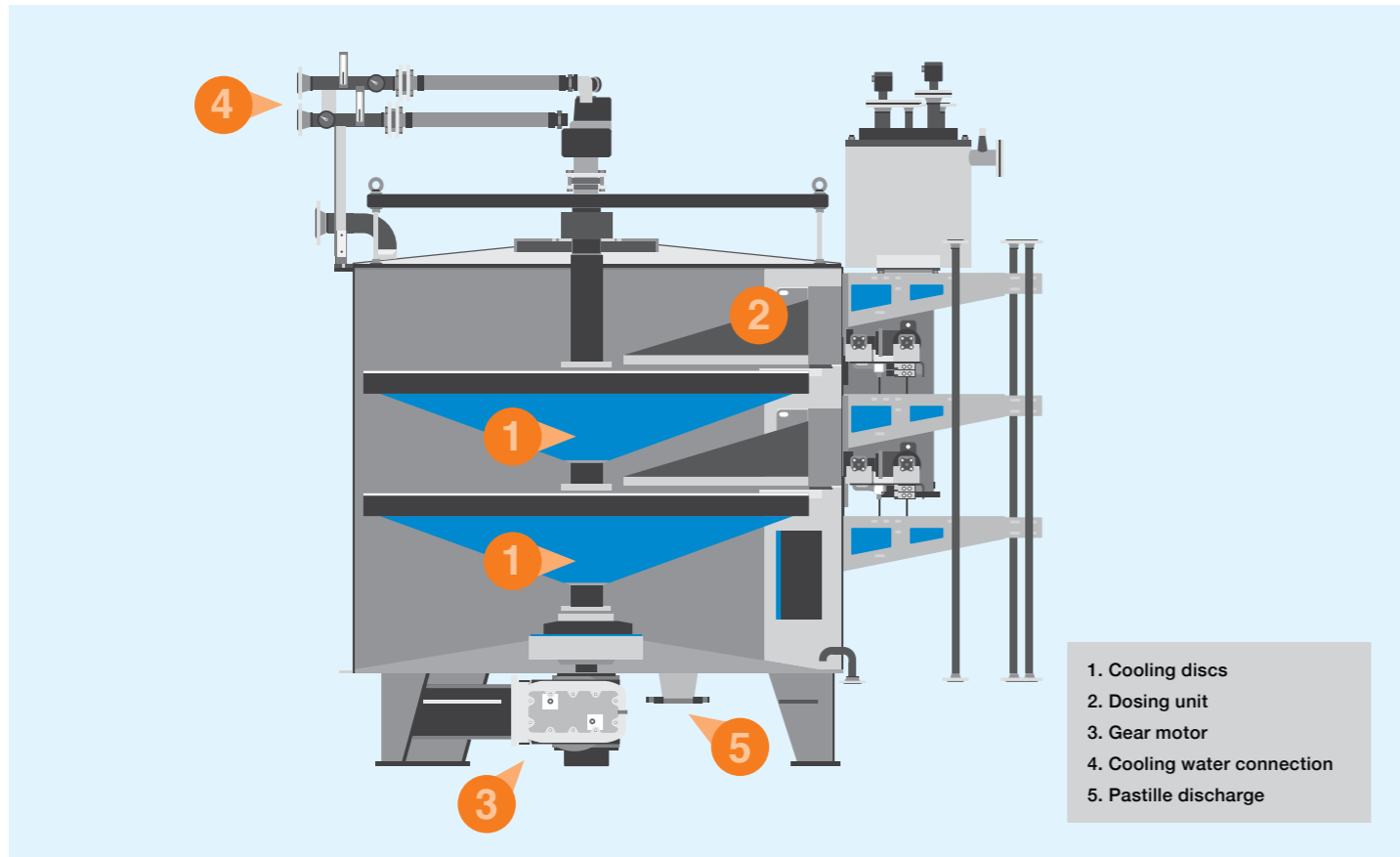
The disc pastillator's discs are housed in a casing in a modular design. Each module consists of two discs. A disc pastillator can be built with a maximum of three modules (six discs). Each cooling disc is provided with a feeding device for the melt and a scraper system for the pastilles.



# Machine description and options

## Product feed and vapor removal

ANDRITZ Gouda supplies a number of specialty machines for special situations.



