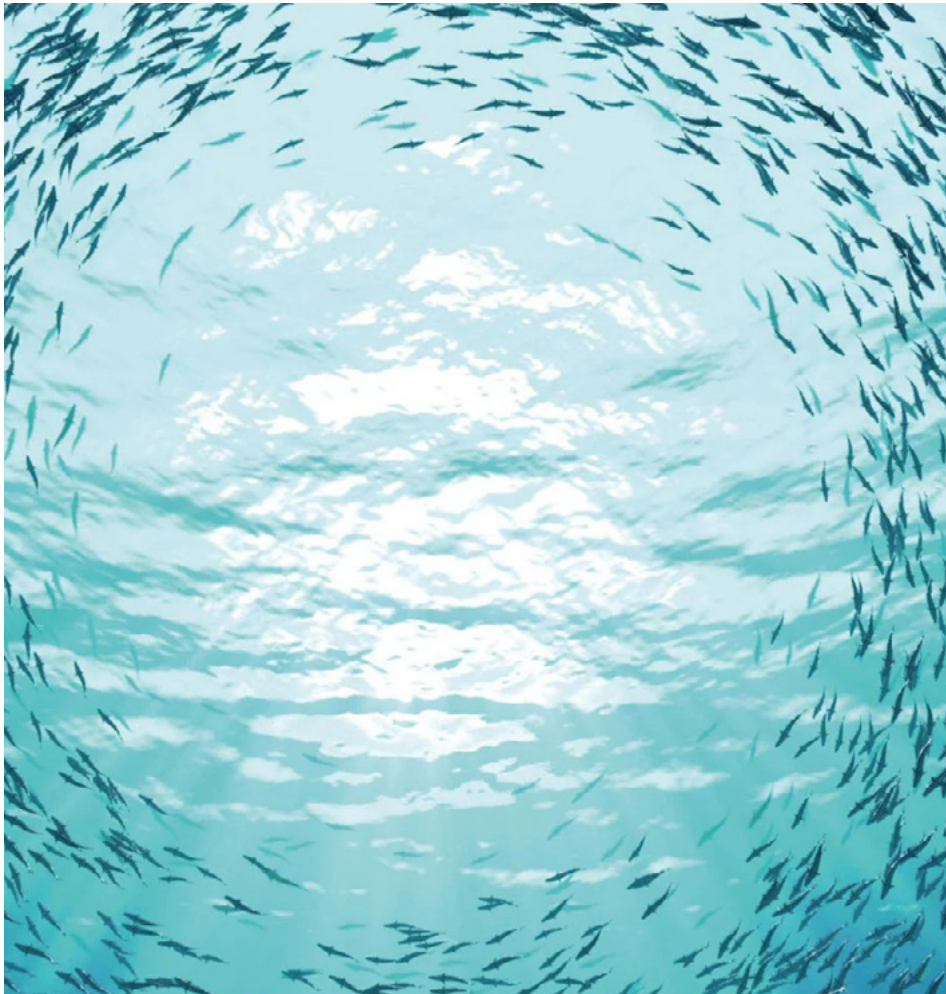




CAPTURING NEW OCEANS

Seafood production redefined

PARTNERS IN PROGRESS

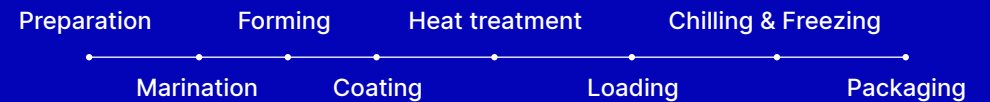


Seafood producers, facing the imperative for higher efficiencies and new value creation, are adapting to evolving consumer trends and assuming responsibility in a world of resource scarcity. As GEA we recognize the challenges shaping your industry. These challenges demand for ingenuity, collaboration, and inventive solutions.

We are pleased to present our robust portfolio of solutions that not only address challenges like labour shortages, supply/demand imbalances and sustainability but also harness the potential for new value creation.

This brochure explores the domain of innovation, presenting new strategies to enhance efficiency and maximize value throughout the entire processing chain. Our objective is not simply to showcase products but to inspire you, encouraging you to envision the future of seafood processing. Let GEA be your partner in progress as we aspire to move the market forward together.

GEA's broad portfolio supports you in the following process steps:



CRAFTING CULINARY EXCELLENCE



Today's consumers wish for culinary experiences that blend health, convenience, and innovation. This necessitates refining your offerings and leveraging new technologies to meet these expectations. Yet, amidst these challenges lies the opportunity for significant value creation and the discovery of new propositions.

