**GEMBA WALK**

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**Introduction**

Pasquier is an international brand in the packaged food production sector. Their main product is the croissant which they bake every day in large quantities and export to the various parts of the world for daily consumption. They bake their croissants from scratch everyday so as to provide hot and fresh croissants to their consumers. In order to get best results the production is divided in their factory and have specific places for each raw material to be stored or processed. But in the production line there are some issues which are costing the company more time to produce the product as compared to time taken after making changes in their production process. Pasquier produces around 18000 thousands croissants every hour which in itself is a big number .

**Process**

The production starts with the delivery of concentrated butter in the INTAKE part of their production line. The butter is 99% fat and 1% water because the company produces without any preservatives; because of this butter the life of croissant is increased to 29 days. After the delivery of butter, a specific person is assigned to check the temperature of the butter. After the butter is checked the blocks are taken to a giant refrigerator. After the butter has cooled down. The production line is shifted to the Le Vin room also called the Propagation room. where the mother dough is kept which contains all the yeasts , bacteria . The mother dough is then later added to the croissant dough to have the perfect taste. In Le Vin this practice of  making the mother dough which is highly acidic has been going on since 1936. This whole process till now has taken around 30 mins. After the propagation room 24 kgs of freshly fermented Le Vin is taken to the Mixing Room.in the mixing room a 300 kg dough is made for a batch of croissant. Firstly, the Le vin is added in the mixer followed by a huge amount of yeasts. Ice is also introduced in the mixer so as to maintain the temperature of the butter and prevent it from melting. After adding the ingredients then mixture is taken towards the mixer where 50 litres of water is added along with 150kg of plain flour , 30 kgs of sugar and 10 kgs of seed oil before being whisked together. After 20 mins of mixing. The mixed dough is then kept to rest for at least 1 hour to settle down. The time taken till now is 3 hours approximately. After the dough is kept for 1 hour , the 300 kg dough is then cut into parts of 10 kg each and then rolled over in a conveyer belt. Once the dough has been in their right thickness on the belt the concentrated butter is then added to it.

Once the butter blocks are added into it the machine then slices them into sheets. The dough and the butter get mixed. After the layer of butter is mixed. The dough then travels from the mixing room to the Lamination room. In the lamination room the machine folds the dough again until there are 4 different laminations. Once there are 4 layers another machine then cuts them into 80 cm sheets and then sent to a stacker. The stacker then stacks 3x80cm sheets of layer so that it becomes 12 layers and gets the perfect size to be baked into. After the layering is done the sheets are kept to rest for 40 mins. From the lamination centre the sheets of 12 layers are then taken into the production line. In the production line , firstly a machine is used to cut the edges of the sheets and then another machine is used to cut that sheet into **triangular** pieces. Once the dough is cut into triangles a set of 5 razor sharp blades cuts the dough into 5 rows. Once all of this is done the cut pieces are sorted out in another conveyer belt and lines them up in the same direction. After that all the pieces are taken into the company’s top secret rolling machine. The secret machine rolls 300 croissants per minute. Once they are rolled into their shapes. The croissants are then measured to its perfect length, which is 11.5 cm long and around 46 g . Once they are weighed, they batches are taken to a room where the temperature of the room is 30 degrees Celsius and 80% humidity for the yeast to mix nicely with the dough. In that particular temperature controlled room, the batch is kept for at least 2 hours before taking them to the oven. But before heading towards the oven a spray of milk protein and water is done on the batch so that the final croissants come out shining. The oven is heated up at 300 degrees Celsius and the baking is done because of a chemical process where the protein spray reacts with the sugar dough turning them into bronze coloured freshly baked croissants. It's a 15 minutes procedure.

Once they are baked, they are again taken to a room where they cool down for around 60 minutes. After the cooling down they whole batch goes under a quality check. To determine the perfect volume of the croissants the company follows the displacement method in which they use food safe seeds to determine any punctures in the baked croissants. 4 croissants are taken at once and then the box is filled with the seeds. The accepted weight of those is around  500 - 600 grams. If they don't make it to the acceptable weight the croissants are then adjusted by adding some ingredients. From the oven area after cooling down the croissants are then taken to the packing area. The packaging is done in a pack of six in which they are first packed in a pair so that only one packet is opened at a time without affecting the other 4 croissants. Further in the conveyor line there are 4 suction pumps which carefully pick the packets of 2 croissants without breaking them. After they are sorted out they are packed in a family pack of 6. Once they are done they are taken to the Dispatch area from where they are taken to different parts of the world. This whole process took around 7 hours.

**Process Improvement**

There are some places in the production line where some changes might be needed. Starting from the butter blocks being received in the factory. The company loses valuable time in maintaining the temperature of the butter. It would be more efficient if the concentrated butter should be used as soon as it arrives to save about an hour in the production time. More robotics machines are needed to carry the heavy loads of concentrated butter as less human power will take more time as expected.

