REFINEMENT

BY SPRAYING AND COATING

AMANDUS KAHL ACCOMPANIES YOU

on your way to the right decision

When it comes to adding ingredients to products, machines from AMANDUS KAHL offer different possibilities.

Why are products refined? This may have different reasons. Sometimes a very thin protective layer is to be applied to the end products after cooling. In other cases, a particularly glossy or even coloured surface is desired to make the product look interesting or tasty. Quite often, however, the focus is on another reason, i.e. the application or incorporation of essential ingredients onto and into the end product.

With the KAHL Rotospray, different substances can be applied to the product surface, be it for sealing, optical improvement or to increase the nutritional value.

With the vacuum coater, AMANDUS KAHL has launched on the market a machine that is unique in its mode of operation. It offers the possibility to incorporate oils, enzymes, vitamins and many other substances into the product by means of a vacuum.

For more than 140 years, AMANDUS KAHL has stood for quality, robustness and energy efficiency in the international mechanical engineering sector. With the refinement technology, the company is expanding its machine portfolio in the feed and food sector.

AMANDUS
KAHL

CONTENTS

ROTOSPRAY

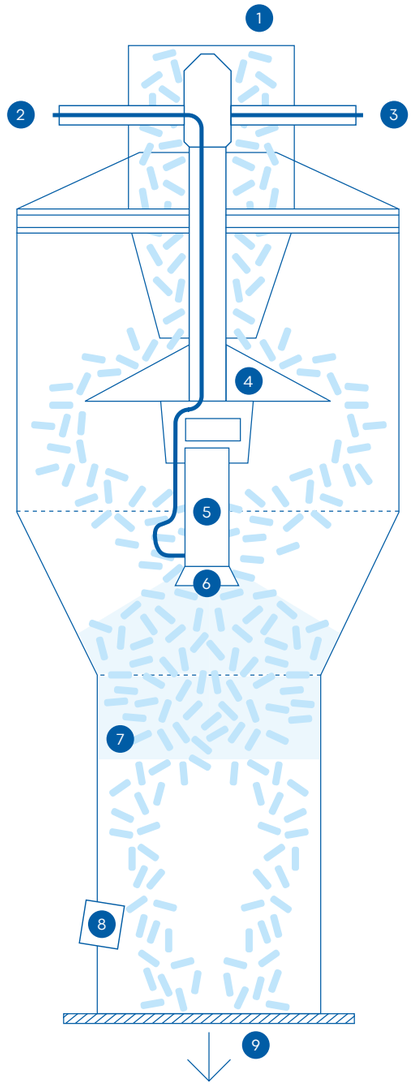
For sealing any product in the feed and food industry

The Rotospray is a micro-spraying system that applies liquid additives to a product surface. The centrepiece of the system is a rotating nozzle that allows ultra-fine spraying of liquids. The special distribution of the solid matter flow ensures spraying of the product from all sides. Customers can choose from three different Rotospray sizes to reach small, medium and high production capacities.

Advantages offered by the machine

- → Low space requirement
- → Automatic adjustment of the liquid flow to the solid matter flow
- → Undiluted spraying
- → Economical application
- → No remainders of liquids
- → High operational reliability
- → Addition of several liquids simultaneously
- → Narrow droplet size distribution
- → Direct application of concentrates possible
- → Unpressurized liquid supply

1. Solids dosing
2. Liquid dosing
3. Power supply
4. Product distribution cone
5. Nozzle drive
6. Nozzle (rotary atomizer)
7. Spraying chamber
8. Level limit switch
9. Outlet



