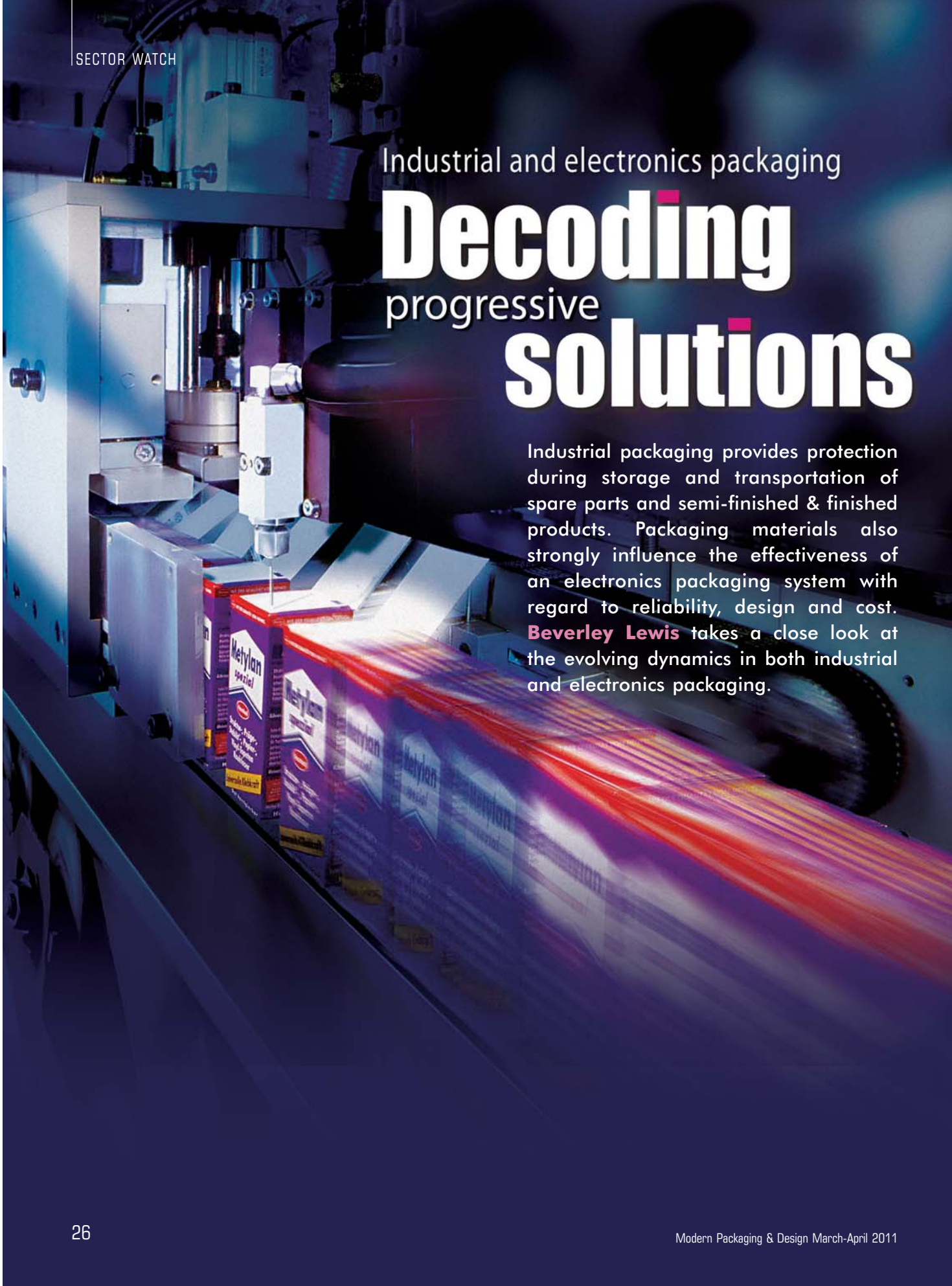


Industrial and electronics packaging

Decoding progressive solutions



Industrial packaging provides protection during storage and transportation of spare parts and semi-finished & finished products. Packaging materials also strongly influence the effectiveness of an electronics packaging system with regard to reliability, design and cost. **Beverley Lewis** takes a close look at the evolving dynamics in both industrial and electronics packaging.

Today's packaging is generally light in weight, utilises less packaging material, is easy to open, dispensable, resealable, storable and disposable. Flexible packaging, as laminates of plastics, has a unique set of properties that ensure toughness, moisture resistance, aroma retention, heat sealability, printability, etc. The role of packaging products has evolved considerably since its inception. There are different types of packaging including hazardous materials packaging, industrial packaging, transport packaging, and much more.

