

Difficult handling made easy

FRENCH COMPANY ESTEVE DESIGNED A BULK HANDLING SYSTEM USING THE MOST ADVANCED TECHNOLOGY IN INGREDIENT FEED SYSTEMS



+ The company recently realized a large project at Pain Jacquet, one of the two market leaders for toast bread in France. Pain Jacquet is part of the group Limagrain. This bakery uses a wide variety of high-quality ingredients for its bread making. It operates on a just-in-time schedule with large-scale distribution which means that orders placed before 9 am in the morning must reach their destination before 5 am the next morning, in other words they must leave the company and be shipped before 7 pm.

Esteve

Esteve is a French company specializing in designing solutions and components for the automatic feed of raw materials, ingredients, and additives. Their expertise covers processes and components for storage and dosing of powders and liquids. The head office is located in Rians, France. The company has offices in Switzerland, the Benelux, South East Asia, North Africa and local representatives all over the world.

www.esteve.fr +++

The project requirements were

- +** Design flexible, automated equipment covering all production operations with high accuracy and for a variety of products.
- +** Make the production fully reliable and available 24 hours a day, capable of meeting the just-in-time requirements.
- +** Reduce labor and product costs in a “make money“ initiative.
- +** Provide an accurate planning system and full, easily available production information for better transparency and total budget control as part of an ISO 9001 initiative.
- +** Improve product quality through reliable equipment.
- +** Optimize the start-up phase and guarantee the installation’s conformity with inspection body (APAVE, etc.) requirements.
- +** Design a lasting, open-ended solution, benefiting from the most advanced technologies.

Esteve met the requirements by installing eight 50 ton silos and 17 intermediate hoppers for storage of the various flour grades as well as minor and micro ingredients. The system includes the management of three differ-

ent liquid materials, including fats and shortening received in containers. The 28 ingredients needed for production in a range between 10 g and 350 kg per batch are transferred automatically to the various production lines. One station is used for solid premixes.

The system allows for the control of dough temperature based on the raw material temperatures and the mixer heating coefficient. There is no restriction in the variety of possible product recipes because all solid and liquid ingredients are available at any moment and in the required dosage ranges. Some ingredients are available simultaneously from the same hopper or silo in order to feed different lines at the same time.

All silos are equipped with filters cleaned by compressed air, vibrating bottoms and feeding screws allowing simultaneous feeding of two pneumatic lines. The silos are mounted on weight sensors for inventory purposes. They are made of aluminum AlMg₃ contributing to the aesthetics of the site and making them totally maintenance-free.

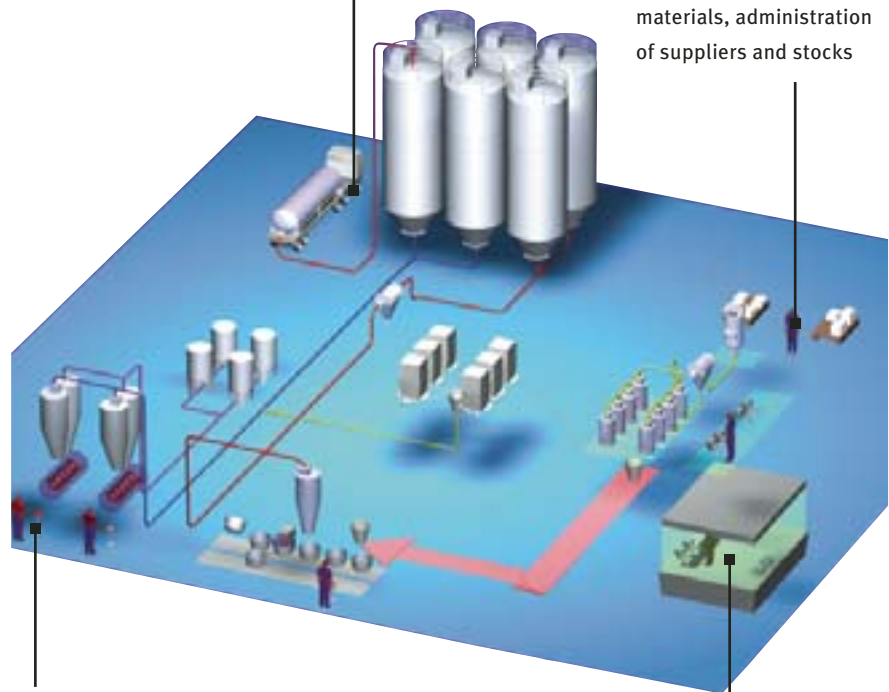
Infeed cyclofilters are mounted on three weight sensors and fitted with a filter. Combined with the pneumatic vacuum line, they totally eliminate all dust emissions. Fluidization at the extraction cones guarantees total and safe product feed to the mixers.

Minor products and micro ingredients are received in sacks or big bags which are emptied into storage hoppers connected to a dust extraction network. Each hopper is equipped with mass-flow extractors and bridge suppressors guaranteeing FIFO extraction and allowing several batches to be identified and managed in the same hopper.

