MACHINES AND EQUIPMENT
FOR FOOD PROCESSING
AND PRODUCTION HYGIENE

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NOWICKI MACHINERY

ABOUT US

Innovation

- research and development investments
- a large number of patented innovations
- wide range of modern solutions implemented in the machines
- cooperation with scientific and industrial centres
- implementation of the innovation management process

Quality

- quality control process standardised at every stage of production
- use of high quality raw materials and branded components
- qualified and experienced staff
- investments in development and employee training

Technology

- investments in modern production processes
- ensuring the manufactured machines and devices comply with safety, reliability and convenience of use standards
- openness to change and market requirements

Support

- service centre with expert technical staff
- individual approach to each and every customer
- comprehensive training programme for users
- sensitivity to quickly changing markets in given parts of the world

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NOMA Nowicki Machinery

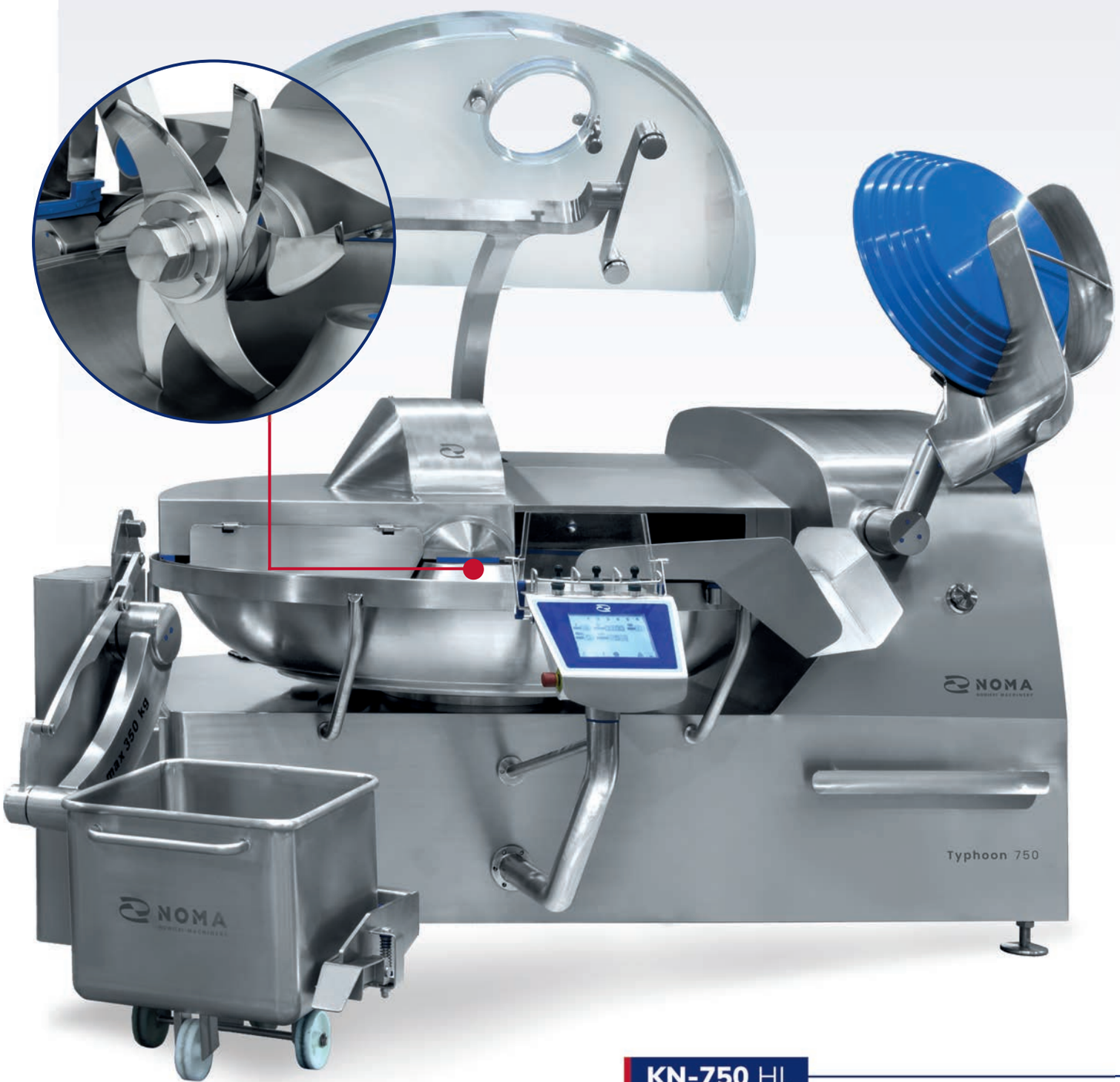
is a producer of state-of-the-art equipment for food industry. Established in 1974, the company supplies comprehensive solutions - machines and complete automatic lines - applicable in almost each processing of food industry like: marination, tenderizing, injection, cutting, grinding, emulsifying, mixing and thermal treatment. NOMA Nowicki Machinery offers also washing systems that meets standards of cleaning of containers of any size in any branch of food industry.

HIGH-SPEED ROTATION CUTTERS TYPHOON

High-speed rotation cutters TYPHOON designed to produce all kinds of **meat stuffing** with different degrees of crumbling and fat emulsions, **also from raw skins.**

RELIABLE CUTTING SYSTEM

system of cutting knives with a constant distance from the bowl gives an equal stuff crumbling in all of the bowl's volume.



Best for the grinding of stuffing and emulsions in the food industry

KN-60

KN-125 HL

Construction advantages*

- stainless steel construction
- high quality and repeatability of stuffing production
- versatility: cutting and mixing of stuffing
- high-speed rotations of knife head (cutting rotations)
- microprocessor control system
- smooth control of cutting and mixing rotations
- possibility of programming up to 40 technological programs
- possibility of changing the language of operator panel
- stuffing unloader
- automatic water dosage system
- effective noise insulation cover
- head with cutting knives not requiring regulation of distance from bowl
- equal stuff crumbling in all the bowl's volume caused by "cutting in the air"
- stuffing temperature control
- possibility to install a higher power motor for heavy stuffing production
- hydraulic loading and unloading system
- hydraulically operated front and back covers of the bowl
- monitoring system of the current machine operation, auto diagnostic and sound signaling system
- complete work safety system
- modern and ergonomic construction of the machine
- construction meets the highest hygiene requirements (flat surfaces inclined at an angle of 3 degrees)
- automatic central lubrication system
- product contact surfaces are polished
- emergency STOP for bowl drive and cutterhead drive
- online diagnostic system over the Internet

*depending on the option

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HIGH-SPEED ROTATION VACUUM CUTTERS TYPHOON II

High-speed rotation vacuum cutters TYPHOON II for production of **homogenized meats**. Designed to produce all kinds of **meat stuffings** and **emulsions** also from fat with different degree of granulation in a vacuum environment.

MICROPROCESSOR CONTROL SYSTEM

KN-550 V

Construction advantages

- stainless steel construction
- cutting in vacuum environment - max. 90%
- high quality and repeatability of stuffing production
- hydraulic loading system for the 200 ltr. Buggies
- hydraulic stuffing unloader
- microprocessor control system
- smooth control of the cutting and mixing rotations
- smooth control of stuffing unloader rotations
- versatility: cutting and mixing of stuffing
- possibility of programming up to 40 technological programs
- possibility of changing the language of operator panel
- current monitoring system of machine's operation, auto diagnostics
- high-speed rotation of knife head (cutting rotations)
- hydraulically operated front and back covers of the bowl
- automatic water dosage system (optional)
- head with cutting knives not requiring regulation of distance from bowl
- head with 8 knives (optional)
- cutting chamber with compartment for salami (optional)
- equal stuff crumbling in all the bowl's volume caused by "cutting in the air"
- stuffing temperature control
- complete work safety system
- easy access to all cutter's elements during the washing after opening the front cover
- modern and ergonomic construction of the machine
- check opening hole in the lid
- construction meets the highest hygiene requirements (flat surfaces inclined at an angle of 3 degrees)
- automatic central lubrication system
- product contact surfaces are polished
- emergency STOP for bowl drive and cutterhead drive
- online diagnostic system over the Internet

HIGH-SPEED ROTATION VACUUM CUTTERS
WITH COOKING OPTION

KN-550 V COOKING
cooking option

High-speed rotation vacuum cutters with cooking option

High-speed rotation vacuum cutters with cooking option are equipped with double heating system for stuffing i.e.:

- heating of the bowl jacket
- steam injection to the knife chamber

Construction and user advantages

- the cutters equipped with the precise system for temperature control
- extended range of technological applications - the cutters can be used for preparation of stuffing of homogenized sausages (technology of standard cutter), as well as for preparation of hot stuffing
- ensure increase of work effectiveness thanks to possibility of using two operations in one machine i.e. initial thermal treatment of materials and their grinding (in production process of determined assortment, pies mainly)
- provide improvement of flavour of a ready product and increase of profitability of production

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GRINDERS

TAURUS AUTOMATIC ANGLE GRINDERS

Designed for **grinding fresh and frozen meat** (after preliminary grinding on a flaker or guillotine) to the required granulation and for performing other technological operations depending on the equipment used.

