



In the storage room of the Franziskaner bakery, the machines (from left to right) have been set up for the dough cooling system hb-ice®, for sour- and pre-doughs as well as the two small component containers Compo 3000 (behind one another).

Strictly according to recipe and fully automatic

The Franziskaner bakery in Bozen has fully equipped its raw materials logistics with machinery made by hb-technik / flour, ingredients, yeast, pre- and sourdoughs, water and even liquid ice are measured precisely.

By Hans Stumpf

centralisation and rationalisation

The entire production has been united at a single location. “This, of course, brings with it many synergy effects and rationalisation possibilities”, argues Jürgen Pfitscher. Rationalisation begins thereby at the very start of the production process, which is where the machines made by hb-technik, the silo- and sourdough machine manufacturer located in Schwanenstadt in Austria come in. In addition to silos and sourdough machines, the family business hb-technik also develops technology for making pre-dough and measuring both liquid and free-flowing ingredients. Virtually the

entire range of this machinery is being used at the Franziskaner bakery. “For us, the evenness of the doughs is an essential contribution to their quality”, points out master baker Jürgen Pfitscher. He took his master craftsman’s diploma at the Academy in Lochham, Bavaria and followed this up with a qualification as a business administrator specialising in handicrafts. Now he is first and foremost responsible for the production. “Our aim is to reduce errors to the lowest possible level with the aid of the automatic weighing of ingredients.”

No weighing mistakes any more

The plant control system ‘hb-backcontrol’ guarantees this. The recipes are now retrieved in the dough-making facility via a touch-screen monitor. This computer is linked with the office-PC in which the recipes may be entered or altered. So the dough makers receive their daily baking slips indicating the quantities displayed on the screen. Conversion errors regarding the quantities of the ingredients are avoided by the very usage of hb-backcontrol. However, this is only the first step along the road to the automatic measuring of ingredients.

Beginning with hb-backcontrol, virtually all ingredients may be automatically retrieved in the Franziskaner bakery and measured

out into the kneading container. Jürgen Pfitscher: “This saves time, is safe and precise.” The largest single component in the weighing process is most definitely the flour. A separate silo room has been set up in which to store the flour. Here stand one silo with a capacity of 13.2 tons of flour and four silos each able to hold 8.3 tons. All of them are made of aluminium. It proved an advantage when setting them up that the silos are provided by hb-technik in grid dimensions, so that the size of a silo can be exactly adapted to the respective requirement and size of room. The feeding of the flour is by means of the so-called fluid discharge. This means that the flour is set in motion in the silo from underneath by way of an air bag (Fluid bed) and is this way

given the physical characteristics of a liquid. This guarantees the complete emptying of the silos, as the flour is even rinsed into the discharge from the corners, the critical areas of a silo.

Fluid bed discharge

At the Franziskaner bakery three of the silos contain wheat flour for bread rolls, large loaves and ciabatta bread. The other two silos are filled with white rye flour (for flat bread) and dark rye flour (for mixed grain breads). To be found only a few metres away are the connections for the external filling from the courtyard. hb-technik uses pneumatic conveyor systems to transport the flour. "In so doing no flour remains in the conveying pipes, which naturally provides positive hygienic aspects", is how Friedrich Bachmair, shareholder of hb-technik, demonstrates the advantages of the system. The flour is then collected in a large flour scale at the weighing station in the dough preparation.

Conveyor belt for individual ingredients

In addition the Pfitscher bakery has decided to also automatically weigh medium and small components. Two hb-Compo 3000s are used for this purpose. 14 pourable ingredients respectively, such as salt, seeds or also spices, can be stored in these systems and automatically dosed. From the containers each holding 60 litres the chosen ingredient is dosed onto the conveyor belt, which simultaneously also serves as a scale. When all ingredients have been weighed, they are then conveyed to the flour on the flour scales; this is also done pneumatically again. Both hb-Compo 3000s are set up next to each other in the storeroom. This saves space in the bakery and simplifies the process of refilling the raw materials. Located directly next to these are large stainless steel containers, which constitute a further element in the automatic weighing. Sourdough, flavouring, ice and liquid yeast are manufactured or stored in these. "Up to now we have only made single-step sourdoughs", reflects Heinrich Pfitscher. Now Franziskaner bakery produces three-step sourdough and this is done fully automatically in the sourdough system.

