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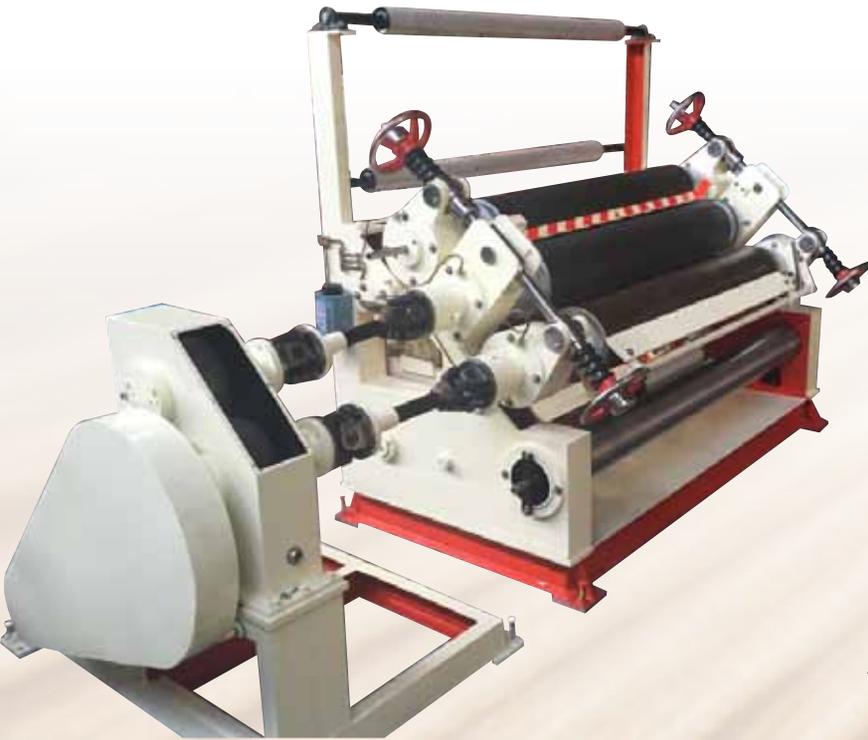
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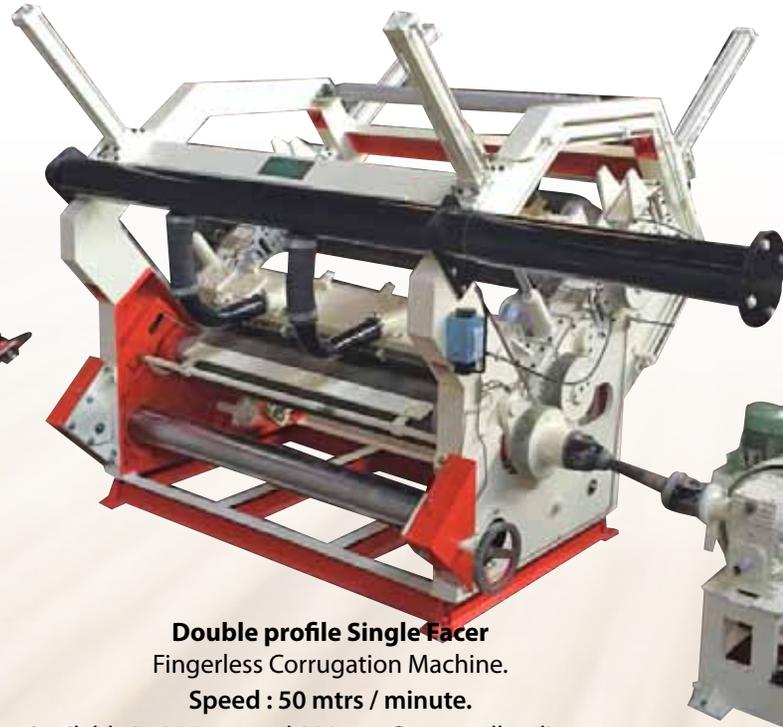
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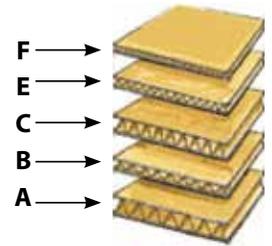


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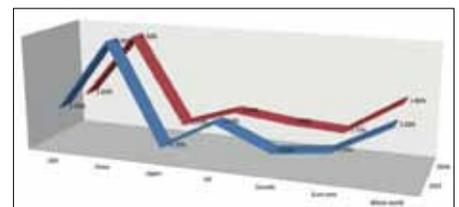
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# THE EDITORS' PAGE



*R. Suresh*



*Pulkit Shab*

The 44th FCBM Conference was a success by every yardstick - excellent venue, big conference hall, gracious hospitality, spacious Exhibition with many stalls, made the Conference a memorable one.