W-130 AL

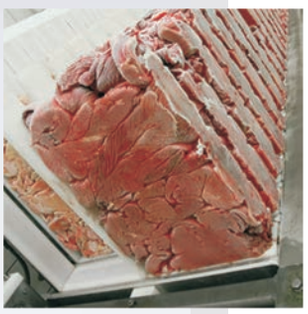
W-200 AL

Construction advantages

- high quality execution of stainless steel
- high quality of ground meat
- execution of pressing chamber and pressing worm in highly resistant to abrasion stainless steel
- two compatible drives of feeding worm and pressing worm ensure optimal adjustment of amount of dosed material
- smooth regulation of feeding worm (optional)
- automatic adjustment of material feeding to set load of pressing worm
- touch panel control for control of all work parameters
- cutting system includes high quality cutting devices
- pressing worm equipped with an automatic pushing out system (W-160, W-200)
- grinders equipped with peripheral device for separation of tendons and membranes (optional) and separator of poultry bones (optional)
- safety system for optimum working safety
- unique construction of pressing worms, worms in the production of CNC machining centres from a single piece of steel by machining
- a special version of the two scrolled grinding worms for heavy raw materials
- the possibility of choosing worms depending on the product range and customer requirements
- special execution of grinders for frozen fish blocks

AUTOMATIC ANGLE GRINDERS TAURUS W-200 B, W-280 B FOR CUTTING FROZEN MEAT IN BLOCKS

Designed for grinding frozen meat blocks down to -25°C to reuired granulations and making other technological operations depending on used euipment.



W-200 B

Construction advantages

- high quality execution of stainless steel
- high quality of ground meat
- execution of pressing chamber and pressing worm in highly resistant to abrasion stainless steel
- two compatible drives of feeding worm and pressing worm ensure optimal adjustment of amount of dosed material
- smooth control of the feeding worm
- automatic adjustment of the feeding speed to the set load of pressing worm
- cutting system includes high quality cutting devices
- pressing worm equipped with an automatic pushing out system
- safety system for optimum working safety
- unique construction of pressing worm, worms in the production of CNC machining centres from a single piece of steel by machining
- different types of worms depending on the product range and customer requirements
- hydraulic pressing worm push out system

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HIGH-PERFORMANCE AUTOMATIC ANGLE GRINDERS
W-200 B TG AND W-280 B TG TurboGrind SERIES
FOR CUTTING FROZEN MEAT IN BLOCKS AND FRESH MEAT

W-280 B TG

special version with
vertical loader and loader
for Dolav containers

Designed for grinding **meat blocks frozen** down to -25°C, **fresh meat**, as well other technical operations depending on the equipment in use. This device delivers high productivity as well as precise and clean cuts.

High Productivity and Heavy Duty

- worm body reduces friction of transported material
- high productivity for frozen and fresh meat
- device made out of AISI 304 stainless steel
- machined internal surfaces
- polished inner hopper surface
- throat diameter 200 mm or 280 mm
- high quality grinding
- pressing chamber and pressing worm made of acid-resistant and abrasion-resistant material
- unique feeding worm design
- two separate drives for the feeding worm and the pressing worm ensure optimal adjustment of ground meat volume
- system of inverters precisely configured for the operation of both the feeding and pressing worms
- maximum torque management system: entailing automatic adjustment of feed speed to match the pre-set feeding worm load. Continuous operation at maximum productivity is made possible by this system
- automatic separation of feeding worm if overloaded
- hydraulic pressing worm push out system
- grinder operation can be quickly configured for given raw material parameters
- automatic power supply adjustment depending on processed raw material
- soft-start

Touch Panel type control panel

- Touch Panel type control panel with additional buttons
- a programme for fresh meat and a programme for frozen meat
- feed operation and device start-up buttons
- worm drives-AC motors
- motor overload protection

Safety system

- protective cap for throat
- emergency switch on edge of the grinder
- locking notch-for safe hopper inspection with the power switched off

GRINDERS FOR FRESH MEAT
W-130 A, W-130 AZ

The latest design combining the reliability of work with the high quality of minced meat produced, is specially designed for small meat plants, companies operating in catering, or large restaurant chains.

W-130 A

W-130 AZ

Construction advantages

- stable and compact design of the entire grinder
- easy to use operator panel
- manual loading of raw material with good access for the operator – W-130 A model, and vertical loader – W-130 AZ model
- possible to work with both E-type containers and standard stuffing trolleys
- manual ejector of the pressure worm
- high quality of meat grinding
- two angularly arranged worms: a feeding and a pressing one
- application of the best cutting tools in various combinations
- use of high-performance tendon separators

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BRINE INJECTORS
BASIC

Designed for brine injection of meat, with bone or boneless, meat products, whole poultry and fish and fish fillets.

MHM-39/156

MHM-68/204

Construction advantages

- complete stainless steel made
- possibility of high and low injection
- system of multifunctional injection heads (1,2,3 and 4- needle)
- easy and fast change and cleaning of the injection head with needles
- injection head stroke of 200 mm as a standard (120, 250 mm is optional)
- two speeds of the injection head in a standard version
- smooth speed control (optional)
- simple and efficient power transmission system
- easy to read and operate control panel
- hand operated injection needles (optional)
- easy to clean and disassemble conveyer
- different conveyer speed controls
- highly efficient centrifugal pump made of stainless steel
- smooth brine pressure control up to 3 bar (4 bar as an option)
- functions of brine mixing and brine pumping out from the tank
- helical pump for heavy brine (optional)
- closed brine circulation system
- easy to clean multistage brine filtration system
- possibility of brine cooling by a rotary filter (option for MHM-68/204, MHM-136/408)

SPECIALIZED INJECTORS FOR FISH AND CHICKEN BREAST FILLETS MH-SAS**

Injectors MH-SAS
designed for technologically advanced process of injection of fish, fish fillets and chicken breast fillets.

MH-1650 SAS

Construction advantages

- stainless steel made
- latest, easy to assemble and disassemble injection head and easy to change for injection head with Ø 1,6; Ø 2; Ø 2,5; Ø 3 mm needles (standard equipment includes injection head with one set of needles with Ø 2 mm)
- injection head and conveyor's servo-drive systems
- unique removal system of brine overflow from surface of raw material
- easy to read and operate "touch panel"
- smooth speed control of injection head
- ability to inject of the raw material with different thickness from 30 to 80 mm
- control of needles height over the transporter
- programming of injection level i.e. determining the level of start and stop of lager of raw material
- smooth brine pressure control
- continuous measurement of brine temperature
- stability of parameters during work, high repeatability for low injection rates as well as high injection rates
- auto diagnostic system
- internet diagnostic system (option)
- table for wasing of the conveyor, heads and other parts of injector
- unique system of injection head hygiene, reducing to the minimum time of cleaning internal part of injection head

