



# FOOD INDUSTRY

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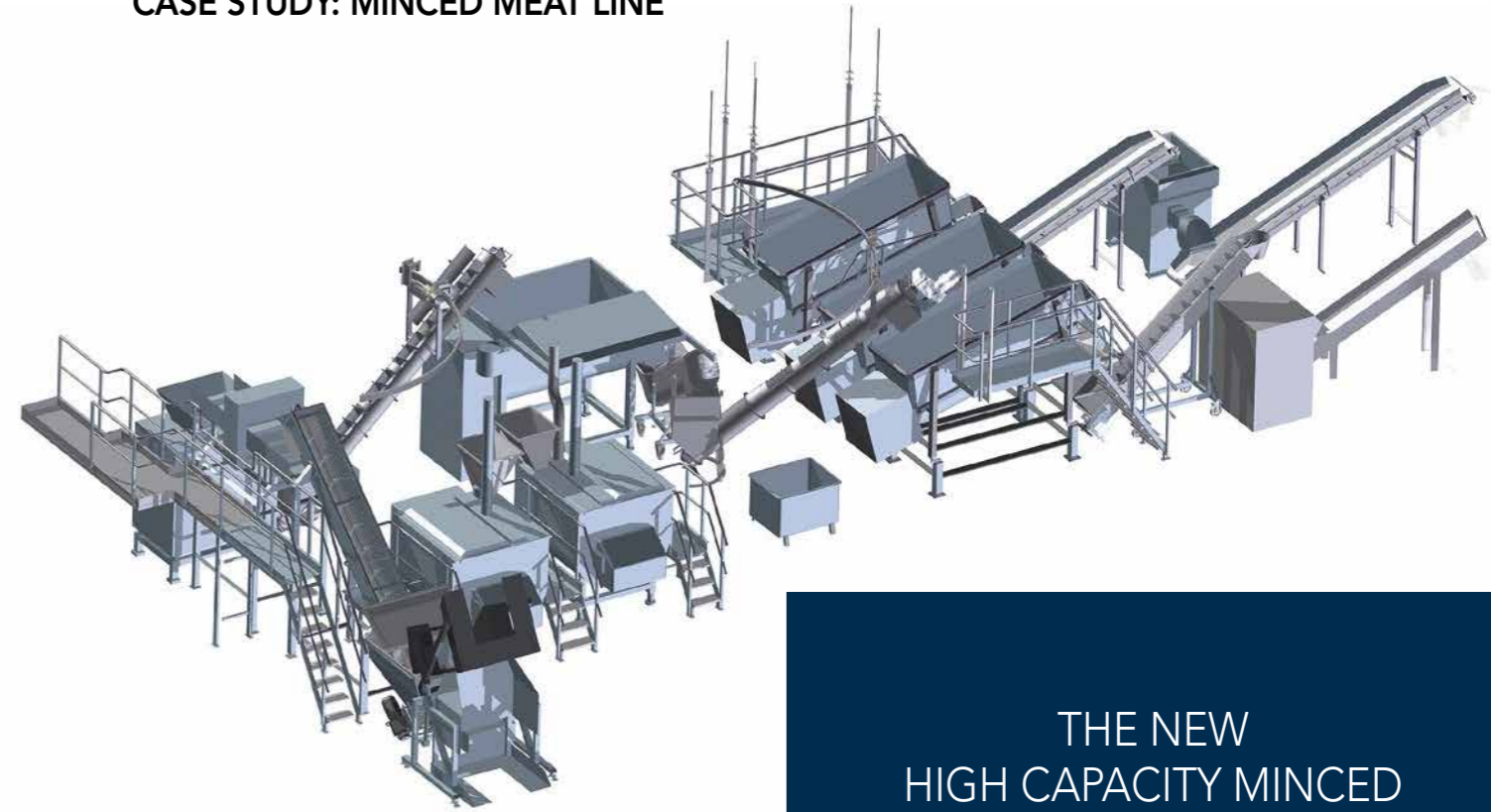
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“ Tailor made solutions ”

CASE STUDY: MINCED MEAT LINE



THE NEW HIGH CAPACITY MINCED MEAT PRODUCTION LINE

**Core targets of the project**

The main focus was a flexible line with a much higher production capacity than the previous line, automatized standardization, continuous production, full controlling by recipe management and traceability.

