



# THE NEAEN PILOT

VACUUM PROCESSING PLANT

**The NEAEN Pilot vacuum processing plant is an ideal solution for the production of pilot batches and the industrial manufacturing of a wide range of products from small to medium capacity.**

### **Ongoing processes**

- ▶ Heating, cooling
- ▶ Mixing
- ▶ Cooking
- ▶ Vacuumization
- ▶ Dispersing
- ▶ Emulsification
- ▶ Homogenization
- ▶ De-aeration

### **Examples of applications in various industries**

- ▶ Dairy processing - soft cottage cheese, yogurt, condensed milk, reconstituted milk powder, cream.
- ▶ Oil and fat processing - combined oils, margarines, mayonnaise.
- ▶ Fruit and vegetable processing - jams, ketchup, sauces, purees, pastes.
- ▶ Confectionery industry - cream filling, chocolate-hazelnut paste, chocolate glaze, honey.
- ▶ Non-alcoholic drinks industry - juices, nectars, soft drinks.
- ▶ Cosmetics industry - lotions, shampoos, conditioners, gels, ointments, toothpaste.
- ▶ Pharmaceutical industry - ointments, emulsions, gels.
- ▶ Chemical industry - detergents, adhesives, paints, varnish, and disinfectants.



### **Design and Functionality**

The plant's design consists of a working vessel with an insulating layer and jacket for heating/cooling. A low-speed agitator with scrapers has a top drive. A rotor-stator homogenizer is integrated in the bottom of the operating vessel. The working bowl is fixed to the locking rotary supports. The product can be unloaded by tilting it (manually or mechanically, depending on the volume of the vessel). The cover is easy

to lean back (manually or using gas-filled shock absorbers in the rear), and it is sealed with four clamps in the closed position.

Depending on the customer's needs, varying degrees of automation can be provided: weighing and dosed feeding of ingredients, temperature controlled heating and cooling, controlled melting and emulsification processes, homogenization, regulation of the agitator speed, and the degree of vacuum.

**Evacuation** - the process of removing air that reduces the temperature of the processing of the product, thus keeping its best consumer properties.

**Mixing** - A specially shaped agitator and shape of working vessel provide uniform mixing of the product without dead zones. Special “floating” scrapers do not allow the formation of burnt-on materials on the walls and contribute to the maximum transfer of heat or cold from the walls to the product in a thin layer.

**Homogenization** - Integrated in the tank bottom, the rotor-stator homogenizer provides a rapid and effective dispersion, emulsification, and homogenization of the particles with a size of 3 microns (or less on demand). The resulting product has an attractive appearance, a stable, homogeneous structure, and does not separate. It has a long shelf life. A homogenizer is used for the recirculation and discharge of the product. There is no need for additional pumps. It improves the hygiene of the plant and ease of maintenance.

**Heating and cooling** - The heating and cooling jacket allows the implementation of heating, melting, and cooling processes in one unit. The “direct steam injection into the product” option can significantly reduce the heating and cooking time in a batch.

The automated control system eliminates human error and ensures a consistently high quality of the finished product from batch to batch.