Although the usage of packaging products will always be to protect its content, more marketers and companies see product packaging as a design to portray their products/image. Today, packaging is an expression at its finest colours and shapes. In fact, some industry experts would even argue that packaging is a form of art.

Current trends

The current demands in industrial packaging are committed to cutting down packaging costs. Ashok Gourish, Business Head, Bosch Packaging Technology, India states, "Flexible packaging is utilised to pack food, tea, coffee, spices, chewing tobacco, bakery, confectionary, oil, and in a variety of non-food applications such as household detergents, health & personal care, soaps and shampoos. An all-time requirement of packaging is protection of the packed product."

Today's automated packaging solutions gives total consumer protection by keeping the product clean and protected from pilferage & adulteration. It provides good barrier against external atmosphere, so that the food is not damaged by oxidation and fermentation.

"This can be achieved by representing the best vendors who provide leading edge technologies at the most competitive prices, and by designing systems that maximise output, minimise labour costs & material costs.

It can also be achieved by optimising efficiency of the existing packaging lines that maximise uptime and eliminate rewinds & repackaging. Also, by supporting the packaging equipment with our good-quality, long-tenured, experienced service technicians & parts department personnel, the cost of a line being down and out can be understood," asserts Jatin Khanna, CEO, M&C Packaging.

Challenges faced by the industry

Increased awareness about environmental hazards related to disposal and recycling of packaging wastes, government initiatives to minimise greenhouse gas emissions, and stringent regulations are driving the growth of sustainable packaging. Sustainable packaging involves the usage of sustainable raw materials such as recycled materials and renewable resources. Companies are offering novel packaging designs, with improvements in several key performance areas, such as environment-friendliness, simplicity, material saving and cost reduction, without compromising on ease of use and convenience.

With sustainable packaging progressively becoming a mainstream global trend, several companies are adopting green packaging as a marketing tool. In addition, manufacturers are currently under pressure to employ environment-friendly materials, and adopt methods that require low-energy consumption and reduce the adverse environmental impact of packaging. States Khanna, "Packaging must meet the needs of the product it is holding. Food must be kept free of contamination and leakage. Electronics must be protected from being damaged. Any plan to retool product packaging must be carefully designed and executed to keep the product integrity intact, while minimising costs. Another issue is consumer awareness."

Companies must make an effort to effectively advertise their sustainable



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Manmohan Chahal

Market Unit Manager,
Nefab India Pvt Ltd

packaging efforts. This should include information regarding how consumers can dispose off the packaging once its life is over. Biodegradable packaging poses particular challenges to producers. The availability of compost facilities remains difficult, as does ensuring that customers properly recognise biodegradable materials and dispose them off accordingly. The makeup of biodegradable packaging can also be an issue.

According to Gourish, "The packaging industry is always facing the challenge of offering services at low operating cost. The material manufacturer has to optimise the material cost and meet the industry demand. He is supposed to keep a balance between the capital & operating cost offering value for money to the user. So, the primary pack should be easily placed in the secondary pack, which should be transported to the end-user without any issues."

'Green' industrial packaging

Currently, there is a lot of debate on how we should deal with environmental issues like global warming and receding glaciers, but few people doubt about the necessity to deal with the issue before it becomes unmanageable. The

manufacturers of industrial packaging are now focussing on developing products that suits the environment.

Researchers are now developing products on a constant basis that would be good for the environment. Says Khanna, "One of the ways in which industrial supplies can be made environment-friendly is by making them biodegradable. Once the products are utilised, these are broken down by bacteria, which thus become a part of the earth. This means that they will not take up space in the landfills, which are harmful to the environment. The products that are utilised for manufacturing packaging supplies are made from the ones that we eat regularly such as sugar, potatoes, and corn."

He further adds, "Another way of dealing with environmental issues is to recycle industrial packaging supplies. If commodities are packed with cardboard, these packages can be applied as raw materials for making other packing supplies after they have been utilised."

Source reduction is also an effective way of preventing damage to the environment, which is about reducing the toxicity or amount of waste that is generated. Manufacturers of industrial packaging supplies make sure that products, which usually lead to the generation of toxic waste is not utilised. If the production of a certain amount of waste cannot be prevented, it can be reused in some other form. This is beneficial too because there is no need to pay for municipal composting, combustion or land-filling.

"We offer outer packaging (plywood boxes), which are E1-complaint and meets the stringent demands of major export markets like the US or Europe. Solutions are designed to ensure full utilisation of container, so low emission per unit is transported," reveals Manmohan Chahal, Market Unit Manager, Nefab India Pvt Ltd.

Radio frequency identification

Radio Frequency Identification Technology (RFID) is an e-tagging



Courtesy: Bosch Packaging Technology, India

technology that can be utilised to provide electronic identity to any object. Electronic information about an object is stored in RFID chips embedded or attached to the object. The data transmitted by the tag may provide identification or location information, or specifics about the product tagged like price, colour, date of purchase, etc. By employing an RFID reader, the electronic identity (code in the form of several bits of data) can be read.

The purpose of an RFID system is to enable data to be transmitted by a portable device, called a tag, which is read by an RFID reader, and processed according to the needs of a particular application. "In a typical RFID system, individual objects are equipped with a small and inexpensive tag, which contains a transponder with a digital memory chip that is given a unique electronic product code. An antenna packaged with a transceiver & decoder, emits a signal activating the RFID tag, so that it can read and write data. When an RFID tag passes through the electromagnetic zone, it detects the reader's activation signal. The reader decodes the data encoded in the tag's integrated circuit (silicon chip), and this data is passed to the host computer for processing. The

host computer could have applications such as inventory management, time & attendance, healthcare, toll, etc. The data pertaining to a single tag can be processed, and relevant MIS reports can be generated from the system," explains Chahal.

A packaging supplier who is knowledgeable about evolving RFID technology and applications is a valuable resource in helping maximise ROI with RFID integration.

RFID systems are completely customisable with infinite combinations of hardware and software. Each system comprises a transponder, a reader and software.

Types of RFID

RFID technology exists primarily in two forms - passive and active technology. Passive technology uses energy emitted by the RF readers, which then emit an RF air signal to energise passive tags, the signal is read by the RF reader and then decoded for processing. Since little power is absorbed from the RF signal received from the passive tag, the effective transmission range is very small, generally under 10 ft. With no power source to contend with, passive tags have a simplified circuitry, which allows the



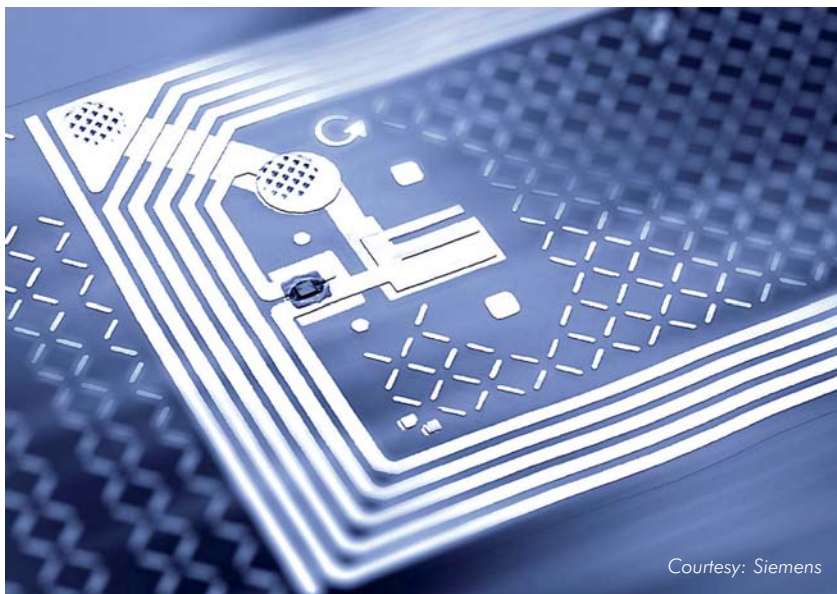
technology to be miniaturised and therefore can be reproduced at a very low cost, typically several cents apiece. With no battery source to deal with, passive tags ideally have an unlimited life span.

Active technology utilises battery power to energise the active tags, which utilise the power to beacon their RF signal. Having a powered source allows the active tags to transmit their signal over large distances. Typically an active tag can transmit an effective RF signal up to 300 ft indoors and up to 1,000 ft outdoors. Active RF tags require more complicated circuitry to deal with the powered RF transmission. This complicated circuitry coupled with the powered battery cell make active RF tags much larger and more costly than passive RF tags.

Future outlook

The industrial packaging segment needs a revamp of all its capabilities and expertise, which include product packaging specifications, incorporating varying international requirements like sustainability, ergonomics, export/import regulations and material returns. Besides, global sourcing, transportation efficiency, breakage and programme launch & management should also be taken into consideration.

"The recent innovations & global necessities have added value to the industrial packaging segment in India. Going forward, the need and dependence on industrial packaging is expected to increase," concludes Chahal. ■



Courtesy: Siemens