



**A natural and sustainable
solution to feed tomorrow's
world**

I. MEETING THE WORLD'S FOOD SAFETY AND SUSTAINABILITY CHALLENGE

Providing better quality food for the world: protein at the heart of tomorrow's challenge.

With an increasing protein shortage in the world (30 to 40 MT in 2030), as the population is growing (10 billion people in 2050) and eating habits are shifting in developing countries, protein production is one of the main challenges facing the food industry in the next decades.

Europe's situation is particularly uncertain as it is currently importing 70% of its protein needs. Aware of this upcoming challenge, France has already declared its ambition to become the world leader in protein production to secure its independence.

The large-scale development of the insect industry in which Innovafeed is actively participating is perfectly aligned with this strategy.

Insect production has progressively become a complementary addition to the traditional proteins sources. It has largely developed for animal feed, specifically in Europe since it has been officially authorized for aquaculture by the EU on July 1, 2017. The insect protein market is significant (estimated at 30MT in 2030) and the offer is still quite limited.

Innovafeed, a sustainable, natural, high-quality offer and a large-scale production.

Innovafeed's cutting-edge technology allows for the insect to be reinstated at the the heart of the food chain by breeding soldier fly larvae (*Hermetia illucens*) in large-scale plants based on vertical, 0 waste, and circular model farms. Innovafeed uses all the parts of the insect from which it extracts 3 products: insect proteins for fish farming as an alternative to the usual fish flour used in aquaculture; insect oil for poultry and swine as an alternative for vegetal oils such as palm or soy oils; insect dejections, called frass, used as a natural and organic fertilizer to enrich the soil.



These ingredients carry strong added value for animal breeding because of its minimal impact on the environment; the improvement of animal growth, well-being and health; but also, improvement of the meat and fish quality for the ultimate consumer.

Thus, the carbon footprint of insect protein is certified 50% less important than that of the traditional alternatives (flour for fish) and doesn't have any impact on marine resources whilst still being a highly assimilable protein sources for fish growing, shrimp disease resistance and fillets quality:

- Improvement of shrimp growing by 27%
- Reduction of heavy metals in the flesh of the fish fillets
- Increased disease resistance

As for the insect oil, its carbon footprint is certified 80% less important than that of the traditional alternatives (imported vegetal oils) and doesn't have any impact on deforestation whilst being a highly assimilable source of energy for monogastric animals (as poultry and swine), improving their growth and well-being.:

- Improvement of poultry and swine growth, hence higher revenues for the farmers
- Improvement of the swine and poultry gut health and a diminution of liquid feces and higher quality bedding.
- Improvement of the animals well-being: pecking reduction, improvement of the feathers, calmer animals and more curious poultry (as measured according to the EBENE method)

Insect dejection is an organic fertilizer with a proven agronomic high performance

- Organic and balanced fertilizer with an NPK profile (essential nutriment for plant development) with a high concentration of organic matter.
- Proven performance for cereals, fruits and vineyards.



**INSECT
PROTEIN**



INSECT OIL



**ORGANIC FERTILIZER
INSECT FRASS**


II. THE LARGEST INSECT BREEDING PLANT IN THE WORLD

Innovafeed is a 100% entrepreneurial story with 3 cofounders brought together for one common purpose: creating a company with a positive and sustainable impact on the environment and the global food system.

Following several years in the strategic consulting and investment financing world focusing on the agribusiness and technology sectors, Clement Ray, Bastien Oggeri and Aude Guo, *Central Paris* and *Ponts et Chaussées* educated engineers created Innovafeed around 3 objectives: offering a high quality product with a significant added value, manufacturing the products as part of a 100% circular economy system and participating in the territorial and industrial revitalization, and returning the insects to their rightful place at the heart of the food chain.

A disruptive technology born in less than 4 years

Innovafeed is now one of the main players in insect production for animal breeding and more specifically for aquaculture, Innovafeed started building its breeding technology in 2016 in the Genopole research center labs in Evry. Thanks to its rapid growing and leadership, Innovafeed hopes to play a major role in developing a new French agri-business branch with a high potential for innovation and exportation which will contribute to France protein sufficiency and independence.