1. Cooling discs
2. Dosing unit
3. Gear motor
4. Cooling water connection
5. Pastille discharge

Each disc is provided with a pneumatically operated dosing unit that exactly meters the amount of product for each charge of pastilles. The molten product is fed to the dosing unit(s) by means of a double-walled flexible hose. The flow direction is controlled by two valves. The amount of product per charge is set by the manually adjustable stroke of the pneumatic cylinders.

Air and vapor trapped in the dosing head have a negative effect on the uniformity of the pastillating process. For this reason, the machine is equipped with an automatic vapor removal system. The basis consists of a collection pipe in which a vacuum can

be created by means of an ejector. A liquid sensor detects the presence of vapor in the dosing head and a pneumatic ball valve opens the connection to the collection pipe. A sight glass is provided for visual checking. The complete system is suitable for heating so that molten product removed with the extracted vapor is collected in molten state at the bottom of the pipe. A level switch signals when this molten product has to be removed from this pipe. Estimated discharge is less than 10 liters per day.



### Dosing head

The dosing head receives the molten product from the dosing unit. It consists of a heated, circle-segment shaped container containing a nozzle plate with nozzles at a triangular pitch. Each nozzle creates a drop on the cooling disc, and each drop turns into a pastille.

The main factors for the pastille shape are the product properties, the feed and coolant temperature, and the amount of dosed product. The top of the dosing head is provided with glass wool insulation and covered with a plate



### Cooling system

The cooling system comprises the above mentioned number of discs. Each cooling disc is welded onto a modular piece of a shaft and is especially designed for maximum form stability.

The cooling medium supply and return are connected via flexible hoses to the rotary connection on top of the shaft. The two helical, counter-flowing cooling circuits of the disc are connected to the hollow shaft by means of flexible hoses and ensure equal heat transfer over the entire disc surface. The disc modules interconnect with flanges. The total shaft is positioned in radial (top) and radial-axial (bottom) grease lubricated bearings. The vertical position of the shaft can be changed to set the distance between nozzles and disc surface.

The cooling surface of the disc can be coated with different types of coatings, such as PTFE to lower the adhesion of pastilles to the disc surface and create thicker pastilles.



### Scraper system

The scraper system is used to scrape the pastilles off the disc. The pastilles are removed from the disc by a knife, which is clamped in a heavy-duty knife holder. Due to the position of the knife relative to the disc, the pastilles are moved to the disc's outside rim.

Knife pressure is effected by means of a pneumatic rotary actuator and controlled from the pneumatic cabinet.

# Machine description and options

## Product feed and vapor removal

### Machine casing

The disc pastillator can be shipped and installed as fully assembled modules thanks to the design of the casing. The basic module provides space for a maximum of two discs, and has a welded base and removable cover. It can be expanded by means of two additional modules, each of which holds two discs. Each module is provided with a door for easy access to the knife and is equipped with viewing windows as well as a small sight glass for each disc on the dosing head side. An exhaust gas flange is mounted on the cover. A separate flange is provided at the bottom for draining off cleaning fluid. The casing is suitable for inert gas blanketing.



### Pastille discharge

The pastilles fall from the disc(s) into a chute system that collects all the pastilles at the flanged outlet at the bottom of the machine. The main chute is integrated into the machine casing.