**SAS - Servo Automatic System

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INJECTORS

SINGLE HEAD AND MULTIPLE HEAD SAS** INJECTORS

TOUCH PANEL

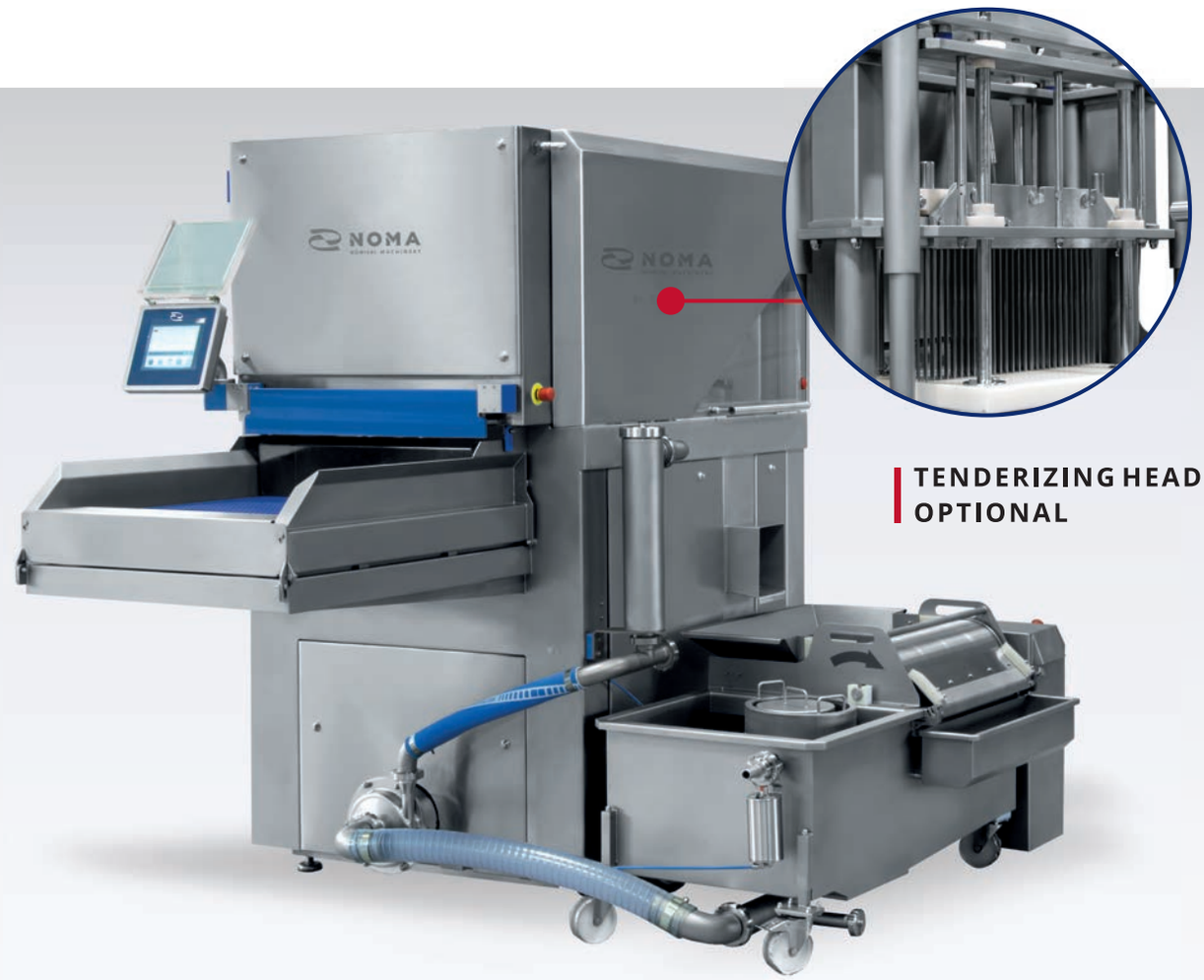
All injection processes are programmed and controlled using clear and easy-to-use touch panel, which allows full control over a broad spectrum of all injector's parameters.

MH-424W SAS

Single head and multiple head SAS injectors**
greater opportunities for control of injection process.
SAS SYSTEM injectors are intended to implement the most complex processes of injection covering a wide range of meat raw materials:

- muscles and elements of red meat with bone or boneless
- poultry carcasses and parts of white meat with bone or boneless
- fresh meat - white and red
- fish and fish fillets

**SAS - Servo Automatic System



TENDERIZING HEAD
OPTIONAL

MH-212 SAS

Construction advantages

- high repeatability of injection level
- low injection rates up to 10%, as well as high injection rates over 100%
- latest, easy to assemble and disassemble injection head and easy to change for injection head with Ø 2; Ø 2,5; Ø 3; Ø 3,5 mm needles (standard equipment includes injection head with one set of needles with Ø 3,5 mm)
- high production rates in kg/h
- maximum speed of injection head up to 60 cycles per minute
- injection of the raw meat of different thickness without extruding brine
- possibility of pre-programming of injection moment, i.e. determining the layer of raw material which will be injected
- drive of transporter synchronized with drive of injection head enables many combinations of injection patterns
- pumps independently supplying each head*
- specjal pump for high viscosity brines
- individual control system for each head*
- possibility of detach of separate head*
- each head can be equipped independently with required needles or tenderizing knives
- table for washing of the conveyor, heads and other parts of injector (for MH-75 - option)
- “Touch screen”control panel
- on-line Internet diagnostic system
- easy and fast replacement of needle heads
- unique system of injection head hygiene, reducing to the minimum time of cleaning internal part of injection head

  * for multiheads injectors

MULTI-STAGE BRINE FILTRATION SYSTEM

- internal filter with replaceable cartridges with different graduation, selected depending on the type of the needles used; the level of filter contaminantion is automatically controlled by the controller
- the FBN rotary filter with a slot drum for a very fine cleaning of return brine, option of matching the slot to the return brine
- specially shaped bottom of the filter
- possibility to use a protein filter (optional)

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INJECTORS MH-212 W SAS, MH-424 W SAS WITH AN INNOVATIVE WEIGHING AND INJECTION CONTROL SYSTEM

MH-212W SAS

MH-424W SAS

Construction advantages

- two measuring systems located at the beginning and the end of the injection zone, measure the weight of the raw material on the machine conveyor
- the advanced control system shows the current percentage increase in the weight of the raw material on the basis of the difference in indications
- the dynamic weighing system enables to control the injection level giving the operator the possibility of any adjustment in the program to maintain the set injection level for the whole lot, thus eliminating inaccuracies resulting from the quality of individual muscles, temperature
- full product control in terms of appropriate final product composition, compliance of the composition with the label and economic effect
- compact design-the weighing system integrated into the machine (no external weighing tables)

CONTROL PANEL

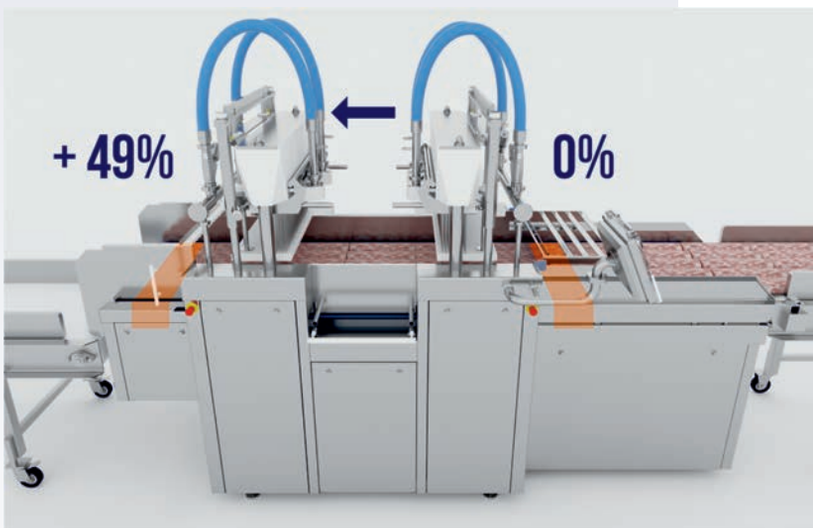
- high repeatability of the injection level
- monitoring of any deviations in the injection level and the possibility of their immediate correction
- identification of errors in the injection process resulting from human factor or technical problems (e.g. incorrect brine or raw material temperature, incorrect program parameters)
- information about machine downtime

The latest, easy to assemble and disassemble injection head

- individual control system for each head
- each head can be equipped independently with the required needles
- high repeatability of injection level
- smooth speed control of the injection head
- programming start and end of the injection process
- control of needles height over the transporter
- injection of the raw meat without extruding brine
- possibility of pre-programming of injection moment
- stability of parameters during work, both low and high injections are characterized by high repeatability

The integrated weighing system used in the injection process

- enables to control product performance continuously, without the need to stop the machine and weigh a batch of the product
- the operator can supervise and correct the parameters if necessary



The weighing system with SCADA monitoring give the possibility of full control of the injection level

Monitored data can be displayed in a form of an interactive window or a diagram of work in time-function.
All the monitored data can be saved as a file in a memory of a computer. In the event of an emergency the data can be retrieved by the monitoring program. It's also possible to print a diagram of parameters in time-function as a documentation of a technological process.

With the program it is possible to observe remotely on a screen and to save on a computer, all the technological data of injector's work, such as:

- injection volume - name and number of current programme
- number of batch
- number of operating personnel
- control of the set injection level
- time of process
- brine pressure
- brine temperature
- head speed
- injection mode
- time of injection
- time of shutdown
- head positions
- conveyor stroke
- current alarms
- status of the device (device working mode)

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TENDERIZERS DRIPPING TUNNEL

Tenderizers designed for tenderizing and softening of meat muscles in order to increase absorption of brine and tenderness of product. Perfect in cutting hard tissues and muscles tendons which increase the absorption surface of brine, that results in an excellent tendering of individual meat elements.