Inauguration Programme with two ministers and one industrialist as honoured guests carried the stamp of grace and dignity.

The technical sessions witnessed delegates engrossed and focused on the subjects discussed. The galaxy of global speakers lent an international touch to the sessions.

In this issue we have a comprehensive coverage of the FCBM Conference at Kochi. The inspiring Keynote Address by Carl Bohm, President ICCA and the vibrant Presidential Address by Mr. P. S. Shah – the outgoing President, FCBM - are also covered in this issue for the benefit of those who could not attend the conference.

The concurrent exhibition 'Smart Pack Expo' brings to mind an article I have gone through in International Paper Board Industry.

The article is titled 'Smart' factories for flexibility and Efficiency.

At the recent FEFCO Technical Seminar, experts focused on a variety of issues such as:

- How to organize 'smart' factories in a flexible and efficient way
- What customers want from the corrugated industry
- How real-time data can improve energy efficiency in Industry 4.0
- How business value can be found in supply chain data.

We all should get inspiration from these relevant points.

Although the passage of the GST bill during this session looks dim, the determination of the Government to go all out to get the GST through is still a hope that will cheer the business.

Recently, after the Paris summit on climate change, Microsoft founder Bill Gates has backed Prime Minister Modi's case for India's growth. "Only way you can achieve both goals (fighting climate change and economic growth) is to have innovation that brings down the premium for clean energy or even invent the source of energy which is cheaper.

Even for our industry, the words of Bill Gates "Innovation – only way to both go green and grow" holds good. Corrugated packaging is universally acknowledged as

environment friendly. Innovation will help us remain green as well as grow.

In a recent interview Mr. N. C. Saha, Director IIP said that India will become a dominant force in Packaging and is poised to be the world's fourth largest.

In such a scenario forecast, corrugated packaging will be at the forefront – as the most widely used mode of packaging.

Like IIP, FCBM will also have a role to play in helping India achieve this dominant position in packaging.

The recent US Federal Reserves rate hike will have minimal impact in India as the country is relatively well cushioned.

Global investors are likely to bet on India because of the huge potential in the domestic economy. India is the fastest-growing large economy in the world. Morgan Stanley on Wednesday said India scores the "best" in macroeconomic risk amongst all 27 emerging markets countries.

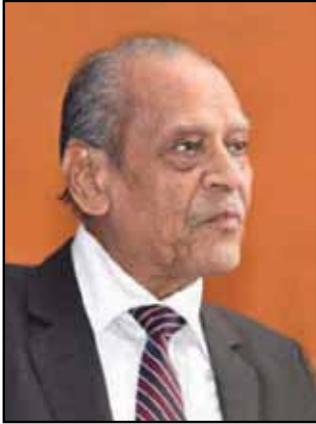
Another eventful year comes to an end. During the year, we have endeavored to bring you very interesting issues containing power packed articles and news from all regional associations.

As we usher in the New Year, we resolve to take The Corrugator to greater heights during 2016

**Wish you all a Happy New Year.**



# PRESIDENT'S MESSAGE



P. S. Shah

*Dear Friends,*

It is a pleasure to address you all through the pages of *The Corrugator* and bid goodbye to you as President FCBM.

I have enjoyed interacting with you all, during this year.

It has been a gratifying year and I do hope the FCBM has moved forward to another pinnacle of achievement during this year – thanks to the excellent cooperation and brotherhood amongst all of us.

I was particularly touched by the hospitality extended by KeCBMA during the Conference at Kochi – which was thoroughly enjoyable.

The economic outlook is showing green shoots of recovery and I do hope important bills get passed in this sessions to drive the economy towards the much needed reforms.

As reported, the manufacturing sector has spurred industrial growth to 5 years high. Last October the sector grew by 10.6% triggering a sharp rise in IIP.

Services sector growth is also at a 8 month high with the Nikkei Business Activity Index climbing up to 53.2 in October.

India continues to be No. 1 choice for global tech R & D with MNCs preferring India for establishing product engineering and R & D Centers 69% of all new off shore technology centre this year were set up in India.

In such a positive and encouraging environment, the corrugated packaging industry needs to gear up to higher levels of growth and production. Technology upgradation is a must for every industry and more so for ours – which has been adopting traditional systems and processes all these years.

I am sure our industry will reach new levels of growth during the New Year.

As the New Year dawns, let me wish you all a Happy & Prosperous New Year. Let us together grow with greater bonds of fraternity during this year.



## Meet the FCBM President - 2016



Mr. N. X. George had a brilliant academic career with a Master's Degree in Economics. He has also done post graduate programmes in Management Science. He has also done the Certificate Courses on Packaging from IIP.