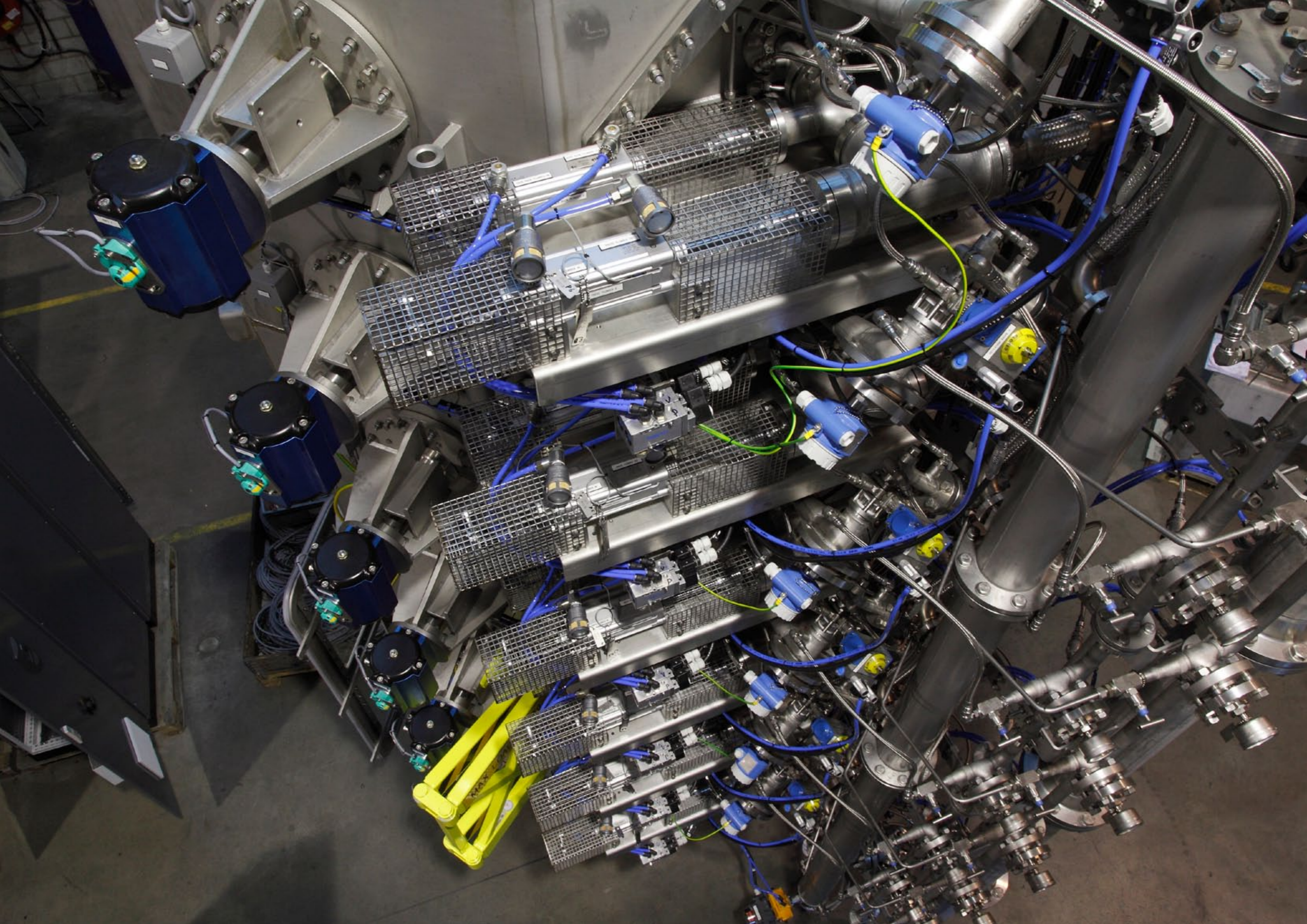
### Variable-speed drive unit

The shaft with the cooling disc(s) is driven by an electric geared motor. The drive unit is located at the bottom of the machine, outside the process environment. The motor is operated in an intermittent mode. In this way, the shaft rotates in stages. When the unit is at a standstill, the product is dispensed to the disc(s). Using an encoder, the dedicated frequency converter, and the PLC, the rotation and the speed of the rotation is controlled to match the desired pastilling process.