In order to assist you in adapting to shifting consumer trends and preferences, GEA offers a comprehensive range of equipment designed to elevate seafood processing

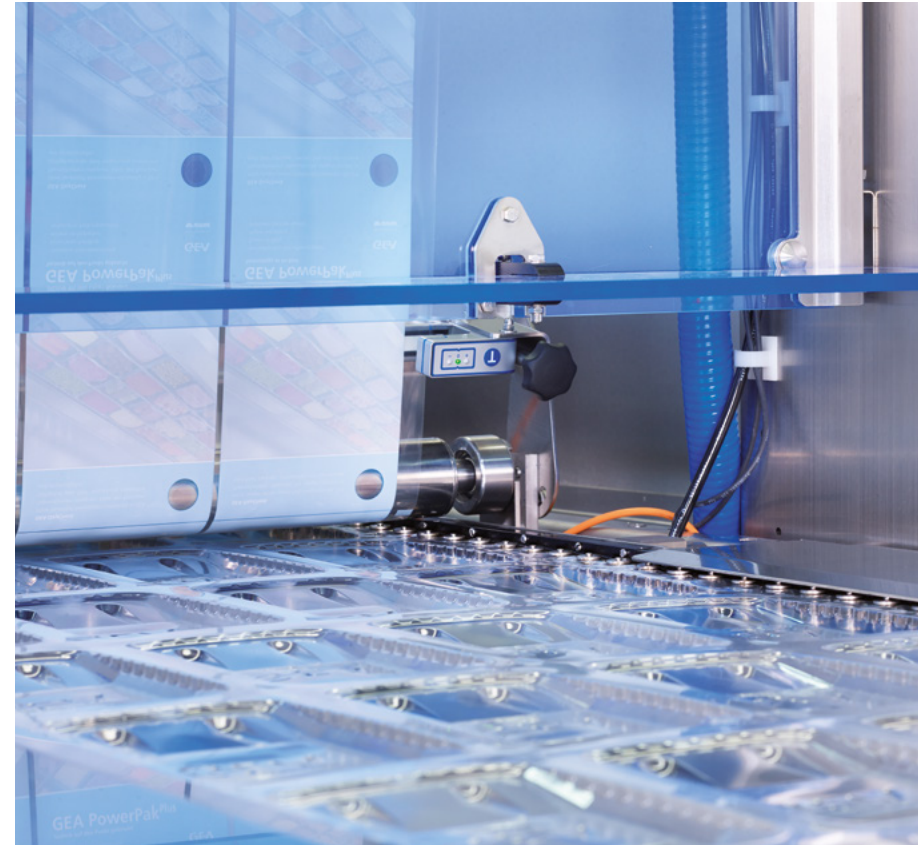
to new levels. Our extensive line-up of marination, cooking, and packaging equipment serves as a versatile toolbox to unlock these opportunities, whether it's delivering pre-marinated and seasoned options or ensuring precise portioning and high quality packaging.



Solutions Highlights:

GEA OptiDipper:

Our advanced batter machine delivers superior pre-marinated fish fillets, enticing consumers with innovative flavors. Featuring a one-piece conveyor design, it minimizes product transfers and ensures quality. With guaranteed total product coverage, reduced waste, and easy maintenance and cleaning, the OptiDipper sets a new standard in efficiency and taste.



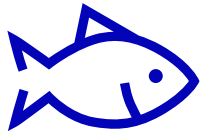
GEA PowerPak PLUS:

Choosing the appropriate packaging type is essential to influence consumers' perception of freshness, quality, and sustainability. That's why our high-performance thermoformer packaging line offers versatility to seafood producers, allowing them to select from a wide variety of packaging options, including modified atmosphere packs, skin solutions, vacuum packs and shrink packs.

Equipped with motorized bottom film unwinding and tensioning systems for enhanced package quality and control, as well as top film unwinding and tensioning systems to improve package sealing and minimize wrinkles. Additionally, it's capable of effortlessly running sensitive 10k films, thanks to a superior film unwind and tracking system.



PRECISION WITH A GENTLE TOUCH



Ensuring the gentle handling of fish portions throughout the production process is crucial for minimizing waste, optimizing yield and enhancing the overall appearance and quality of the final product for consumers.

These factors are paramount for maintaining competitiveness in the market. GEA's machines are purposefully designed with this critical element in mind, spanning from injectors and freezers to robot loaders and packaging lines.