Immediately after postgraduation, he started his career as a first generation Entrepreneur starting Super Packaging Industries in 1967 at Aroor, Alleppey Dist, Kerala. He was inspired and assisted by his family, especially by his parents namely late Shri. N. T. Xavier & late Mrs. Annamma Xavier. The unit will be celebrating the Golden Jubilee next year.

Mr. N.X. George is Past President of Kerala Corrugated Box Manufacturers Association. He is closely associated with various Chambers of Commerce & Industry and Industrial Associations.

His firm namely Super Packaging Industries is a member of FCBM since 1970's. Super Packaging Industries pioneered the introduction of Corrugated Paper Packaging in many user industries replacing wooden packagings.

It gives me great happiness to address you through 'The Corrugator' as the President of our great Federation.

At the outset, I wish to thank you for the trust and confidence you have bestowed on me to lead FCBM during the year. I will endeavor to stand up to your expectations.

"The Corrugator", is our valuable and beloved magazine. This magazine is among the best compared to other industry association magazines.

Friends, we have to put in more effort and take our magazine to greater heights with more useful and meaningful content. Regional news must be regularly published so that greater all India participation and greater mutual understanding can be achieved.

It is time we also simultaneously develop "The Corrugator" as an online publication for wider coverage especially in international circles.

New Year will start at the Corrugator with an editorial board of eminent members. Editors together will work for better upliftment of the magazine.

The economic environment in our country is reacting positively to the global turmoil of recent times and continues to project a decisive outlook. India's GDP growth stands out globally and growth is expected to accelerate to 8+%. Manufacturing sectors are heading for more investments and will create more jobs. This will result in higher demand for goods.

We need to aggressively leverage these favourable signs and propel the growth of our industry - by adopting latest technologies and modern management practices. As box makers we corrugators need to evolve as solution providers with value addition rather than commodity sellers.

The memories of the 44th FCBM Conference are still fresh in our minds. I do hope those of you who could attend the event enjoyed the conference and the stay at Kochi.

**I wish the Corrugator greater success.**



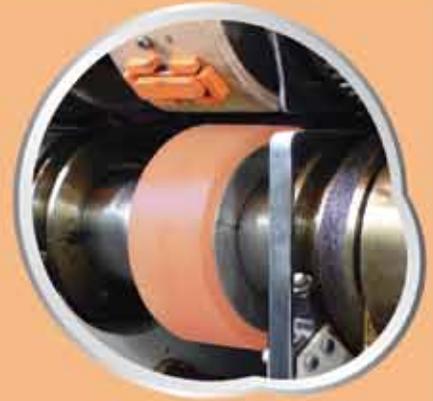
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# Folding and Gluing a Square Box

During our recent series of articles, we discussed industry standards that influence and control the many different types of plants in the box industry. We discussed calibration practices, methods to improve the integrity of our board caliper and the different challenges and opportunities that we present to our managers and supervisors. As we turn into a productive and demanding 2016 we need to review specific issues that enable us to maintain quality in our converting plants, as we continue to focus on exceeding our customer's requirements.

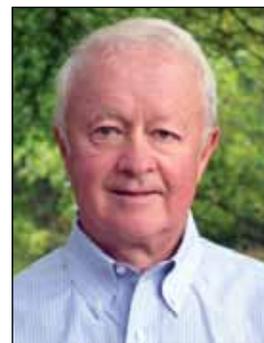
The first area that I want to discuss is the basics in folding a square box. This is frequently a discussion in our production meetings and the answers are sometimes difficult to manage. Customers are frequently asking our sales people how the plant can improve the box quality as it pertains to squareness and skew.

FYI. We define Box Squareness as consistency in the variation in the manufacturer's joint "box to box." This variation adversely affects the inside dimensions of the shipping container and can effect the case erector. The industry's tolerances for "gap variation" are generally  $\pm 0.062$ " or 1.5 mm. The manufacturer's gap by design should equal the width of the slot in the other three panels which is normally  $3/8$ " or 10 mm. Proper settings with today's tooling and computer settings have allowed this number to be relatively predictable and manageable. I have done

this many times with good success and frequently with consistent numbers.

We define Box Skew as a variation between the lead and trail manufacture's gap "within one box." This number with today's knowledge and tooling is within 0.125" or 3 mm. Properly managed, this number has been reduced to a lead and trail edge gap variation to "within 0.094" or 2 mm within one box. (That is different than a "+/- number.") We have to be careful as to what our sales people agree to with our customers, as these numbers are sometimes difficult to measure. We are measuring trimmed edges of a corrugated sheet made with recycled liners and mediums. These points are not consistent within themselves and these edges are not always straight. My point is that we are not measuring metal edges that are absolutely straight and predictable! We are measuring paper.