The sourdough system hb-Europro can hold a volume of 1,000 litres. Rye flour and water are automatically added with the correct temperature. The relevant sourdough parameters are stored in the control software hb-backcontrol; likewise the mixing intervals of the system. The double-walled boiler can be used for cooling as well as for heating purposes. Because of the integrated cooling system in the sourdough system, once produced sourdough can definitely be used for two days. In addition sourdough produced through multi-steps has advantages with sourdough and even bread aroma and keeping the bread fresh. "The machine ensures that the same parameters are also observed without additional work being required", is how Friedrich Bachmair demonstrates the advantages of a sourdough system. Reproducing the recipe exactly also requires making the pre-dough or sourdough available at a constant quality.

Dosable ice-cold

What is also required for recipe accuracy is for it to be possible for the dough to be manufactured at the desired temperature. "That would also have become difficult in the new bakery",

is how Jürgen Pfitscher describes the difficulties. Although the room is large and over six metres high, very high temperatures must be expected, particularly in the summer months. Even the ventilation system only helps in this respect to a certain degree. Therefore, Heinrich and Jürgen Pfitscher decided on the new hb-technik system, hb-ice®, as the first bakery in South Tyrol. "It was the customers who requested this system", said Friedrich Bachmair. "The long dough processes as are often made required cool dough." Cooling with water or using crushed ice is only considered to be an emergency solution in many businesses.