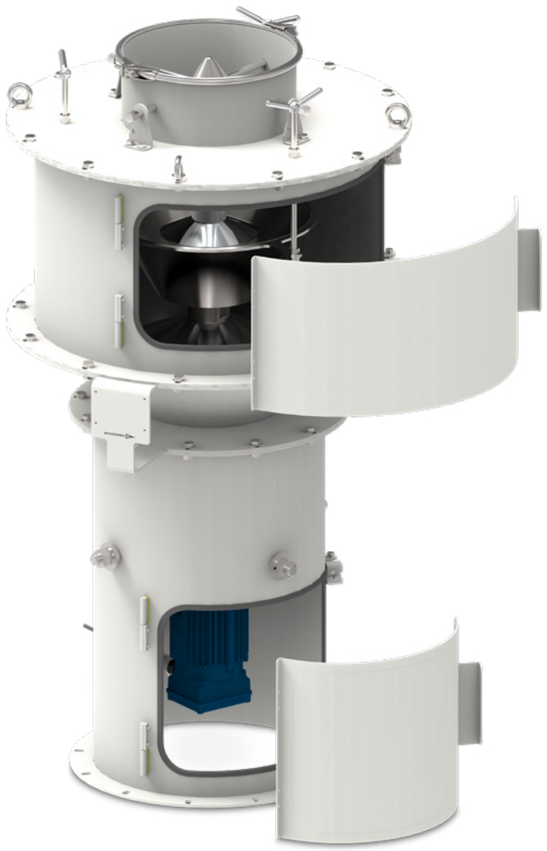
↑ Fattening feed for poultry

↑ Mineral feed for cattle

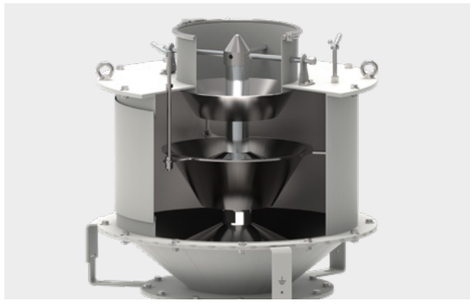
↑ Pig feed

ATOMISATION OF LIQUIDS

1 millilitre of liquid is atomised into
~10 000 000 droplets



↑ Rotospray, type RS 350



↑ View into the interior

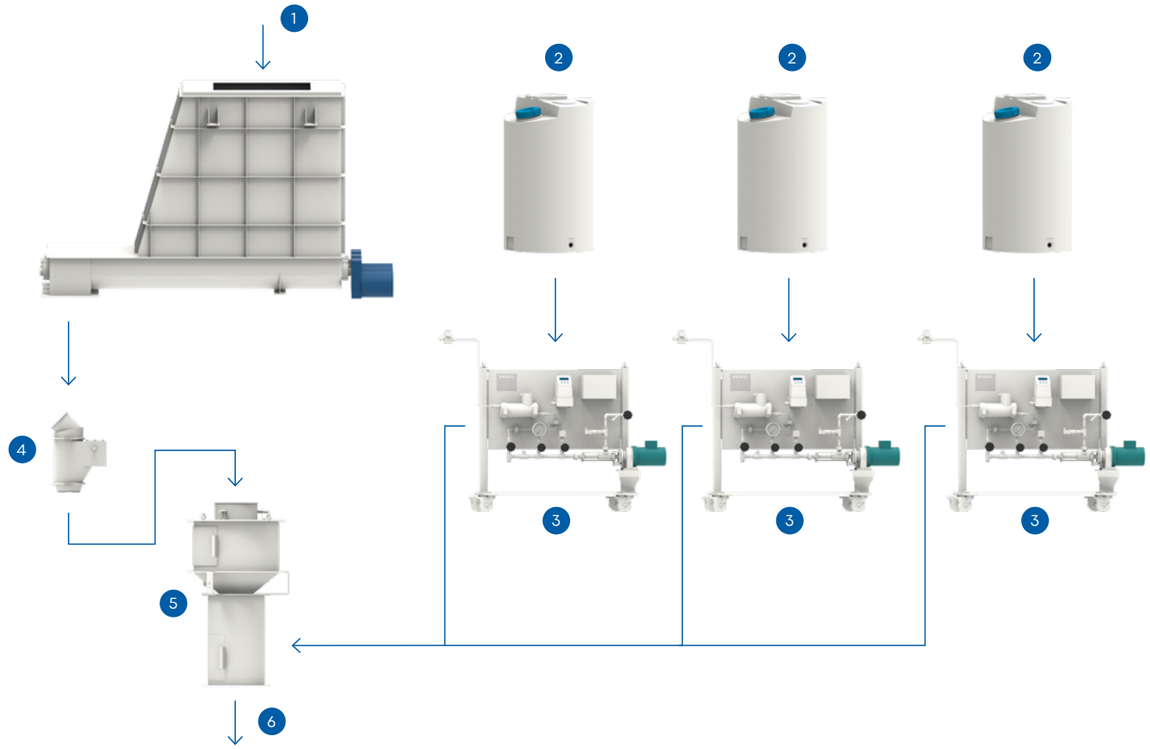
The system is appropriate for the following liquids