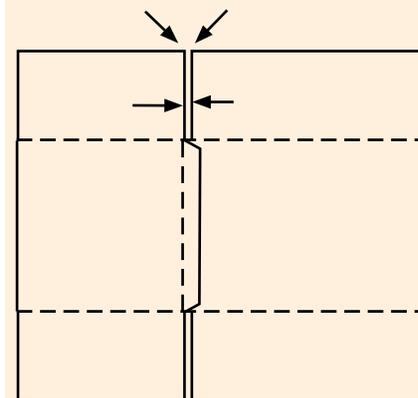
We now should discuss where the measuring point is for both gap variation and skew. This is always a question and a good one at that. Many different plants have different answers to this and I guess this relates to the local market and how the boxes are set up. The correct answer, however, to this question is that the



**Dick Target**  
"On Target Consultants"

measuring point is two (2) inches or 50 mm from the corrugator score. It is also appropriate to generate numbers that represent the average number within a small group. As we know, we all live in a world of tolerances. Tolerances represent the agreed variations within a population of boxes. Several years ago, I worked with a group of regional engineers studying samples and applying "Statistical Process Control" data points to measuring Gap and Skew. After taking samples of over 5,000 boxes of all different sizes, we determined through raw data that the numbers do not change after a sample size of 25. That means that in taking statistical data, the SPC numbers do not change after 25

Skew and Gap Variation Measurements are made 50 mm from the corrugator score."



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consistent boxes. This means 25 boxes in a row not the top box on 25 bundles. We have to measure according to averages and tolerances, as we can't afford to inspect every box that we make. So, just keep this in mind when discussing gap, skew and box dimensions.

Now, in producing a square box we need to deliver a consistent caliper sheet to the folding section. (We did discuss this in detail in previous articles)

We also need to deliver a sheet with scores that are consistent in two areas. (a.) scores that are perpendicular to the lead edge of the sheet and (b.) scores that have a consistent depth.

We produce square boxes by controlling quality in the slotter section not the folding section. The sheet must travel square through the press and not exceed 0.003" (.08 mm) in caliper loss. We must control the TIR (Total Indicator Run Out) of the male and female scoring heads. The TIR must not exceed 0.002" (.05 mm). TIR number is not a "+/-" number. It is a total number.

We now need to deliver the slotted and scored sheets into the folding section perpendicular to the centerline of both folding rails. It is necessary that the first nip points on the folder entrance section of the rails are both parallel and consistent on both the operator side and drive side rails. This is critical as this is the transfer point from the press section to the folding section. When the plant is running sheets

with minimum width dimensions, this transfer point is actually critical. We need to review and check this daily.

Processing a square box is certainly an interesting challenge as there are a number of different skills that all contribute to this process. Proper feed rolls, properly manufactured printing plates, pull bands and pull collars all play a roll in producing a square box. We also need to set the nip point of each rail approximately 1/4" or 6 mm in from the folding score. This will allow enough clearance for each 180-degree fold.

We now need to review another important skill and that is one of gluing our boxes and applying our adhesives to the glue tabs. There are two basic systems that we use. The first system that we use is the glue wheel system. This design uses a set of two wheels. One wheel uses an engraved applicator wheel, which in turn uses a bronze glue shoe to meter the glue. The other wheel is the impression wheel. This is an accurate system and it does deliver a consistent glue pattern across the width of the tab. It is limited, however, to one pattern width.

The other adhesive system that we use today is an extrusion or non-contact glue system. This system uses an extrusion type head that offers different methods of application. Three points, four points and five points of application are all options depending on the strength design requirements of the box. We can

also change the head in order to accommodate designs changes of the box such as tab width and length for different fluted containers. In order to maintain quality there are several points that need attention.

## Necessary checkpoints;

- The Photo Eye... This announces the arrival of the glue tab and starts the gluing cycle. This photo eye will see the lead edge of the box (must be square to the center line) as it enters the folding section... We recommend the photo eye be protected from jam-ups and mounted far enough down stream just before the first panel has started its fold. The head must be mounted so that the distance from the photo cell turn on point to the glue applicator orifices is fixed.



- The Pulse Generator... This measures the transport belt and carton travel. It accurately allows control of the glue placement. Be sure that the wheel has consistent contact with the belt. In some machines, the pulse generator is driven from the machine's line shaft. In this case, the pulleys must be in good shape and bored concentrically. The timing belts must also be tight.

