EUROPEAN ACADEMIC RESEARCH
Vol. VIII, Issue 3/ June 2020

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

The Automated Oven For Cassava Flour Production: The importance and benefits triggered by the insertion of technology for producers

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Abstract

The culture of the Amazon region incorporates the inputs brought by the indigenous people, such as manioc which is possible to make countless delicacies, flour is one of them. This study makes considerations about the main benefits triggered by the insertion, in the flour manufacturing process, of the automated oven bringing to the producing communities, improvement in production, cost optimization,

gains in productivity, agility of the process, as well as, the minimization of errors that cause rework. For the development of the research, conditions were optimized so that the producer, in the use of automation, gains savings and improvements in the process. Nowadays, most processes tend to be impacted by technology, flour could not be left out, since the conditions of manual work make the production process vulnerable and automation leverages significant gains. The study took place with a survey of the manual processes for the identification of the main benefits, seeking to characterize an action research, one that promotes knowledge starting from a descriptive case and supported by the bibliography, integrating the technique with the perception of the differentiating factors, the whole mechanism aims to show the steps that the system will take by inserting new production mechanisms. The application of the study shows that automation in the production process guarantees a differential, as it inserts means that enhance production and resizes quality, making production systems more flexible, which are gaining new formats, but without losing the essence of tradition and its naturais characteristics.

Keywords: Automation; Benefits; Oven, Flour, production.

Resumo

A cultura da região amazônica incorpora os insumos trazidos pelos indígenas, como a mandioca que é possível fazer inúmeras iguarias, a farinha é uma delas. Este estudo tece considerações sobre os principais benefícios acionados pela inserção, no processo fabril da farinha, do forno automatizado trazendo para as comunidades produtoras, melhoria na produção, otimização dos custos, ganhos na produtividade, agilidade do processo, bem como, a minimização de erros que ocasionam retrabalhos. Para o desenvolvimento da pesquisa se otimizou condições para que o produtor, no uso da automatização, ganhe economia e melhorias no processo. Na atualidade, a maioria dos processos tendem a ser impactados pela tecnologia, a farinha não poderia ficar de fora, visto que, as condições de trabalhos manuais vulnerabiliza o processo de produção e a automatização alavanca ganhos significativos. O estudo se deu com um levantamento dos processos manuais para a identificação dos principais benefícios,

buscando caracterizar uma pesquisa-ação, aquela que promove o conhecimento partindo de um caso descritivo e amparado pela bibliografia, fazendo uma integração da técnica à percepção dos fatores diferenciadores, todo o mecanismo visa mostrar os passos a que o sistema vai absorver pela inserção de novos mecanismos de produção. A aplicação do estudo evidencia que a automação no processo produtivo garante um diferencial, pois se insere meios que potencializam a produção e redimensiona a qualidade, flexibilizando os sistemas produtivos, que vão ganhando novos formatos, mas sem perder a essência da tradição e suas características naturais.

Palavras Chave: Automação; Benefícios; Forno, Farinha, produção

INTRODUCTION

The Amazon is a region very rich in culture and diversity of raw material that, in its majority, are used in the raw form, that is, free from manufacturing processes. Attrition that inherited from the indigenous tradition the artisanal manufacture of nature products, postponed the insertion of more sophisticated mechanisms that promote changes in the production of inputs.

Cassava flour is a product that reflects the eccentricity of the Amazonian population, as it has always been manufactured for the livelihood of families and its production was done by hand, but with the increase in population and market demands being extended, this process was changing over the years, incorporating diversified mechanisms that require new concepts in terms of quality and quantity.

According to Araújo (2008), the culture of dealing with cassava plays an extremely important role in the national and international agricultural structure, be it for human or animal food purposes, as well as for the generation of employability and income generation, in the case of Brazil most active in the North and Northeast regions. The IBGE (2008), points out that the national production from cassava products (2007 harvest) production was around 27 million tons. Almeida (2004) comes corroborating and

points out that the cassava, tanto leaves as the roots are used in food, but the consumption of roots worldwide is much more expressive, which leaves highlighted the pain by-products of cassava that are starch (tapioca) and farina the in Brazil, 20% of the cassava is produced destined a potato starch manufacturers but the most significant that reaches 80% is intended for the manufacture of flour.
The flour has much market value and increasingly has become more popular in the regions of the country, it requires better production conditions and adjust productivity thus an automation and a technique that transforms any m activity Annual humane in an automated system. S will activities to stop producing by people exclusively and pass to be made by poor corners, can integrate the three types existing in the automation whether industrial, commercial and residential , process optimization is by necessity the development of a system that is intended to be automated, in the case of this work, the device to be automated is an oven for making flour.

