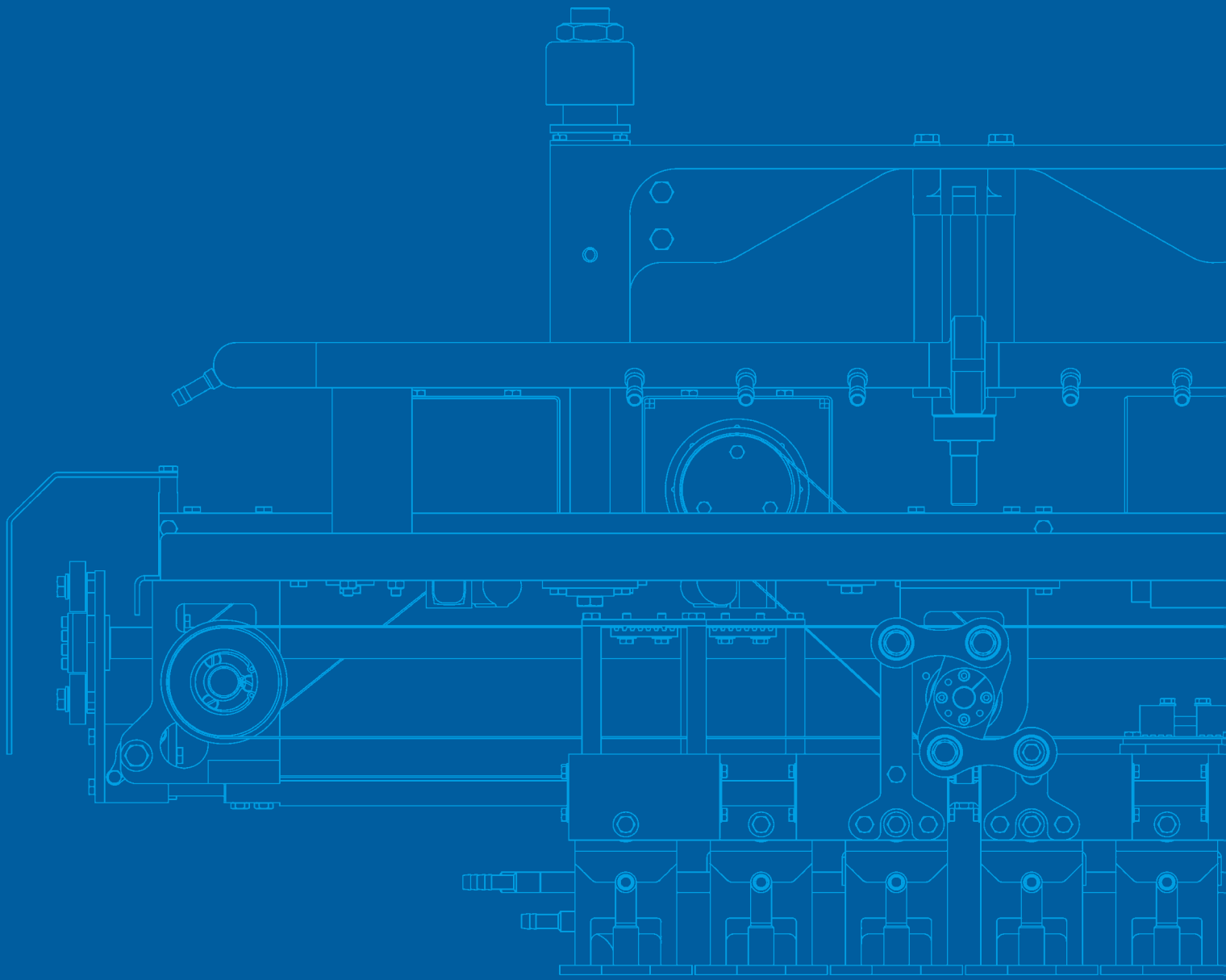
75 years of experience in processing and filling solutions for food and cosmetics

LIEDER | ROBOT FOOD TECH
Maderthoner
Maschinenbau GmbH



Welcome at LIEDER

LIEDER HOLDING GmbH with head office in Wietze in Northern Germany is one of the leading manufacturers of servo- and robot-controlled filling and packaging machines, food assembly lines and final packaging lines for convenience food and cosmetic products. With innovative ideas and maximum effort we create customized solutions which optimally meet our customers‘ requirements. LIEDER stands for innovative development, decades of competence in packaging technology and the worldwide proven LIEDER technology.