The new high capacity minced meat production line, had to be designed and implemented into existing facilities. A few existing machines were to be integrated as well. With the great experience of turnkey deliveries from different food production applications, and strong design knowledge, Mesmec were able to present a winning concept to the customer.

**Minimized number of operators, fat analyzing and metal detection**

The capacity of the line is normally 5000 kg/h and be increased to 6500 kg/h at top production, without having to increase the manpower. The high production yield was possible, due to the skilled engineering work at Mesmec.

The line has an online fat analyzer used to verify actual fat percentage, making it possible to quickly react for possible need of corrections. Both fresh and frozen meat can be used. However over 85 % of the meat being used is fresh. Detection of possible metal is done in an early phase. This, to minimize breakdown of grinder and most important of all, to detect and reject metal in the meat.

**Mixing, storage and feeding of packing lines**

After grinding and fat analyzing, one of 3 possible mixers is fed by a powerful high-clean screw conveyor. A CO2 mixer is feeding 3 storage hoppers via screw conveyors. Capacity of each hopper is 3000 kg. The way of controlling the continuous meat flow into and from the hoppers, gives invaluable advantages to the customer – a) high throughput can be achieved for both small and big volumes, and b) no production stops at all in the packing lines, when

changing between different meat types.

**User friendly, hygienic requirements and traceability**

Filling from A to B and further to C is fully automatic and operated from a touch screen, thanks to the design of Mesmec controlling system. The hygienic aspects are treated with respect at Mesmec. Production of minced meat, using fresh raw material through the whole line from cutting until packing, requires easy-to-clean construction in every single machine. Disassembly before cleaning, without affecting the important safety of the staff, is another great advantage in this production line.

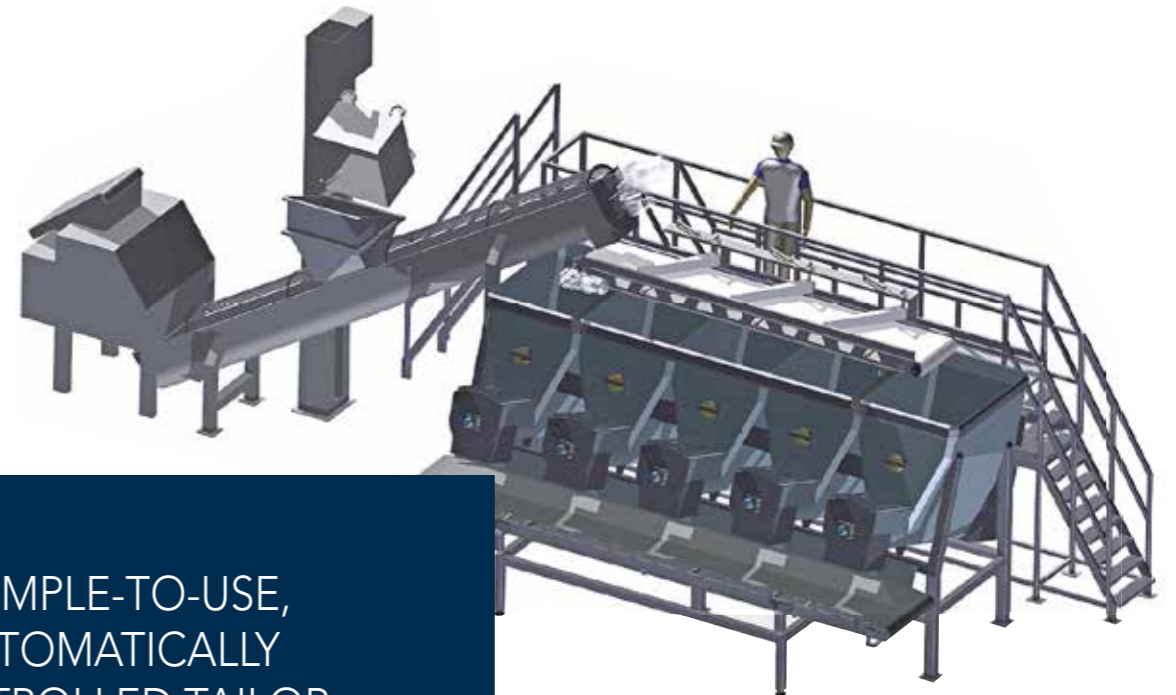
Thanks to the high degree of automation, 100 % traceability is achievable. Any data is collected and transferred to the ERP system of the customer. As an option, Mesmec can provide software for optimization of the raw materials being used.



