

## **Production of Pelonetes in Hershey's**

2-C28-12-008

By early November, 2007, Mr. José Inés Aguilar, Production Manager of the Spicy<sup>1</sup> product line in Hershey's México, S.A. de C.V., received the sales forecast of *Pelonete* for the following year, a product which accounted for 54% of the total sales for this product group, according to data provided by the company's Demand Planning department. Through the analysis of the forecast, he found himself facing a dilemma, he had to decide whether to increase his production capacity or not, in order to be able to satisfy *Pelonetes'* demand for the following year. In the face of this situation, Mr. Aguilar needed to know if the current production capacity of the line was sufficient or if it had to be increased.

### **History of Hershey's México, S.A. de C.V.**

Hershey's, a leading company in the chocolate production field in the United States since 1903, started operations in Mexico in 1969 as a confectionery company, with the partnership between Hershey Food Corporation and Anderson Clayton & Co. S.A., so the company Nacional de Dulces, S.A. de C.V. was constituted in the Distrito Federal, and 12 years later, it moved its facilities to El Salto, Jalisco, where it started operations in february 1981.

In 1992, Hersheys Foods Corporation, through Hershey International, purchased the total number of shares of Nacional de Dulces, S.A. de C.V. and changed its corporate name to Hershey's México, S.A. de C.V.; thus, the company became part of the Hershey's Chocolate North America Division, which included the United States, Canada and Mexico. Later on, in 2004, Hershey's company bought Grupo Lorena<sup>2</sup>, seeking to diversify its products supply, hence the company was able to have *Pelonetes* among its most popular products, *Pelonetes* was part of the Spicy line.

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<sup>1</sup> Spicy product line: Spicy candies product line, which was the result of the purchase of the company Grupo Lorena S.A., products such as: pelón pelo rico, roller, pelón mix, crayón, pelonete, etc.

<sup>2</sup> Grupo Lorena, was a company established in Jalisco, which had two plants in Mexico, and they had candies such as Crayón and Pelón Pelo Rico among its main products, these candies were produced since 1987 and they became leader brands in the Mexican market of candies seasoned with chili. Source Notimex, Vanguardia 2004

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*This case was written by Professors Araceli Zavala Martínez and Jonathan Cuevas Ortuño, with the objective to serve as discussion material in the classroom, it does not intend to illustrate good or bad administrative practices.*

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The reason of the aforementioned name is that the products in the said line include spicy ingredients and they account for 37% of company's total sales.

Hershey's Corporate decided to buy Grupo Lorena in order to be able to sell its products in Mexico and in the Hispanic market of the United States. It was intended that Grupo Lorena's non chocolate candies would foster Hershey's products in the Mexican youth market, which preferred non chocolate candies<sup>3</sup>.

Grupo Lorena's purchase required that its staff would adapt themselves to new ways of working and to the production of new products, which led Hershey's company to invest in training of the new personnel and in the induction process of the staff, who was previously working for Grupo Lorena, to Hershey's.

### The product

Pelón Pelo Rico was among the products within the Spicy product line, it was a candy made from tamarind pulp, sugar and chili, which had been one of the favorite candies of children and adults<sup>4</sup> during two decades, according to studies performed by Hershey's. From Pelón Pelo Rico stemmed more products such as Pelón Pelo Rico Roller, Pica Hielo, Pelón Mix, Crayón and *Pelonete* among others, all of which have the same formula but a different physical appearance. (see **figure 1**).

Figure 1. Pelonete



The *Pelonete* candy was a product made with sugar coated Pelón Pelo Rico pulp, and it was positioned as one of the main products of the product line, in the sales forecast for 2008.

The components of *Pelonete* were: plastic container, lid, seal and candy. Its dimensions were: 11 cm height, 4 cm width and 1.7 cm depth.

### Production process of *Pelonetes*

A linear manufacturing system based on a *layout* by product, was used for the production of *Pelonete* in the plant of Hershey's.