Our employees are our most important capital. Behind every technology there are dedicated people creating innovations through their motivation and constantly pushing forwards further developments. In our company, technology arises through the know-how of our senior employees combined with the innovative ideas of our junior employees. Specially trained experts are indispensable for special-purpose mechanical engineering. Therefore, we train our employees ourselves in our major fields.

Our team

Construction department

Our construction department forms the core of all our developments. This is where the visions of our highly qualified engineers are brought to paper, discussed and refined. With the aid of modern CAD programs ideas are visualized and prepared for manufacturing. The special requirements of our customers represent a challenge for us, which we are always happy to meet. Together, we create individual solutions on a high technical level for almost every special case.

Manufacturing department

Thanks to the latest processing machines we are able to manufacture the majority of the parts for our machines directly on site. This allows us not only an excellent quality management and short production times, as well for spare parts, but it also brings advantages in the area of research and development. As a result of the close cooperation of all the departments participating in the manufacturing process, all components of our machines are subject to a continuous optimization process.

Sales department

Our sales team comprises longtime employees that dispose not only of commercial experience but also of profound technical knowledge of our machines. Therefore, they are always able to provide our customers with optimal consultation and offers customized to their requirements.

Service department

Our service team forms a crucial link between our company and our customers. The direct insights into the production that our service personnel obtain when visiting our customers, provide important information for our construction department, which allows us to tailor our machines optimally to the process operations. In the event of problems, changing requirements or optimizations, our service technicians are the first point of contact for our longtime customers.

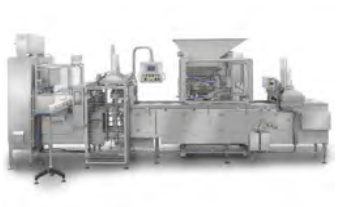
The heart of our machines are the people developing them.

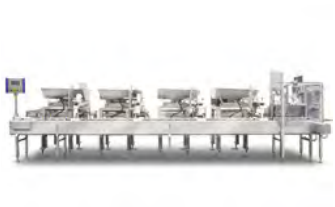
Our machine programme

1. Universal lines

3 Transport systems – 1000 possibilities

Our universal lines are ideal for processing complex products such as gourmet salads, ready meals, raw vegetable salads, pizzas, and many others. Their modular construction allows for individual adaptation to customer needs. Depending on the specific requirements, the following lines can be equipped individually with any required station.






Linear line

→ modular design allows the combination of different equipment options
→ flexible subsequent adaptation in case of changed demands on product or production

Drag chain conveyor

– entry-level machine for small-scale production
– as compact and economical as a rotary machine

Carrier plate transport TA

→ all functions servo-controlled
→ Ultra-Clean-Design possible
→ applicable for small, medium or large productions
→ dual format plate system

1 - 10 lanes, single and double cycle up to 30,000 containers per hour

Bar transport RCR

→ all functions servo-controlled
→ flexible adaptation in all 3 dimensions for most diverse formats
→ quick format changeover by push-button

1 - 6 lanes, single and double cycle up to 12,600 containers per hour

Drag chain conveyor MT

→ all functions servo-controlled
→ simple operation
→ compact design
→ simple and fast cleaning

1 - 2 lanes, single and double cycle up to 4,800 containers per hour

It is all about efficiency!

