



FEED & BIOFUEL

EXCEPTIONAL PRODUCT QUALITY

BATCH COATER

ANDRITZ

ENGINEERED SUCCESS

Batch coating system with or without vacuum

For years, vertical mixers provided gentle mixing of feed ingredients. Now, ANDRITZ is adapting vertical mixing to coating technology with or without vacuum.

The low energy input of vertical units ensures that mixing occurs without shearing. Most importantly, the concept of mixing using a vertical transport screw allows all of the product to be exposed over time at the top of the mixing vessel. This product exposure provides the ideal medium for uniform application of liquids or powders.

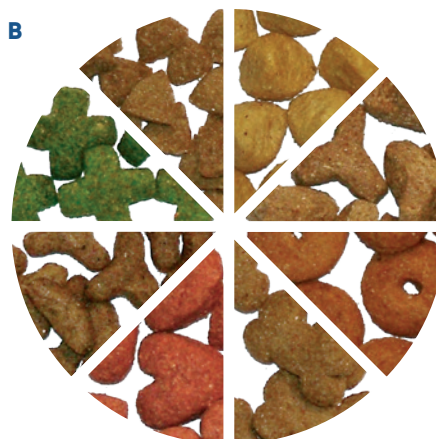
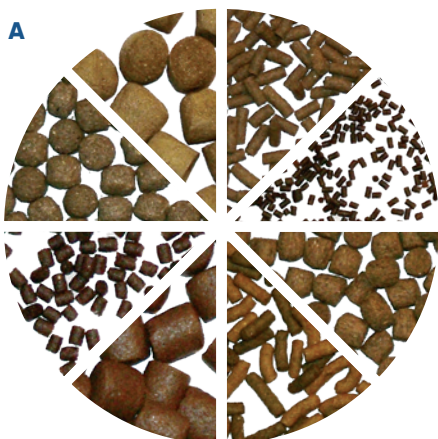
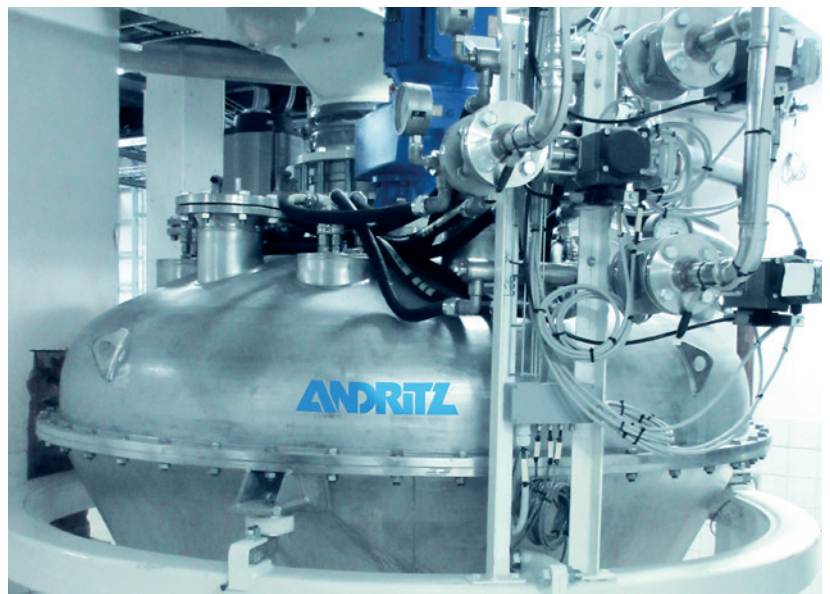
ANDRITZ provides a new tool for extruded product manufacturers, a tool that:

- affords simultaneous cost reduction and quality enhancement,
- potentially opens the door to the production of entirely new categories of products in the future.

The aqua feed industry has used vacuum coating for several years, but has had problems maintaining performance levels with conventional coaters. The future will require high-energy products based on protein sources with poor liquid absorption properties. This, coupled with the

addition of microliquids places stringent demands on tomorrow's vacuum coating systems.