The assembly process included the following stages (see **Figure 2**):

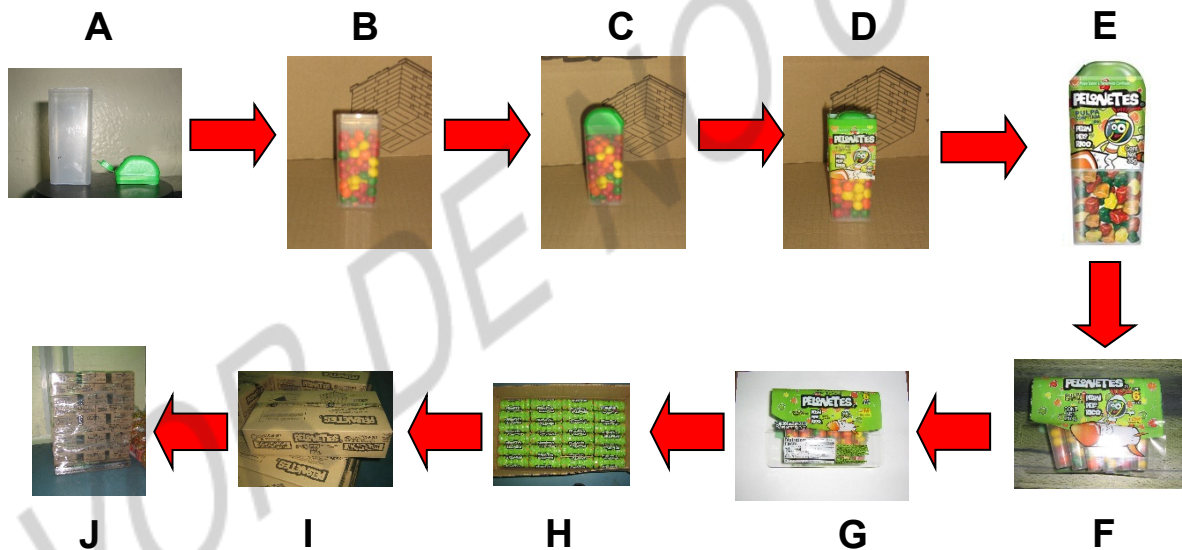
- Containers were placed manually on the belt (**A**),
- then, they went through a candy dispenser (**B**), which filled the container up to the desired level;
- later on, the lid was placed to each container (**C**) and then the container was sealed (**D**);

<sup>3</sup> Source: [http://www.sre.gob.mx/laredo/images/pre\\_bol\\_eco\\_2004\\_30.htm](http://www.sre.gob.mx/laredo/images/pre_bol_eco_2004_30.htm)

<sup>4</sup> Source [www.hersheys.com.mx/pelonpelorico](http://www.hersheys.com.mx/pelonpelorico)

- finally, the *Pelonete* went through a shrinking oven and an individual numbering stamp (E).
- The product was removed from the belt, in groups of six *Pelonetes* (F), so that it could have the plastic sleeve placed on the *display* (with six *Pelonetes*) (G),
- immediately after, the *display* was placed on a third belt so that it could go through the shrinking oven and the *display's* numbering stamp.
- Finally, the *display* went through the metal detector and was packed in boxes with 24 *displays* each (H).
- The boxes were sealed top and bottom with tape, by means of a vacuum-sealing machine (I);
- then, they were stowed in nine level pallets and seven boxes per level (J). A simultaneous operation of the *Pelonete* process was the closing of the lid, since the supplier delivered them open.