T-600S

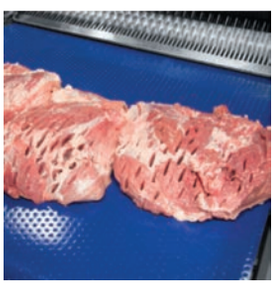
TN-700

Construction advantages (T-600S)

- stainless steel execution
- multi-roller system based on two tenderizing shafts
- easy assembly and disassembly of shafts for maintenance and cleaning process
- upper shaft's smooth adjustment of pressure force allows for optimal working conditions for different meat elements
- possibility of use of different shaft's shapes, depending on a type of operations performed by the device
- auto adjustment of thickness of tenderized meat from a control panel
- two synchronized transport tables - loading and discharge

Construction advantages (TN-700)

- stainless steel execution
- multi-knives tenderizing head
- threestage adjustment of thickness of tenderized meat, for elements with skin and without skin
- stepless adjustment of notching head speed



TO-2

Dripping tunnel TO-1, TO-2
is a device for the operation of separating excess of brine while closing the holes formed by needles in the injection process of meat elements and poultry. It can be used for protein activation in muscle for configu-rations of industrial massaging and marinating.

BRINE MIXERS (MS)
DUAL BRINE PREPARATION SYSTEM (ZMS)

The mixers allow for quick and simple producing of homogenous brine, without deposits with the use of dry substances. Possibility of using a cooling version and a microprocessor control allows for full control of brine preparation process.

Dual brine preparation system
is designed for preparation brine with lots of dry ingredients. The system allows for quick and effective achievement of homogenous brine used in food processing. Two tanks (preparing and storing tanks) two highly efficient pumps, a computer control system and cooling system - all of this enables to carry out further injection and massaging processes effectively.
This directly affects the quality improvement of the final product.

ZMS-2000

Construction advantages (MS)
- complete stainless steel
- construction meeting the highest hygienic requirements
- triple mixing system of solution components (mechanical, circulating and injection agitators)
- automatic dosing of dry ingredients
- possibility of transportation of ready brine
- efficient centrifugal pump
- precise calibration of brine tank
- it is possible to integrate the machine with the injector
- short time for obtaining a homogenous brine solution
- full control of set water quantity (option)
- full control of solution temperature (option)
- smooth internal part of the hopper with the vibrating device (optional) for effective adding of dry ingredients to water
- possible to adapt the machine for the preparation of thick sauces
- membrane pump for thick brine (option)
- possibility of brine sterilization with UV lamp (option)
- easy to read and operate“touch panel”

Mixer tank
- precise calibration of brine tank
- double mixing system of solution components (mechanical, and injection agitators)
- it is possible to integrate the machine with the injector
- short time for obtaining a homogenous brine solution
- possible to adapt the machine for the preparation of thick sauces

MS-1000S+

PUMP
An efficient centrifugal pump, forcing the brine circulation, enables excellent blending of dry ingredients in water.
- efficient centrifugal pump
- automatic dosing of dry ingredients
- possibility of transportation of ready brine

Brine mixers S+
- full control of set water quantity - automatic water dosingfull
- control of solution temperature smooth
- internal part of the hopper with the vibrating device for effective adding of dry ingredients to water
- easy to read and operate“touch panel”

OPTION for S+ version
- weighing system

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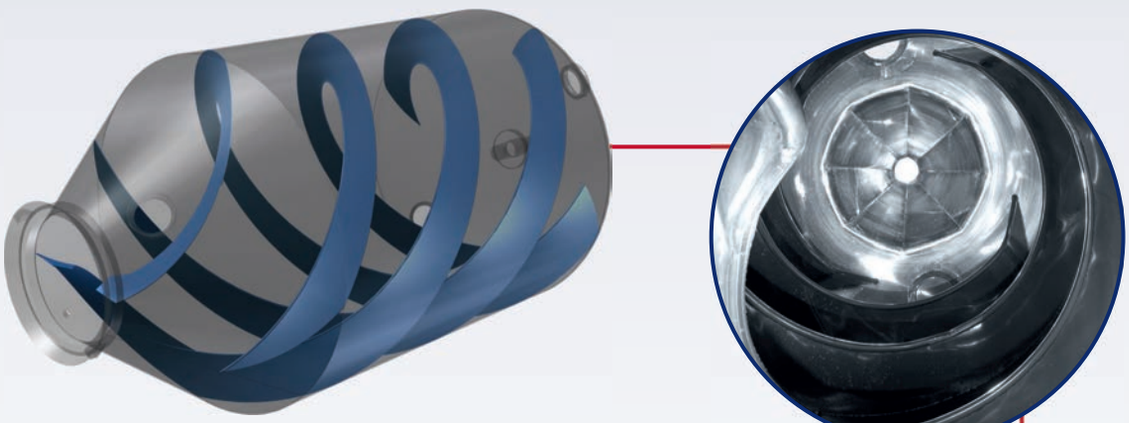
TILTED VACUUM TUMBLERS (MAH)

Tilted vacuum tumblers MAH

Vacuum tumblers MAH series for massaging in vacuum environment meat products, characterized by adjustable drum angle during both the loading and unloading as well as working time.

Due to variable tilting angle the tumblers are ideal for use in modern process automation systems, loading/unloading and transportation for muscles massaging. The MAH vacuum tumblers are available with a cooling jacket and without cooling jacket.



Spiral blade system

Results in significantly increased movement of meat along the circumference of the tumbler drum while moving it in a horizontal plane (front-back). At the same time it has a milder effect on massaged meat elements, which favorably affects their appearance and final process yield, particularly with regard to the most delicate meats. During massaging the meat stream flows along the spiral to the back of the drum, then the next phase of the revolution raises the meat to the top and returns it to the front according to a sinusoidal algorithm. This results in more intense rubbing of the individual elements to give a better massaging effect in a much shorter time.

MAH-5200 PSCH

Construction advantages

- execution of stainless steel
- microprocessor controller
- smooth adjustment of all massaging parameters
- adjustable angle of tumbler's drum
- possibility of automation of loading and unloading of muscles
- adapted for use with automated transportation lines of meat: "brine injector-massaging tumbler" and "massaging tumbler-ready-made-products"
- load cells weighing system*
- automatic closing and opening of lid
- security system for vacuum pump
- two technological revision holes
- computer monitoring system of machine perform
- innovative blade system allowing:
  - shortening of massaging time
  - improve a quality of muscle
  - ideal massaging of most delicate parts of meat
  - minimization of yield losses

*optional

Transport systems of muscles

Using the MAH vacuum tumblers we can design modern transport solutions for muscle, tailored to the individual needs of meat processing plants. To minimize time losses and inter-operational losses, to eliminate weight errors, to minimize number of operation personnel in the departments of brine injection and meat massaging.

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TUMBLERS

VACUUM TUMBLERS (MA)

MA-1000 PS

Construction advantages

- stainless steel construction
- precisely designed drum shape and blades system of the tumbler
- microprocessor control system
- smooth control of the massaging parameters
- automatic system of vacuum control
- multistage system of vacuum pump protection
- technological port
- brine conscription valve
- possible massaging in a replaceable gas environment
- computer monitoring system of the machine's work parameters
- weighing system (optional)

Vacuum tumblers
are designed to improve vividness of the muscles, meat elements, small meat pieces, chicken bodily sizes and elements in the vacuum environment, ensuring the high quality of meat products.

MA-2000 PSCH

Vacuum tumblers with cooling system
designed to achieve a high quality of meat products requiring to respect very strict technological rigour.

Tumblers MA-G with heating and cooling system
for technologically advanced processes of cooking, steaming, marinating, curing and massaging in a controlled temperature environment.

COOLING SYSTEM ADVANTAGES

- insulated double cooling jacket
- shortening to a minimum the massaging time
- maintaining the massaging temperature at a required level
- improving and stabilizing the natural colour of the products
- high production capacity
- high quality of products independent of pickling room conditions
- optimum protein bonding

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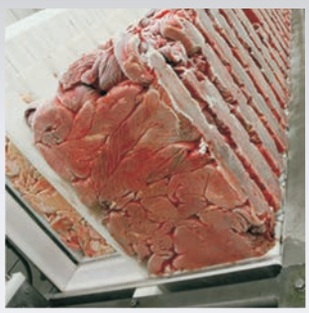
TUMBLERS

VACUUM TUMBLERS MAH-PS/D WITH A DEFROSTING SYSTEM



Vacuum tumblers MAH-PS/D designed for a technologically advanced processes of thawing blocks of meat, poultry, seafood and others. The blade system allows for a gentle massaging and achieving the high quality of thawed products. Machines are equipped with control system which allow for a total control of the defrosting process.