The pet food industry currently utilizes a wide variety of externally applied liquids and powders. Drum coating systems fulfil the normal requirements, however several benefits can be achieved with vacuum coating that are not possible with atmospheric coating.

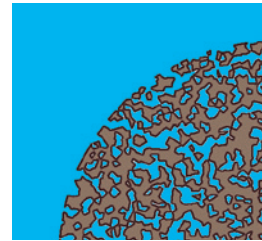
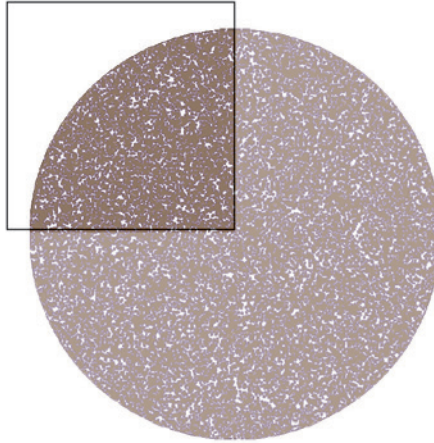


A High-performance aquatic feed
B High-performance pet food.

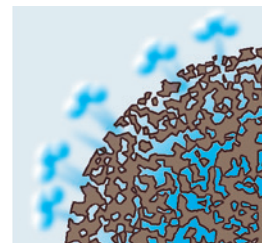
The vacuum coating process for aquatic feed and pet food

Extruded pellets have a very porous inner structure. The liquid added is retained within the pores of this internal structure. The object of vacuum coating is to use a pressure differential to force liquids through the outer layer and deeply into the porous area of the pellet.

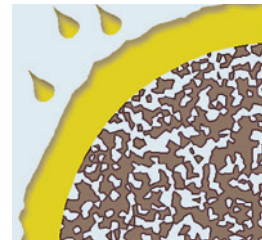
The system provides accurate control of the vacuum pressure, liquid addition, and cycle time to allow flexibility and reproducibility in terms of degree of absorption and penetration.



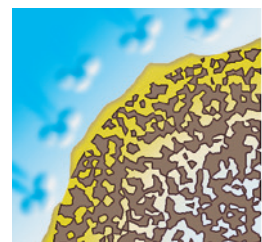
Dried product 1,015 mbar



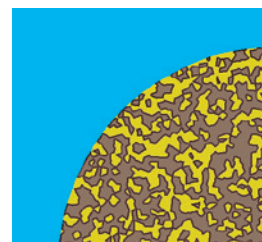
Air evacuation 500 mbar



Coating 50 mbar



Liquid absorption 500 mbar

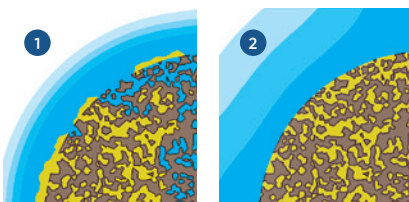


Final product 1,015 mbar

VACUUM PRESSURE RELEASE

Vacuum pressure release must be controlled according to the amount of liquid to be added. With high coating levels, an extended pressure release time is required, often as long as 180 seconds.

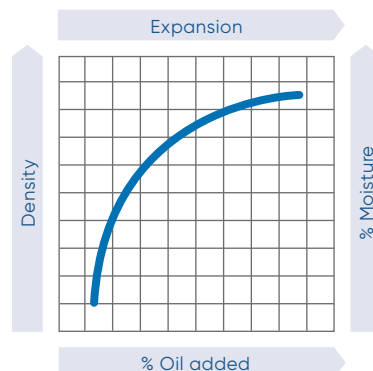
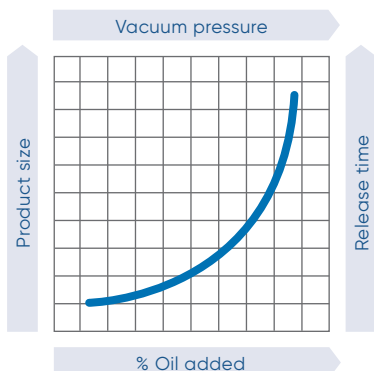
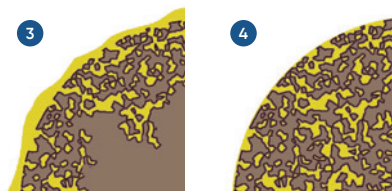
- 1 Short pressure release time of 30 seconds. Air penetrates the product, resulting in poor absorption properties.
- 2 Long pressure release time of 180 seconds, where the liquid is slowly forced into the center of the product.