Figure 2. Process of the Pelonete

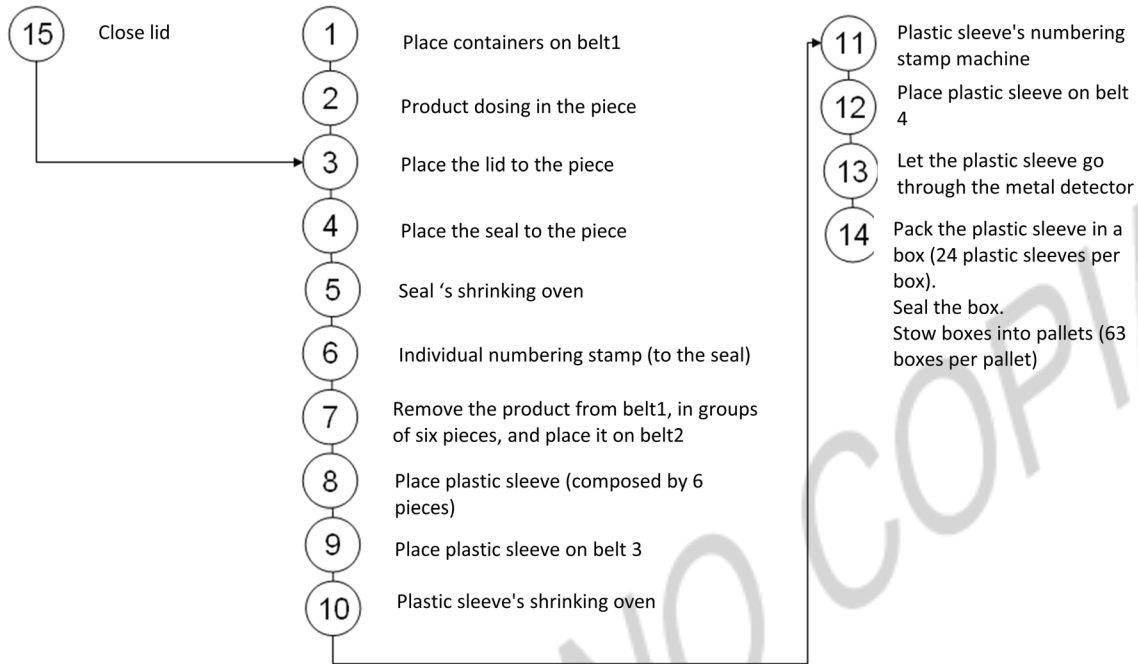


Source: Preparation made by the authors

### Operation of the Production Department

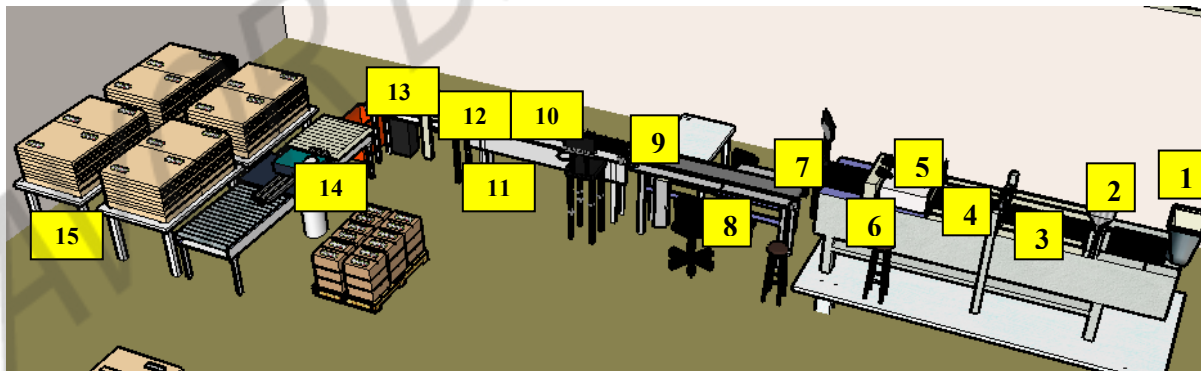
The graphic representation of the *Pelonetes* production process can be observed through the operation process diagram, that the Manufacturing Department of the company had. (see Chart 1).