▲ Modular machine casing

Simple stationary feeding head, resulting in perfectly shaped pastilles ►

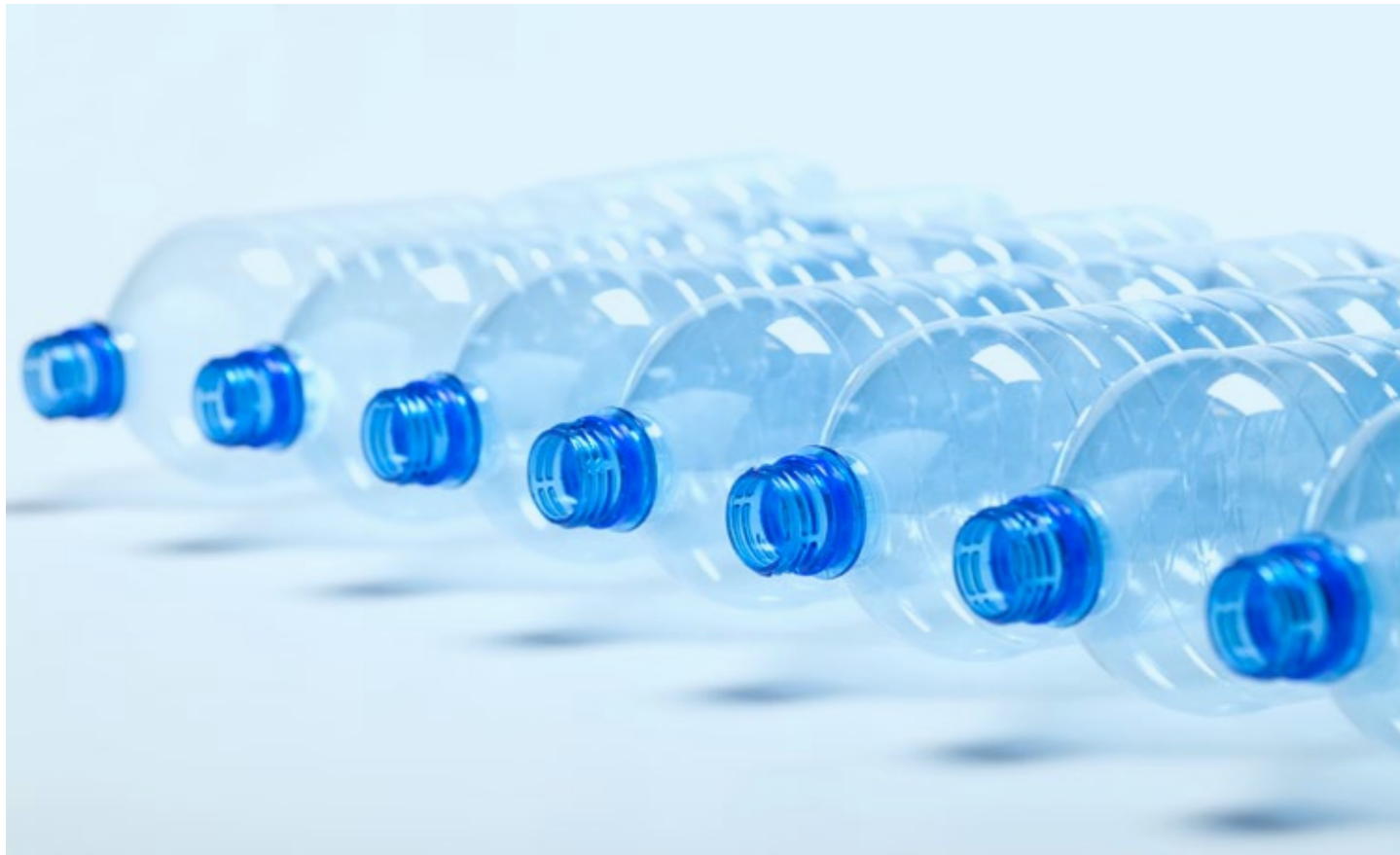




# Applications

## Fine chemicals

Your time is important, just like your equipment selection. Finding the right machine, with the reliability and the features you need, has an impact on your profitability.



The main demands set by the chemical industry to suppliers of equipment are a high safety standard, maximum plant operating time, the economic use of energy, and competence in problem solving. The ANDRITZ Gouda disc pastillator can be used for solidification and flaking of various fine chemicals. For industrial implementation, some product properties must be investigated under real process conditions. This can be arranged in our pilot plant. Over the years, ANDRITZ Gouda has obtained knowledge on treatment of different chemical applications. Do not hesitate to contact us if your application is not in the list. Feasibility tests can usually be executed at short notice.

**These (fine) chemical applications can be processed on the disc pastillator**

- Wax
- Caprolactam
- NaHs
- Maleic anhydride
- Sterol
- Bisphenol

# Pharmaceutical industry

Several concepts to choose from depending on the upstream processes and potential pollutants to be filtered out, including tailored solutions for industrial applications