PRODUCT CHARACTERISTICS

Product characteristics must be adjusted according to the required amount of liquid to be added. Degree of expansion as well as moisture levels must be controlled.

- 3 Poor absorption properties occur due to insufficient expansion and too high moisture level.
- 4 Good absorption properties because there is sufficient porous area to contain the coating liquid.



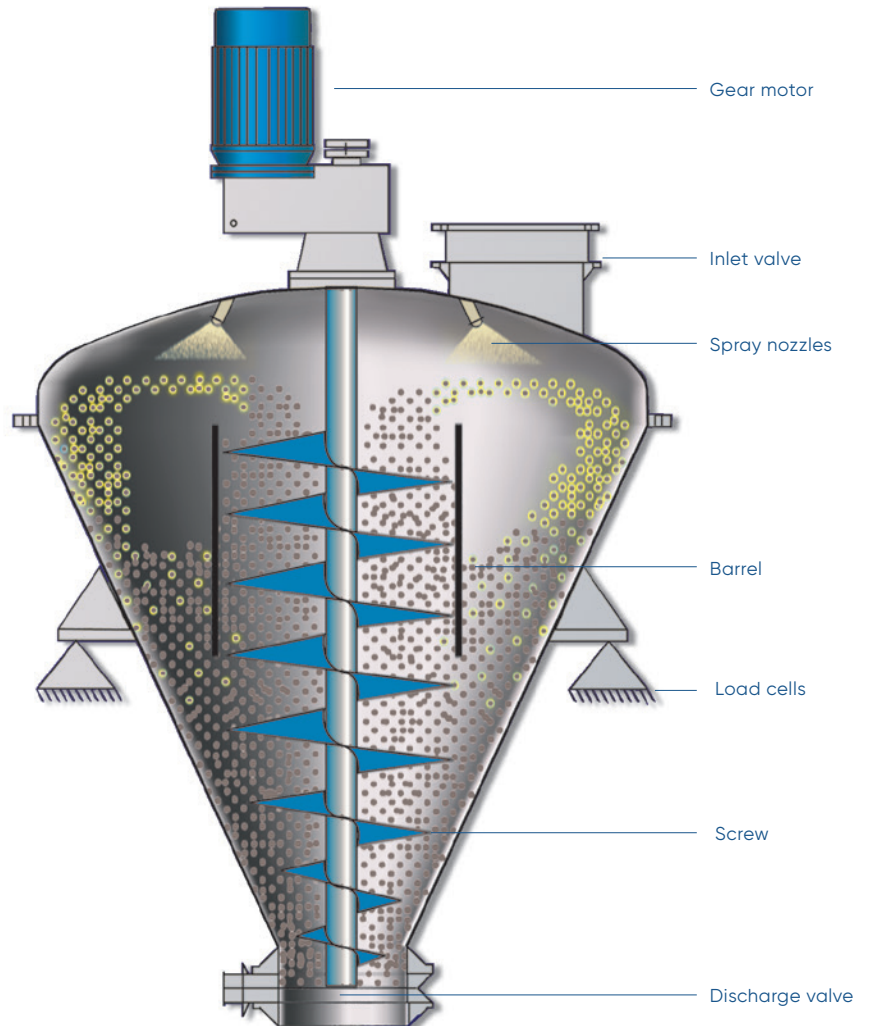
Unique design provides excellent results

Gentle agitation avoids damage to your product, regardless of its shape.

The product is conveyed gently in vertical direction by the screw and dispersed on top of the barrel in a thin, spherically shaped layer and exposed to the hexagonal pattern from 6 flat fan spray nozzles, which secure a uniform distribution of liquids to the pellets and covering 360 degrees ensuring a completely uniform coating. The conical shape and pitch design of the screw provides efficient circulation of the pellets during coating.