MAH-G-10200 PS

Technological advantages

- they enable combining several technological processes in one device, without the need for additional loading of the load
- possibility to exclude weight losses
- improvement of the microbiological conditions of production processes
- shortening the massaging time to a minimum
- controlling the process temperature at the desired level
- improvement and consolidation of the natural colour of the product
- high production efficiency
- improving the microbiological quality of products

HEATING SYSTEM

- insulated cooling jacket around the perimeter of the drum
- glycol system of heat distribution
- external box with fittings, connecting with the plant steam installation
- possibility to work with an autonomous steam generator

COOLING SYSTEM

- insulated cooling jacket around the perimeter of the drum
- external cooling unit
- glycol cooling system

LOADING SYSTEMS OF TUMBLERS

WPH **SYSTEM**
LOADING UNIT

WPD **LOADING SYSTEM FOR BOX-PALLETS**

WP-1 **MECHANICAL**
LOADING UNIT

WP-3 **VACUUM**
LOADING SYSTEM

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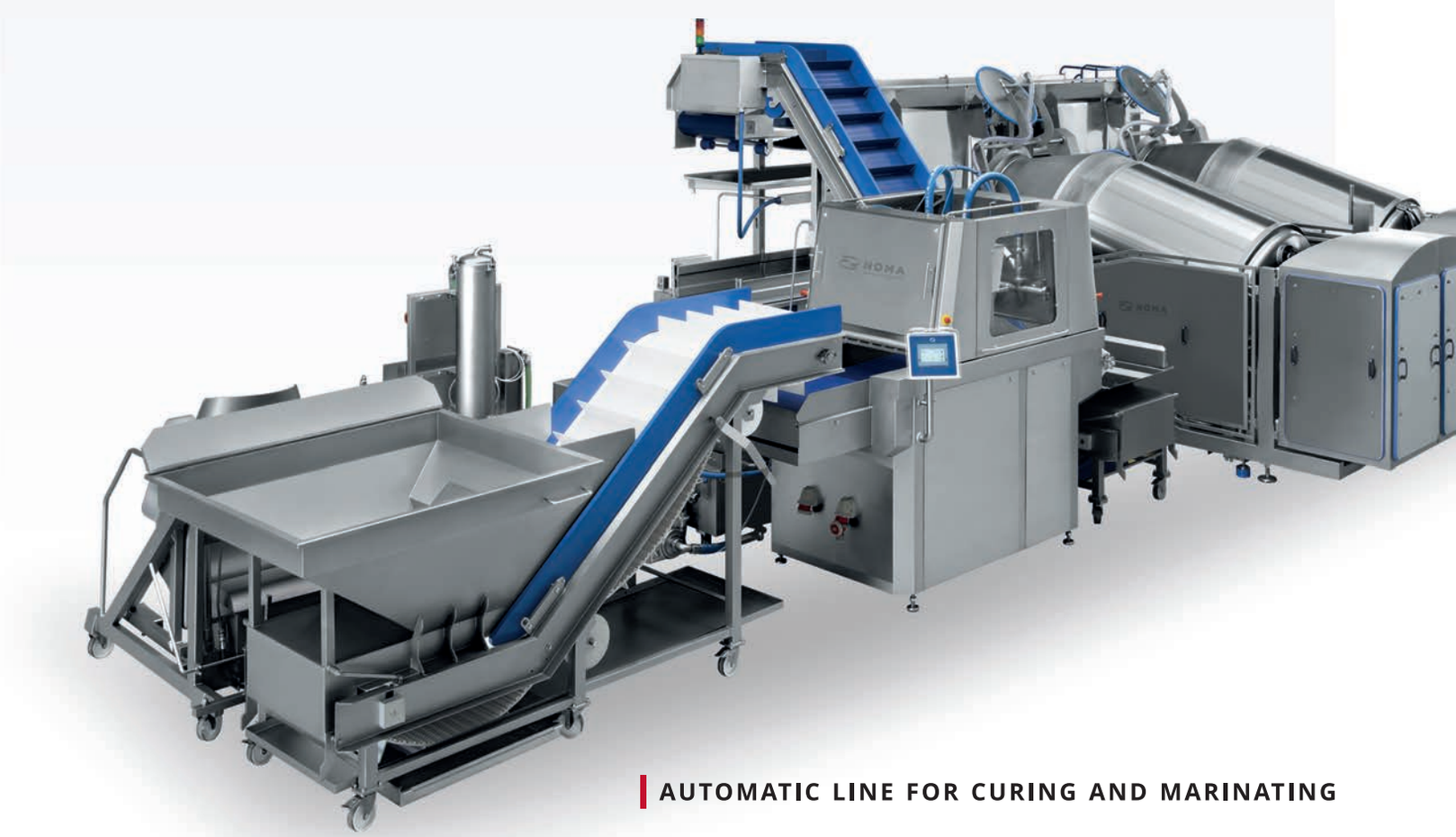
TUMBLERS

COMPLETE AUTOMATIC INJECTION AND TUMBLING LINES

AUTOMATIC PRODUCTION LINE FOR HAM AND BACON

MM LINE FOR INJECTING MEAT WITH MEAT



AUTOMATIC LINE FOR CURING AND MARINATING

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WASHERS

CONTAINER WASHERS

Container washers designed to wash all kinds of plastic containers, covers of containers, euro-pallets*, giving optimal washing effectiveness.

* MPU-600

The MP-300, MPU-600 container washers

are available in a modular version (with possibility of extension of the pre-wash module and/or the air blow-off module).

MPP-150

MP-400

MPU-600

Construction advantages

- stainless steel construction
- closed water circulation system
- stainless steel centrifugal pump
- water heating systems: electric, steam, electric-steam, gas, oil and hot water
- high efficiency - up to 600 containers per hour (for MPU-600)
- regulation and distribution of rinsing water in terms of: intensity of rinsing, refreshing of tank water, overflow
- guiding mechanism for washed containers*
- mechanical conveyor for containers transport with a speed regulation (chain conveyor)
- effective water filtration system:
  - filter with perforated sieve and clarifier
  - self-cleaning rotating filter with impurities separator (optional)
- high pressure nozzles with adjustable angle for optimum results
- system of cutting off rinsing*
- chemical dosing
- clean container discharge chute*
- counting of containers (optional)*
- optional devices available, i.e. pre-wash and air blow-off modules
- vapour extraction system (optional)
- overhead rails for single operator use (MPP-150, MP-300)
- working time counter (option)

* refers to MP-300, MPU-600

CLEANETIC
Industrial Washing Systems

MODULAR CONTAINER WASHERS

Universal modular container washers
modular tunnel construction allows
for universal connection of each module
used in the container washing process.

MPU-600+MW+SO-600

Pre-wash module (MW)

is designed to wash food industry containers up to (length/width/ height) of 1200/800/400 mm for MW-600 and 600/450/400 mm for MW-300.
The pre-wash module is mechanically and electrically compatible with the main washing module.

Construction advantages

- stainless steel construction
- high quality of washing (increasing of washing efficiency even up to 100%)

Air blow-off module (SO)

designed to remove water from the surface of the containers and other packages after washing and disinfection processes in container washers.
It is compatible with others modules of the washing line.

Construction advantages

- stainless steel construction
- high efficiency
- limit water consumption in the washer (directing of recovered water to a tank)
- individual drive of a conveyor with a smooth speed regulation
- regulation of intensity of air stream (fast change of distance of nozzles from container surface)

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WASHERS

AUTOMATIC INDUSTRIAL CONTAINER WASHERS

Designed to wash containers of dimensions max. L x W x H 700x600x400 mm), of efficiency from 1200 containers an hour, provide effective washing and disinfection process with very low media consumption. Equipped with extremely efficient container air blow-off system.
The container washers are easily adaptable for use with an automatic warehouse of containers.