Solutions Highlights:

GEA OptiRobot:

When seafood producers seek to automate without compromising quality, our new robot picker is the answer. Engineered for gentle handling, it ensures precise loading of salmon chunks into packaging machines. Capable of loading a broad range of portion shapes, including shingled, stacked, turned, and overlapped, it offers an optional state-of-the-art vision system to ensure only high-quality portions are loaded and % of give-away gets reduced. Seamlessly integrating with other GEA line solutions, it provides comprehensive automation.



GEA MixMaster and MultiJector:

Homogeneous brines are a critical factor in the marination process. GEA MixMaster delivers perfect mixing, from light brines and pickles up to higher viscose marinades. Injecting fish products with brine is a delicate process to improve moisture retention during the production process and enhance the natural flavours of seafood. Featuring the innovative 2 mm OptiFlex needle system, it ensures precise brine distribution in delicate fish fillets while leaving minimal marks.

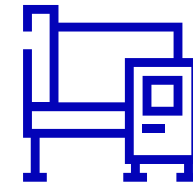


GEA CookStar SuperHeatSmoke:

Revolutionizing smoking in a spiral oven, this innovative and patented in-line process, developed in collaboration with Kerry Red Arrow, empowers seafood processors to produce fully cooked smoked seafood products on an industrial scale. By introducing freshly-generated, purified natural smoke into the airflow, it delivers a distinctive and customizable flavor, attractive color, consistent quality, and extended shelf life. Say goodbye to traditional smoking methods and hello to efficiency and flavor.



RIDING THE WAVES OF AUTOMATION AND DIGITIZATION



In the dynamic seafood landscape, where labour shortages are increasingly pressing, digitization and automation have become essential tools unlocking new opportunities to enhance production yield and quality. At GEA, we recognize the critical importance of these aspects and are committed to providing intelligent software solutions tailored to the needs of seafood producers. From intuitive Human-Machine Interfaces (HMI) for seamless process control and optimization to data-driven analytical tools, our solutions empower seafood processors to elevate overall efficiencies and thrive in an ever-evolving industry.

Solutions Highlights:



GEA SmartControl HMI:

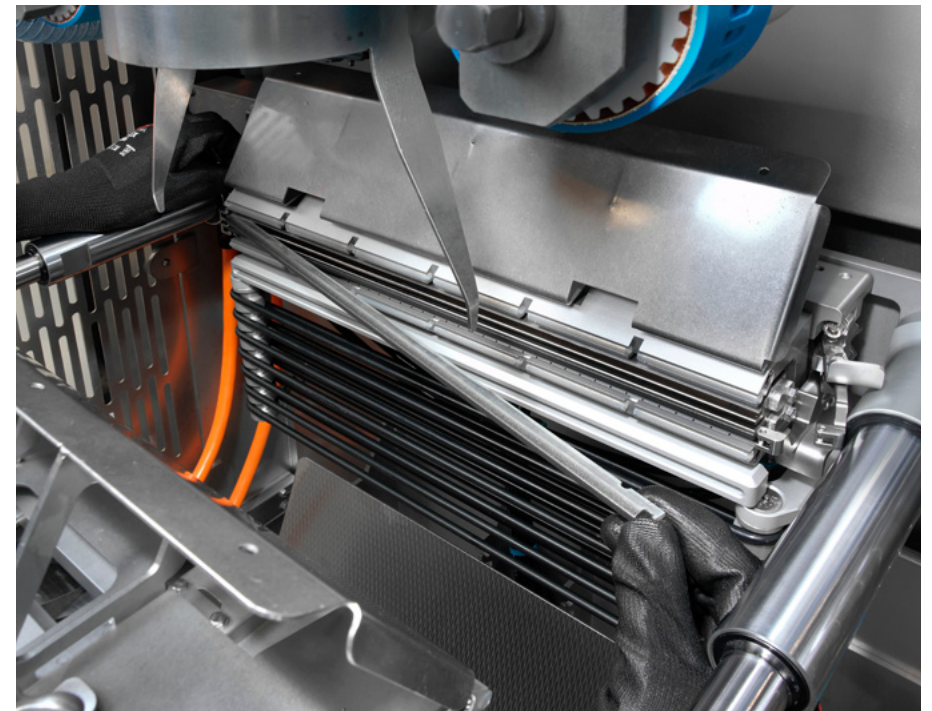
Our newly developed user interface places the operator at the heart of the production process, facilitating collaboration between operators and machines. With a role-based permission system, operators can adapt better to individual needs, while performance and event-related insights drive improved team performance.



Advanced recipe management ensures process efficiencies and traceability, empowering operators to optimize production at every step.