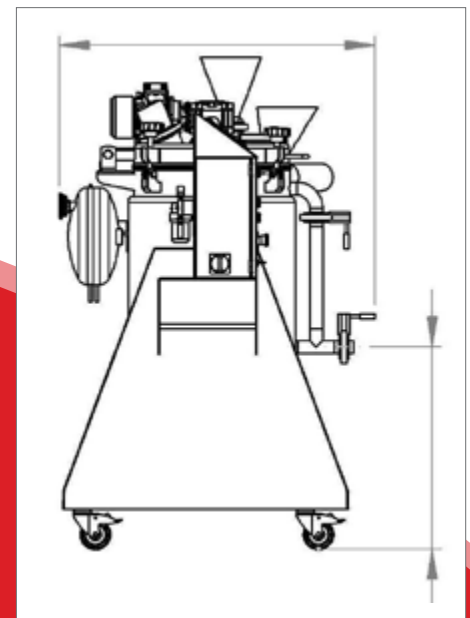
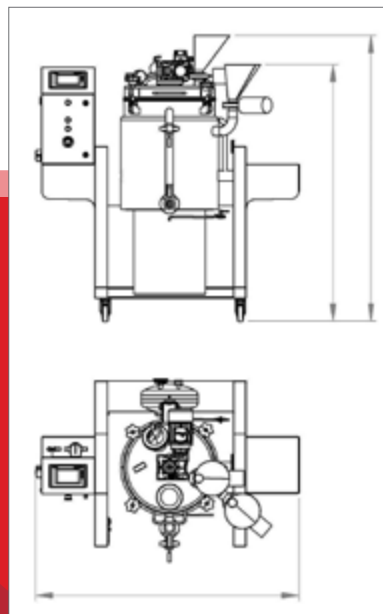
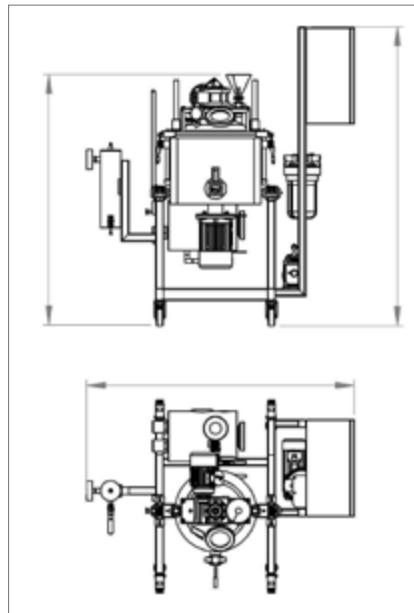
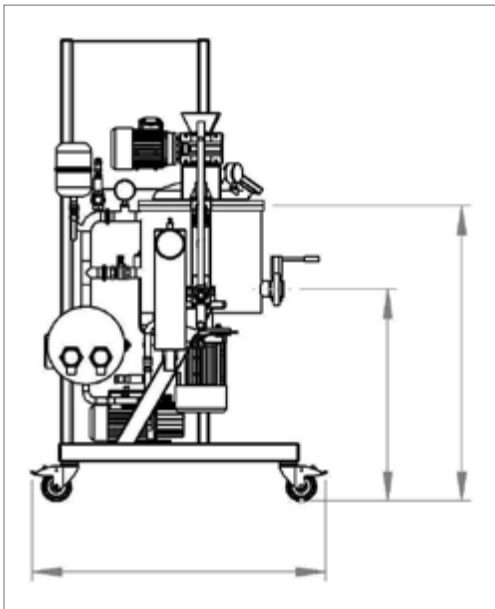
## Advantages of the NEAEN Pilot vacuum processing plant

- ▶ Low initial costs for the purchase of equipment, suitable for start-ups and for developing new formulations and the manufacturing of test batches
- ▶ Ability to handle a wide range of liquid, pasty, viscous, and highly viscous products
- ▶ Minimum load 15% of the volume of the container
- ▶ High performance
- ▶ Robust design and long trouble-free service life
- ▶ Quick change to produce a new type of product
- ▶ Easy to work, maintain, and clean design
- ▶ Low operating costs and low resource consumption
- ▶ Low noise

## Options

- ▶ Adding additional ingredient directly in a vacuum chamber of the homogenizer
- ▶ Funnel for entering components into the vessel at runtime
- ▶ Tilting bowl
- ▶ Lid is opened through the gas-filled shock absorbers
- ▶ Different types of agitators
- ▶ Variable agitator speed
- ▶ Direct steam injection into the product
- ▶ Different levels of automation
- ▶ GMP performance
- ▶ Complete validation documentation for use in the pharmaceutical industry

Model	30	60	100	150	200	300
Total volume	30	60	100	150	200	300
Working volume	4.5-25	9-54	15-80	23-135	30-185	45-270
Rotating speed of rotor	3000					
Rotating speed of agitator	35					
Drive power of rotor, kW	5,5	5,5	7,5	11	15	15
Drive power of agitator, kW	0,37	0,37	0,55	1,1	1,5	1,5
Temperature of heating of the product, °C	110					
Pressure inside the working vessel, MPa	-0,04...+0,1					
Size of solid particles after homogenizing, not more, µm	4					
Temperature of steam supplied into the jacket, °C	140					
Pressure of steam supplied into the jacket MPa	0,3					
Consumption of steam supplied into the jacket, kg/h*	20	40	50	60	70	90
Power of the heaters (for models with electric heating, the heat carrier-glycerol), kW	6	9	12	12	15	15
Tilting drive	Manual		Mechanical			



# THE EMA EUROPE COMPANY HAS MORE THAN THIRTY YEARS OF EXPERIENCE IN THE DEVELOPMENT, DESIGN, AND MANUFACTURE OF INDUSTRIAL EQUIPMENT FOR THERMAL FOOD PROCESSING

The range of commercially available equipment includes continuous conveyor fryers and ovens, drum fryers, batch blanchers, and continuous drum and conveyor blanchers, defrosters, continuous and batch cookers both atmospheric and vacuum, scraped surface heat exchangers, and a wide range of auxiliary equipment such as washers, conveyors, pumps, homogenizers, and others.

Our company offers a complete cycle service from design of technology projects to the manufacturing of equipment of any complexity in our own production site, located in the heart of Europe, as well as the introduction of the equipment in operation, upholding the warranty and after-warranty service with our own service center.

Having much experience in the practical implementation of projects in the industrial processing of meat, fruit and vegetable products, semi-finished and other products, our company is ready to offer technological consultation, development of the production process of the project, equipment manufacturing, erection supervision, commissioning works, and further maintenance services to its customers.



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