- The Applicator Head... This head must be fixed, properly positioned and cannot be moveable in the machine direction. The position of the head must be perpendicular to the tab as it travels through the first part of the folding direction. It is also absolutely important that the first "point of fold" must start after the glue application is complete. Another point of discussion is where we mount the glue head. Do we mount it on the first or fourth panel? When possible, we recommend that we mount the glue head on the fourth panel. This will help the age-





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old problem of tab scrap interfering with the glue application, as when the glue head is mounted on the 4th panel, there is no tab scrap in the area. In some cases however, we do mount a dual set of heads on both the first and fourth panels in order to offer different design opportunities such as five panel boxes.

- When the glue valve system is air powered, there should be no air drain points up stream from the head itself. This will cause a drop in air pressure and an inconsistent glue pattern. The glue pattern will move back and now we have cartons with inconsistent glue joints. This is not an acceptable condition.
- The viscosity of the glue must be consistent and the glue may not have clay or fillers in the formula. Temperature can and will affect your glue viscosity and its performance. Work with your glue supplier and get the proper technical support. They will be glad to share this information with you and your plant employees.

You must, however, ask and demand technical support. If you never ask, they will never come to your plant!

- The power to your glue control center must come from a clean power source in your plant. There should be no D.C. drives associated with this power source.
- In all cases, we need to clean the glue system. Regardless of the glue system.

Remember that square boxes are controlled in the slotter section. The folding rails fold the panels according to their design and the position and the depth of the scores!

Take time to review all these points with your crews and supervisors. Every plant is certainly busy shipping boxes and satisfying your customer's needs and requirements. As an industry, we need to consistently review and improve our in-plant processes. Take the time and run "single subject" meetings so that all these details which should be covered and understood. Listen to your crews as they do have a lot of good information. Keep them up to date on what is happening within your

company and your customer's companies.

In future articles, we will be discussing details on tooling and tooling design as it pertains to quality and productivity.

ENJOY YOUR JOB !!

*Dick Target, owner of "On Target Consultants" based in Lower Gwynedd, Pa., has been in the corrugated industry for over 35 years.*

*He has worked in 29 countries developing and guiding corrugated plants in lean manufacturing, vendor development and management training.*

*He teaches Flexo and Die Cutter Calibration "Short Courses" for TAPPI several times each year.*

*Dick also writes for Corrugated Today and International PaperBoard Magazines.*

*The Readers will recall that he is a regular contributor to our magazine.*

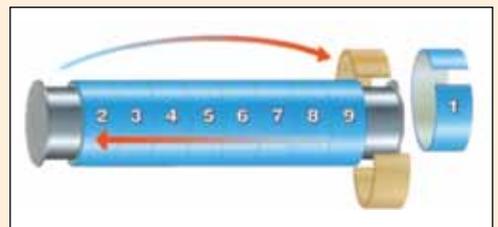
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# Corrugated vs. Paperboard

In order to succeed in today's packaging industry there are things that everyone needs to know about package design. Your customers rely on you to create (or help them create) packaging that's worthy of containing their products. New techniques, materials and software provide the ability to design truly innovative packaging. But how does one decide whether a package's structural design is best served by corrugated or paperboard?

The line used to be fairly clear—paperboard was used for primary, retail and display packaging and corrugated was used almost strictly for secondary packaging, such as for shipping boxes simply expected to get products from point A to point B.

As paperboard has become thicker, while corrugated has grown thinner, and as both materials are engineered better and are more visually appealing, you now see paperboard being used often for shipping purposes. There is also a growing trend to use corrugated for retail packaging for its “greener look” and shelf-ready characteristics. This “battle of the packaging materials” allows us to look at the pros and cons of “like” designs being made in both materials, featuring both a corrugated and a folding carton viewpoint. Of course, there are also package designs that simply need to go one way or the other.

## What is the difference between brown box and folding carton?

Let's start by talking about brown box corrugated. A lot of the big integrated companies are now running B- and C flute, and initially the reason that became popular is because it was lightweight and really substantial for structural integrity. We wanted to put the product in something to protect it, with just a simple identification on top of it. While corrugated provides good protection, even with marginal presentation it unfortunately doesn't always fold very nicely. People manage

folding through different processes, but the difficulty is traditionally because of the flutes—it doesn't fold square all the time. It's a thick material that needs design attention. Corrugated has fought for market share by addressing the “marginal” graphics through the application of labels. There are label options—you can label a single face or a double face corrugated to improve graphic appeal—but corrugated is still usually used as secondary packaging.

On the folding carton side, it's a little bit different. One of the advantages of paperboard is the great graphics you can achieve as a result of fewer limits in the actual printing process. The substrate is flat and thin; it's flexible and usually has a good surface to print on. This isn't always the case with corrugated. For example, if you are going to be printing on a two color flexo press, you are pretty limited with what you can do for enhancing the graphics. With folding carton, the litho and gravure presses generally start at four colors and go up from there. Process work, higher resolutions and larger gamuts really show their colors.