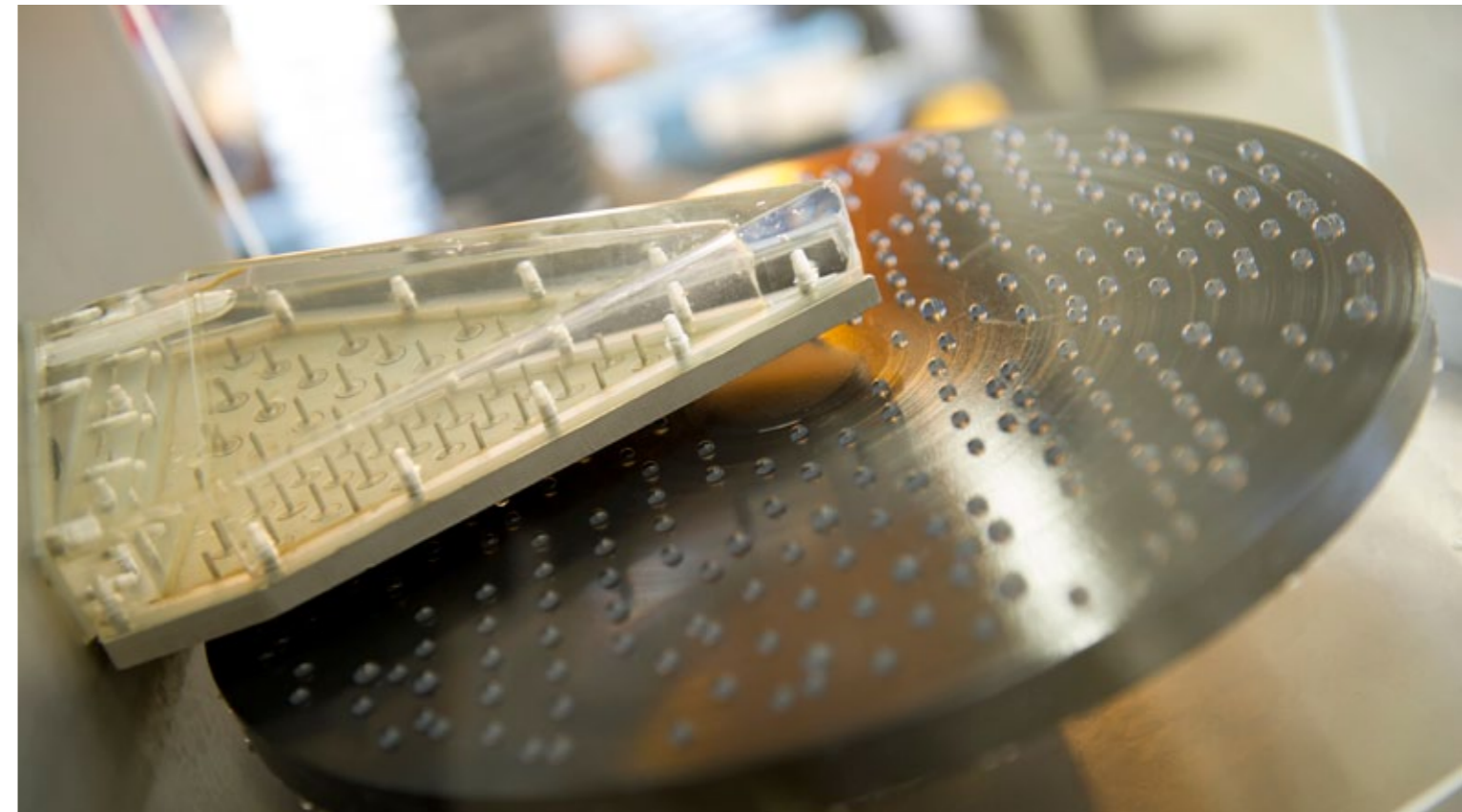


ANDRITZ Gouda's experienced sales and engineering specialists recognize a number of very important factors in supplying solidifying solutions – no two pharmaceutical applications are the same; all application requirements are unique; and the last thing you need is a "standard" solution. ANDRITZ Gouda application solutions are successful because of our understanding of the specific demands and requirements of the pharmaceutical industry.

**These pharmaceutical applications can be processed on the disc pastillator**

- Stearate
- Soaps





▲ Test in our pilot plant

## ANDRITZ Gouda pilot plant: A valuable test center

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 set-up of processing lines, contributing to significant cost saving (for the customer) in the production process.

ANDRITZ Gouda can conduct three different kinds of tests:

**Feasibility test:**

Requires a small amount of product to determine its "pastillability".

**Bench-scale test:**

Requires approximately one kg of product on a bench-scale disc pastillator to determine flake behavior and produce a small sample.

**Pilot plant test:**

Requires approximately 100 kg of product to determine a guaranteed capacity and process parameters on a pilot plant disc pastillator.



