

tsenso

Optimise the Supply of Food— Economically and Ecologically

A conscious awakening has occurred across the global consumer packaged goods (CPG) and food grocery landscape. Consumers are adopting a healthier lifestyle and mindset to align their personal beliefs with the products they consume. Evidently, they are keen to become more conscious and aware while driving more informed product decisions. Despite this growing food literacy, one-third of the world's food is wasted. Perishable goods such as fish, meat and dairy products are prone to greater risks in the wake of inappropriate and transport conditions, which have a considerable influence on shelf life. Added to this, the “best-before” dates on products often mislead consumers to dispose of edible and safe food earlier than needed. In the case of fruits and vegetables, as they usually do not provide any “best-before” date or similar shelf-life information, consumers often buy a large quantity of a product and end up wasting a significant share as the product is spoiled before it gets eaten.

numerous other factors come to play to understand how long the shelf life exactly is. “It’s not all about the origin of a food product, but also how it has been stored and handled ever since production: most production processes require regular microbiological measurement to assure food safety, others mandate monitoring the supply chain temperature. This data, however, is not shared with other stakeholders along the supply chain nor the final customer,” he adds.

Dr Brunner goes on to mention that the real problem lies in the inflexible handling of product and storage variations by the current HACCP processes. He explains, “The retailer often will not reject a cargo delivery and risk to run out of stock, just because the temperature of the pallet arriving was 1 degree off the temperature limit for less than 20 minutes. If 1 degree for 20 minutes does not represent a safety risk, where do things get risky: 2 degrees for 30 minutes, 10 degrees for 1 hour? The correct answer here is: it depends on precisely what happened before and after this incident.”

Meet tsenso—a company revolutionising the quality and freshness monitoring in the food supply chain. tsenso equips its clients with FreshIndex—a food quality and information system based on AI that evaluates the current characteristics of food and predicts the remaining shelf-life, depending on production, storage and handling conditions. FreshIndex focuses on fresh products, such as dairy, meat, and fish, wherein the growth of pathogens or their toxins is the main concern.

As an independent food platform, FreshIndex enables the confidential exchange of food data along the supply chain. The FreshIndex digital twin analytics provide unbiased insight about the true quality, freshness and safety of food products to food producers, logistics and retailers that help tsenso’s clients to make data-based food safety decisions and improve their quality and logistic processes.

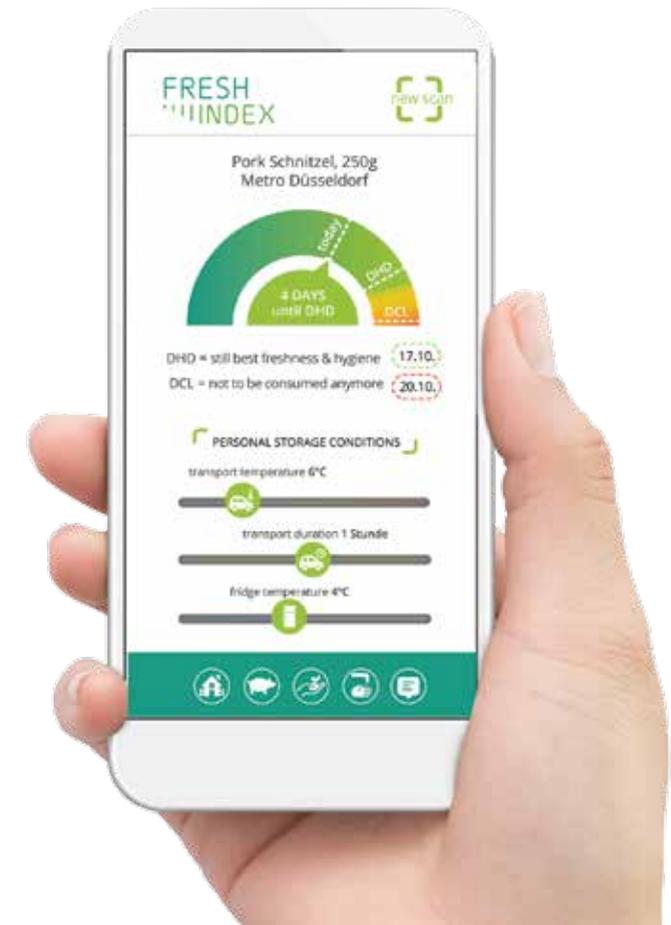
“Our food safety modelling is done through precise quantitative risk assessment on the level of production batches, individual pallets, down even to the single product unit. As we take the real production and storage conditions into account, from the farm into the consumer’s fridge, we get a precise insight into the risks in the products. From the food wastage perspective, we provide dynamic “best-before” and “use-by” date, which renders a longer safe consumption time than the expiry date labelling, winning consumers’ trust that

they are buying a high-quality product,” says Dr Brunner, founder and CEO, tsenso.