1.1 Drag chain conveyor MT: The machine that grows with your business

Advantages of the drag chain conveyor MT

The compact design of the drag chain conveyor MT combines the space-saving property of a rotary machine with all the advantages of a modular linear line. A consistent servo technology in all adjustment and drive elements not only reduces the energy consumption of the machine but it also ensures an ideal adaptation to the different properties of the product to be filled. All relevant parameters are stored in the programme, ensuring a high reproducibility which is reflected in the uniform presentation of your products. The drag chain conveyor MT is retrofittable with further modules, which makes it an ideal investment for small and medium sized companies, aiming at a fast expansion.

Combination with filling machines

Depending on the product to be filled, the LIEDER drag chain conveyor MT can be combined with the different LIEDER filling systems or with filling machines of other manufacturers.

Equipment options

- container magazine
- container loader
- dust extraction system
- product levelling
- pusher

Output ranges

- transport system with up to 2 lanes
- up to 4,800 containers per hour
- also for jars

1.2 Linear line TA: Modular concept

The modular concept of our linear lines offers individual equipment options for different market requirements and different products such as butter, margarine, yoghurt, cream cheese, gourmet salads, ready meals and raw vegetable salads, even with large particulates.

Format changeover
The carrier plate transport is driven by a freely programmable servo drive which allows for an optimum adaptation of the acceleration and braking processes to the individual requirements. The machine can be delivered with format plates made of a special aluminium alloy or of stainless steel.

Dual format plate system
For the dual format plate system, the conveyor is equipped with format plates for two different formats at the same time. The machine moves with a double feed per cycle.

Optional quick changeover system
With the optional quick changeover system for format plates the carrier plates are automatically released from their fixation.

Combination with other machines
Depending on the product to be processed, the TA can be equipped with further components such as the particulate filler AWF, the fluid doser RCF or multi-head weighers.

Servo control
A consistent servo technology in all adjustment and drive elements not only reduces the energy consumption of the machine but it also ensures an ideal adaptation to the different properties of the product to be filled. All relevant parameters are stored in the programme, ensuring a high reproducibility which is reflected in the uniform presentation of your products.

Standard equipment
- container denester
- carrier plate transport
- container lifter and pusher
- outfeed conveyor straight on or to the right or left side

Output ranges
- transport system with up to 10 lanes
- single or double advance feed
- up to 30,000 containers per hour

Equipment options
See chapter 6 of this brochure

An investment for generations

1.2.1 TA for ready meals: Ready meals clocked per second

Standardausstattung
- container denester
- carrier plate transport
- heat-sealing station with film blanking press
- container lifter and pusher
- outfeed conveyor straight on or to the right or left side

Output ranges
- transport system with up to 6 lanes
- single or double advance feed possible
- up to 8,400 containers per hour

Equipment options
See chapter 6 of this brochure

1.2.2 TA for dairy products: Hygiene comes first

Advantages of LIEDER machines for dairy products

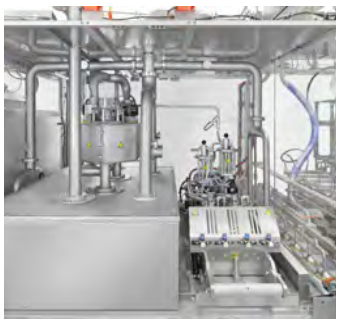
→ individual adaptability by modular design, various equipment options, a wide range of services and retrofitability

→ very high hygienic standard by hygienic design, CIP/SIP cleaning and optional packaging sterilization

→ highest flexibility by modern servo technologies and quick format changeover

→ outstanding performance by modern technology, a high degree of automation and operator-friendly handling

→ excellent availability by high quality, longevity, process control and remote servicing



Output ranges

→ transport system with up to 10 lanes
→ single or double advance feed possible
→ up to 30,000 containers per hour

For highest hygienic demands, as required in the dairy industry, the filling and packaging lines of our TA series can be equipped with the following optional equipment

→ efficient, reliable packaging sterilization
→ ultra-clean equipment with closed housing, laminar flow zone with sterile air
→ and automatic CIP/SIP systems

Maximum flexibility and high efficiency paired with high payback

1.3 Highly flexible linear line RCR

Highly flexible bar transport for quick format changes by push-button without time-consuming changes of format plates Absolute flexibility and optimized production times due to our unique patented bar transport.