MPA-1200

Construction advantages

- work mode: pre-wash section, washing section, rinsing, steaming (optional) and air blow-off system
- possibility of any configuration of the following modules, depending on the expected efficiency and degree of soiling of containers
  - main-washing module
  - pre-wash modules
  - rotary filter
- plate link chain
- air blow-off module with 8 ventilators (option)
- closed water circulation system with filtration system, self-cleaning rotating filter as an option
- highly efficient : output from 1200 per hour (dim. 400x600 mm)
- two water tanks with 450 l capacity
- automatic chemical dosing pump with concentration display
- stainless steel nozzles with easy to disassemble washing manifolds
- water heating systems: electric, steam, steam-electric, oil, gas, water or steam exchanger
- automatic water temperature control system
- proportional valve on rinsing - regulates water consumption depending on the efficiency of the machine
- gravitational, self-regulating pressure top rail
- guards protection against accidental opening
- opening up the side guards

Touch screen control panel

- easy to use colour 5.7 ”touch panel
- switching the pump on and off with operation signaling
- turning the conveyor on and off together with smooth speed regulation and operation signaling
- washing temperature control system and temperature hysteresis with a clear display of set and current parameters
- a system that allows saving water in the device in the event of a temporary lack of container in the tunnel
- automatic water level control and correction system
- switching on the dispenser together with the indication of the detergent shortage
- safety switches
- container counter
- SCADA monitoring system (option)
- water consumption measurement (option)

CLEANETIC
Industrial Washing Systems

BUGGY WASHER
BOX PALLET WASHER
PALLET WASHER
SMOKE STICK WASHER

Buggy washer MWF
Box pallet washer MPD-1
chamber type

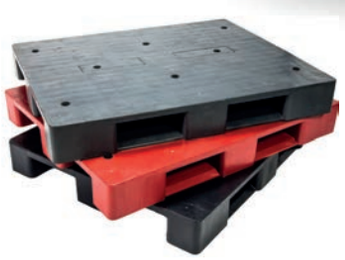
designed to wash standard 200 ltr and /or 300 ltr buggies (MWF-1, MWF-2) / dolav containers (MPD-1). It allows achieving maximum washing and disinfecting effectiveness.

MWF-1

MPD-1

Pallet washer

for washing pallets that are no larger than: 1000 mm x 1200 mm x 150 mm (length x width x height); the washer gives optimal washing and disinfection effectiveness.



MEP-100

MK-3 Smoke stick washer
chamber type

is designed to wash smoke sticks, slaughter hooks and all other small metal tools used in food processing The washer has a compact drum construction giving durability of the machine and optimum washing results.

MK-3

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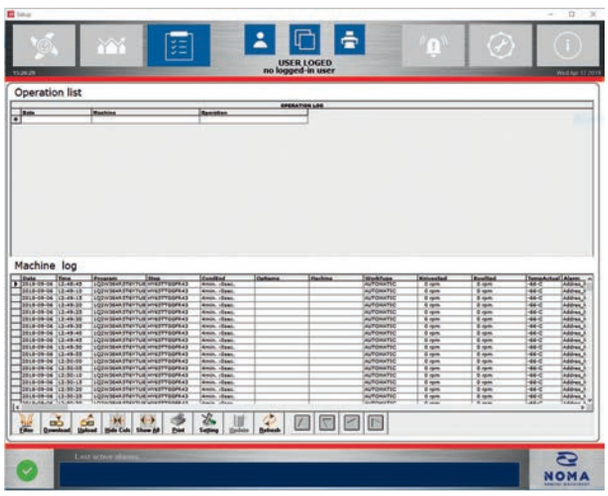
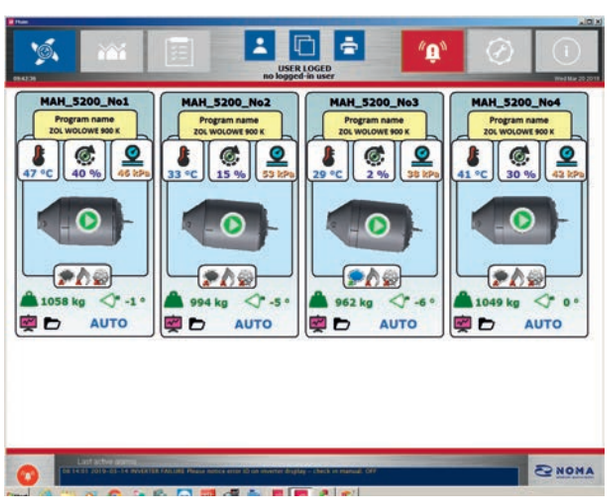
MONITORING SYSTEM SCADA (OPTIONAL)

Screen view with parameters



The SCADA Monitoring system

enables to monitor operation of cutters, vacuum tumblers, injectors and brine mixers with the program it is possible to observe remotely on a screen and to save on a PC computer, all technological data of machines work. Monitored data can be displayed in a form of an interactive window or a diagram of work in time-function. All monitored data can be saved as a file in a memory of a computer. In the event of an emergency the data can be retrieved by the monitoring program. It's also possible to print a diagram of parameters in time-function as a documentation of a technological process.



Diagrams of batch temperature, vacuum and drum speed in time-function

TECHNICAL DATA

Cutters KN Type		KN-60	KN-90	KN-125	KN-200	KN-330	KN-550	KN-750
Bowl capacity	dm^3	60	90	125	200	330	550	750
Cutterhead speed /working (adjusted)/	rpm	200÷6000	200÷5500	100÷5000	100÷4800	100÷4500	100÷3800	200÷3500
Bowl speed (adjusted)	rpm	2÷15 ± 3%	2÷18 ± 3%	2÷20 ± 3%	2÷20 ± 3%	2÷20 ± 3%	2÷15	2÷15
Dimensions L/W/H	mm	1660/1310 /1585	1710/1430 /1620	2740/2270 /1875	2790/2625 /2035	3070/2650 /2125	3490/2940 /2400	3700/3575 /2565
Weight	kg	1170	1300	2480	3350	4200	5600	7700

Vacuum Cutters KN-V Type		KN-125 V	KN-200 V	KN-330 V	KN-550 V
Bowl capacity	dm^3	125	200	330	550
Cutterhead speed /working (adjusted)/	min/rpm	200÷5000	100÷4800	100÷4500	100÷3800
Bowl speed (adjusted)	min/rpm	2÷20 ± 3%	2÷20 ± 3%	2÷20 ± 3%	2÷15 ± 3%
Cutting cycle vacuum	%	40÷90	40÷90	40÷90	40÷90
Dimensions L/W/H	mm	2710/2460/1875	2950/2860/2025	3185/3090/2200	3450/3470/2450
Weight	kg	2780	4750	6300	9500

Angle grinders Type		W-130 AS W-130 AL	W-130 A W-130 AZ	W-160 AL	W-200 AL	W-200 E W-200 BE TG[1]	W-200 B W-200 B TG[1]	W-280 AL W-280 B[1] W-280 B TG[2]
Diameter of throat	mm	130	130	160	200	200	200	280
Capacity of hopper	dm^3	360 (110)**	110/360	360	450	1200	600	1200
Max. power of pressing worm drive motor	kW	13,5/20	11	25/34 lub/or 28/38	37/53	37/53 96[1]	55 96[1]	90/125 110[1] 165[2]
Power of drive motor of loader	kW	1,1	1,1	1,1	1,1	1,1	1,1	1,1
Output ***	kg/h	up to 3000	up to 2100	up to 8000	up to 12000	up to 12000	up to 2500÷3000 4000÷12000[1]	up to 21000 4500÷6000[1] 6500÷21000[2]
Dimensions L/W/H	mm	2395/1790 /2895*	2395/1790 /2895*	2655/1995 /3105*	3160/2045 /3155*	2452/1907 /2391	3282/2031 /3330*	3960/2390 /3455
Weight	kg	1500*	1200/1400	2300*	3100*	3450 3700[1]	3920*	6550*

* dimensions with vertical loader ** technical data of the W-130 grinder in the version for manual loading
*** capacity depends on the type of meat, its size, temperature and product granulation

Brine injectors MHM Type		MHM-21/84	MHM-21/84A	MHM-39/156	MHM-68/204	MHM-68 S
Number of sockets	pcs.	21	21	39	68	68
Maximum number of needles	pcs.	up to 84	up to 42	up to 156	up to 204	up to 204
Conveyor width	mm	326	326	376	525	525
Maximum output	kg/h	500÷2000	500÷2000	500÷3500	500÷6000	500÷6000
Injection height stroke	mm	200	200	200 (250[1])	200 (250[1])	200
Dimensions L/W/H	mm	1440/760 /1840	1400/760 /2020	1770/840 /2000	1820/990 /1970	1820/1750 /1970
Weight	kg	330	330	430	490	550