In 2016 and 2017	From 2017	In 2020	By 2022
Research and development in Evry's Genopole to define the main strategic priorities and conduct the first technology testing of a brand-new technology maximizing the insect product cycle with a capacity of 500 kg per year.	European market opens for insect-based protein for aquaculture and creation of a pilot unit in Gouzeaucourt (59) which doubles the production capacity to 1000t/ year	<p>Start of a new industrial production unit in Nesle (60) with an unprecedented production capacity of 15 000t per year, a worldwide first.</p> <p>Signature of a partnership agreement with Archer-Daniels-Midland Company, leaders in the agri-business to develop its industrial model on the largest agricultural site in the US (Illinois)</p>	Continuing the industrial expansion and a 250 million Euros investment to develop 5 new industrial sites in France and abroad.

Innovafeed: spearheading industry of the Haut de France in Nesle

- **A production capacity multiplied by 10**

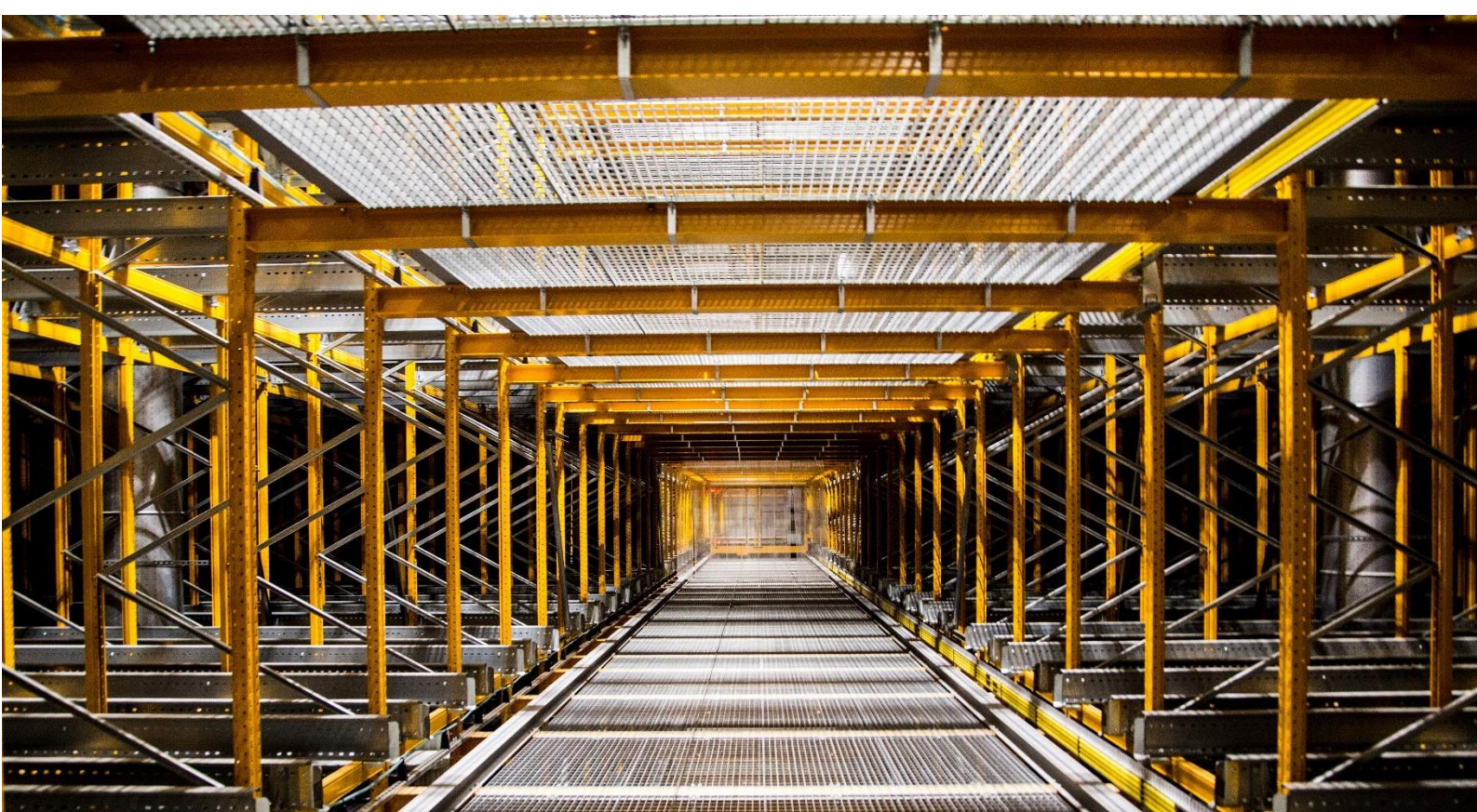
- A 15 000t/year capacity, i.e the largest insect production capacity worldwide
- A cutting-edge technology combining robotics with thousands of sensors and artificial intelligence enabling larva micromanipulation on a large scale.
- 20 000 eggs laid and collected per second on a breeding surface of 200 000m² total.