**Answers to past Questions**

**1. The line for the production of croissants must be reliable, since the production of this type of product is one of the main ones. Do you think that modern, automatic new croissant lines can also provide the highest productivity and excellent product quality with a quick return on investment?**

Answer: In order to assess the competitiveness of new automated equipment, it is necessary to identify the factors that have a significant impact on the competitiveness of PASQUIER. The factors of the company's competitiveness are: the location of the enterprise, the reputation of the enterprise, the qualifications of its personnel, the decoration of the premises, the corporate identity, the automation of production processes at the enterprise, the price level, the breadth of the assortment, compliance with product quality standards, marketing policy, etc. Accordingly, the installed equipment meets all the requirements, perhaps only in the future it will need to be replaced.

**2. Would a new fully automatic production line combining the latest technology and technological advancements reduce the cost of producing frozen dough or baked goods?**

Answer: With a small depreciation charge in the price of goods, new equipment will help increase the profitability of these types of goods.

**3. Does your plant use high-precision, continuous production?**

Answer:  This type of production is not applicable.

**4***.* **Does your company have a hygienic product design, what are the standards in the field of lean manufacturing adopted in your company?**

Answer:  Hygienic product design is applied, and standards for Lean Programming and Growth Marketing are adopted.

**5.****What metrics are used to measure production efficiency in your company?**

Answer: We in the company use indicators of labour productivity, capital productivity, capital intensity, etc. to assess efficiency. According to this assessment, PASQUIER is more competitive both now and in the future. The strengths of the company are profitability, the quality of goods and services offered by the company, the average buyer's bill. The enterprise needs to work on the following indicators: market share, increase in financial resources, work on the staff of the enterprise. But in accordance with the stage of the life cycle of the enterprise, the significance of individual indicators will differ. The attractiveness of the market includes such indicators as market potential, profitability, qualified workforce, market infrastructure, for competitive struggle, the nature of demand in the domestic market for the company's products.

**6. How often do your croissant production lines change over to new products?**

Answer: In connection with the development of new types of products, the lines can be reprogrammed for new production.

**7. Are your manufacturing methods patented?**

Answer: The company has all the required patents (FR2757746A1).

**8. Have you encountered industrial espionage from your competitors?**

Answer: There were no such cases of industrial espionage in the company.

**9. Does your company take part in international exhibitions and does it showcase its innovative achievements in the field of croissant production?**

Answer: The company tries to participate in such events, maintain partnerships with industry representatives. To increase the competitiveness of PASQUIER, it is necessary to expand its regional presence, develop long-term cooperation with other trade enterprises. Strive to improve marketing policy. Development, which, and adherence to the outlined plans, will allow the company to increase its competitiveness. To increase the efficiency of its activities, the PASQUIER enterprise, increasing profitability and increasing competitiveness, needs to maintain a wide range of products offered, pursue a carefully considered pricing policy, choose the most optimal suppliers and continue to apply all possible methods of forming and stimulating consumer demand, and constantly improve its management strategy. In these matters, participation in exhibitions only helps.

**10. In your opinion, will artificial intelligence replace human labour in your enterprise in the future?**

Answer:  In industry, over the next decade, artificial intelligence can perform part of production simple tasks. But complex tasks will continue to be performed by humans.

# Problems with the current production

We have seen that Pasquier is a very efficient company. Pasquier is the leading producer of industrial croissants in the world. However, the production process of the brand is not perfect.

First of all, the company does not seem to set clear objectives for the efficiency of its production. Even though in the video, we could see that the Pasquier factory was particularly efficient, the firm could surely still improve this aspect. Indeed, even with a recognized product and known methods it is always possible to improve, at least in the long term. However, in Pasquier's production system as it is today, there is no room for innovation and exceeding objectives.

Secondly, we have already highlighted that Pasquier is an international brand. Pasquier has four production sites outside France, including a factory in England, but does not produce croissants there. Yet the English are big consumers of croissants. This example is not insignificant because the company only produces its famous croissants in France and then exports them. Moreover, in the video we can understand that the visited factory produces a very large number of Pasquier croissants. Pasquier's strategy is to divide the production in each factory so that each factory is specialized in one product. This poses a problem, if something goes wrong in the factory where the croissants are produced, the croissant production will be hit hard.

Another problem with production process is the raw material management plan.  Pasquier seems to have very large stocks of raw materials. However, some ingredients used in the composition of croissants do not keep well, such as butter, which melts above 16 degrees Celsius and becomes unusable after a certain period of time. The company seems to adopt a mass production method. It orders its raw materials in advance and in large quantities to ensure that it can produce a large number of croissants no matter what.

Furthermore, each croissant must pass through each machine in a specific order. If one of the machines stops working, the whole production is blocked. In fact, there is only one big circuit that all the croissants take. We saw that the process was very standardized and respected a very strict protocol. In order to standardize production, each croissant leaving the factory must be identical to the others, whether in its ingredients, its weight, its baking time or its shape. A faulty machine could therefore jeopardize the productivity of the whole factory.

Also, the production process is highly automated. The company seems to rely heavily on the capital factor. Nevertheless, during the visit of the factory, we can see that some tasks can only be done by human workers. Let us take the example of the croissant conformity test: at the end of the production process, the last step before packing the croissant is to check that the size and weight of the croissant are in accordance with the brand's standards. However, the worker in charge of the visit tells us that he only checks a few times. If a machine malfunctioned and the croissants were suddenly too small, it could take several hours for the factory to realize this, and they would have to throw away their production. There are other tasks where the labor factor could complement the work of the machines.