COSTA (2019) in his study describes that in the traditional populations of the northeast, the artisanal way of making flour has been compromised by the low adhesion of young people who understand the difficult and unprofitable process, therefore the mechanization of the process greatly improves the development and allows add product quality.

The industrial automation, according to Natale (2018) originated in the modernization of the productive process, accompanied by the advent of the massification of technologies and computerized techniques. Nacaratti (2018) highlights that industrial automation has been generating gains in quality and quantity in production, enabling improvements in price conditions to the final consumer.

The present study highlights the concepts basic to the industrial automation, the impact on the lives of producers workers flour, as well as the difficulted adhesion found for the preparation of the manual flour and improvements that automation will bring in large scales, and the broad of the concept of automatic controllers of manual ovens. Júnior (2013) describes that automation impacts the lives of workers, as the competitiveness of the machine with the lack of qualifications can be decisive when implementing the machines, but

not necessarily, the machine tends to replace man, if he does its qualification role, as a continuous process, the systems are improving and the way of processing also.

The personalized and qualified workforce tends to produce more suitable working conditions and defined costing, in this industry automation is a matter of survival of the sector, as highlighted, what happened in Japan, in 10 years the number of vehicles produced quadrupled, sustaining the same workload, as highlighted by Rosário (2010). This condition of large-scale manufacturing and with standard quality signals the modernization of systems, which are incorporating new forms of access and changing the way people are recruited for production.

For this study that highlights the making of flour, with the insertion of the automated oven, taking into account the problems that occur during the process of preparing the flour manually , since the work overload is huge and the producer has many chances to have health problems , automation of the process facilitates the making of flour, leaving to be only a cultural activity becoming business, which serves, among other situations, the local product demands, as well as support improvements in living conditions and labor for the operators of that system.

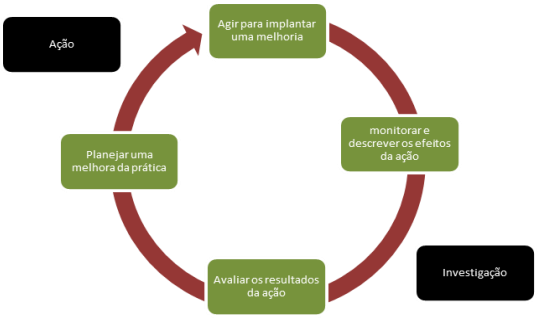
The expected impact with the application of this work is in the form of observation of access to the most adequate mechanisms for production, even if it is a family production, with the automated oven it will be possible to improve the quality of the product, increase the productivity on site and value the qualification operators. The traditional system perceives the changes and tends to regenerate itself in order to optimize the conditions that will justify the industrial scale production of flour. It is important to emphasize that the automation of the oven on an industrial scale has an investment cost and requires planning so that the quantity produced is sufficient to incorporate the technology, being more suitable for associations, cooperatives, medium and small companies that subsidize lesser products by producers, thus making the mechanization of flour making an activity that works in a chain. The characteristic of this work is an action research that tends to validate the advantage of

using an automated oven for making flour, highlighting its positive and adverse points to its implementation.

2. METHODOLOGY

The form of approach to the realization of this work is characterized as a research - action, referring to a generic condition that subsidizes any process that is conducted on cycle , because improvement practice by varying systematically between the way of acting in the execution of field and the investigation that unfolds from it. It is planned, modeled, discriminated and evaluated to differentiate for a subsequent improvement in its application, all the devices will lead to learn more, within the process, either through the practice of practice or by the investigation itself. Figure 1 highlights the process flow of an action research and refreshes the important points for the researcher's involvement in the work environment.

Figure 1- Flowchart of the action research system for application of the automated oven.



Source: Tripp (2005) adapted.

According to Silva Junior (2019), action research is an important tool, and as it is possible to outline the path linked to what is intended, allowing reflection and the possible transformation of the practice.