Patented format changeover
- → absolute flexibility by the unique patented bar transport
- → fastest adaptation to the most different packaging formats in all three dimensions
- → optimized production times due to quick format changeover within a few minutes

Standard equipment
- → container denester
- → bar transport
- → container lifter and pusher
- → outfeed conveyor straight on or to the right or left side

Combination with other machines
Depending on the product to be processed the RCR can be equipped with further components such as the particulate filler AWF, the fluid doser RCF or multi-head weighers.

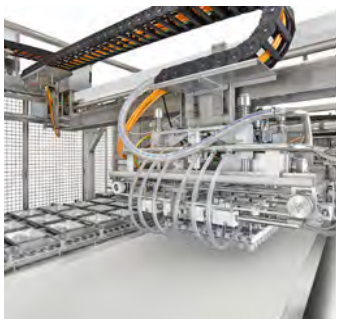
Output ranges
- → transport system with up to 6 lanes
- → single or double advance feed possible
- → up to 12,600 containers per hour

Equipment options
See chapter 6 of this brochure

1.3.1 Lasagne line RCR: From dough cutting to cheese-filling – all from one single source

Filling machine RCF for sauces

- high weight accuracy
- consistent layer thickness
- high hygienic standard due to fully automatic cleaning of (suction and product) pipes
- temperature monitoring at the hopper
- minimum product loss due to process control
- level monitoring at the hopper



Gantry robot

- up to 6 servo controlled axes
- exact picking and placing of the lasagne sheets
- optimum positioning of the lasagne sheets into the containers
- individual storage of all parameters depending on the container sizes allows a quick adaptation to new formats
- CIP cleaning
- easy handling
- lasagne sheets do not fold

Our line – your advantages

- the whole line from one single source
- all stations are controlled centrally from one main operator panel
- all functions servo-controlled
- minimum product loss
- large weight range
- format and product changes by push-button
- reproducibility of product quality
- optimum product presentation

Process steps

Our lasagne line covers the following steps of lasagne production:

- dough supply to the cutting machine
- longitudinal and transversal dough cutting
- transport of the cut lasagne sheets
- automated feeding of the container magazine
- container denesting
- transport of the containers in a bar transport
- sauce filling
- placing of the lasagne sheets into the containers
- cheese dosing
- outfeed of the filled containers
- transport to the downstream oven

2. Filling machines for particulate products

2.1 Particulate filling machine AWF
The fastest employee you could ever have

- wide range of products
- fast product changeover
- fast cleaning process
- high payback
- compact design
- operator-friendly

Advantages for your production

→ mobile chassis allows a flexible use at different lines
→ ideal adaptation to most diverse products
→ fast and tool-free removal of the filler parts for a fast format and product changeover
→ easy cleaning
– automated filling process – no permanent operator required
→ automated product feeding via flighted elevator or lift and tip device for euro bins

Technical specifications

Volume adjustment	continuously adjustable
Filling volume	10 g up to 5000 g
Electrical connection	230/400 V, 50 Hz
Output per filling head	up to 40 cycles/min
Number of filling heads	1 to 10

Equipment
- → spaghetti feeder for long fibrous and lumpy products
- → flighted elevator
- → lift and tip device
- → mobile chassis

Conveyor for spherical products such as
- → tomatoes
- → meatballs
- → falafel
- → etc.

2.2 Particulate filling machine AWF-C / AWF-E

Special design for the distribution of grated cheese on lasagna, pizza and other ready meals.