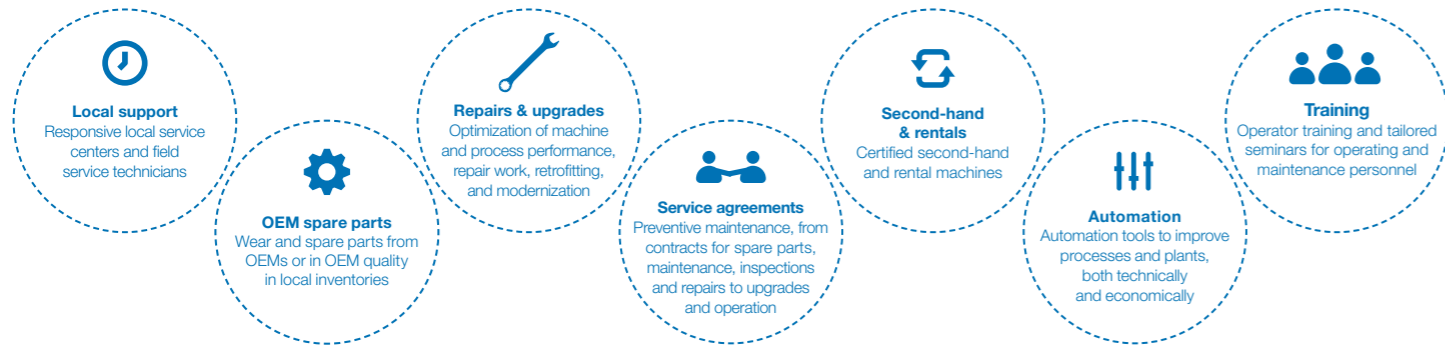
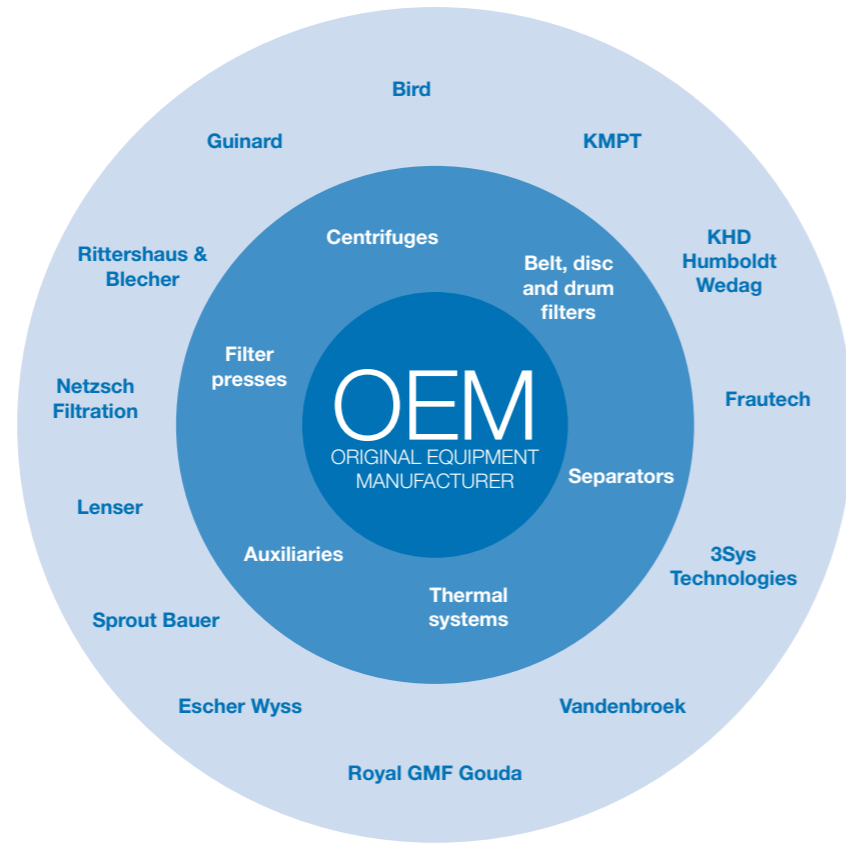
◀ Pilot disc pastillator



# A world of service

Put our 150 years of OEM experience to work for you

With ANDRITZ SEPARATION, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation systems, including such well-known names as Bird, KHD, Guinard and more. From initial consulting through to service agreements, plant optimization, automation, 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.

