

MASECA: A 5,000-YEAR TECHNOLOGICAL LEAP

When the world was more worried about reaching the moon than revolutionizing the food industry, MASECA group decided to take the first steps towards the achievement of a technological leap that would represent a total transformation of a process, which had remained almost intact in hundreds of years.

The production of corn tortillas from flour instead of the traditional production from nixtamal dough meant a 5,000-year technological leap: moving from the very old, handmade preparation in pots and vents to the storage, processing and packaging facilities of the final product at an industrial level.

In the achievement of this technological jump, MASECA GROUP was the pioneer who, after 30 years of continuous research, allowed it to be placed as the world leader in corn flour and tortillas production for a market of 462 million consumers, for the American continent only, and with a value greater than US\$ 1.6 billion.

It is easy to say now that consumers can buy tortillas packed in almost any commercial establishment. However, for the flour pioneers, it meant an enormous challenge that began 1949 when Roberto González Gutiérrez and his son Roberto González Barrera bought a homemade machinery to elaborate corn flour in Reynosa, Tamaulipas.

By 1951 they already had two small plants that produced low volumes of flour: one in Cerralvo, Nuevo León and another one in Acaponeta, Nayarit.



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Also in that time Mexico's Central Bank, which was directed by Rodrigo Gómez, invested considerable amounts through the research department to produce flour in a plant in Tlalnepantla, State of Mexico.

Both parties agreed that, given the population's quick growth (40 million people in that time), and the growing urbanization of the country, a massive and efficient production for a primordial food in the diet of the Mexicans was required.

To face the challenge it was necessary to start from scratch, as the elaboration of tortilla had not changed substantially since pre-Columbus times and the prevailing thing were handmade methods for self-consumption for closed societies lacking industrial development.

Until 1943, the few scientific references of tortilla were remitted to anthropological texts on the nutritious customs of Meso-American villages. A patent of 1820 mentioned that tortilla should be prepared by mixing the dough by hand with ashes from the blaze.

Today, MASECA GROUP has 37 registered patents on the methods to manufacture corn and wheat flour and tortillas, mass scale.

In the sixties, however, large international corporations were not interested in researching and developing the technology for an exotic food of a poor country.

The industry for the processing and utilization of rice carried a long tradition, whereas that of the wheat bread 200 years en vogue. On the other hand, by the



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middle of the 20th century even the elementary was unknown about the massive production of tortillas.

One of the first questions that had to be answered were: How is the weight of corn dough weighted? How is corn flour weighted? What is the ideal temperature to cook tortilla? Why does the tortilla swell?

In 1963, the two González personally verified the quality of the corn that arrived to their mills, making experiments with the methods for a dry flour that could be re-hydrated with water and, therefore, that lasted longer and could be kept in storage a longer time duration and storage life, since the traditional dough spoils 10 hours, without taking hot weathers into account.

With the collaboration of Mr. Manuel Rubio (who joined MASECA in 1963), questions about millennial food started to become clear. The first obstacle to overcome was the fact that there were no large mills manufacturers with a great capacity for corn; no manufacturers of cooking furnaces; no wooden molds, no mechanical spare parts, no anything, except for pots of up to 16 tons used for cook corn with traditional methods.

The modest resources of the González family were put on a stake upon an investigation that guaranteed no success any victory guarantee in spite of the tortilla being the food par excellence in the country: the product would have to pass the test of being accepted by a public accustomed to another flavor and texture.



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Technological developments progressed due to a fundamental fact: contrary to large corporations where innovations must be reviewed and authorized by the whole organization chart, in MASECA the results were directly verified by Roberto González Gutiérrez. This fact allowed progress without bureaucracy for the research and production team, headed by Mr. Manuel Rubio.

One of the main developments was storage tanks for the cooked grains. Using the "Theory of Impacts", a system of □ endless screw□ was applied in the cooking tanks for the evenly cooking of each grain contained in several tons of corn. The system allowed the re-utilization of heat from the ovens and the water used to boil and wash. MASECA needed boilers of 100-horsepower to cook same quantity of corn than a traditional mill, whereas the latter required ovens of 700-horsepower. Furthermore, while a plant of MASECA was built on a single floor, the traditional plants needed buildings of up to 10 floors.

Results were evident: with a kilogram of corn up to 1.4 kilograms of tortilla were obtained through the traditional method, whereas with the flour they processed, between 1.55 and 1.65 kilograms of tortilla were obtained from a kilogram of corn.

Starting from scratch, nowadays MASECA can install, in just 45 days, facilities with production lines of 2,000 tortillas per minute; everything with its own technology.