Advantages for your production
- → accurate dosing of the product on the meal
- → minimum product loss
- → no product recirculation

Technical specifications

Volume adjustment	continuously adjustable
Filling volume	5 g to 280 g
Electrical connection	230/400 V, 50 Hz
Output per filling head	up to 35 cycles/min

Filling machines for pumpable products

2.3 RCF – the ultimate filling machine

For pumpable products, also with particulate
- high cycle rate
- ideal weight accuracy
- product protecting
- CIP/SIP cleaning
- up to 5 servo controlled axes
- filling and decoration in the same operation step

Advantages for your production
- → all axes freely parametrizable
- → ideal adaptation of the filling behaviour in case of sudden changes of product consistency during operation
- → practicable filling programmes
- → filling with position accuracy
- → filling in layers
- → filling and decorating in the same working process
- → mobile chassis for using the machine at different production lines
- → no permanent operator required

Technical specifications

Volume adjustment	continuously adjustable
Filling volume	10 g up to 5000 g
Electrical connection	230/400 V, 50 Hz
Output per filling head	up to 40 cycles/min Number of
filling heads	1 to 10

Equipment
- → 4th and 5th servo-controlled axis for decoration purposes
- → CIP design
- → mobile chassis

Individual solutions for product supply to the filling unit
- → pressure compensator
- → screw feed hopper
- → hopper with or without agitator
- → double-walled hopper, heatable

Diving cut-off nozzle, specially adapted for the products
- → clean filling
- → high weight accuracy

2.4 FS7 - the entry-level model

Equipment
- → manifold applications at low acquisition costs
- → ideally suitable for small production facilities
- → for pumpable products of fluid or pasty consistency, with or without particulates
- → mobile chassis for a flexible usage of the machine at different production lines
- → single or double lane design with an output of up to 40 cycles/minute (depending on product and filling volume)
- → all product contact parts are designed for easy and tool-free removal for cleaning purposes
- → simple operation via touch screen
- → recipe memory for up to 30 recipes

3. Cosmetic lines

Our cosmetic lines fulfill highest demands regarding output, flexibility, weight accuracy and product presentation. All functions are servo-controlled and freely parameterizable.

Advantages of our cosmetic lines

- → individual adaptability by modular design, various equipment options, a wide range of services and retrofitability
- → highest flexibility by modern servo technologies, a wide dosing range and quick format changeover
- → excellent performance by modern technology, a high degree of automation and operator-friendly handling
- → excellent availability by high quality, longevity, process control and remote servicing
- → highest hygienic demands are met by smooth surfaces, CIP / SIP capability as well as easy-to-clean components based on our experiences in the food industry

Output

1 lane	up to 65 jars/minute
2 lanes	up to 130 jars/minute
-	single or double cycle

Anti-ageing for your production

Regardless of the selected type of packaging supply (via rotary table, sorting system or puck system) we ensure a trouble-free infeed of the jars and caps and an exact positioning on the conveyor.

Types of packaging and closure systems

- plastic jars
- glass jars
- tin boxes
- aluminium foil or plastic film, pre-cut sealing lids or roll stock material
- crimping of foil lids
- shives
- slip-on caps
- screw caps
- dispensers with piston and bottom cap

Equipment

- servo controlled carrier plate transport
- format plates in quick changeover version
- recipe control
- standard hopper for cold filling
- double-walled hopper with agitator for hot filling
- pressure compensator vessel for highly viscous products
- high-performance filling system RCF
- jar turning device for prevention of air entrapments
- entirely heatable filling unit
- manual or automatic CIP/SIP cleaning
- heat-sealing station for pre-cut foil/film lids
- servo controlled lid applicator
- jar centring device to ensure the centred application of the plates or shives
- pre-sealer
- high quality punching tool with quick changeover system for roll stock material
- variable sealing technologies
- special, multistage heat-sealing procedure for glass jars
- screwing station with servo-controlled vacuum heads
- take-away conveyor

4. Guaranteed standard of hygiene

Single or multi-tank CIP-systems: A clean affair

The demands on the essential topic of hygiene in food production are continuously rising. CIP (cleaning in place) represents the best suitable method to guarantee a reproducible hygiene standard.