Thiollent (2011) suggests that to refer to a social research with characteristic empirical can be performed associated with an action or a solution of problem order collective, where the executors of research and all participants spheres are interlacing the problem that are involved in the form of cooperation and effective participation. As

this study highlights the insertion of a technology, modifying a process, in a descriptive way and with the use of direct observation, which makes a reflection on the problem existing in the manual process, classifying it as, exhausting, being the process of making the flour, very laborious and heavy, and can cause, among other damages, health problems to the farmer. It is estimated that the automation of the oven combines technology with the well-being of the user, facilitating and bringing improvements to the flour making process, and within this chain of modifications it can reduce costs, amplify productivity, minimize errors and accentuate the quality level.

The logic of this study sought to observe the development of an automated system that facilitates the production process, economy and practicality in the operational processes. For that, the vulnerability of the conditions of manual work in the oven was verified, with a data survey of the processes that are developed for the identification of the benefits that are generated with the implementation of the automated oven. Corroborating form of data collection, Silva (2008) points out that the searchable qualitative can be linked to the collection and the observation and analysis of spoken information and written product of direct observation, which is complemented with the observation Godoy (1995) which indicates that the descriptive study seeks to understand the phenomenon in its entirety, in the complex condition, allowing for qualitative analysis.

The form of action research that highlights an insertion in a system to promote changes, the research technique will be used adds the description of the facts with the objective direct observation, for the allocation of the research data. The study highlights the advantages of using an automated oven for making flour, which Michel (2005) points out that the information obtained through personal encounter or analysis of documents produced by people defined by their characteristics, such as and elements of research sample.

Direct observation was performed through document analysis and records made available for consultation in the field.

Within the set of elements that were used in the course of the works, they were responsible for collecting the information that is expressed in the following topic.

3. DISCUSSION AND RESULTS

3.1 Vulnerability of Manual working conditions in the oven

The work in the making of flour is quite heavy, as artistically all the steps are performed by people, ranging from the removal of the roots, the preparation of the dough and toasting. At all stages, manually, the process is expensive because it requires a lot of dedication and willpower. In the Amazon, in the flour shed, the manioc is removed from the peel (peeling) and destined for grinding, part of it is also soaked in running water to soften and compose the dough. Once the cassava dough is prepared in a solution form it is expressed, which can be with a tipiti (object woven with arumã fiber) or a press, the tucupi and tapioca that are used in other forms are removed from it feed.

The cassava is then pressed, and when dried it is sifted, being processed for the oven which, under manual conditions, a batch of around 10 kg of flour, with an average processing time of close to two hours, being its mobilization with wooden shovels or gourds (cuiapeua) and shaking, usually with oars (wooden object), to remove the residues (cuí) that remain in the final product generates poor quality.

As can be seen, the flour is made in an orchestrated way and the steps are passed from generation to generation. According to Silva (2019), the form of knowledge transmission is fundamental for the understanding of the dissemination of cultural knowledge, the construction of collective identity and the process of making cassava flour in the spaces of the ovens, flour is a form of activities that the community mobilizes around activities to produce flour.

In the flour mill, usually the whole family is mobilized, causing dissatisfaction in handling for the manufacture of flour manual form, the figure 02 shows the flour mill environment that the preparation process of the inputs requires efforts physical repetitive, appointed as the most exhausting and time- consuming, mainly in the process of peeling cassava and roasting in the oven, it is commonplace, the farmer goes through long periods of the day standing in repetitive tiring movements, being able to develop diseases caused by repetition and disposition for a long time in an activity.

Figure 2- Artisanal flour house with traditional elements used in the production of flour

Source: Own Author

SOUZA (2000) emphasizes that it is very common to develop anomalies such as (RSI / WRMS) which consists of disorders caused by repetition of movements, and which impairs the development of work, as it reduces the ability of the worker to produce according to pain occasional. Wajnman (2016) points out that according to the INSS Disability Technical Norms, 1993, RSI are conditions that can be caused in regions of mobility of the body (tendons, synoviums, muscles, nerves, fascias, ligaments, isolated or associated) , but it can also happen with or without tissue degeneration , in this case it can reach, mainly the upper limbs, being located in the scapular region and neck, because in the working condition the disposition of inadequate posture can be aggressive to the organism that tends to adjust according to the conditions. Factors that contribute to these disorders are the repeated use of muscular sectors, the forced use of those muscular sectors that atrophy their stability, as well as the maintenance of inadequate posture.