There is more folding carton now that is being printed direct flexo, and if it's on flexo, it is often running in line with a diecutter. There have been marked improvements in the last 20 years in flexo technology, so you will see a lot more of it.

While paperboard offers great graphics, its weakness is it generally offers marginal protection. Another paperboard advantage



**Kevin Koelsch**

Dynamic Dies, Inc., Holland, OH, USA

is greater accuracy of folding than corrugated. Very tight tolerances in terms of foldability can be achieved with folding carton. If we look at things like cigarette packages and small cosmetic packages, the alignment is very critical. So with the methodology of creasing on folding carton, which is thinner stock, we can produce cartons that are very high tolerance.

This is particularly advantageous in regard to high speed gluing and filling machinery. For example, with stock that is 12 pt—that's 0.012” (0.3 mm)—the folding tolerances are very tight. In some cases what they are now doing is scanning produced cartons and measuring the actual profile of the creasing bead to an accuracy range of 0.001” (0.025 mm). This technology for measuring the location and accuracy of the fold positions is now becoming fairly common in the quality analysis world. In high-speed carton work, if you don't line your creases up properly, you are going to have failure on the filling line. This technology can help to determine the root cause and identify the source of the problem. Still, today the majority of folding carton is used as primary packaging; often it is then put in a corrugated case that is used for transport.

So when deciding between the two, you need to decide what is most important to you. In the traditional brown box

*Cont. on - 23*



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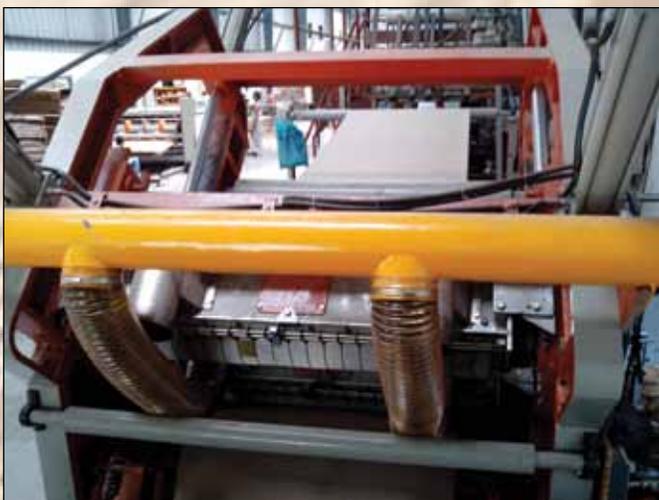
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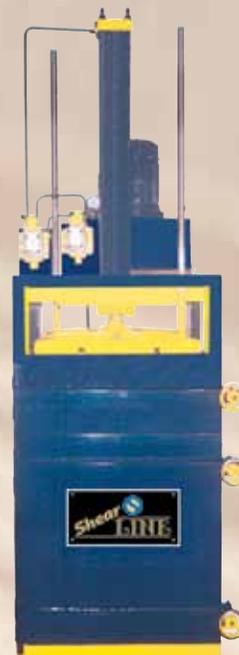
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corrugated market, it is the bursting and stacking strength criteria that determine success and market value, compared to the precise folding needed for gluing and machine filling in the folding carton market. This is one of the overlapping gray areas where fine (micro) flute corrugated comes in. With this innovation we can now produce a carton that has enhanced structural integrity, with great graphics and is able to come closer to matching the tight specifications of a folding carton.

## The substrate

In the beginning, the differences between the substrates were pretty well defined and could be summed up as follows:

### Corrugated

- Pack it to protect it
- Thick and bulky
- Low cost
- Generic product ID
- Limited speed accuracy and automation

### Folding Carton

- Pack it pretty
- Small sizes and high volumes
- High speed filler lines
- Secondary corrugated wrapper

However, now a number of factors are causing a migration or overlap between the two substrates. Wherever there is overlap is where the opportunities begin to choose one or the other. Let's look first at the folding carton side.

### Pack it pretty

When you get into folding carton, and even more so into cosmetic packaging, there are a lot more UV coatings, a lot more double bumps of ink and very elaborate graphics. Interestingly, these complementary graphics can adversely affect the ability to crease, because if the coatings don't have elastic properties, they can crack in the folding process. So now we are not just learning how to crease paperboard and prevent cracking, we now have to do it with all of the ink and coatings that are

put on top of it. Add to that a significant amount of heat used in UV printing and the challenges go on.

### Small sizes and high volumes

In general, there is a perception that folding carton is being for smaller sizes and higher volumes. Tied into that is the fact that many of these cartons go through high speed filling lines. Because of this, there is a greater demand and a lot more pressure to produce tooling that is tighter tolerance.