GEA Smart Sealing System:

Introducing our Smart Sealing System, a groundbreaking feature on our GEA SmartPacker CX400's vertical packaging line, marking a new era of productivity. Experience an impressive increase of up to 20%, with the capability to seal up to 1 million bags without changing. Its 'click and go' sealing strip replacement feature ensures minimal downtime and maximum output, revolutionizing your packaging efficiency.



THE EYE FOR DETAIL MATTERS



In seafood production success depends on keen attention to detail. Even minor changes can yield significant impacts on the bottom line. From reducing waste and giveaways to optimizing line speed, every improvement matters.

For example, a mere 5% reduction in tempura battering or a 1% decrease in giveaway can greatly enhance profits and overall success. At GEA, we take pride in our keen eye for these critical details, driving progress and efficiency for our seafood customers.



Solutions Highlights:

GEA CrumbMaster Gen2:

Representing over 60 years of expertise in coating machine development, our latest innovation in dedicated crumb coaters sets new standards. With the lowest crumb breakdown and a closed machine design that eliminates up to 90% of dust, operations, cleaning, and maintenance are simplified. Featuring integrated blow-off control and crumb recirculation, it enhances product quality consistency while minimizing waste.

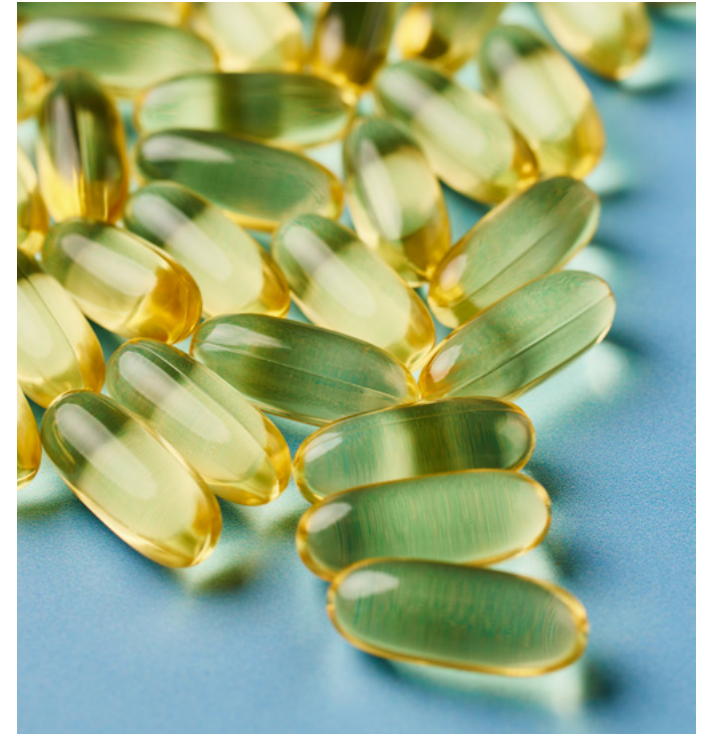
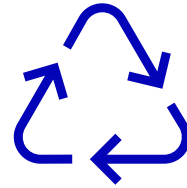


GEA ProFry:

Drawing upon over 50 years of expertise in frying technology, our advanced industrial fryer, the GEA ProFry, delivers a 30% enhancement in oil flow, real-time inline oil quality measurement (patent pending) and a 15% increase in capacity within a smaller footprint. Optimize your frying process and elevate the quality and profitability of your flash fried and deep fried products.