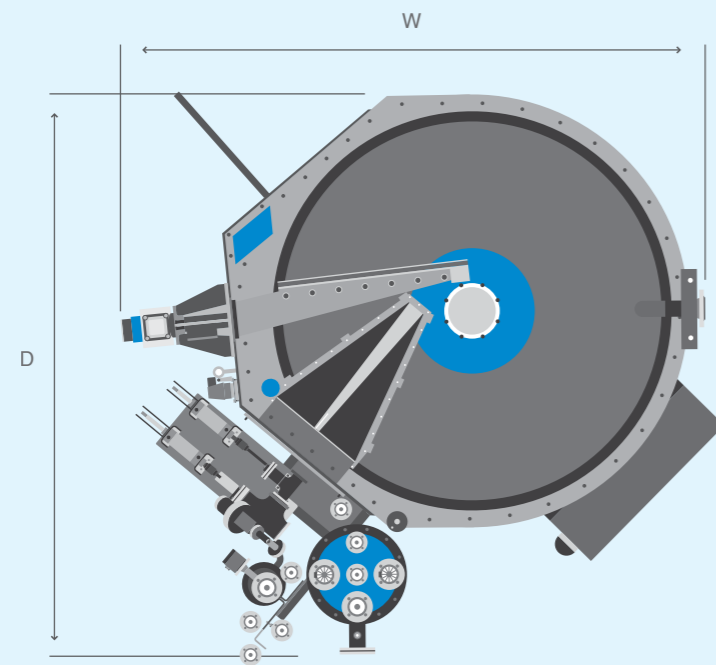


Installing a disc pastillator ▶

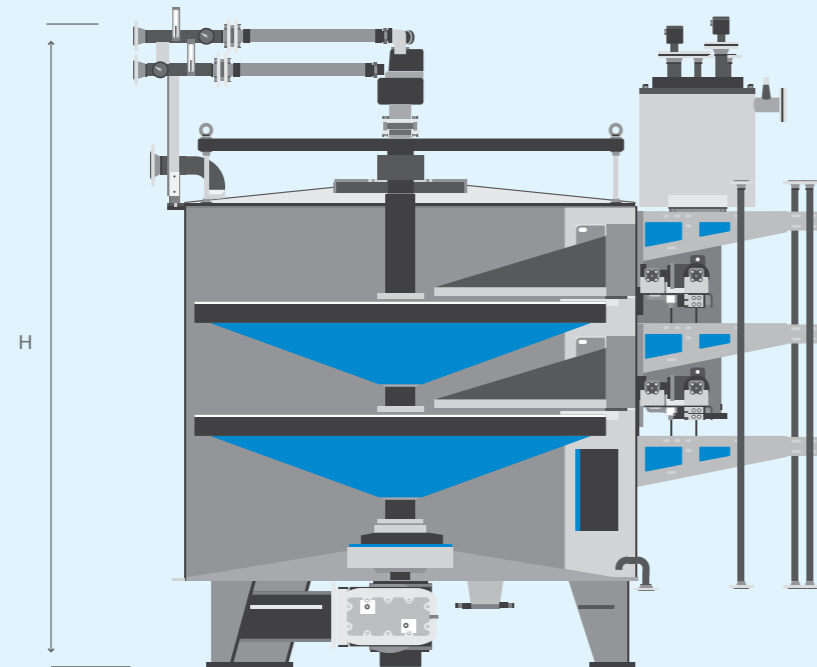


# Dimensions

The disc pastillator is a compact machine that requires little floor space and can, therefore, be placed almost anywhere.



Top view



Side view

TYPE OF DISC PASTILLATOR		20/1	20/2	20/3	20/4	20/5	20/6
Number of discs	-	1	2	3	4	5	6
Total disc surface	m <sup>2</sup>	3	6	9	12	15	18
Width (W)	m	3.1	3.1	3.1	3.1	3.1	3.1
Depth (D)	m	3.0	3.0	3.0	3.0	3.0	3.0
Height (H)	m	3.7	3.7	4.8	4.8	5.9	5.9
Drive power	kW	1.5	2.2	2.2	3	4	4
Weight for foundation	ton	3.9	4.9	6.6	7.6	9.3	10.2
Shipping weight	ton	3.8	4.7	6.3	7.2	8.8	9.7
Shipping volume	m <sup>3</sup>	28	28	37	37	48	48

## ANDRITZ Gouda

ANDRITZ Gouda has been implementing complete process solutions for the environmental, chemical, and food industries for over 100 years. As a machine manufacturer as well as process solutions expert, ANDRITZ Gouda is able to handle all of the stages involved in designing and building plants, including engineering, service, installation, and commissioning.

ANDRITZ Gouda, as part of the international ANDRITZ GROUP, 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 full-scale processing.



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