### High speed filler lines

The tighter tolerances are important because a failure on the filling line can reach thousands of dollars in lost time and lost product. This can filter all the way back to the diemaker and become their burden to respond to even though they aren't running the tools themselves.

### Secondary corrugated wrapper

Often a wrapper is slid over the folding cartons; they actually plank, and then the wrapper slides over, depending on what graphics you want to use. This is pretty common, for example, in hardware stores. Paperboard and corrugated are often used in this fashion.

On the corrugated side, as the equipment has evolved to produce higher quality, thicker corrugated products as well as thinner products, the graphics have improved, the speed has improved and the accuracy has improved, making corrugated a more viable substrate for other uses than it was in the past.

### Types of corrugated

Quickly running through the construction of corrugated (see Diagram 1), the original profiles are lettered A, B, and C and were quite thick, up to 0.25" (6.3 mm). A-, B- and Cflute are widely used in brown shipping boxes and are typically 0.08" to 0.19" (2 to 4.8 mm) in thickness. Then thinner profiles were developed, such as the micro flutes F, G, N and O, which are quite thin (see Diagram 2). The profiles for these boards range from 0.012" to 0.07" (0.3 to 1.8 mm).

Obviously, board choice went from quite simple to rather complex because people want options, and options mean opportunity, and opportunity means money—so we give people a lot of choices. With these thin corrugated models moving into the folding carton range and being capable of different structural characteristics, it gives us even more options to use corrugated instead of folding carton. At the same time, it also makes things more confusing because the different profiles cannot all be handled in one way. Diagrams 3 and 4 provide additional information and comparisons.

### Types of folding carton

The type of paper used in making folding cartons will go a long way in determining the overall quality of the carton. Strength and print quality, along with cost, will all vary when using different substrates. Paper substrate is the raw material used to make folding carton packaging. There are two types of substrates that are used in folding carton: paperboard and small flute corrugate (sometimes called micro flute).

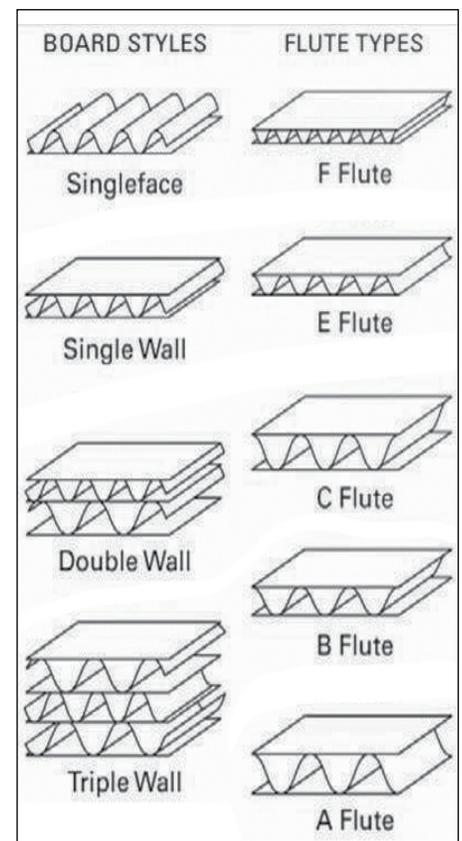


Diagram 1



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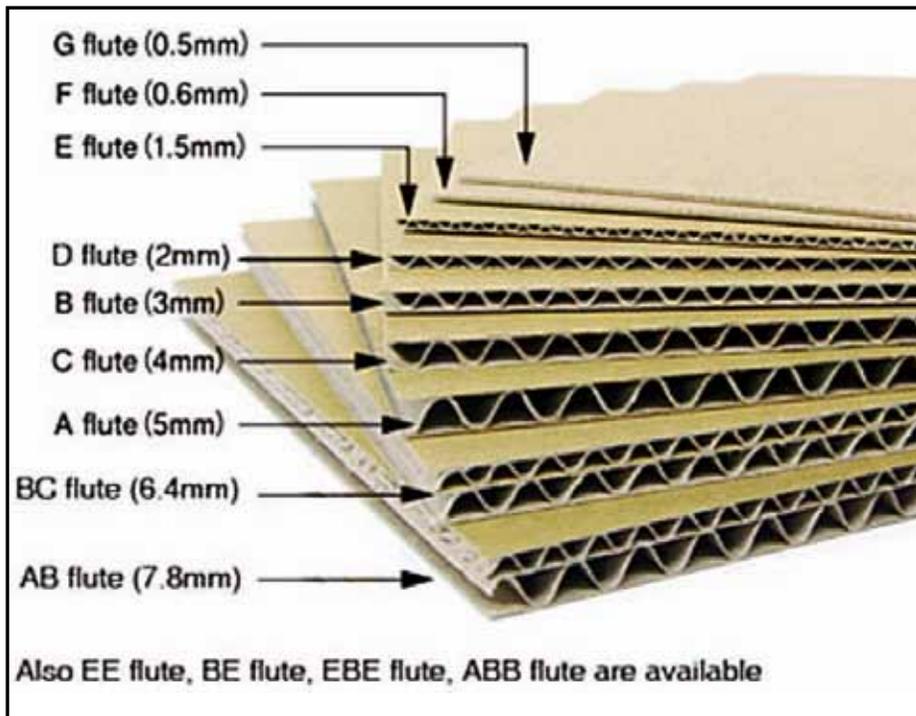