**Chart 1. Operation process diagram**



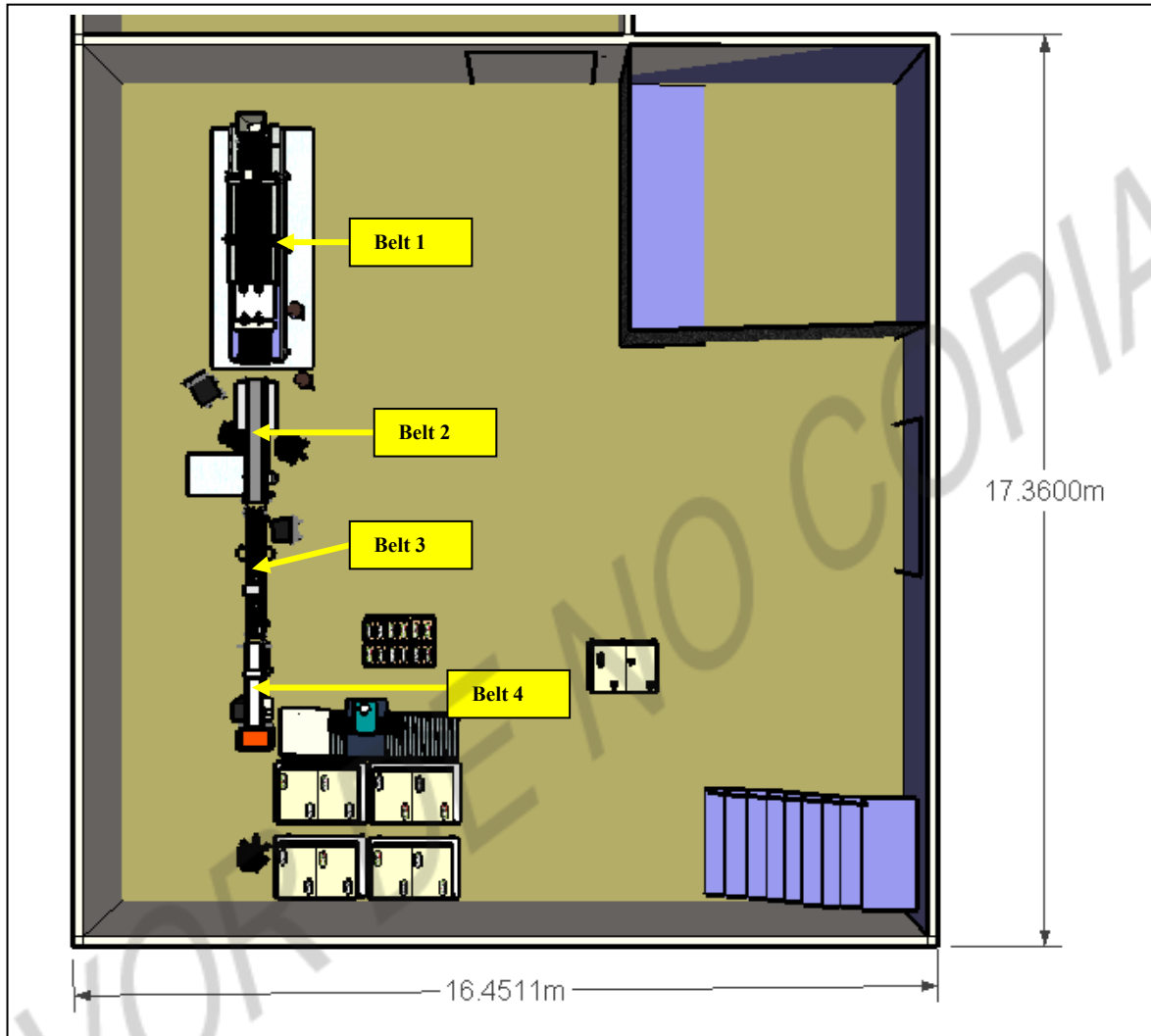
**Source:** Preparation made by the authors

The aforementioned operations were carried out in the following location of the line (see **Chart 2**):



**Source:** Preparation made by the authors

The process was carried out in an area of 17.36 x 16.45 meters, as shown in the following *layout* of the area (see **chart 3**).

Chart 3. *Layout of the production area*

Source: Preparation made by the authors

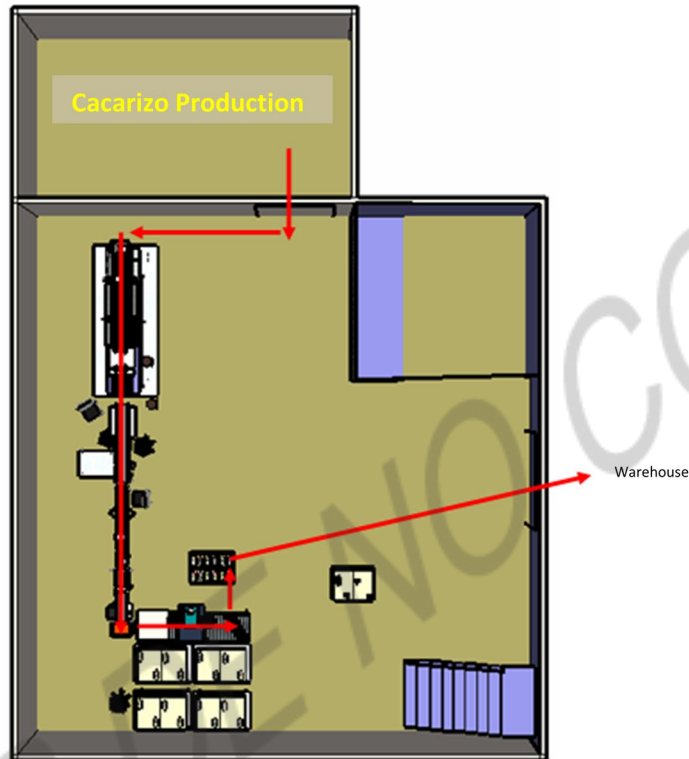
The production process of *Pelonetes*, started with the production of the sugar coated product called “*cacarizo*”. This product was the main raw material of *Pelonetes* and it was manufactured in an area, which was annexed to the production line (see **Figure 12**).

**Figure 12**



After manufacturing the “cacarizos”, they were moved to the production line using plastic containers. Following you will find the route that the product followed through the production area (see **chart 5**):

**Chart 5.** Product route



**Source:** Preparation made by the authors

Line staff worked shifts of 500 minutes and the company gave them 30 minutes to eat and 10 minutes to perform cleaning work on the line, before their shift was ended.

The company had the policy that one or two shifts had to work, as needed, to satisfy the expected demand. It was not allowed to work half of a shift.

The company gave the following dates as day off: January 1<sup>st</sup>, March 20<sup>th</sup> and 21<sup>st</sup>, May 5<sup>th</sup>, November 20<sup>th</sup>, December 12<sup>th</sup> and 25<sup>th</sup>.

The following information was considered for the analysis (see **table 1**):

**Table 1:** Transformation of pelonetes to display

Container with “cacarizo” (Pelonete) =	1 piece
6 pieces =	1 display
24 displays	1 box
63 boxes =	1 pallet

**Source:** Preparation made by the authors

In November 2007, the line included the following personnel (see **table 2**):

**Table 2:** Number of workers per operation

No. of operators	Operations of the Assembly line
2	Place pieces on belt 1 (Cap. 84)
0	Product dosing in the piece (Cap 12)
4	Place the lid to the piece (Cap. 60)
4	Place the seal to the piece
0	Seal 's shrinking oven
0	Individual numbering stamp (to the seal)
2	Remove product from belt 1 in groups of 6 pieces and Place product on belt 2
2	Place the plastic sleeve (6 pieces)
2	Place the plastic sleeve on belt 3
0	Plastic sleeve's shrinking oven.
0	Plastic sleeve's numbering stamp machine
1	Place the plastic sleeve on belt 4
0	Let the plastic sleeve go through the metal detector
1	Pack the plastic sleeve in boxes (24 plastic sleeves per box)
	Wrap boxes up
	Stow boxes in pallets (63 boxes per pallet)
<b>Parallel Operation</b>	
2	Close lids
<b>20</b>	<b>Total of operators</b>

**Source:** Preparation made by the authors

The pallets coming from the production line were sent directly to the bus, and as soon as they reached 22 of them, they were moved to the JUMP or main warehouse. The company had the policy that they had to finish year 2007 with an inventory of 0 *Pelonetes*.

The Company's Costs Department sent the following information to Mr. José Inés Aguilar, this information had to be considered when making the production scheduling for year 2008:

- Penalty cost per box for not delivering the product to the customer: \$308.09
- Cost of keeping a pallet in inventory: \$110/week

On its historical records, the *Pelonetes* Production Department, had the following information for year 2006 (see **table 3**). To be able to observe the product seasonality during the whole year, it was solely considered the analysis of year 2006. Besides, there was a very little variation regarding historical data available from 2007.

**Table 3: Efficiency of the pelonetes line in 2006**

Year 2006	Boxes		% Actual Efficiency
	Actual production	Standard capacity	
January	17,033	17,496	97%
February	13,947	17,496	80%
March	16,397	17,496	94%
April	17,168	17,496	98%
May	15,721	17,496	90%
June	14,082	17,496	80%
July	16,204	17,496	93%
August	16,537	17,496	95%
September	16,909	17,496	97%
October	15,239	17,496	87%
November	15,370	17,496	88%
December	17,372	17,496	99%
	191,979	209,954	91%

Source: Preparation made by the authors

The company Demand Planning Department, based on the Box-Jenkins model, forecasted the following *Pelonetes* demand for year 2008 (see **Table 4**):

**Table 4:** Forecast of the 2008 *Pelonetes* demand

	Month	Boxes/Month
1	Jan-08	13,646
2	Feb-08	15,180
3	Mar-08	14,172
4	Apr-08	14,918
5	May-08	12,705
6	Jun-08	14,299
7	Jul-08	12,408
8	Aug-08	15,281
9	Sep-08	14,676
10	Oct-08	15,051
11	Nov-08	13,147
12	Dec-08	15,974

Source: Preparation made by the Demand Planning Department

Company executives expected a nationwide demand increase for *Pelonetes* in the coming years; therefore, the Production Manager, Mr. Aguilar, had to decide whether it was necessary to acquire another production line, similar to the current one, whether to modify operations, request more staff for the line or to hire another shift. He had to deliver the proposal to satisfy the demand, at the beginning of December 2007, in order to make the necessary changes in January 2008.

To watch the video about Hershey's production line click [here](#)