

Success Story

**More efficient distribution and optimized
process flows**

Beefy Green



distribution & process flows

Company description

BeefyGreen is a supplier of the purest alternative or supplement to meat, based on oyster mushrooms. The oyster mushroom is the best vegetable raw material for meat substitutes and for vegetarian products. This way you get a 100% natural, 100% pure and 100% quality product. In collaboration with producers of both vegetarian products and meat processors, BeefyGreen is creating hybrid products (e.g. meat burger and sausage) consisting of one part oyster mushroom and one part meat. This is how BeefyGreen saw the light of the day, with production partly in-house and partly outsourced. With its hybrid products, BeefyGreen focuses on the Food Services market, such as caterers, company canteens and restaurants that want to offer their guests more sustainability.

Motivation/Starting Point

Based on good contact with an oyster mushroom grower, they wanted to investigate how more value could be obtained from the residual flows of the oyster mushroom. In doing so, they wanted to go hand in hand for the highest attainable: human consumption. Until now, the residual flow from the oyster mushrooms (hereafter: stalks) has already been processed into animal feed or fermented.



Frank Nouwens started BeefyGreen in 2018.

But according to BeefyGreen, there were more options up for grabs, because the oyster mushroom leaf itself is already eaten. This gave birth to the idea of valuing the stems into a consumer product as well. As a company, BeefyGreen initially started producing a semi-finished product (oyster mushroom farce) that are then prepared into a full-fledged product by producers of vegan and hybrid end products. As a growing organization, it is increasingly difficult to find personnel to perform the monotonous manual detection and also to guarantee the “human failure”. BeefyGreen is aware that further digitization and automation is necessary to maintain the company, but also offers the only opportunity to grow the company further.

Analysis

Production is almost exclusively set up manually to guarantee flexibility with the existing large variation in batch sizes and assortment. Together with the successively grown company structure, the stations “cleaning”, “cutting”, “filling”, “labeling” and “packing” are often locally separated from each other or only loosely connected. Transport routes and intermediate steps are therefore required, which lead to extra work pressure for resources and employees. With the help of the COTEMACO project, employees should be relieved and resources/capacities are expected to be better used in the future through more efficient distribution and optimized process flows. The focus in this project has been on detection.

After white mushrooms and chestnut mushrooms, Oyster mushrooms are in third place of the most eaten Dutch mushroom.



There is minimal automation in oyster mushroom cultivation, so everything is done by hand. Even cleaning. This makes it a labor-intensive and expensive production, in contrast to the cultivation of mushrooms, for example. Oyster mushrooms can become contaminated with foreign particles in all sorts of ways. Metal, plastic, straw and glass are the most common contaminants in the substrate that is delivered to BeefyGreen in crates. To gain a place within the food industry, BeefyGreen is therefore forced to implement a form of automation, primarily in the field of detection.



A challenge to apply an automated process is that the market for which BeefyGreen produces is a very small one, there are no standard detection and production machines available for the substrate flow that must be processed from „contaminated“ to clean semi-finished products. In addition, the setting must be in a food-grade environment in order to comply with the FSSC 22000 certification.

And all this for a product for which one or a few day(s) per week is currently being run per production. Dedicated automation of all processes would not be economically feasible. That is why BeefyGreen has asked COTEMACO to investigate whether and/or when it would be feasible to make detection and eventually processing hands-free, now that the biggest challenge lies in terms of margin of error in combination with finding personnel. In the long run, BeefyGreen intends to deploy cobots and/or robots to use the further process, if cost-feasible, to solve the further challenges of an improved working environment for staff and more manageable and increased output.

Technical realization

The COTEMACO Support program for BeefyGreen was carried out by the Technology Providers of Food Tech Brainport in the Netherlands. The support consisted of a feasibility study about the technical and economic feasibility to arrive at a specific detection set-up that makes it possible to detect possible contaminants between the oyster mushroom stems. This is to be able to arrive at a situation that can be automated in the future.



This has led to a test set-up in the field lab in Helmond under the inspiring leadership of Technology Provider DVC Machine Vision.

Result

From mid-2020 – the end of 2020, DVC Machinevision BV conducted feasibility studies in close contact with BeefyGreen. Different vision solutions/setups were evaluated and optimized in iterations to meet the processing requirements for production to semi-finished products as desired by BeefyGreen. Special attention was paid to safety requirements for personnel, hygiene and health issues related to food products, ease of use and flexibility and integration with BeefyGreen's software systems. In the last phase of the feasibility study, it was concluded that the desired detection is very extensive and has many varieties and the question is whether the costs of arriving at a technical solution are economically feasible at all now that the volumes that BeefyGreen processes and delivers to customers be low.

The concept developed for optimizing and hands-free detection would also include a new workplace/station concept (layout) with adaptation of the internal processes. Based on the existing and forecast number of annual orders and lead times, a furnishing and workplace concept has been developed that ensures linking of labelling, filling and packaging and that processes run parallel. The use of a cobot (for handling tasks) can reduce the workload for employees, although the use of a cobot based on the data currently available does not (yet) have direct added value in terms of process times and output.

In short; as soon as the size and turnover of the company are of such a nature to take the step towards automation, BeefyGreen is ready for the next step.

Interview

How did COTEMACO support you?

COTEMACO helped us to define the process steps down to the individual steps. This has resulted in a concept that forms the basis for us for an automation approach to be set up and applied in the future, which will lead to maximum hands-free production.

What has been implemented and what are the benefits?

COTEMACO has recorded the sub-processes and shows how they can be merged into one concept in the future. Now, the various sub-processes do not yet form a single system. Implementation has not yet taken place because we still have to build the infrastructure and volume first. We do see, however, that working towards a single system alone results in a reduction in human resources. It can be seen what the impact will be if everything can be processed in an automated process. It is expected that at least 2 Fte will not be needed when the proposed concept is introduced.

Did your expectation come true?

No. I expected that the detection where we had put our focus would not be an easy job. But I did not expect that it would be so complex and the associated costs too high to implement a solution at this time.

Some light in the delivery and quantity of the product. This once again makes it clear that not everything can be realized just hands-free.



What is COTEMACO?

The project, which is an initiative of Interreg North-West Europe, aims to support around 60 SMEs in the automotive and food manufacturing industries with so-called „test environments“ and to encourage them to integrate collaborative robotic systems and digital technologies into their business. Accordingly, in addition to increasing production flexibility, the relocation of production abroad will be curbed and the number of jobs in manufacturing increased, which will generally lead to an improvement in the competitiveness of the companies involved.

In the project new technologies are implemented in application examples - the aim is to move from the prototype in the laboratory environment to the transfer to production, taking into account the legal situation and certifications.

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