Diagram 2

Flute	Flutes / Linear Foot	Height	Qualities	Common Uses
A	36	1/4"	Excellent compression and cushioning; Good stacking strength	Packaging fragile items; Used for its structural strength
B	49	1/8"	Excellent crush resistance and printing surface; Good puncture resistance	Inner packaging like pads and partitions
C	41	11/64"	Good printing surface, compression, and crush resistance	Most common flute used for shipping boxes; Used for its structural strength; Used for glass, furniture, food, etc.
E	90	1/16"	Excellent crush resistance; Exceptional printing surface; thin construction helps to reduce storage space	Consumer goods packaging, like boxes for cosmetics, jewelry, and ceramics; Used for displays, ballot boxes, and pizza boxes
F	128	1/32"	Outstanding printing surface; Excellent crush resistance; thin construction allows for stiffer boxes with less fiber	Consumer goods packaging, like boxes for cosmetics, jewelry, and shoes; Used for software packaging and for McDonald's Big Mac clamshells
*Note: These measurements are approximations. Manufacturers produce corrugated flutes which may vary slightly in size.				

Diagram 3

Paperboard is a term describing heavier weight grades of paper—at least 0.01" (0.25 mm) thick—made from cellulose or wood fibers.

### Unbleached kraft paperboard

Often referred to as solid unbleached sulfate (SUS), it is the most commonly

used substrate for folding cartons. It can also be treated with a moisture barrier for use in liquid and food packaging (such as beverage and beer boxes). Typical uses are electronics packaging, hardware packaging and packaging for powdered detergents and soaps. It has great strength.

### Bleached kraft

Often called solid bleached sulfate (SBS), it is the highest quality and most expensive paperboard substrate. Most bleached kraft paperboard grades are clay-coated to enhance the smoothness and the receptivity of the printing surface and can also be treated with a moisture barrier. The bleaching process also adds cost and reduces stiffness. SBS is the easiest board to convert and get a great crease; you don't have variation like you do on recycled paper.

### Recycled paper

The predominate use of more recycled material and different liners has actually given us a lot more challenges in terms of producing creases that are straight, with great integrity and that work well on a filling line.

### Small flute corrugated

Small flute corrugate consists of a fluted or wavy layer of paper and one or more thin layers of paperboard. The fluting is smaller than what is found in corrugated shipping type boxes resulting in a sheet with less strength and greater flexibility than standard corrugated board, but still has greater strength than paperboard. Small flute can be a challenge because of its increased rigidity, whereas paper will be a challenge because it isn't rigid.

If we look at food packaging, for example frozen food, we'll see a lot of crossover of micro flute and paperboard. With anything that is frozen in paperboard, we have to make sure there is a barrier in case there is premature thawing and moisture creeps in. Or in the summer or when it is hot and humid and you take a beverage box out of the refrigerator or the store, you get a lot of condensation, and without the strength of this board, basically your handle will break or the bottom will fall out because the paperboard can't withstand the weight because of the moisture migration or what is called a wicking of paperboard.

There are a number of converters now who are looking at trying to size the board

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Flute Corrugated Sizes		Here's How to Figure Out Type of Board, Test and Liner				
		Description	Maximum Weight of Box and Contents	Inside Size (L + W + D) May Total Up To:	Bursting (Mullen) Test of :	Rule 41 Requires Minimum Facings of :
33±3 Flutes/Lin. Ft. ↓	↑ 3/16 approx.	 <p><b>DOUBLE FACE (SINGLE WALL)</b></p>	20 LBS.	40 IN.	125 LBS. Per Sq. In.	52 LBS. (Combined Wt.)
"A" Flute Characteristics: High top-to-bottom compression, good stacking strength. Thickness gives outstanding cushioning protection.			40 LBS.	60 IN.	175 LBS. Per Sq. In.	75 LBS. (Combined Wt.)
47±3 Flutes/Lin. Ft. ↓	↑ 1/8 approx.		65 LBS.	75 IN.	200 LBS. