



*Short Commentary*

## Advanced manufacturing systems in food processing and packaging industry

**Ertiga Lara**

Department of Food chemistry, University of Dammam, Saudi Arabia

Corresponding author's Email: [ertiga.lara@yahoo.com](mailto:ertiga.lara@yahoo.com)

**INTRODUCTION:** Food business is one in all the largest businesses within the world. This is often contained of poultry, meat, crops, vegetables, farming products; Key gears of food industry achievement are its food processing and packing procedure. It grows into necessary for businesses to get ways to enhance their productivity in terms of maintaining safety, using sustainable materials in packaging, implementing flexible and standardized technology, and maintaining good quality of foods. Reducing wastes is very important, while shortening lead times is that the goal of accomplishment. Background: Food processing is that the methods and techniques won't to transform raw ingredients into food for human consumption. Food processing takes clean, picked or crushed and butchered components and uses them to offer wanted food products. There are several alternative ways during which food will be produced which are one off production, batch production, production or just-in-time production. Non-thermal processing methods like PEF (Pulsed Electric Field), UV (Ultraviolet), and Ozone yield products with more 'fresh-like' flavour than those produced by traditional thermal processes because of fewer chemical and physical variations although they're not active in dropping the motion of bacterial spores. an excellent deal of automation strategies is continually being utilized in every phase of processing and packaging.

**MATERIALS AND METHODS:** Materials in Food Packaging Papers and garments are flexible, lightweight, less waste-to-discard packaging materials. Glass and metals are used for high-value products and are corrosion resistant and stronger, respectively. Polymers (plastics) exhibit many desirable features like transparency, softness, heat seal ability and good strength to weight ratio. the foremost commonly used plastics in packaging industry are supported Petro chemical products like polyethylene terephthalate (PET), poly vinyl chloride (PVC), polyethylene (PE), polypropylene (PP), polystyrene (PS), and polyamide. However, they cause opposing effect (neither totally ecological nor decomposable) to the atmosphere causing risk to human health or ecologies. There's an increasing demand for identifying biodegradable packaging materials and finding innovative methods to create plastic degradable. Smart Packaging: Smart packaging persistence is to feature further features to the food and also aids the customers. It deals with the mechanical, mechanical, chemical, electrical and electronically-driven function that enhances the usefulness of the food products in a very something which will be measure. Various aspects of smart packaging are available for instances; time-temperature food quality labels, usage of self-heating or self-cooling containers integrated with electronic displays indicating

Important information on nutritional qualities and expiry dates. The key functionality is electronic and also the major beneficiaries are the stakeholders along the whole supply chain. The advantage of using nanocomposites materials is specially to enhance the mechanical and oxidation stability of the foods. The famous nanocomposites used are (i) Polymer clay of nano clay (ii) Silica nanocomposites of nano silver.

**Manufacturing Systems in Food processing and Packaging:** Manufacturing systems today is beyond our imagination for few decades ago. The vast progress and research in industrial systems brings profit to the food processing and packaging industry. Machines in food manufacturing play major part in manufacturing high return of venture without negotiating value in food. To form it more efficient in producing massive amount of food products, the mixing of machineries and systems must be easily adaptable to changeover with minimal time consume in tool changing.

**Automation:** Rising labour cost, health and issues of security cause the spread over of robot and robotics in food processing and packaging. The necessity to automate food processing and packaging actions is motivated by several key necessities for viable success and in some businesses, viability of making plants. The aids of automation are to increase productivity, product value and viability. Productivity is directly linked with how capably the input resources are utilized in rendering them into vendible end products. Quality assurance far and away is that the aim of any industry within the world. The volume to process and package top quality foods steadily is that the key for success in massively competitive food industry. As productivity increased vigorously, the standard presupposed to be improved simultaneously. The practice computer-controlled plant operations offer unlimited opportunities to take care of records of all events within the operations.

**Advanced field bus technology:** Most of major industry during this world like oil and gas, power generation, and waste management industries have adopted the advanced field bus technology into its automation and control systems since its existence. However, the implementation of this excellent technology into food processing and packaging industry as a full remains in preliminary stage. Field bus may be a control networking system, used for connecting field devices like sensors, actuators, regulators, controllers, and man-machine interfaces with one another for factory automation. The advantage is that the value of installation is lower in low scale network because of fewer numbers of sensor and actuator. However, in production of food, the usage of conventional network system limits the performance thus affects the productivity.

**CONCLUSION:** As the food processing and packaging industry continues to stay competitive in an ever-expanding global market, the requirement for technological advances that result in increasing productivity, better product quality with enhanced safety assurance, and every one at lower and lower cost, advances in automation and intelligent on-line control will inevitably continue at a rapid pace. In future, this industry is probably going to rework conventional method to totally integrated and advanced manufacturing systems to further increase productivity without compromise the protection and hygienic issues. During this paper, the author has looked into the state of the art in food processing and packaging industry in terms of (i) packaging and materials, (ii) automation, control and field bus technology, and (iii) food safety technology. There's a desire for a comprehensive research on overall food processing and packaging systems without neglecting the core element of any industry which is production management principle.