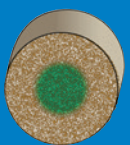
BENEFITS OF VACUUM COATING SYSTEM

- High levels of liquid addition
 - Up to 30% of dry matter weight
- High spraying efficiency
 - Addition of microliquids
- Gentle product handling
 - No dust created
- Vacuum pressure
 - Suitable for 50 mbar
- Flexibility
 - Large batch size
 - Prepared for capacity scale-up

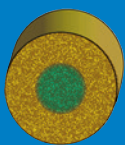


BENEFITS OF VACUUM COATING TECHNOLOGY

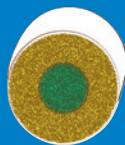
- Improved absorption
- Improved palatability index
- Improved nutrient values



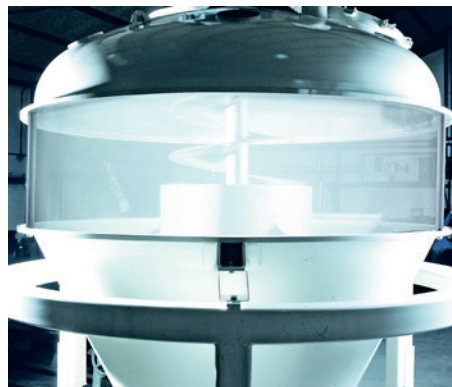
Pigment/F.A.A
50 mbar



Oil/Fat
300 mbar



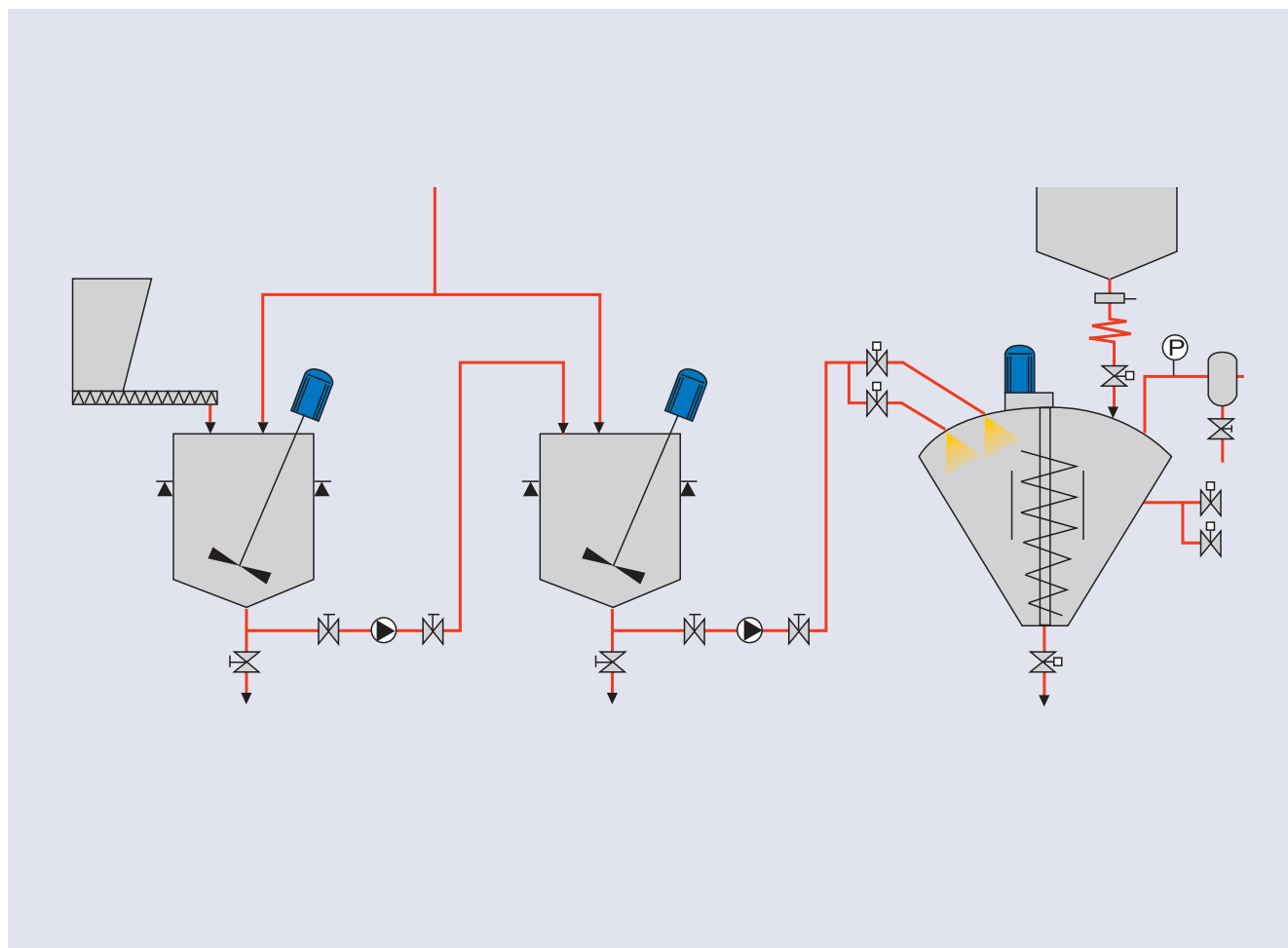
Flavor/Tallow
1,015 mbar



SCALE UP

Easy coater capacity scale-up because all features, i.e. motor, valves, and spraying system, have been prepared for this.

Specifications of batch coaters



Engineering and project management
ANDRITZ has more than 100 years of experience in the feed and food industries and can provide engineering support and proposals for installation of the vacuum coater.

ANDRITZ also offers a wide variety of concepts for application of special liquids, such as:

- Pigmentation/colors
- Medication
- Flavors
- Various top coatings

TECHNICAL DATA

Coater type		VAC1500-C
Batch size	liters	3400
Motor size	kW	22
Height	mm	4120
Diameter	mm	2400
Total weight	kg	2800