FreshIndex brings in transparency, and a better understanding of the quality and freshness of the food consumers buy. Clearly, tsenso’s food quality, and safety information system is disrupting food safety procedures through dynamic HACCP processes. While such a profound change requires careful implementation, tsenso offers its customer to do benefit study in the form of a pilot implementation project, so that they can experience the advantages of FreshIndex within their own organisation at moderate costs. It is important to note that FreshIndex is not a replacement of laboratory tests. Indeed, it is only as accurate as the measurement data shared. With a risk and probability focused approach, tsenso quantifies the uncertainties in the supply chain data and in the digital twin calculations.

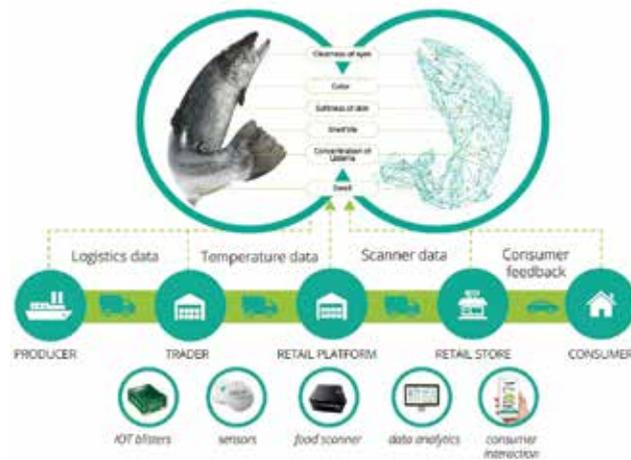
“**We provide a quality-related dynamic “best-before” and a safety-related “use-by date” for all food products as additional information to today’s legal expiry date labelling, so that good food is not wasted, and bad food is not eaten**”

Illustrating the value proposition of the platform, Dr Brunner cites a customer success story that involved a multinational wholesale chain: Metro Cash & Carry. Together with METRO and its key pork meat producers, tsenso installed the FreshIndex system for the full German pork supply chain based on the monitoring and measurement data already available. FreshIndex provided a real-time quality and safety-related shelf-life to the client’s quality assurance staff. The dynamic “best-before” and “use-by” dates from FreshIndex allow METRO to understand variations of product quality on the shelf, as until when a product is still in best quality and when it should not be eaten anymore. This additional information helps METRO to improve their warehouse and stock rotation. In the summer of 2019, tsenso got permission to provide the dynamic “best-before” date and the dynamic “use-by” date to the customers of METRO for a limited time. They were able to scan the existing GTIN or GS-128 code on the product



with tsenso’s mobile app to get these precise shelf-life dates displayed, down to the individual product unit. By adjusting the foreseen storage conditions on the way home and in their fridge, consumers were able to see and understand the direct impact of their handling of their food. “For most cases, this dynamic shelf-life was considerably longer than the expiry date printed on the product, at least as long as the consumers did not enter extreme handling scenarios, such as leaving the schnitzel on the passenger seat of the car for several hours on a hot summer day, in which case the app would most likely immediately recommend to dispose the schnitzel for safety reasons, regardless of the printed shelf-life marking,” adds Dr Brunner.

It is indisputable that a bright future awaits tsenso. While tsenso has established its core data analytics services on food safety and food quality, the company looks forward to partnering with other innovators in the field, especially providers of innovative food measurement solutions to improve the accuracy of the results as well as to be able to better fight manipulations on the data. 



So, the question looms: how does one identify whether or not something is actually safe to eat, and better even in a quality state where it is nice to eat?

Dr Matthias Brunner has an answer. According to the expert with more than 10 years of experience in the development, sales and marketing of automotive sensors,