“The accuracy of dosing is one of the highest available.”



CASE STUDY: SALAMI PRODUCTION OR SMALL SIZE SAUSAGE PRODUCTION



A SIMPLE-TO-USE, AUTOMATICALLY CONTROLLED TAILOR MADE SILO SYSTEM

**Main customer specifications**

Dosing of 5 different raw materials for salami production, by using a silo system that is fully controlled by a PLC system. The PLC of the silo system was specified to communicate with customer ERP. Thus, recipes could be made either locally or via customer ERP. Used raw material was determined to be frozen at the start of the process. Raw materials should end up in a bowl cutter for further processing. Mesmec were chosen to design, manufacture, install and commission the whole project as a turnkey delivery. Important features like hygienic requirements, safety issues and ergonomic cleaning possibilities played a key role, when the customer made their decision.

**Reduced manpower and easy to use**

The product is crushed or grinded and fed into the silo, fully controlled by the PLC. In addition to a discharge screw conveyor, every silo is equipped with an agitator. The agitator secures an even product flow for the dos-

ing, when using frozen raw materials. Each silo is marked for one special raw-material and the number of silos can be specified according to the customer's requirements. By placing weight cells either under silos or discharge belt conveyor, different dosing features can be applied. Thanks to the design of the silo and the construction and controlling possibilities of the dosing phase, the accuracy of dosing is one of the highest available on the market! A simple-to-use, automatically controlled tailor made silo system, that need low manpower is very important in a modern food factory. The system provide different raw materials for either salami or sausage production.

**Options**

The silo system can be constructed for both fresh and frozen products! Furthermore, usage of a silo(s) for feeding the production line with different kind of emulsions, can be delivered upon request. Filling of silos can be done either by lifter, swing loader or as in this case, by a screw conveyor.

**Traceability and quality assessment**

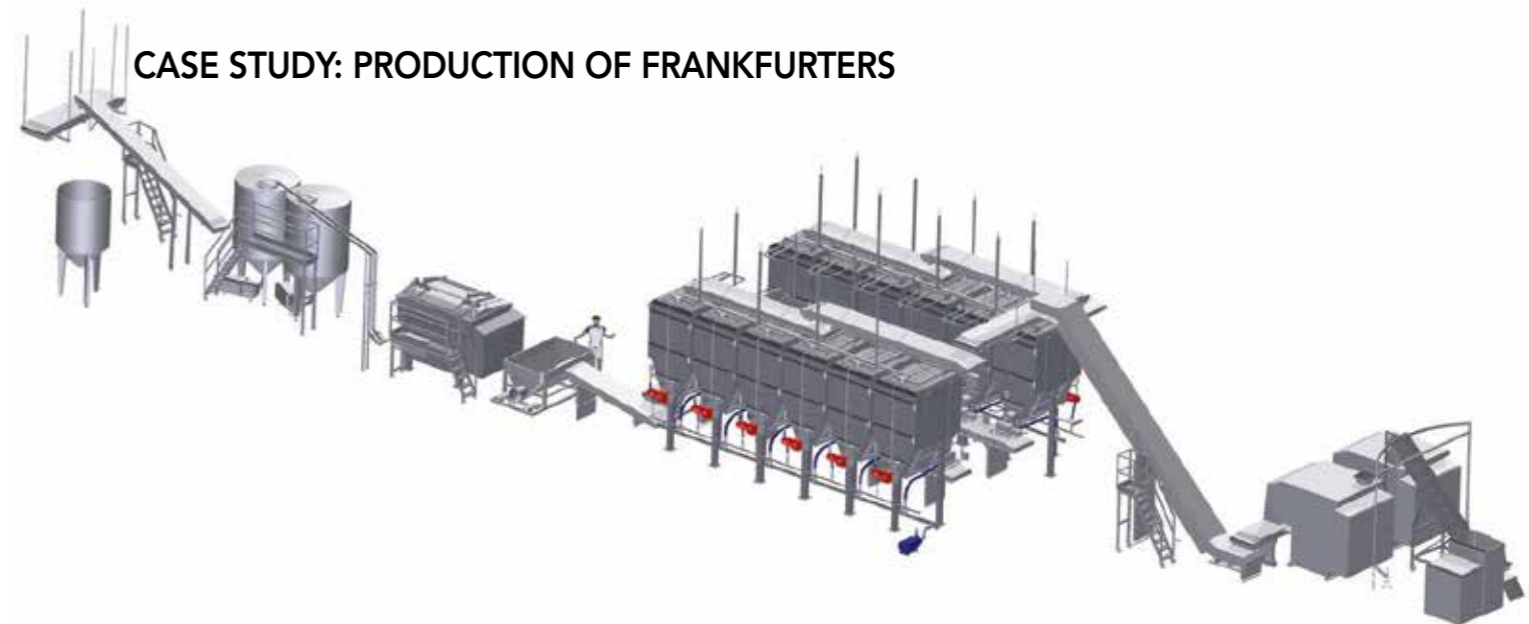
The traceability of the materials used in the production was very important for the customer. The control PLC provided, was tailor-made by Mesmec, able to track the materials thru the whole production line. From the system you can get different kind of reports.