THRIVING THROUGH VALORISATION

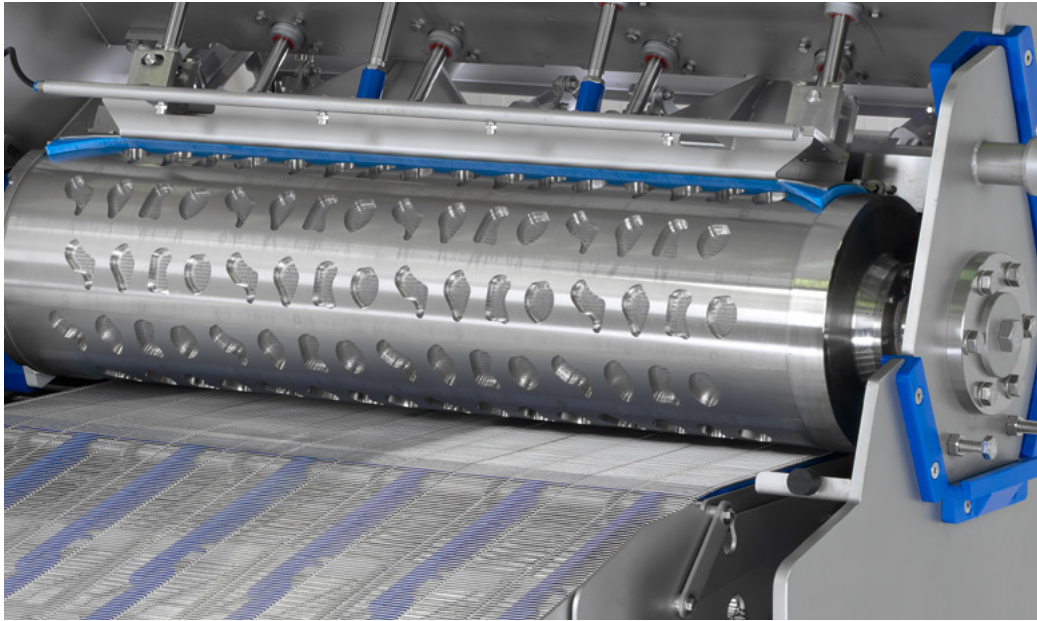


The winners in the market are those who understand how to extract the maximum value from raw materials, aligning with consumer demands for health and sustainability.

This strategic approach, known as valorisation, is paramount. GEA has a longstanding commitment to this industry,

supporting seafood producers for years in harvesting as much value from raw materials as possible. With our expertise and dedication, we empower producers to thrive in a landscape where sustainability and value creation go hand in hand.

Solutions Highlights:



GEA MaxiFormers:

The production of fish burgers and innovative hybrid foods offers seafood producers a valuable opportunity for value creation. By utilizing fish by-products such as trimmings, off-cuts, and less common species, these products help reduce waste and diversify offerings. Additionally, they appeal to a broader audience, including those hesitant about consuming whole fish or fillets. Our patented drum forming

technology, GEA's MaxiFormer, surpasses competitor equipment in both quality consistency and total cost of ownership. Its distinctive drum design, unique patented filling process and streamlined software communication deliver immediate savings in product usage, water consumption, waste disposal, and power usage. Offering our customers the lowest total cost of ownership over the operational life of the equipment.



GEA Separation:

GEA's separators and decaners have been used for the processing of fish by-products since 1929. Our separation expertise stands for top quality fish meal, fish oil and protein. Not only do we offer individual machines but we engineer complete production processes that extract more value from raw materials, ranging from fish and animal feed to omega-3 production.



NEW FOOD FRONTIERS



With 85% of fisheries already at or beyond their limits and constraints on fish farming, traditional seafood supplies struggle to meet demand. To address this challenge, seafood producers are turning to alternative proteins. Cultivated, fermentation-based, and plant-based products emerge as promising alternatives due to their similarities and market readiness.

Leveraging our extensive experience as an industry supplier in the New Food world,

GEA is well-prepared to serve the market for alternative proteins, particularly those from plant-, cell-, and microorganism-based sources. Many of these innovative foods require liquid processing—a domain where GEA excels. But that is not all, our technologies support the complete value chain, from raw materials to packaged products.



New Food Highlights:

GEA New Food Application and Technology Center of Excellence (ATC):

Investments in the new food sphere require a different kind of approach. It requires technology partners that are willing to invest time in experimentation and handle uncertainties. For seafood producers, the primary hurdle lies in transitioning from laboratory prototypes to full-fledged commercial production. Our New Food Application and Technology Center of Excellence (ATC) has been established as a central hub to support innovation in the emerging field of cellular agriculture, providing invaluable support to corporate startups as they strive to scale their innovative initiatives.



Helping the world eat less meat:

In a partnership spanning two decades, GEA has been an integral part of Vivera's journey towards excellence in vegan and vegetarian food production. More than just suppliers, we're collaborators, working closely to refine processes and pioneer

new products. From our service centers to our Technology Center in Bakel (NL), we're supporting Vivera's mission to redefine the food industry. Read more about our partnership here.



CAPTURING NEW OCEANS TOGETHER



We believe that, in order to set new industry standards and redefine seafood production, we need to design specialist solutions at every stage of a line rather than employing a blanket, one-size-fits-all approach. That means, in some cases, starting small, building modularly, and supporting a growing customer as they progress. For others, it means optimizing existing processes. Building complete lines that are

fully integrated and work in perfect harmony. It is the combination of creativity, business sense, and working closely together that will bring us there.

We work closely with our customers to assess their processes, build compelling business cases, and craft optimal solutions that align perfectly with the requirements of the seafood industry.

Whether you want to learn more about specific solutions and single process steps or talk about a full-line solution.



Reach out to our experts directly or visit our website to learn more.

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