[1] - option for meat without bones

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TECHNICAL DATA

Brine injectors SAS Type		MH-117 SAS	MH-117 T SAS	MH-234 SAS	MH-234 T SAS	MH-212 SAS	MH-212 T SAS	MH-424 SAS	MH-424 T SAS
Heads quantity	pcs.	1	1+1	2	2+1	1	1+1	2	2+1
Number of needles	pcs.	117	117	234 (2x117)	234	212	212	424 (2x212)	424 (2x212)
Number of knives	pcs.	–	257	–	257	–	784	–	784
Conveyor width	mm	450	450	450	450	750	750	750	750
Maximum output	kg/h	5000	5000	7000	7000	6000	6000	10 000	10 000
Volume of injection	%	5÷120	5÷120	5÷120	5÷120	5÷120	5÷120	5÷100	5÷100
Dimensions L/W/H	mm	2200/2040 /2200	3010/2070 /2165	3200/2350 /2200	3010/2070 /2165	2800/2460 /2200	3500/2460 /2200	3400/2420 /2170	3930/2485 /2165
Weight	kg	1440	2010	2465		1530	2130	2190	2440

Brine injectors SAS Type		MH-516 SAS	MH-516 T SAS	MH-774 SAS	MH-212 W SAS	MH-424 W SAS	Specialized brine injectors MH-SAS MH-350 SAS	MH-660 SAS	MH-700 SAS	MH-1650 SAS
Heads quantity	pcs.	2	2+1	3	1	2	1	1	2	2
Number of needles	pcs.	516 (2x258)	516 (2x258)	774	212	424 (2x212)	212/350	660	424/700	1640
Number of knives	pcs.	–	992	–			–	–	–	–
Conveyor width	mm	1050	1050	1050	750	750	750	600	750	1050
Maximum output	kg/h	20 000	20 000	25 000	6000	10 000	6000	5000	10 000	7000
Volume of injection	%	5÷100	5÷100	5÷100	5÷120	5÷100	5÷120	5÷100	5÷100	5÷100
Dimensions L/W/H	mm	3700/3060 /2170	4430/2760 /2400	4905/2750 /2400	3259/2430 /2170	3770/2545 /2170	2800/2460 /2200	3000/2210 /1870	3400/2420 /2170	3310/2860 /1950
Weight	kg	2160			1530	2520	1530	1000	2190	1700

Brine mixers MS Type		MS-250	MS-400 MS-400 S+	MS-1000 MS-1000 S+	MS-1500 S+	MS-2000 S+
Container capacity	dm^3	250	400	1000	1500	2000
Installed power	kW	2	2	4,5	4,5	6
Dimensions L/W/H	mm	1380/1050/1850	1380/1150/1930	1920/1420/2100	2200/1600/2290	2200/1810/2655
Weight	kg	140	180	370	470	600

Brine mixers MS-CH Type		MS-400 CH	MS-1000 CH	MS-1500 CH	MS-2000 CH
Container capacity	dm^3	400	1000	1500	2000
Installed power	kW	2,5	5	5	6,5
Cooling yield of cooling unit	kW	4,6	10	15,2	21,6
Total installed electric power of refrigerating unit	kW	~2,3	~5,3	~8,9	~11,5
Dimensions L/W/H	mm	1700/1150/1950	2280/1650/2230	2600/1830/2290	2595/1935/2655
Weight	kg	390	740	870	1120

Brine mixers BM Type		BM-1000	BM-1000CH	BM-1500	BM-1500CH	BM-2000	BM-2000CH
Container capacity	dm^3	1000	1000	1500	1500	2000	2000
Installed power	kW	~4,6	~5,5	~5,5	~5,5	~6	~6
Cooling yield of cooling unit	kW	–	10	–	15	–	22
Total installed electric power of refrigerating unit	kW	–	~5,3	–	~9	–	~11,5
Dimensions L/W/H	mm	1900/1550 /2270	2260/1730 /2300	2170/1865 /2200	2570/1930 /2240	2170/1865 /2665	2570/1930 /2800
Weight	kg	~440	~740	~700	~870	~800	~1000

Dual brine preparation system ZMS Type		ZMS-750	ZMS-1000	ZMS-1500	ZMS-2000
Tank capacity	dm^3	2x750	2x1000	2x1500	2x2000
Installed power	kW	3	8	8	11
Dimensions	mm	3250/1590/2320	3300/2100/2450	3850/2300/2450	4070/2280/2500
Weight	kg	900	1100	1200	1650

Tenderizers Type		TM-300	TN-700	TN-1000	T-600S
Number of cutting knives	pcs.	224	833	1026	–
Output	kg/h	4000	4000	5000	do/up to 8000
Number of revolutions	rpm	30÷60	17÷34	15÷50	–
Number of cutting shafts	pcs.	–	–	–	2
Number of knives on a shaft	pcs.	–	–	–	69 (101)*
Max. height of tenderized meat	mm	160	160	160	180
Tenderizing width	mm	325	600	1050	600
Dimensions L/W/H	mm	1780/870/1520	1700/1120/1520	1650/1550/1460	1900/1268/1522
Weight	kg	440	570	1300	900

* optional

Dripping tunnel TO Type		TO-1/TO-1A	TO-2/TO-2A
Length of drum	mm	3500	2500
Inclination of drum		0-3	0-3
Drum revolutions	rpm	0÷25	0÷25
Dimensions	mm	4390 (4025[1])/1500/2080÷2340	3370 (3025[2])/1500/1810÷2000
Weight	kg	1380	1165

[1] - version TO-1A
[2] - version TO-2A

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TECHNICAL DATA

Vacuum tumblers Type		**MA-500 PS**	**MA-1000 PS**	**MA-1500 PS**	**MA-2000 PS**	**MA-2800 PS**	**MA-3600 PS**	**MA-5400 PS**	**MA-7200 PS**	**MA-10000 PS**
Drum capacity	dm^3	500	1000	1500	2000	2800	3600	5400	7200	10 000
Maximum load	kg	~250	~500	~750	~1000	~1400	~1800	~2700	~3600	~5000
Drum speed	rpm	0,5÷14	0,5÷12	0,5÷8	0,5÷8	0,5÷10	0,5÷7	0,5÷6	0,5÷5	0,5÷5
Installed power	kW	2,2	2,2	3,3	3,3	5,6	4,5	6,6	8,3	10,2
Dimensions L	mm	2000	2540	2700	3100	3300	3700	4040	4100	4830
W	mm	1295	1340	1375	1380	1615	1795	1950	2080	2200
H	mm	1700	1700	1940	1940	1950	2030	2260	2470	2450
Weight	kg	450	640	1050	1100	1900	2150	2900	3200	3600

Vacuum tumblers with cooling system Type		**MA-500 PSCH**	**MA-1000 PSCH**	**MA-1500 PSCH**	**MA-2000 PSCH**	**MA-2800 PSCH**	**MA-3600 PSCH**	**MA-5400 PSCH**	**MA-7200 PSCH**	**MA-10000 PSCH**
Drum capacity	dm^3	500	1000	1500	2000	2800	3600	5400	7200	10 000
Maximum load	kg	~250	~500	~750	~1000	~1400	~1800	~2700	~3600	~5000
Drum speed	rpm	0,5÷14	0,5÷12	0,5÷8	0,5÷8	0,5÷10	0,5÷7	0,5÷6	0,5÷5	0,5÷5
Installed power	kW	2,6	2,6	3,7	3,7	6,0	5,5	7,5	9	11
Type of cooling unit		ZCh-1	ZCh-2	ZCh-2	ZCh-2	ZCh-3	ZCh-3	ZCh-3	ZCh-4	ZCh-4
Dimensions L	mm	2000	2550	2740	3100	3300	3700	4060	4200	4890
W	mm	1320	1365	1400	1390	1630	1780	1950	2090	2200
H	mm	1700	1700	1940	1940	1950	2060	2280	2480	2450
Weight	kg	640	770	1350	1550	2200	2550	3400	3800	4300

Tilted tumblers Type		**MA-200 PS**	**MA-200 PSCH**	**MA-300 PS**	**MA-300 PSCH**
Drum capacity	dm^3	200	200	300	300
Maximum load	kg	~120	~120	~180	~180
Mixing arm speed	rpm	–	–	–	–
Drum speed	rpm	0,5÷15	0,5÷15	0,5÷15	0,5÷15
Installed power	kW	1,6	2,5	~1,6	~3
Dimensions L	mm	1730	1730	1833	1845
W	mm	1200	1200	1290	1280
H	mm	1498	1495/1700	1580/1765	1580/1700
Weight	kg	370	490	420	580