LIEDER CIP systems are equipped with the state-of-the-art control systems for:

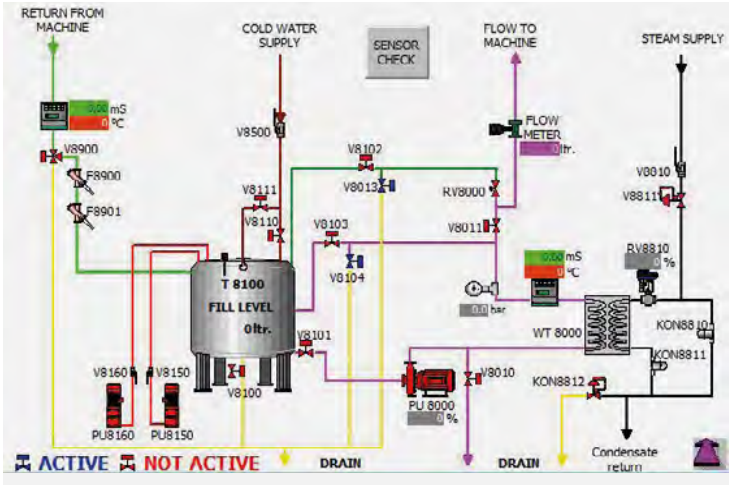
- → water
- → caustic
- → acid
- → disinfection
- → pressure
- → temperature
- → time
- → flow measurement

The programme steps are freely parametrizable and can therefore be adapted to the food products and machines to be cleaned. In addition, the complete CIP process including all parameters can be documented automatically in the LIEDER CIP machine.

- → fully automatic operation including the necessary pumps and valve technology
- → freely programmable control system

Technical specifications

Tank size	2000 up to 5000 litres
Number of tanks	1 up to 6 tanks



5. Flexibility in Equipment

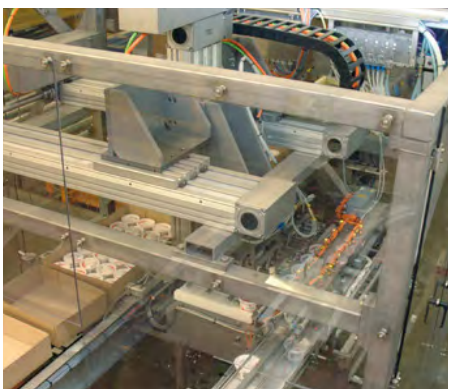
Special purpose solutions: The perfect solution for any requirement

Even complex requirements are no problem for us. We take on every challenge and offer our customers individual solutions for any type of filling or packaging.

Gantry robot GR-P
- → gripper head for picking up several cartons at the same time
- → freely programmable packing arrangement on the pallet
- → automatic pallet magazine
- → automatic pallet in- and outfeed

Gantry robot GR-T
- → gripper head adjustable to different dimensions
- → push-button changeover to different cup, tray and carton dimensions
- → output of up to 400 cups/hour

Pick & Place systems
- → forks, sauce packages etc. can be placed into salad bowls or other containers by means of robot systems



6. Flexibility in equipment

Equipment options: Individual solutions for any purpose

Our lines have a modular design and can be equipped individually as required.

Container magazine loader
→ automated container feeding
→ torage time of up to 15 minutes

Dust and particle extraction system
→ servo-controlled lowerable device for removal of dust and particles from the empty containers

Lid loader
→ automated lid feeding
→ storage time of up to 15 minutes

Lid station
→ magazine for prefabricated plastic lids
→ monitoring of the stack height
→ removal of pre-cut lids from the magazine and placement on the container

Special filling systems
Filling stations for special products such as pesto, water-oil-mixtures, herbal mixtures, etc.