- → Enzymes, particularly phytase
- → Disinfectants
- → Vitamins
- → Aromatic substances
- → Flavourings
- → Vegetable oils
- → Organic acids
- → Dust binders

Appropriate product shapes

- → Crumbles
- → Expanded, extruded products
- → Pellets

INSTALLATION OPTIONS AND EXAMPLES FOR DOSING DEVICES



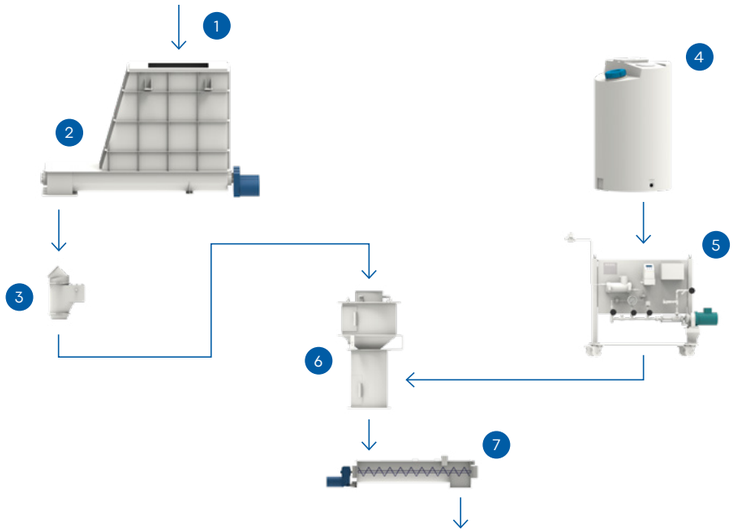
1 Product
2 Storage bin
3 Dosing system
4 Vertical pipe weigher
5 Rotospray
6 Treated product

TECHNICAL DATA

Rotospray

Type	Solid matter	Liquid	Number of liquids
RS 400	3.0 – 6.0 t/h Max. granular size 10 mm	max. 20 l/h	2
RS 600	12 – 20 t/h – RS 600-16 20 – 30 t/h – RS 600-25 30 – 50 t/h – RS 600-40	max. 500 l/h	3 simultaneously (separately)
RS 1000	50 – 80 t/h	max. 500 l/h	3 simultaneously (separately)

Possible application



1. From cooler
2. Pre-bin with dosing system
3. Vertical pipe weigher
4. Storage bin
5. Liquid dosing system
6. Rotospray
7. Retention and discharge screw

ADVANTAGES OF THE ROTOSPRAY

Advantages offered by the machine

- → Small and manoeuvrable, thus requiring little space
- → Automation, e.g. automatic adjustment of the liquid flow to the solids flow
- → No remainders of liquids
- → Fine atomisation = 1 millilitre of liquid is atomised into ~10 000 000 droplets
- → High operational reliability
- → Direct application of concentrates possible
- → Unpressurized liquid supply
- → Economical application
- → Sturdy design
- → Long service life and low wear
- → Low operating costs
- → Low noise
- → Low maintenance