RSI are anomalies that are not always noticed by the caboclo, who ignores the discomfort that falls on him and postpones the actions taken, if not taken with the cortical precautions, the problem can evolve to more specific situations and difficult to cure. In the case of WMSDs, which consists of a name for RSI, aiming to deflect the emphasis related to repetition and with the purpose of minimizing confusion about RSI being said as a new disease, in fact, it consists of creating a new name (WMSD) whose diagnosis the physician of the condition may be affected by the set of diseases caused by inadequate

disposition (bursitis, tenosynovitis, carpal tunnel syndrome, among others) are examples of anomalies of repetitive stress . It is certain that the term "work-related disorder" is considered more appropriate to illustrate the most varied anomalies caused by the body's unwillingness to work (WAJNMAN, 2016, Pag. 1020).

Gomes (2019) describes that oven houses are very important in the dynamics of preparing cassava flour, as in these spaces are used for flour where cassava is transformed into flour, whose product, historically, creates a traditional and cultural and material reproduction takes place in culture and art.

Based on the difficulties in the water flour preparation process and its handling techniques, studies were carried out to mobilize actions that cause agility in the process, which is exhausting and tiring for the worker, thus, automated ovens were developed, able to facilitate the process of preparing in the oven (toasting) the most appropriate flour, as the manual factors prove to be difficult and laborious, but with the advent of easy-to- operate machines , it credits better working conditions for the preparation of flour water.

Teixeira (2016) indicates that the optimization of the automation process requires methodological questions that highlight interdisciplinarity and integration, defining particularly a general scientific and automation policy, guaranteeing the means of sustaining it and promoting the ability of professionals with the ability to design a look to understand the connections of particular situations and unrelated to the system as a whole. Industrial automation is the area that has undergone significant advances in recent decades and its evolution remains pulsating today due to the ability to add many factors for growth and quality.

The growing prominence of emerging technologies will be qualifying time-consuming and degenerative processes, increasing the possibilities insertion of new inputs in the range of processes. What corroborates Schäeffer (2001), who defines automation as a list of technological subsidies, capable of automatically carrying out the activities that were previously performed by manual (human) operators, this automation tends to eliminate physical effort, governing standards, providing security, quality and uniformity in the processes.

Still on automation, Rosário (2010) indicates that the elimination of lost time, those that were previously occupied by "workers" passive of injuries because they have an accentuated time in repetitive activity, which can lead them to develop pathologies. In addition to promoting a very long time to acquire goals and return on investments. Schäeffer (2001) points out that industrial automation has boosted the manufacture of products with agility and quality.

In a race to improve the systems, the devices gain new clothes and have the intelligence to perform multitasking, as they know that automation is configured in the process that performs tasks and activities autonomously, or assists man in daily tasks. History reports that automation has already included water wheels, pylons, mills, and others that potentiated solutions for societies in times past. The machines, with their arrival, revolutionized, mainly, the processes that require agility, as is the case of the steam machines that created other standards in the industries generating high productivity, standardizing and qualifying the products and services. In fact, automation is gaining new forms of activity, as it escapes from the dependence of man, automatic machines distributed in factories, will leading the processes with the help of a few people and often integrated with each other.

To automate something is to apply technology that uses mechanical, electronic and computerized means capable of operating and controlling production. Within this cycle of technological possibilities, it includes machines and tools; Automatic material handling systems; Automatic assembly machines; Continuous processes; Feedback control systems; Process control.

In the case of systems that work automatically for production, they can be called fixed automation, which consists of the process when the production sequence remains at the same level, in this role the inclusion of a high level of initial investment is estimated, also they obtain high productivity, basic operations are considered simple and as the term fixed term is mentioned, they are unreliable, once trying to move changes in the production lines makes the product more expensive, as it triggers a sequence of changes.

With the factor of continuity and the requirement of development processes that increasingly improve your development

these technologies , by facilitating the implementation of procedures in one environment where you will receive one system that was totally manual becoming an automated system able to support the needs in the flour producers, automation in simple and small processes is feasible , even in complex processes of fully automated flour house plants , there is much debate about the mechanization of flour preparation systems at all stages, but the focus of this work is the toasting process, that is, the insertion of the automated oven.

3.2. Flour production processes.

By Machado's insertion (2002), the Manufacturing standards indicate that the basic requirements for food producing / industrializing facilities, aiming to guarantee adequate hygienic-sanitary conditions. Culturally, the making of flour had no purpose of hygiene standards, as each location acted according to its knowledge or culture passed on. But for the preparation of flour from cassava in one oven automated requires the equipment and utensils appropriate, with construction - Features of smooth and non - porous materials, with easy corners to be clean and easy to handle; the most suitable materials for the development of an automated oven is formed by a machine working in drying and roasting flour, with appropriate materials developed within standards to ensure the health of operatives in the house flour. The flour from cassava, according Sanni (2018) is a product particulate dry, fibrous and of free - flowing, obtained from cassava roots, prepared from dried chips milled or mashed moist. The root is processed, grated or softened, beating or grinding peeled roots. The preparation can be fermented or non- fermented. When the dough does not fermented is dried and ground, giving rise to one tasteless particulate product, odorless, white or off-white, also known as high quality cassava flour.