OPTIONS

- CIP cleaning
- All stainless steel

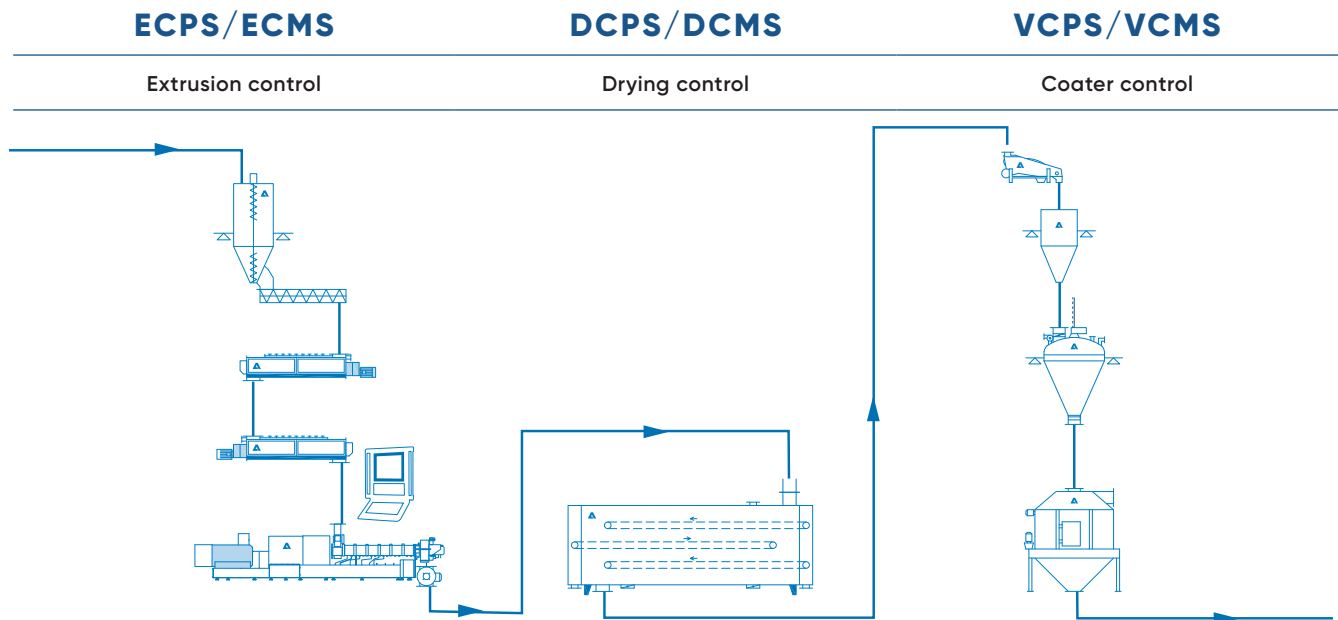
Features of the batch coater



- A** Inspection door hinged for quick opening provides easy access to coater.
- B** Spray nozzles with easy access from the outside of the coater. Optional air cleaning of nozzles is standard on the ANDRITZ vacuum coater.
- C** Gear motor with built-in bearing and seal ensures low maintenance.
- D** Liquid manifolds ensure even distribution of the liquid to the nozzles independently of the flow rate.
- E** Batch coater in stainless steel
- F** Discharge valve as slide gate driven by pneumatic cylinders is fast-acting and leak-free.



Control systems for each stage of the processing line



PROCESS CONTROL SYSTEMS

Type	Extruder	Dryer	Coater	Touch control panel system	PC remote management system
Basic	ECPS	DCPS	VCPS	x	
Extended	ECMS	DCMS	VCMS	x	x

BASIC FUNCTION CONTROL

Stand-alone control system

- Extruder – ECPS;
Extruder control panel system
- Dryer – DCPS;
Dryer control panel system
- Coater – VCPS;
Coater control panel system

FUNCTIONS

- Basic functions
- Basic operation of equipment
- Manual settings/readings

EXTENDED FUNCTION CONTROL