Advantages for the products to be treated

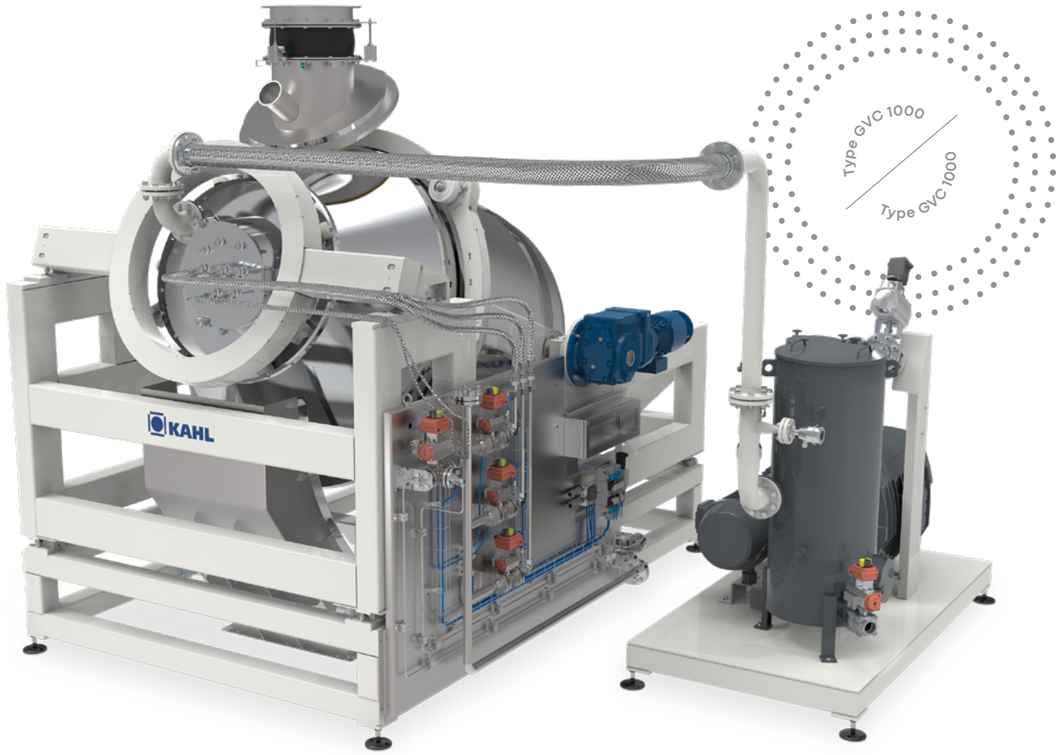
- → Maximum product flexibility for feed and food production
- → Gentle product treatment

Advantages offered by AMANDUS KAHL

- → High vertical range of manufacture
- → Long-term service also after commissioning
- → Product-specific design

VACUUM COATER

For refining pellets and extrudates



Vacuum coating is a process that allows liquids to be subsequently introduced into extruded feed, pellets or porous products. This is done by the product being sprayed with the additives during the vacuum. Then the vacuum breaks and the liquid is forced into the interior of the product. Depending on the process parameters, almost all pores can be filled with liquid. Extrudates with a larger pore volume absorb more liquids than dense pellets.

Do you have questions regarding the KAHL technology?

We will be happy to answer them and can be reached here:

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Vacuum coating is a standard process in the production of fish feed. Depending on the feed type or fish species, 4 – 40 % oil are subsequently applied to the extruded fish feed. Also in the field of dry dog and cat food, this method is being increasingly used, since this is the only way to reach a superior product quality.

Different liquids can be applied one after the other. This has the advantage that the first liquid is inside the product and is surrounded by the second liquid in the pellet. Thus, sensitive additives can be protected, for example, or their taste can be masked. Since the vacuum coating process is carried out after the actual manufacture of the product, the defined addition of heat-sensitive additives is no problem.

Fields of application

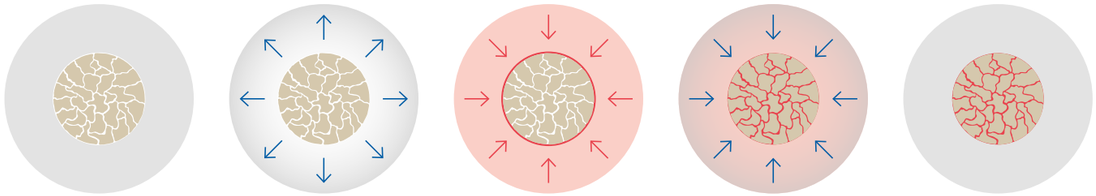
↑ Shrimp & fish feed

↑ Pellets & extrudates

↑ Poultry feed

↑ Petfood

Process



↑ Extruded fish feed

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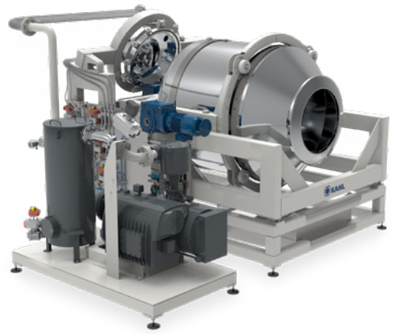


← **Filling**
The drum is filled with the product to be processed. Weighing and dosing are carried out by load cells integrated in the vacuum coater. The drum swivels into the working position and rotates.

