

Casestudy: Unga Holding Ltd.



Building a future for African aquaculture

According to the latest United Nations report of World Populations Prospects (Revision 2017) the African population will have doubled by 2050. At this moment, there are approximately 48 million people living in Kenya and it is expected this will grow to 95 million by 2050. A massive growth of population also means that twice as many people need to be fed. Doubling the food chain in Kenya is a very challenging goal. Especially when we dive into the Aquaculture chain and the production of consumable fish.

South-East of Kenya's borders is the Indian Ocean whilst on the west side is Victoria Lake. With capture fisheries sharply declining, both provide less and less fish, whilst more is needed.

Until very recently, there was no structured aquaculture chain in Kenya. A problem that not only occurs in Kenya but also applies to other African countries. The continent of Africa is responsible for just 2.5% of the worldwide aqua culture output . Most of this output is concentrated in 2 countries, Nigeria and Egypt.

In 2011, during a working visit to Kenya, Wouter van Vliet (Director of Larive International) noticed that there was hardly any fresh fish available on the local market whilst demand seemed to be rampant. Coming back to the Netherlands, Wouter spoke with experts from the aquaculture value chain to see what was needed to build a viable sector. This marked the start of the establishment of FoodTechAfrica in 2013.



FoodTechAfrica

FoodTechAfrica is a Dutch public-private partnership combining the strength and expertise of 13 partners, all active in the Aquaculture value chain. The objective of FoodTechAfrica is to demonstrate the effectiveness and efficiency of a fully integrated aquaculture value chain in East Africa by combining the strengths of Dutch agro-food companies (mainly SMEs), knowledge institutions, government and their East-African counterparts. Developing a value chain to improve agricultural productivity and local market efficiency is the most effective way to boost local economic growth while substantially contributing to poverty reduction. This will lead to less dependence and contribute to increased self-reliance. At the start of this project, the sector faced several major challenges:

1. lack of economies of scale and the absence of critical mass
2. insufficient access to high-quality inputs, including fingerlings, aqua-feeds and water
3. poor farm management
4. poor animal health management
5. lack of an functioning value chain (including inputs, production, processing, cold storage and distribution)
6. lack of local finance, costly debt funding, high transaction costs and commercial risks
7. a challenging business environment for farmers

“

Demand for fish in Africa is going to go up, whilst wild-catch is declining. This leaves fish farming or importing fish as the two main options to provide fish to the growing consumer base. Africa is under the spotlight when it comes to global food security. And food security is best achieved by sustainable local production, for the local market. Thus, it is important to look inland, towards sustainably farming freshwater fish.

Wouter van Vliet,
Director Larive International



Aquatic feed plant

Without a local fish feed producer, it is both risky and expensive for local fish farmers to produce fish. This is due to the fact that roughly 70% of the operational costs are fish feeds. And if these fish feeds need to be imported, the risks are multiplied (i.e. non-delivery of imported feeds means loss of the entire fish stock).

A local feed producer of high quality fish feed thus enables fish farmers to increase the output and lower their production costs per kg. In short, a local fish feed manufacturing facility is an essential cornerstone of the sector. Establishing a local fish feed facility became the first key objective of FoodTechAfrica

By combining the expertise of Pelleting Technology Netherlands, Almex, Skretting and Unga, Ottevanger Milling Engineers built a state-of-the art fish feed facility, producing high-quality feeds in the heart of East Africa, Kenya.

On the 16th of March 2017, Cabinet Secretary of the Ministry of Agriculture, Livestock & Fisheries Mr. Willy. K Bett alongside Dutch Ambassador Mr. Frans Makken officially opened the new plant. The plant has the capacity to produce 5,000 tons of high-quality extruded floating fish feed annually for the East African market. It is the first facility of this size in East Africa that will produce the much needed high-quality floating fish feeds, the single most important impediment to the growth of the aquaculture sector in the region.

“



“In line with our Vision of “Nutrition for Life”, Unga has taken a bold step – investing, with the support of funding from the Dutch Government –in a state-of-the-art fish feed production facility to serve an aquaculture industry still in its infancy. Locally produced fish feed is a critical and essential building block to enabling the aquaculture sector to grow. It is the first facility of such size and technical capability in East Africa and also worth noting that it has been designed with the flexibility to double capacity within a very short timeframe.”