“ The analyzer software advise the operators ”



CASE STUDY: PRODUCTION OF FRANKFURTERS



**Specifications**

The capacity of the line is designed for 90 t / day for a continuous frankfurter line and a separate bowl chopper (batch production) line. The line has been designed for using mostly frozen or temperate meat, but fresh meat can also be used in the production line.

**Description of the process**

The raw material used in the line is tempered meat blocks that are unwrapped and grinded. The meat fed into the line, passes a metal detector and a fat analyzer. The inline fat analyzer assures an accurate meat mix-ture with the right fat percentage according to the recipe. The fat analyzer software advise the operators how to adjust the mixture, in order to achieve the required fat percentage. The grinded meat is fed into pre-mixers. Brine is added according to the recipe and mixed into the meat.

The pre mixture is fed into a storage silo of 5000 kg (12 silos, 5000 kg each). The silos are automatically filled by conveyors. Meat from the silos is ordered according to the recipe in the control panels, either to the continuous line or to the bowl chopper line. All silos stand on load cells that gives the accurate amount of meat in every silo. Dosing of meat from the silos is done according to recipe, and dosing of meat can be done from several silos simultaneously. For the bowl chopper line, the pre mixture is dosed into a 200 l trolley. For the continuous line the meat is dosed into a pump hopper. From the pump hopper, the ready pre mixture is pumped into a mass mixer. The spices and other ingredients for the mass mixer is fed into the mixer with a lifter. The ready mass is directly pumped into storage silos from the mixer. The mass silos are automatically feeding the continuous cutter. By controlling the filling level in the sausage stuffers, the continuous cutter is automatically started and stopped.

**Software controlling**

The recipes for production, as well as daily production planning, is automatically transferred to production via a PC. Any phase in the production line is stored in a report database. The 100 % traceability of used raw material, gives operators the possibility to make detailed follow-up at any time during production.

**CIP cleaning system**

For cleaning of the silo system, there is a separate CIP washing center. Any silo(s) can be washed during normal production without any affect or danger to the product! The water from the washing is circulated back to the CIP-washing center. Dirt from the CIP cleaning is separated by a filter. Mesmec CIP system gives an extremely important advantage – cleaning at any time during any production phase in a safe and hygienic environment!

CLEANING AT ANY TIME DURING ANY PRODUCTION PHASE



“ Silos can be washed individually during normal production ”



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MESMEC TAKE FULL RESPONSIBILITY FOR ITS DELIVERIES



### Specifications

The capacity of the production line is 50 - 60 t / day. The line produces mass and raw materials for a continuous cutter line and for two bowl choppers. The line is designed to use mostly fresh meat and with a maximum use of 30% frozen meat in the mixtures.

### Description of the process

The meat is grinded into trolleys and tilted into the pre mixer, where also brine is added. The ready pre mixture meat is pumped into the silos. Silos are filled from the bottom and each silo has a capacity of 3000 kg. High accuracy dosing is achieved by help of weight cells placed under each silo.