- **A unique industrial symbiosis in the world**

- A 25 000 m² plant at the heart of the sugar industry of the Somme, first European field for agro-business coproducts.
- A colocation model with predominant industrial actors which allows for the recovery of 300 000t of Tereos agricultural coproducts each year to feed the insects, and for the exploitation of the otherwise wasted into thin air heat from Kogedan to provide the plant with 100% renewable energy, thus saving 87GWh/year.
- Thanks to this symbiosis model 57 000 tons of CO₂ are saved each year and innovafeed's carbon footprint is reduced by 80%. Therefore, Innovafeed is able to offer more sustainable insect-based product on the market.

- **A local actor who contributes to the territorial and industrial revitalization**

- 110 jobs directly created in the Hauts de France that cannot be outsourced and 500 jobs indirectly created.
- Strategic partnership with local agri-business actors for the creation of new agricultural branches in the Hauts de France with substantial added value.



III. SIGNIFICANT OPPORTUNITES FOR ECONOMIC DEVELOPMENT

Partners throughout the world

Innovafeed has secured commercial partnerships with the largest actors of the sector: Cargill, an american agri-business player offering a large range of products and services to animal food manufacturers, farmers and retailers worldwide; Skretting, a French company and international leader for innovative and sustainable nutritional solutions in the aquaculture industry; Italtollina, an Italian company and leader in the organic fertilizers, bio stimulants, micro-organisms sector; and Barents, European leader in the food ingredients for the breeding animals and pets distribution business.

« We found the ideal partner in Innovafeed. We have a shared purpose—offering innovative, sustainable solutions to meet the nutritional needs of our growing population and our customers. »

Helene Ziv, Global Leader of the Risk Management and Sourcing for Cargill Animal Nutrition



« Italtollina is always looking for innovative solutions like Innovafeed's to meet the farmers need whilst respecting the environment and human health. Moreover, research shows that the products potential in tomorrow's plant-based nutrition »

Luca Bonini, Italtollina's CEO.

« We are very happy to work with Innovafeed as they produce insect-based ingredients of a high quality with significant added value that respect the environment. That is exactly what our customers are looking for.»

Tim Lemeer, Barentz Animal Nutrition's vice president.



A farm to fork pioneering approach

Since 2017, Innovafeed has struck a strategic partnership with Auchan to make insect-fed products accessible to the end consumer.