For the manual adding of minor and micro ingredients, the operators are guided step-by-step for safe, validated incorporation. Each ingredient is identified, weighed and added precisely to the gram. Liquid ingredients such as

Silos: delivery of bulk products, validation and authorization

Minor and micro ingredients: delivery of raw materials, administration of suppliers and stocks



Operators: validation of manufacturing orders, weighing-data entry of manually added products, assisted follow up of planning

Control room: formulation, planning, supervision, ratios

shortening or fat are received in containers. The containers are mounted on tilting platforms allowing total emptying. The pipelines are heated or cooled according to the type of product. The quantities are controlled by flow meter. CIP cleaning is used for the pipelines.

Two Esteve T800 sieves and in-line magnetic separators ensure safe separation of solids at 650 microns in a single step for direct feed to the mixers. The sieves can be bypassed/crossed depending on the product, cross-contamination requirements or for maintenance. The hoppers receiving the minor and micro ingredients are equipped with mass-flow extractors for total, chronological FIFO extraction. All mechanical parts capable of retaining the product (silo, screw, etc.) have protected access points for cleaning and maintenance. The design of the mechanical equipment contributes to the food safety of the installation.

The entire equipment is ATEX classified. Directive 94/9/EC (ATEX direc-

tive) defines the classification of industrial premises on the basis of a risk analysis arising from dust emissions and their explosiveness. The rooms are classified in three zones (20 – 21 – 22) according to the type of equipment concerned (bag emptier, silos, cyclofilters). By limiting the risks of sparks through use of conducting materials (aluminium silos), by careful equipment design (explosion relief panels, strength calculations), and by classified instrumentation (Ex II 1 D, 2 D or 3 D), Esteve contributes to the installation's conformity with the requirements of the competent inspection authorities.

Monitoring of raw material batches is essential for guaranteeing the traceability of a product at any moment, for knowing the batches used for a manufacturing process and for managing the transition between two batches of materials stored in the same silo. By installing an EDI system (Electronic Data Interchange), the data is available at any moment in real time for quality control and accounts. ▶

Production report updating is available, indicating the line number, manufacturing order number, set-points and values, weight and tolerance values. It is possible to determine the number of products, the use and stock of raw materials and the batch number of the manually added ingredients. In addition, the recipes control the mixing parameters: time/energy, data on vacuum and pressure application, mixing speed, etc. Production data can be imported/exported via the network to any operating station, in MS[®] Excel format for example, and real time. Finally, in addition to managing ingredient feeding, the system is an effective method for cost control via the ratio "equipment allocation/no. of parts produced".

By opting for a SIMATIC WinAC solution, Esteve has turned its back on older, complex wire technology with proprietary black boxes and networks producing bottlenecks when information is passed on to the supervision level.

TIA (Totally Integrated Automation) from Siemens, built around Profibus, is now considered to be the most open field bus in the industrial world. In terms of safety, and in the event of PC problems, TIA allows all the production information generated to be recovered in a manner that is totally transparent to the operator. The manufacturing order is then sent completely to the PLC which takes control and manages production. +++

International expert seminar

+ **chleb+wipetschka**, the Russian sister magazine of **baking+biscuit international** in cooperation with the management of Unifine Russia is organizing an international expert seminar on frozen gateaux and frozen baked goods to take place on June 22, 2006, in the Meridien Country Club in Moscow, Russia. The speakers are renowned experts in their fields. Conference language is Russian, interpreters are available upon request.

9.00 am – 10.00 am

The market and its coordinates

The market for gateaux and cakes in Russia is in motion. Modern raw materials trigger new product ranges; technology of frozen goods affects production and logistics; food trade and food service offer new sales channels. Chances and risks of this dynamic market and the competitive fields of the future will be elucidated with intimate knowledge. Philip Tcholakov, managing director of Unifine Russia, Moscow.

10.15 am – 11.30 am

Top priority: constant quality

Constant and uniform quality is a highly demanding challenge for a modern industrial bakery. This includes to ensure the maintenance of defined and reproducible production, storage and transport conditions, a uniform raw material quality, a sophisticated hygiene concept and last but not least the selection of optimum production and packing technology. The understanding of the production as continuous process that has to be planned and organized systematically is fundamental.

Speaker: NN

noon – 1.30 pm

Specific problems – specific solutions

Production of frozen goods is different from the production at ambient temperatures with subsequent freezing. Development and shelf life of flavorings for example is

very different and each interruption of the frozen supply chain will inevitably result in quality loss. Michael Kleibert, today manager at the University of Applied Sciences Wädenswil, Switzerland, has been working for many years as production manager at Swiss producer of frozen baked goods, Hiestand, and knows the details and pitfalls of frozen baked goods production from own experience. He will explain where production problems can arise on the way to the point of sale.

2.30 pm – 3.30 pm

The customer is king

Philip Tcholakov will explain the results of a market poll among Russian B2B customers and consumers on what they require and expect from frozen gateaux and cakes.

3.30 pm – 4.30 pm

The market for frozen baked goods in Western-Europe

Benchmarking – to see what other do and to implement good ideas into the own company and strategies – is one of the secrets of successful management. Hildegard M. Keil, editor-in-chief of the magazines **chleb+wipetschka** and **baking+biscuits international**, Hamburg, Germany, will inform about developments and trends on the market for frozen baked goods in Western-Europe.

4.30 pm – 6.00 pm

Open discussion

... with the lecturers, with coffee, tea, gateaux and cakes

For more information please contact

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