← **Working**
In the working position, a vacuum is generated, and then one or more liquids are sprayed onto the product one after the other. The vacuum is broken in a defined way.

← **Emptying**
The drum is emptied by a downward swivelling movement. The drum continues to rotate meanwhile. Complete emptying is ensured.

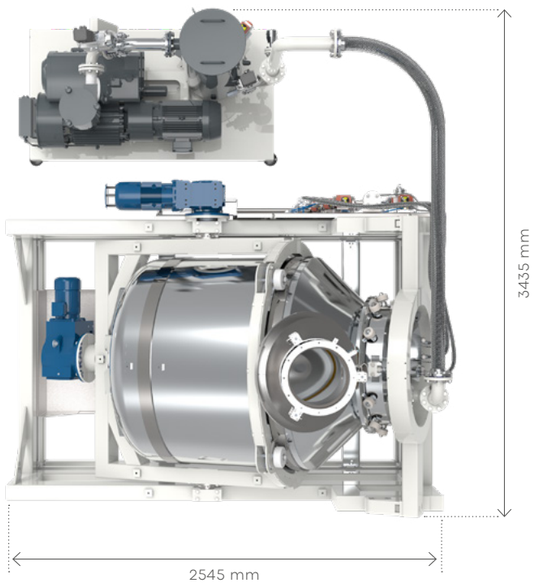
← **Cleaning**
For cleaning and inspection, the drum can be swivelled completely to the rear for best possible access.

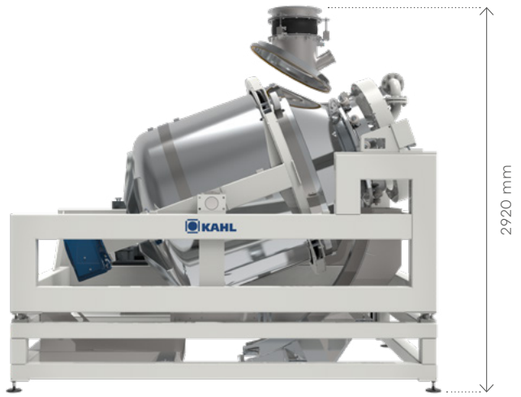
TECHNICAL DATA

Vacuum coater

Weight	3600 kg	Throughput	up to 8 t/h (depending on product and parameters)
Total weight	5500 kg	Vacuum (standard)	200 mbar abs. (200 hPa)
Total power	20.1 kW	Maximum vacuum	50 mbar abs. (50 hPa)
Power of vacuum pump	15 kW	Liquid addition	4 – 40 %
Power of mixing drive	4.0 kW	Mixer speed	5 – 19 rpm (freely adjustable via frequency converter)
Power of swivel drive	1.1 kW	Liquid addition	8 connections (fixed on cover, spray position adjustable, individually controllable, cleanable with compressed air)

Dimensions





ADVANTAGES OF THE VACUUM COATER

Advantages offered by the machine

- High product volumes are possible
- Automations, such as calculation of liquid quantity in relation to solid quantity
- Low mechanical stress of pellets and extrudates
- No moving mixing tools
- Easy cleaning
- Latest control components
- Full system diagnostics
- Remote maintenance is possible
- Versatile control and regulation concept
- High operational reliability
- Sturdy design
- Long service life and low wear
- Low operating costs
- Low noise
- Low maintenance

Advantages for the products to be treated

- Maximum product flexibility for fish feed and petfood
- Gentle product treatment
- < 1 % abrasion

Advantages offered by AMANDUS KAHL

- High vertical range of manufacture
- Long-term service also after commissioning
- Product-specific design

KAHL

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shop.akahl.com

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