The pre-mixture for the bowl choppers is dosed into 200 l trolleys and the material for the continuous cutter is dosed to a pump hopper. From the pump hopper the material is pumped to the mass

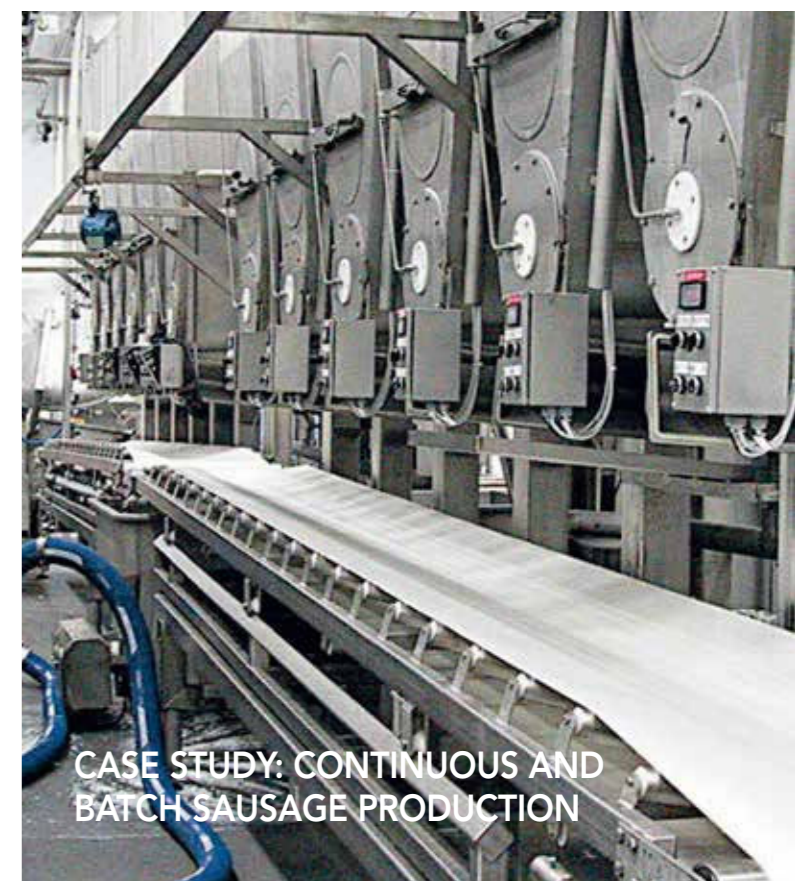
mixer. The spices and other materials are tilted into the mass mixer. Skin emulsion is made in a bowl chopper and pumped into a storage silo. The skin emulsion storage silo is placed on weight cells and a pipeline is feeding the ready emulsion to three user locations. The mass from the mass mixer is pumped into two different storage silos. The storage silos are used to feed the continuous cutter. The ready mass from cutter is fed into three different silos. The mass is filled into 200 l trolleys manually, and the trolleys are tilted into the stuffing machines.

### CIP cleaning system

Any silo can be washed individually during normal production without affecting the production. The CIP washing center is always ready to clean a silo and all of the leftovers in the silo is filtered from the process before the water is returning to the CIP washing center.

### Turnkey delivery

This project is among many others, a typical turnkey delivery supplied by Mesmec. Starting from layout design, mechanical and electrical design, manufacturing, installation and commissioning of the whole production line. Manpower and resources needed by customer to design and build the line, is minimized! The less number of suppliers needed, the less is the work for the end customer. Mesmec take full responsibility for its deliveries!



CASE STUDY: CONTINUOUS AND BATCH SAUSAGE PRODUCTION

EQUIPMENT

MIXERS



HYGIENE EQUIPMENT



SCREW CONVEYORS



WASHING MACHINES



CONVEYORS



METAL DETECTORS



CHECK WEIGHERS



MULTIHEAD WEIGHERS



SINGLE AND DOUBLE COLUMN LIFTERS, SWING LOADERS AND DENESTING MACHINES



HAM TROLLEYS



CUTTERS



GRINDERS





## MESMEC - MORE FROM RAW



Mesmec is a Nordic supplier of systems for handling raw materials of the food and processing industries. We take total responsibility for delivery of a solution for new as well as old systems.

**'More from Raw'** is our customer promise, which we fulfill by combining the latest technology with our extensive experience. We enhance the efficiency of the processing of raw ma-

terial by helping our customers streamline their processes and make them more responsible.

Mesmec can support the customer throughout the entire lifecycle of the system, from planning to delivering and maintaining the equipment. The quality system which is in accordance with ISO 9001-, ISO 3834-2- and EN 1090 standards is an important tool in Mesmec's operations.

# MESMEC

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