Client server-based control system

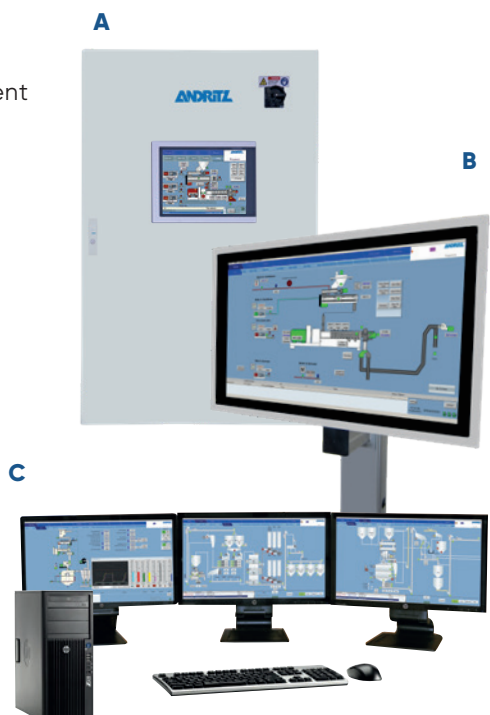
- Extruder – ECMS;
Extruder control management system
- Dryer – DCMS;
Dryer control management system

- Coater – VCMS;
Coater control management system

FUNCTIONS

- Extended remote control
- Fully automatic control
- Total traceability
- Auto start/stop feature
- Production management
- Database
- Recipe logging
- Remote online support

- A** Touch control panel system
- B** Server installation for control room
- C** Touch client for field installation





GLOBAL SUPPLIER – LOCAL PRESENCE

ANDRITZ Feed & Biofuel is truly a global organization – with local presence. We are represented all over the world. The global market is served from five main locations: Denmark, China, Netherlands, USA, and Slovakia.

In addition, ANDRITZ Feed & Biofuel operates from several strategic regional sales, engineering, and service locations in Australia, Bangladesh, Brazil, Canada, Chile, Dubai, France, Germany, India, Italy, Mexico, Poland, South Africa, Thailand, Turkey, the UK and Vietnam – and is also represented locally by agents and distributors in many other markets.

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