Manual peeling is slow and expensive due to irregular shapes and sizes. The bark, which consists of periderm and cortex, also varies in thickness, texture and strength. A manual stripping operation is still predominantly used in most d equipment small, micro and small for the preparation of cassava. Ezekwe (1976) describes that research efforts during the last decades have been the target of the development of mechanical means of development that help these

needs. Hermes (2018) points out that mechanized processes with the use of clean and waste water for the preparation of cassava can bring products with marked quality and great acceptance for their organoleptic characteristics.

In the process of making of flour becomes important to observe the roasting, through the wet mass occurs pasta drying processing, thus helping in their consistency, color, taste and preservation. Nago (1995) and Dos Santos (2018) indicate that in this process due to the existence of hydrocyanic acids found in cassava, this modification in the dough process has to occur, with this, a mixture with a light and dry characteristic can be obtained.

Due to the large volume of water found in the cassava mass , care is needed when starting the drying processor, due to a reaction given when the wet mass impacts in the oven heated to more than 300 ° C, by the action of temperature initial is one of the great factors to obtain the product with quality, all this care is due to a substance called gum that is found in the dough, if this substance is not removed there will be a thicker than normal aspect in the flour, along with a system of movement of the oven influences a lot in the tonality and taste that gives the flour is what reports Matsuura (2003).

The drying of cassava consists of a critical operation which, if not done correctly, can affect the final product, implying its quality. For the evaluation Maziya- Dixon (2005), Shittu (2001) and Silva (2018) to s properties granule of the starch and, by implication, the characteristic function of the starch, the flour can be modified by the drying process. That depends on the drying conditions such as drying temperature, time of drying method of drying, ie, optimization conditions in the process. Higher temperatures and longer drying times lead to an increase in the granular modification of the starch and a change in the functional characteristics of the starch.

In addition to what has already been mentioned about the drying system for the manufacture of the automated oven, the following materials are required: Diameter 1.5 meters, manufactured in 1/4 "plate, ie 6.35 mm in carbon steel; Edges in plate 1/8 "with 33cm depth; 2 hp motor with a production capacity of 75 kg / h, one chip maker, controlled or temperature, inverters to monitor the frequency and control d to end temperature pairs of dishes or

stainless one PLC 6 inputs and programming in ladder and another frequency inverters for oven automation.

Currently has happened one change in the level of technology of cassava processing, the processing (mechanized) processing technique back, replacing the existing manual operation. The biggest roadmaps for manual handling, dosing, pressing, drying and milling have now been removed by the advent of various mechanical devices that perform these operations. With the insertion of the automated oven it was possible to increase the production yield and diversify the applications, as well as the marked improvement in the quality of the product, as highlighted by Adetan (2006).

The flour shed becomes more agile and with an innovative shape because the oven starts to work alone, being instinctively monitored so that the improved product is satisfactorily, soon it is observed that the coming of the automated oven brings many benefits to the flour preparation process. and that its use is in order to improve the example of the oven for other instances of the flour house such as peeling, grinding, pressing, sifting and finally, the process gaining new formats and generating varieties of optimized products.

3.3. Main benefits with the automated oven.

With the intention of evaluating the new technologies connected to the cassava flour confection system by the agribusiness, Silva Júnior (2019) found that the absorption of the technology and the new demands applied by the agribusiness, allows control and stability conditions to consolidate the s activity s agribusiness in the context familiar most likely to sustain on the variation in cassava flour market in relation to prices . It indicates that the entrepreneurial vision prompted increased productivity index, profitability, low in cost, as well as access to new markets.

Silveira (2010) shows that automation has advanced grounded to microelectronics, the pneumatic and the hydraulic and other engineering fields of activity that allowed the emergence d the Controllers Programmable Logic (PLC), such devices replace mechanical and contactor system, so the system wins enhancement as reducing consumption of energy to, easy maintenance and installation

of sectors command who are in charge of running the process for autonomy.