Special closing systems
→ Inductive
→ Crimping

Gas flushing systems
→ standard head space gas injection: 5% residual oxygen in head space
– LIEDER Ultra gassing: 1% residual oxygen in head space

System for pre-cut sealing lids
- ⟶ magazine for pre-cut sealing lids
- ⟶ servo-controlled applicator
- ⟶ pre-sealer to fix the foil on the rim of the container

System for roll stock sealing material
- ⟶ high quality blanking press with quick changeover system
- ⟶ separate drives of foil unwinding and residue rewinding system to reduce cut waste
- ⟶ foil control system

Special heat-sealing procedure for glass jars
- ⟶ special multistage heat-sealing procedure for glass jars to optimally equalize irregularities of the sealing rim

Freely parametrizable sealing station
- ⟶ variable sealing technologies
- ⟶ high quality tool materials ensure constant temperatures
- ⟶ individual tuning of sealing parameters (temperature, sealing time and pressure)
- ⟶ in case of machine standstill to prevent damage to the product or the packaging
- ⟶ mechanism to lift the sealing station for cleaning or maintenance purposes

Versatile screwing systems
- ⟶ all systems are quickly changeable
- ⟶ screwing heads can also be used for protective shives
- ⟶ servo-controlled screwing head in multi-axial design, torque-controlled with forward/backward rotation
- ⟶ gripper tool for an exact pick up and positioning of the screw caps
- ⟶ control station for screwed caps
- ⟶ final screwing head ensures a customer-oriented closure quality

Machines for the cutting and emulsifying of food

7. EmulsiCut

The EmulsiCut operates by rotor-stator-system. The cutting head rotates with a motor speed of 3000 rpm inside of the cutting ring, which defines the clearance between 11 and 0.2 mm. By a double cutting tool of different clearances, multiple cutting operations can be carried out in one step.

In the following, we have listed some proven application examples. Of course further applications are possible.

Confectionery and pasta products
For cutting of nuts and almonds, broken cookies and chocolate, recirculation of bread and dough rests.

Delicatessen and convenience food
Preparation of dips, sauces, dressings, pastes, pestos and tapenades.

Dairy products
Processing of cream-cheese preparations and stirring of desserts.

Meat and sausage products
Machines for the cutting and emulsifying of sausage meat. Production of rind emulsions.

Vegetable and fruit processing
Cutting of fruits and vegetables into pieces respectively rasps or fluid products such as mash or pulp.

Advantages for your production
- → non-contact operation
- → no abrasion
- → low increase of temperature
- → ideal cutting
- → excellent cutaway view
- → unvarying quality
- → high durability
- → cost effective
- → user friendly

EmulsiCut types

ECV vertical design

For the production of fluid products and dry goods. For cutting and emulsifying in the production of meat, sausage, sweets or delicatessen.

Designation	Output (t/h)
ECV125-7,5	0,6 – 0,8
ECV180-30	2,0 – 3,5

ECH-I inline design

For homogenizing, sieving and emulsifying of soups, sauces, dressings etc.
For inline-production and operation with hopper and circuit line.

Designation	Output (l/h)
ECH125-7,5l	1.200 – 3.000
ECH150-30l	3.000 – 6.000

ECH-K dry goods design

The micro cutter with separately driven feeding screw. For cutting of vegetables, fruits, broken cookies and chocolate, nuts and almonds.

Designation	Output (t/h)
ECH125-7,5k	0,6 – 0,8
ECH150-30k	1,5 – 2,5

BMCH-H hopper design

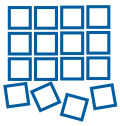
For microcutting and emulsifying. For the production of fluid products like sausage meat and rind emulsion.

Designation	Output (t/h)
ECH125-7,5H	0,6 – 0,8
ECH150-30H	1,5 – 2,5
ECH-D150-55HS	2,0 – 3,5
ECH-D180-75HS	3,5 – 5,0

8. De-clumping machine for cohesive foodstuffs

One of our outstanding in-house developments is our de-clumping machine for separating food that tends to stick together. Examples are raisins, mangoes, apricots, plums and various other dried fruits, which often form a compound that is difficult to loosen after storage. After separation in our product-friendly de-clumping machine, further processing as loose bulk material can take place.