Finally, there is no reference to a possible re-use process for non-conforming products. If croissants are declared non-compliant with the Pasquier brand, they will not be marketed and will be thrown away. The same is true for ingredients that are about to exceed their use-by dates. For example, if the company orders too much milk to make butter, milk will be thrown away. In addition to wasting money, this would result in additional costs, whether it's buying more ingredients or disposing of unusable products.

We have therefore identified six problems for which we will now try to provide one or more solutions.

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# Potential solutions

Concerning the solutions, here are our proposals.

To solve the first problem we mentioned, which was that the company did not set to itself enough objectives to achieve in the short and long term, Pasquier could formulate an Enterprise Resource Planning or ERP to better manage its production. One can easily imagine different KPIs that would be measured at regular intervals: weekly or daily. Thus, the company would be better able to improve its production process.

Then, concerning the localization. We could therefore imagine that it would be preferable for the company to produce croissants directly in the countries where it is established. In this way, the costs of exports would be reduced, as would the costs of stocks of finished products. At the same time, the company would get rid of heavy logistical problems, since a product like croissants cannot be kept indefinitely. Moreover, rather than specializing each French factory, the company could have each factory produce several products. This would reduce transportation costs, while reducing the dependence of Pasquier products on their production plant.

To solve its raw material management problem, the company could switch to a just-in-time method for purchasing its raw materials. This would be particularly beneficial for ingredients such as milk. It is also possible to imagine that the company would choose to change to a Just-in-time method only for certain raw materials, while keeping its mass production method for the rest. Pasquier would therefore be closer to an Agile method. Still, the company should manage to always have a sufficient amount of each ingredient without having too much stock as it is the case at the moment.

Concerning the circuit that all the croissants must follow. To avoid a slowdown, or even a stop, in the production if a machine breaks down, it could be conceivable for the company to choose to set up several small parallel production circuits rather than one large one. Moreover, once again, the company could have its croissants produced in several of its factories rather than concentrating everything.

Now, regarding problem number 5, the company could consider re-hiring workers. Indeed, it is always beneficial to have the labor factor and the capital factor complementing each other. Pasquier wants to represent a certain ideal of French cuisine, and for this to happen, the products must be of the highest quality. We must keep human workers.

Finally, even if the last problem does not directly concern the finished croissants (a non-conformity of the large-scale production is a highly improbable hypothesis), the absence of a plan to re-use stocks could especially be a problem for raw materials such as milk and yeast. One could therefore imagine that the company transfers its excess inventory from one plant to another. However, this solution is not perfect since it increases production costs, hence the interest of the Just In Time method. Finally, we could imagine that the company could give its stocks to an association as a last resort, if it really can't do anything with them before the deadline, thus improving its image.

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**Recommendations:**

For the development of the company's production activities, the following recommendations can be made. For example, the strategy "Integration back by buying some supplier companies" requires certain actions from PASQUIER to economically justify the benefits of integrating back, organizing the process of finding objects of interest for purchase, assessing the actions of competitors in this area. Threats that can have a decisive impact on competitiveness and pose the greatest threat to PASQUIER are lobbying for the adoption of new laws, the possible deterioration of the development of long-term relationships with large suppliers. Implementing an Integration Back by Purchasing Certain Supplier strategy will help the enterprise mitigate its inventory supply risks. The task of trade is not only to bring the product to the end consumer, but also to actively influence the formation of consumer demand, which is impossible without high-quality trade services.

Purchasing is the backbone of trade. You need to have a product in order to sell it to a buyer and make a profit. The main task of procurement is to buy goods at a bargain price to meet consumer demand.

As you know, the purpose of procurement is to purchase goods of the required quality in the appropriate quantity at a predetermined price at the required time. The results of the company's activities largely depend on the state of procurement activities.

Let's consider in more detail the stages of the process of purchasing goods. In accordance with the model adopted by the company, the decision to purchase goes through seven stages of the process of its implementation: forecasting demand; defining the characteristics of the required product or service; search and preliminary assessment of potential suppliers; receiving and analyzing offers from suppliers; evaluation of proposals and final selection of suppliers; order selection; evaluation of the results of the order and feedback.

Forecasting needs. Most purchases are driven by production needs, specific stocks, or day-to-day operations. Hence, the firm's need for certain goods is derived demand. The needs of the store arise from the needs of the customers for goods and services.

The definition and description of the characteristics of the goods or services required, the types and quantities of goods to be purchased, are usually demand-driven. Therefore, the criteria used to determine the list of required items must be technically accurate. Likewise, the amount (volume) required by the company, it tries to determine as accurately as possible, this avoids the accumulation of excessive inventory.

After the company clearly defines the type of product that it needs, it starts looking for and working with a base of potential suppliers. If this product has already been purchased, the search may be limited to one or more vendors that have proven themselves well in the past, especially when it comes to strategic partners.