For automatic oven with the insertion of the programming language, which according to Franchi (2008) is a con standardized next command that the computer program is able to recognize. In recent years, there has been a major advance in techniques and programming languages, aiming to serve the most diverse sectors.

The functionality of the system, addressing each of its commands. The oven functionality programming is that by Ladder language, as follows: The motor is turned on and activated the program, this triggers control via the PLC, give the system/off switch goes into operation. The components existing in the oven: turn the system on, the realization of the entire process of browning, occurs through the system automated.

The advantages in manufacturing sheds flour that has one oven automated in comparison to the old houses flours not afforded the hygiene of the product 100% and that made the life of the producers more tiring and exhausting, and may cause disease and risk of burns as well from the great effort that has to move all the flour to the point of toasting for hours , the technology associated with the oven has come to improve the life of the farmer , giving him more than a better life expectancy the possibility of expanding business due to the quality of the products.

More with automation facility made this process more streamlined, with no risk of burning, me in RSI / MSDs and more sustainable the middle environment, poi s the bad corners do all the work far more advantages, quality, speed and safety ensuring preparation of the flour with more skill. The automation depends on the flexibility of system s where it requires its improvement and gains in several aspects, as autonomous systems are more intelligent and efficient, also is closely linked to quality fixtures, electronics, me reeds, tires that are sufficient to create new postures in the systems that make them responsible for the best performance, guarantees of continuity because their management occurs with interactive and consistent software.

As was shown in this study, automation together with man aims at better performance in the automated oven. Figure 3 shows the

interface of an automated oven, a subsidy that gives more quality to the flour preparation process.

Figure 3 - The automated form for the preparation of flour.

Source: MF Rural - www.mfrural.com.br (2008).

The farm will no longer be the same with the insertion of the automated oven in the making of flour, as the farmer's life tends to gain new perspectives. The preparation of flour is very laborious and requires a series of subsidies for the final product to be of quality. Only those who have tried to make flour at all stages know the degree of difficulty that it is to "express" the cassava in *tipiti*, spend more than an hour and a half next to the oven making movements for the flour not to burn and so on, the There are countless difficulties, which contribute to the advent of technologies that are giving new clothes in traditional processes and with little quality aggregation. Today, flour is an export product of the states of the North Region and, as a result, the market demand for a quality product and acceptance for an assured value. It is a consensus that manual ovens will still persist for a long time in the preparation of flour in the regions of the Amazon, but that the presence of the possibility of automated ovens in associations, cooperatives and producing communities can lead new paths.

Today many communities are gathering their partners to create organizational conditions within the flour production cycle, taking embedded technologies into the fields, ranging from how to drill the forests and make the most of the deforested land. Even with a certain degree of competitiveness from starch producers for mining and other applications, the use of cassava root, which is a source of resources for many families in the Amazon, and the knowledge of

devices that allow them to trigger healthier working conditions, optimization of their productivities and product quality, will generate new ways of acting and will attract more followers to the use of the automated oven that brings many benefits to the communities, above all, with the access to electric light with the "LUZ PARA TODOS" program which allows communities to access new technologies and improve their productivity and improve their way of life.

4. CONCLUSION

The preparation of flour is a way of obtaining income and subsidizes many families, communities and others within the Amazon. The tradition of the riverside populations of the Amazon in making flour for their subsistence reaches a heightened level. Because flour has become an important business in the region and extends to other regions of the country. For this work, whose purpose was to highlight the benefits of the automated oven for farmers, seeking to show a system developed with autonomy to facilitate the user in the operational processes of making flour. The foundation was made to check d the vulnerability of the conditions of m jobs annually in the oven, making a survey of processes that have been developed and identified the benefits triggered by the insertion of automated oven.

What reflects the study is that the automated oven becomes a differential in the flour shed, as it gives robustness to the process, increases the quality and hygiene standards, increases the quality of life of the worker, in addition to allowing the integration of communities traditional to the world of technology. Automated systems are intelligent and are applied to solve problems such as costly and inefficient process agility due to resistance to innovation.

It is worth noting that there are few works that deal with improvements on the making of flour in the north of the country and as technology advances, much of the history is lost along with people who migrate to other cycles and memory is left a side. It is important to think that the added value to the communities in the Amazon, is not only in the form of the insertion of technologies, but also to hear their stories and dreams, but who fears for its autonomy, so it is important to clarify the roles of the implementations and show them

the real gains from the counterpart of inserting new materials in their routines.

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