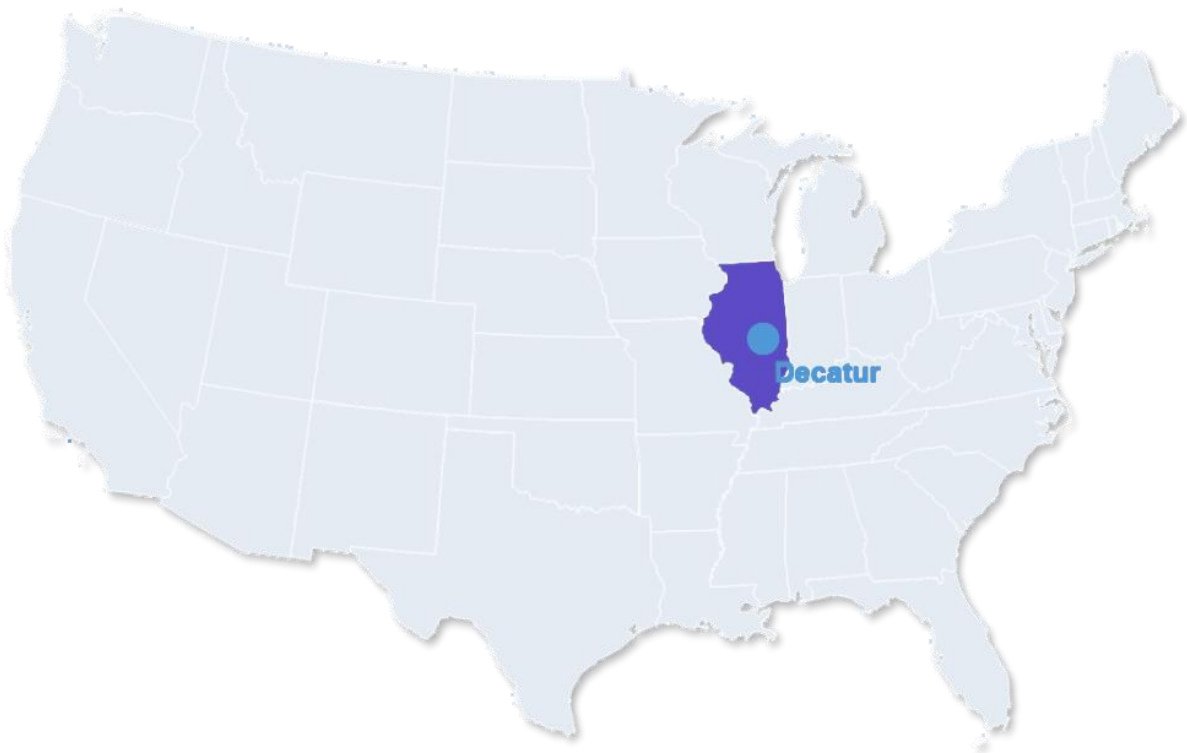
This is how the first “insect-fed fish” branch in the world was created. It contributes to the development of a sustainable French aquaculture branch. The recently labeled “sustainable trout” is now available in about 50 retail shops in the Hauts de France. By feeding more than 100t of fish a year with insects, 20t of forage fish are saved each year.

Building on this first commercial success, Innovafeed duplicated this approach by offering “insect-fed poultry” to the end consumer. In June 2020, more than 4000 chickens fed with insect oil and bred in compliance with the conditions set forth by the Label rouge were distributed in the retail shops, becoming the first French insect-fed poultry branch offered to the consumers.



IV. A FRENCH MODEL THAT SPREADS BEYOND THE BORDERS

In 2020, Innovafeed signed a partnership agreement with Archer-Daniels-Midland (ADM, leader in the agri-business sector, as to develop its industrial model in the largest agricultural site of the US, Decatur (Illinois), and build the largest insect protein plant in the world by 2023 with a capacity of 60 000 tons of insect protein per year.



Building on its experience in France, Innovafeed will duplicate its partnership with ADM and his symbiosis model in the USA in Decatur (Il), the largest corn processing site in the world. The ADM corn coproducts will be recycled locally as to feed the insects through infrastructures connected to the site. This production model will allow Innovafeed to use 27MW of energy collected through the ADM process, this energy would have otherwise been wasted as it was not collected before.