Tilted vacuum tumblers MAH Type		**MAH-3200 PS MAH-3200 PS/D**	**MAH-5200 PS MAH-5200 PS/D**	**MAH-7200 PS MAH-7200 PS/D**	**MAH-10200 PS MAH-10200 PS/D**
Drum capacity	dm^3	3200	5200	7200	10200
Maximum load	kg	~2000/~1000**	~3100/~1500**	~4300/~2200**	~6100/~3000**
Drum speed	rpm	0,5÷12	0,5÷11	0,5÷11	0,5÷10
Obtainable vacuum	%	÷95	÷95	÷95	÷95
Installed power	kW	9,5/11,5***	14/15***	18/19***	21/22
Dimensions L	mm	4300	4530	4830	5400
W	mm	2560	2370	2520	2760
H	mm	2340÷2860	2290÷2900	2450÷2950	2650÷2950
Weight	kg	~4500	~5025	5800	7000

** maximum load of frozen blocks for model PS/D and PSCH/D
*** installed power for model PS/D

Tilted vacuum tumblers MAH Type		**MAH-3200 PSCH MAH-3200 PSCH/D**	**MAH-5200 PSCH MAH-5200 PSCH/D**	**MAH-7200 PSCH MAH-7200 PSCH/D**	**MAH-10200 PSCH MAH-10200 PSCH/D**	**MAH-12200 PSCH/PS MAH-12200 PSCH/D**
Drum capacity	dm^3	3200	5200	7200	10200	12220
Maximum load	kg	~2000/~1000**	~3100/~1500**	~4300/~2200**	~6100/~3000**	~7300/~3600**
Drum speed	rpm	0,5÷12	0,5÷11	0,5÷11	0,5÷10	0,5÷10
Obtainable vacuum	%	÷95	÷95	÷95	÷95	÷95
Installed power	kW	11,5	15	19	22	22
Dimensions L	mm	4300	4530	4830	5400	6050
W	mm	2560	2370	2520	2760	2560
H	mm	2340÷2860	2290÷2900	2450÷2950	2650÷2950	2740
Weight	kg	~4500	~5025	5800	7000	8500

** maximum load of frozen blocks for model PS/D and PSCH/D
*** installed power for model PS/D

Tumblers MA-G Type		**MA-G-500 PSCH**	**MA-G-1000 PSCH**	**MA-G-1500 PSCH**	**MA-G-2000 PSCH**	**MA-G-3600 PSCH**	**MA-G-5400 PSCH**	**MA-G-7200 PSCH**	**MA-G-10000 PSCH**
Drum capacity	dm^3	500	1000	1500	2000	3600	5400	7200	10000
Maximum load	kg	~250	~500	~750	~1000	~1800	~2700	~3600	~5000
Drum speed	rpm	0,5÷14	0,5÷12	0,5÷8	0,5÷8	0,5÷7	0,5÷6	0,5÷5	0,5÷5
Installed power	kW	2,6	2,6	3,7	3,7	5,5	7,5	9	11
Type of cooling unit		ZCh-1	ZCh-2	ZCh-2	ZCh-2	ZCh-3	ZCh-3	ZCh-4	ZCh-4
Dimensions L	mm	2150	2550	2770	3150	3700	4060	4200	4920
W	mm	1295	1360	1415	1420	1920	1930	2100	2200
H	mm	1700	1700	1940	1940	2030	2280	2480	2450
Weight	kg	640	770	1350	1550	2550	3400	3800	4300

TECHNICAL DATA

Tumblers MAH-G Type		**MAH-G-3200 PSCH**	**MAH-G-5200 PSCH**	**MAH-G-7200 PSCH**	**MAH-G-10200 PSCH**	**MAH-G-12200 PSCH**
Drum capacity	dm^3	3200	5200	7200	10200	12200
Maximum load	kg	~2000	~3100	~4300	~6100	~7300
Drum speed	rpm	0,5÷12	0,5÷11	0,5÷11	0,5÷10	0,5÷10
Installed power	kW	11,5	15	19	22	22
Type of cooling unit		ZCh-3	ZCh-3	ZCh-4	ZCh-4	ZCh-5
Dimensions L	mm	4420	4656	4860	5400	6150
W	mm	2360	2370	2520	2760	2645
H	mm	2250÷2860	2280÷2900	2450÷2950	2600÷2950	2740
Weight	kg	~4500	~5025	5800	7000	8500

Container washers Type		**MPP-150**	**MP-300**	**MP-400**	**MPU-600**
Efficiency (containers/h)		up to 150	up to 300	up to 400	up to 600
Pump's motor power	kW	3(5,5)**	5,5 (7,5)**	7,5	7,5
Heating element's power	kW	18 (27)**	27 (3 phasesx9 kW)	27 (3 phasesx9 kW)	27 (36)** (3 phasesx9 (12) kW)
Steam supply	110-135°C	3/4" max., (0,15-0,3 MPa)		1" max., (0,15-0,3 MPa)	
Water supply	40-45°C	3/4" max.; (0,3-0,6 MPa)		3/4" max.; (0,3-0,6 MPa)	
Tank's capacity	l	200	340	340	380
Dimensions L+L1/W/H	mm	2629+2300/1057/1820	3630+2300/1210/2004	4000+2310/1390/2010	4100+2400/1510/1985
Weight	kg	460	710	790	850

** depending on version

Automatic industrial container washer Type		**MPA 900**	**MPA 1200**
Efficiency (containers/h)		up to 900	up to 1200
Steam connection	110-135°C	1"; 0,15-0,3 MPa	1"; 0,15-0,3 MPa
Water connection	40-45°C	3/4" 0,3-0,6 MPa	3/4" 0,3-0,6 MPa
Compressed air		0,5÷0,8 MPa	0,5÷0,8 MPa
Tank's capacity	l	2x450	2x450
Total power installed	kW	~43	~54,5
Washer dimensions with air blow-off module L/W/H	mm	8822/1556**/2751***/1760	11775/1556**/2751***/1760
Weight	kg	2510**/2680***	2880**/3050***

** without rotary filter
*** with rotary filter

Pre-wash module (MW) **Air blow-off module (SO)** Type		**MP-300** **+MW-300**	**MP-300** **+MW-300** **+MW-300**	**MPU-600** **+MW-600**	**MPU-600** **+MW-600** **+MW-600**	**SO-150**	**SO-300**	**SO-600**
Pump's motor power	kW	5,5 (7,5*) 5,5 (7,5*)	5,5 (7,5*) 5,5 (7,5*) 5,5 (7,5*)	7,5 (11*) 5,5 (7,5*)	7,5 (11*) 5,5 (7,5*) 5,5 (7,5*)	–	–	–
Fan's motor power	kW	–	–	–	–	3x4	3x4; 4x4	4x4 (5x4**)
Heating element's power	kW	27 27	27 27 27	27 (40) 27 (40)	27 (40) 27 (40) 27 (40)	–	–	–
Installed power	kW	48 (70)	71 (104)	68 (91)	100 (135)	~12,5	~12,5; ~16,5	16,2 (20,2**)
Steam supply		1" 0,15-0,3 MPa 110-135°C		1" 0,15-0,3 MPa 110-135°C		–	–	–
Dimensions L	mm	5520	7440	5810	8450	2742	3170	3300
W	mm	1210	1210	1510	1510	871	1010	1370
H	mm	2010	2010	1985	1985	1673	1834	1825
Weight	kg	710+625	710+625+600	850+700	850+700+700	610	570	1000

* possibility of using a pump of higher power
** option - 5 fans installed

Chamber washers Type		**MWF-1** **MWF-1-300**	**MWF-2**	**MPD-1**	**MPD-2**	**MPD-3**
Efficiency (containers/h)		up to 60	up to 90	up to 30	up to 30	up to 30
Steam consumption	kg/h	40	60	60	60	60
Power of electric heater	kW	27	54	54	54	54
Power of washing pump	kW	7,5	11	11	11	11
Power of rinsing pump	kW	–	1,5	0,55	0,55	0,55
Water connection	40-45°C	3/4" (0,3-0,6 MPa)	1" (0,3-0,6 MPa)			
Steam connection	110-135°C	3/4" (0,15-0,3 MPa)	1" (0,15-0,3 MPa)			
Dimensions L/W/H	mm	2060/1880/2060 3350/1880/2250*	3960/2790/2300	4620/2350-G (2100-EP)/2860	6553/2369/3030	6160/3650/2860
Weight	kg	850	1410	1600	1800	2030

* dimensions MWF-1-300

Smoke stick washer Type		**MK-3**
Efficiency		up to 300 smoke sticks for 30 min
Dimensions L/W/H	mm	1960/1083/1784
Weight	kg	570

MACHINES AND EQUIPMENT
FOR FOOD PROCESSING
AND PRODUCTION HYGIENE

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We inform that individual differences may appear between the machines shown in this catalogue and those offered for sale due to either design changes or the individual orders of our customers.