



#FOOD

# Food safety innovations you just cannot miss

The month of June celebrates something we all love — food! There have been many technologies innovated and introduced globally that serve to ensure that absolutely the safest and best food is delivered to consumers. While there are quite a large number of them worth mentioning, some have just topped the list and are unconditionally worth knowing.

## Aseptic Technology by Tetra Pak

The aseptic technology introduced by Tetra Pak makes sure that food, along with the packaging materials, relevant processing equipment as well as the packaging environment itself, has been made completely sterile. This technology keeps food safe, fresh and retains its nutrients for as long as six months, that too without refrigeration or preservative addition.

According to the Tetra Pak website, “UHT treatment requires both a sterilizer and an



that it is of the highest quality and fit for human consumption. Dynamic QR codes also enable consumers to trace the origin of their food, and get detailed information about the product.

Automation makes quality control more efficient because it gets easier to notice issues earlier in the supply or production processes. Machines are precise, which helps keep everything standard in a way that is difficult to achieve with humans.

Automation systems and equipment can perform, monitor, or control dangerous tasks, thus limiting the dangers that workers have to face. Automation can help businesses move better and faster than it would if relied solely on human workers.

Human workers often have to be retrained to adapt to new systems. Digital automation does not carry the same disadvantage as systems are easier to repurpose. If laws or industry standards change, then software or hardware adjustments are all you need to get back into compliance quickly.

## Role of adulteration kits and laboratory sensors

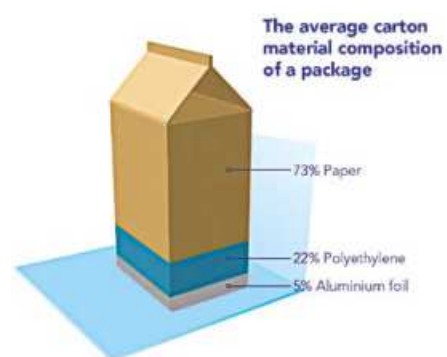
Adulteration kits have been developed that detect the presence of contaminants, pesticides, food-borne pathogens and other toxins.

Most detection kits comprise of reagents that will undergo certain colour change when added to the food being tested. The most striking advantage of these kits is that they give instantaneous results.

In addition, there are many laboratory sensors that are able to detect adulterants or contaminants in food. The most recently developed are the nanoparticle-based ones, termed as nanosensors. These are adept in identifying a wide range of food contaminants — pathogens, pesticides, fertilisers, carcinogens, heavy metals, to name a few. Nanosensors provide very specific and accurate results.

No matter the number of innovations, food safety cannot be fully ensured without backup of the law. One such example is the highly appreciated Food Safety Act 2013, which has encouraged food safety in Bangladesh and reinforced its importance in the country.

**By Faiza Khondokar**  
**Photo: Collected**



aseptic unit (for packaging the product). The goal is to maximise the destruction of microorganisms while minimising the chemical changes in the product. That means finding the optimal combination of temperature and processing time for different types of food.

“Tetra Pak offers two alternative methods of UHT treatment: direct or indirect. In direct UHT heating, steam is briefly injected into the product, and this is rapidly followed by flash cooling. The brevity of the treatment makes it possible to achieve very high product quality. With indirect heating, the product does not come into direct contact with the heat source, but is instead heated using heat exchangers.”

The packaging material is the next step

to keeping the food safe, and Tetra Pak has that covered just as well. Made essentially from paper, Tetra Pak cartons comprise of 75 percent paperboard, 20 percent polymer, and 5 percent aluminium.

Heat and pressure are used to fix the above-mentioned materials together, forming a six-layered ‘shield’ which protects the food from environmental factors. As the microbes in the food are already deactivated through aseptic processing, the aseptic packaging allows the product inside to stay fresh, without the need of any preservatives. The pack need not be refrigerated until opened.

## Retortable carton technology

The Tetra Pak website states, “Retorting is an in-container sterilisation process where both the package and its food contents are exposed to high pressure, high temperature in a humid environment for a longer period of time. The time and temperature exposure are dependent on which food product is being sterilized and will vary also between different producers with the same type of food product.”

“Retorting is a tough process for any package type and has traditionally mainly been used with metal cans and glass jars. With Tetra Recart, it is now possible to have a carton-based package managing the tough retort process. The major challenge

when developing Tetra Recart was to find a packaging material structure that would be able to withstand the conditions inside a retort and manage a shelf-life up to two years. Each layer in the package has its own specific purpose and together, they keep the food inside the package safe.”

Safety aside, what makes Tetra Recart so unique is that it is environmentally sound. Tetra Recart has been hailed as ‘canned food, but two centuries smarter.’

It has smaller carbon footprint in comparison to its conventional glass jar and can counterparts. After comparing Tetra Recart packages with glass jars and steel cans, it has been deduced that Tetra Recart has a significantly lower environmental impact. Tetra Recart packages are mainly made of renewable materials — wood fibres. Tetra Recart also takes up 30 percent less space than cans and glass jars and are lightweight (they weigh about 60 percent less than cans).

## Use of automation in the food industry

This has been one of the most revolutionary changes in the food industry. Automation and analytics combined, can improve the traceability of raw materials and foods from the field all the way to order fulfilment.

Special mention goes to use of ‘dynamic’ QR codes for traceability. These codes are used to track and trace products to ensure