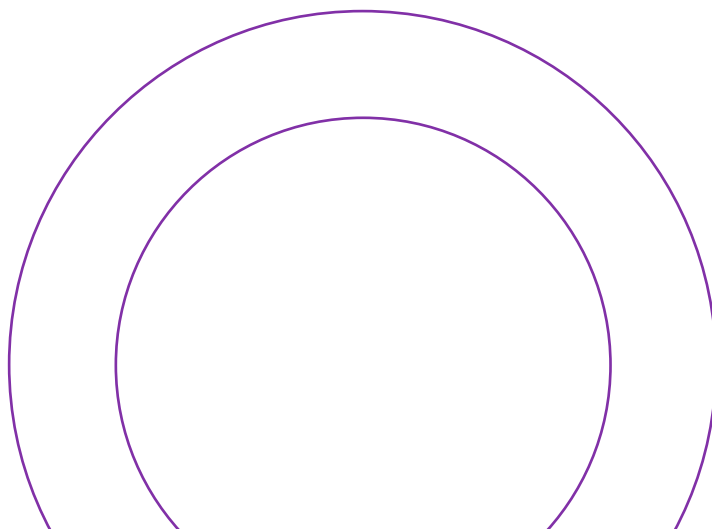
« At a time when the demand for animal feed protein is steadily increasing, insect farming stands out as a true solution for the future. We are happy to work on this ambitious project with Innovafeed which widens our position in the animal food sector by offering responsible and sustainable sources. It is an excellent example of collaboration with leading, innovative industries. »

Chris Cuddy, ADM senior vice-president.



« Cutting-edge technologies and Innovafeed's choice to build its very first international plant in Illinois is a vote of confidence for our State and a win for our agricultural community. »

JB Pritzker, Gouverneur de l'Illinois.



V. CONTINUED SUPPORT FROM LEADING INVESTORS

Leading investment funds that invest massively

When the Nesle site was first launched, Innovafeed announced it was able to raise 140 million Euros, half in the form of equity shares. This brings its secured investment from its creation in 2016 up to 200 million euros

This fundraising was meant to accelerate Innovafeed's development in France and internationally and it is a testament of the shareholders's (Creadev and Teamsek) constant confidence. They have supported Innovafeed's project and ambition for the branch from the very start.

« We believe in the insect economic and societal potential in the agri-business sector. After having studied all the actors from the sector, Innovafeed stood out as the most technologically advance since 2018 with the most competitive products of the market. During the last tow decades, the launch of the Nesle site and the partnership agreements with Cargill and Italtollina have confirmed this potential. We are happy to reinvest in the project today in order to develop this technology internationally” stated Jean-Baptiste Bachelerie, Creadev CEO.

Loyal partners

The Credit Agricole group was innovafeed's first financial partner when it was created in 2016 and it has constantly been supporting Innovafeed since. Whether for the financing of the R&D center, the signature of its real estate lease for the production pilot site in Gouzeaucourt or the building of the Nesle site, the Credit Agricole group has continually supported Innovafeed and every step of its development.

Lille Arkea Bank for companies and institutions business center, a branch of the Arkea group dedicated to the financing of companies, institutions and real estate professionals, has been Innovafeed's partner in this entrepreneurial and innovative project for tomorrow's food system granting Innovafeed with a real estate lease agreement signed with the Arkea Lease branch.

Predominant investment funds

TEMASEK

CREDEV
CREATING FOR PEOPLE

Strategic partnerships with 7 banks



Public Institutions support



The Hauts de France region and the French state, supporting Innovafeed from the very start

The department of the Somme and the Third Industrial Revolution Regional funds for Amplification (FRATRI) for the Hauts de France region have both contributed to the creation of the Nesle site in their territory. The French government through its different institutions has supported Innovafeed from the start. Selected in 2020 in the *France Relance* program, Innovafeed has also benefitted from ADEME's support (as one of the winners of the innovation competition in 2018), as well as the FranceAgriMer's or the General Commission for Territorial Equality's. Moreover, Innovafeed has benefitted from the support of the European commission through the European Innovation Council (EIC) accelerator (2018) and the Blue Economy Window '2020)



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