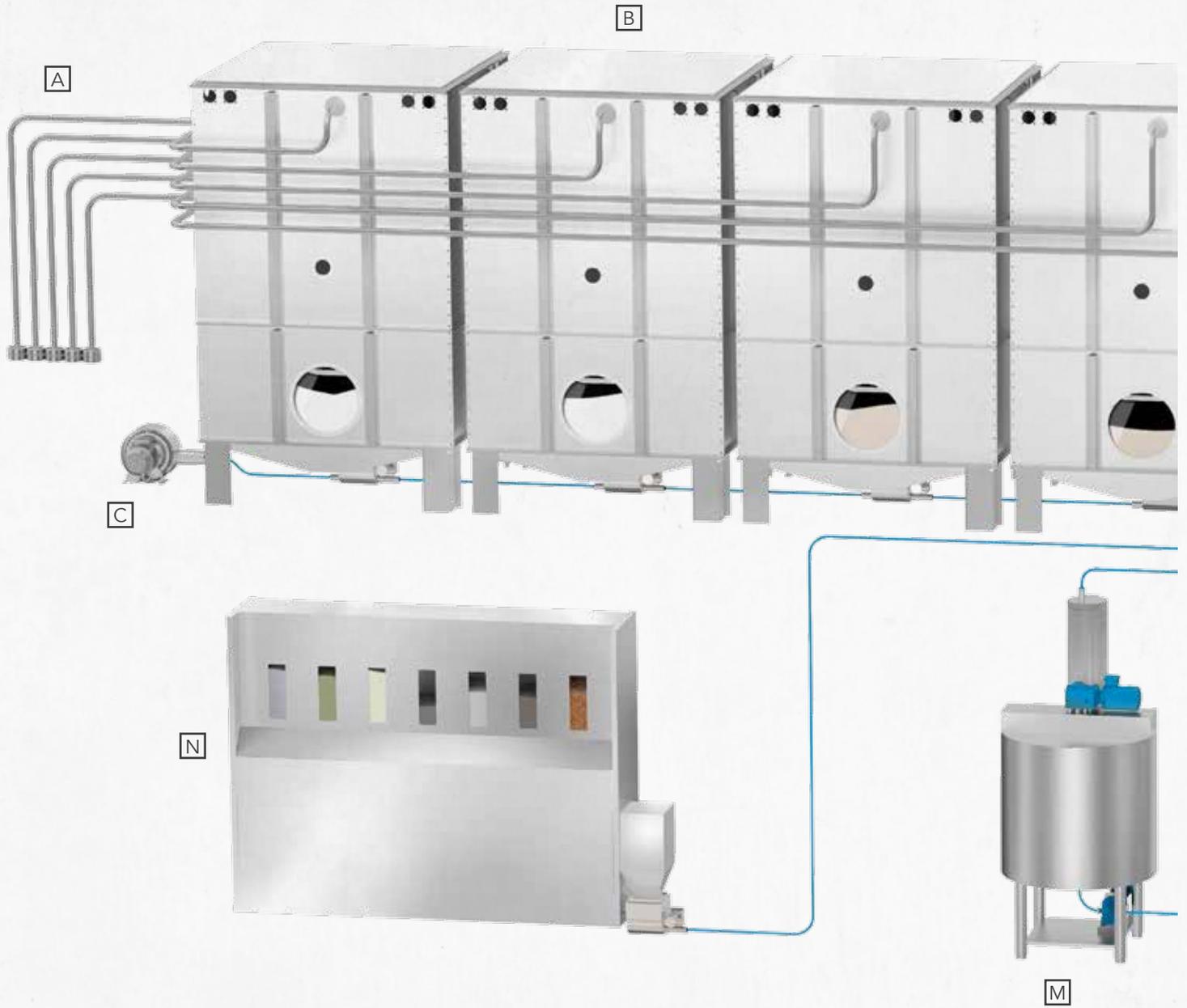
Freezing point lowered

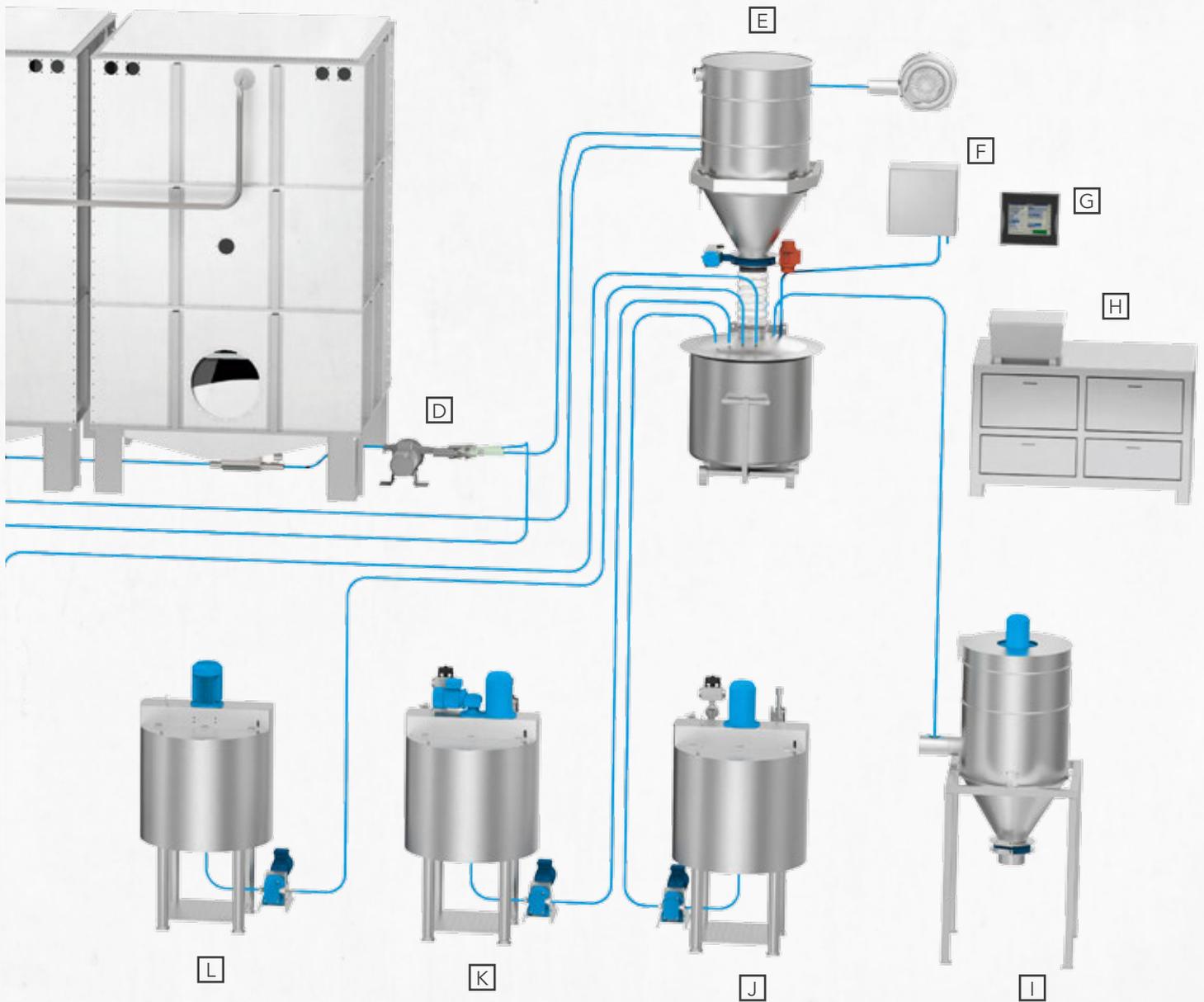
The objective of the development engineers was to be able to use a dosable and extremely cold liquid. This is made possible by hb-ice®, a water-salt brine, which is cooled. By adding salt the freezing point is lowered and mixing at programmed intervals prevents the water freezing. "The result is a mass equal to thawed snow", is the result shown by master baker Pfitscher. This ice-cold mass, the temperature of which is below freezing point, can be automatically pumped from the stainless steel boilers of the system into the kneading bowl. Which quantity of hb-ice® and at the same time how much salt less is to be added is calculated in turn by the control hb backcontrol.