Ms. Isabella Ochola Wilson, Unga Holdings Limited Board Chair

Making the most of what's available

Making the most of what's available The complete factory was designed by Ottevanger Milling Engineers. The equipment was installed in an unused maize mill building, which was fully refurbished to meet the modern design criteria. This way, the consortium made the most of what was already available. By using an existing construction, both time and money have been saved, whilst existing infrastructure was given a second life.

The plant is equipped with a hammer mill, single shaft ribbon mixer, continuous flow conditioner, crumbler, extruder, vertical drier, cooler and a pellet coating system. The plant is fully automated by Inteqnion.



Floating Pellets

The floating pellets come in a four-part-offering, providing nutrition throughout the lifecycle of the Tilapia. Formulations are provided by Skretting, the global leader in innovative and sustainable nutritional solutions for the aquaculture industry, and utilizes the latest research on feed formulation. The extruded pellets will be manufactured and sized to offer the best in nutritional value. The feed is easy to consume and provide key nutrients for growth, proper immune support and overall health of the fish. In time, the plant will also produce a range of pellets targeted at the smaller catfish market.



Fish Farming

The second pillar of the FoodTechAfrica project is Fish Farming. The consortium started with an extensive analyses of the local conditions in Kenya, with the goal of assessing the optimal fish production method. This included among others review of temperatures, water availability, land scarcity and distance to the final consumers.

Based on the extensive analyses, FoodTechAfrica developed a recirculating aquaculture systems (RAS), specifically for application in East Africa. This system operates by filtering water from the fish tanks, so it can be reused. This dramatically reduces the amount of water and space required to intensively produce fish and fits very well in an environment, where water and land are both scarce, and will be even more scarce in the future. The steps in RAS include solids removal, ammonia removal, Co₂ removal and oxygenation. Also, the system simulates a stress-free environment for the fish, reducing mortalities and improving the feed conversion, growth rates and quality. The result is a system providing 100 times the output compared to a fish pond of the same surface.

The new technique was then applied in practice, by constructing the first RAS-based fish farm, together with the local partner Kamuthanga. The farm is yielding spectacular results in terms of output, with a business case providing a solid income to local fish farmers. The farm showcases the potential of commercial fish farming on land. At the farm, selected farmers are trained to become professional fish farmers. This way, the farm acts as an aquahub, where expertise, inputs for farmers and fish production all come together.

The first major steps have been set. In a short period of time, FoodTechAfrica has created a feed production facility, the largest land-based fish farm, expertise and training essential for the growth of the sector and direct jobs. Given the ambition level of the project partners, this is just the beginning. In the coming years, FoodTechAfrica will continue building the aquaculture value chain by replicating the successful model of the aquahub, both within Kenya and regionally, including Rwanda and Tanzania.

FoodTechAfrica's success of working as a consortium covering all expertise needed to build the value chain, proves the worth of an African proverb about the value of team work: "If you want to go fast, go alone. If you want to go far, go together."

“

"FoodTechAfrica offers a whole goodie bag of expertise, with one hand supporting the other. Things are coming together very nicely".

Tony Ndetto, Farm owner Kamuthanga



About PTN

Pelleting Technology Netherlands (PTN), specialist in the development, production and servicing of pelletisers and related machinery for the production of animal feed. Our products can be used for a wide range of applications.

Since 1974 PTN has been active on a global scale in the development, engineering, production, sale and servicing of pelletisers and related machinery for the compound feed, recycling and biomass industries.

Thanks to its ongoing research and development based on demand from the market PTN has various patents to its name. Following the first patent taken out on the super rotor sifter, over the last 40 years PTN has also developed and patented the automatic roller adjuster, the unique mould quick-change system, the mix compress, the BOA compactor, the hygiene concept (TCS & RTB) and in 2016 the High Efficient Progress Monoroll. Innovations that now still contribute to the company's continuity.

Quality and reliability have been guaranteed for many years by the ISO 9001 certificate and constantly monitored as part of ongoing improvement.

On 1 January 2013 the company joined the Triott Group, thus taking a major step towards a global presence as an innovative company.





P.O. Box 132

5480 AC Schijndel

The Netherlands

T +31 (0)73 54 98 472

F +31 (0)73 54 78 595

info@ptn.nl

www.ptn.nl

specialist in pelleting equipment