The machine‘s mode of operation



Pre-separating with the spiral rotor on the upper level.

Separating the product with the scraper rotor turning over a perforated screen on the lower level.

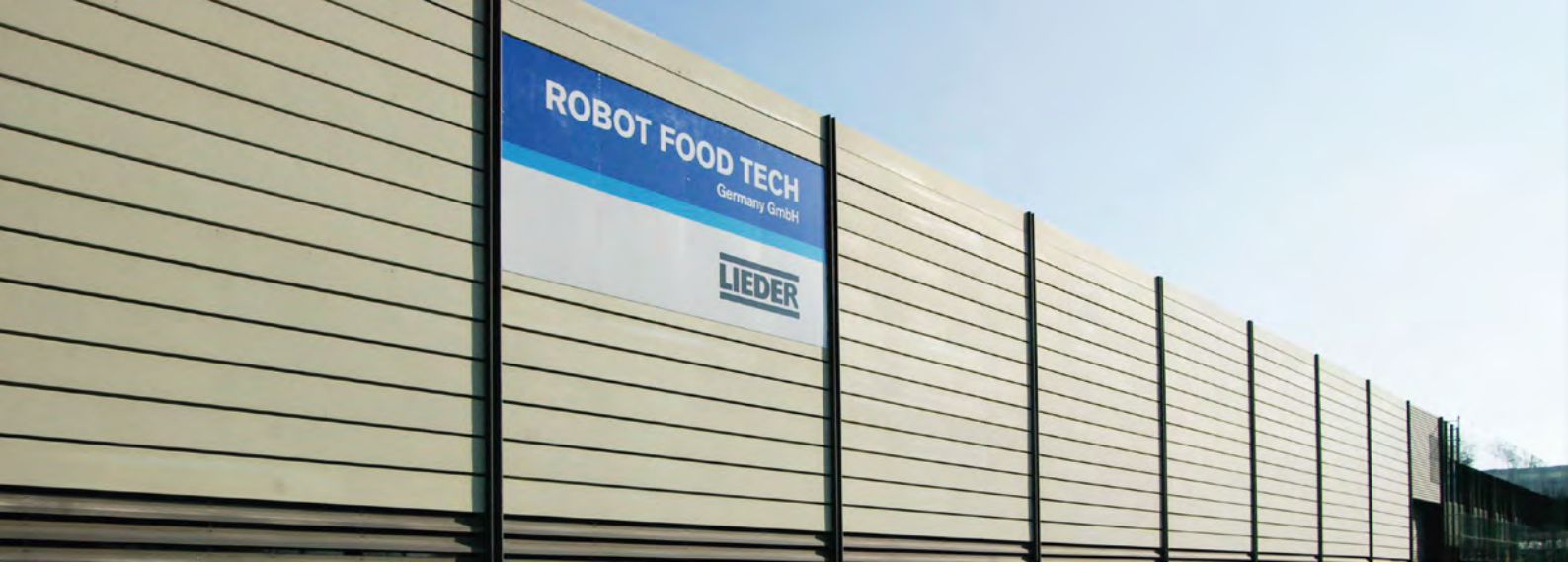
The separated product can then be fed into production for further processing.

We have designed our machine for flexible and all-purpose applications to achieve optimum performance with a wide range of products. At the same time, operation is simple and cleaning is easy thanks to the high-quality stainless steel surface and accessible design of the components. Customisation can be realised in many cases.

Using the machine leads to considerable savings of time and thus also of cost - for example in the production of trail mixes, as the initially solid compound of e.g. raisins can be processed conveniently after a short de-clumping time. The machine is also available with infeed or outfeed conveyors to enable good integration into the production line.

Technical specifications and features

Dimensions (L/W/H):	1375 / 1040 / 1230 mm
Weight:	approx. 240 kg
Material:	Stainless steel 1.4301
Drive power:	1.5 kW
Voltage:	400 V/50 Hz
Speed:	manually infinitely variable
Processing:	robust ready-to-market industrial machine



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