"Crushed ice to be dosed by hand would be a step backwards again in view of automation", is the argument Jürgen Pfitscher uses. Now he can literally add ice cold water automatically. "This gives us security in manufacturing dough since we now get a dough with exactly the right temperature." Today master baker Pfitscher goes as far as to say that the entire water quantity comes from hb-ice® for the firm pretzel dough. "This makes the dough really good." Up to now he has had his problems, particularly in the case of pretzel dough when crushed ice was used. "The ice simply added the water too late." The dough development is quite different now when adding the liquid ice mass. There is enough liquid there for the dough to be formed and at the same time enough cold is added to the dough. The yeast is likewise added to the dough in liquid form. It used to be standard practice for compressed yeast to be suspended with water before the dough was made. Many businesses have given up this idea in the meantime for reasons of time. However, this is now possible again with the hb yeast pulper. The system is likewise in the storeroom of the Franziskaner bakery for this purpose.

Yeast in liquid form

A new yeast solution is mixed in every two to three days. Friedrich Bachmair: "Significant advantages here are the improved dough properties and the pumpability of the yeast solution." In this respect the yeast can also be automatically brought to the boiler at the push of a button. 'Goal achieved', Heinrich and Jürgen Pfitscher are pleased to say. With the help of know-how and hb-technik systems the many types of dough can be manufactured consistently at a high and precise quality. This makes the oldest bakery in Bolzano well equipped for the future.





Equipment overview

Pos.	Description
A	Tank lorry piping
B	Silos with fluidised bed discharge
C	Pneumatic conveying system
D	Inline pipe sifting machine
E	Vacuum-Pressure-BWI-weighing hopper with Jetfilter
F	Water mixing and dosing device
G	Backcontrol

Pos.	Description
H	Hand-add ingredient scale
I	Central dust aspiration station
J	Yeast
K	Liquid ice
L	Bread cream mixer
M	Sourdough
N	Ingredient dispenser Compo 3000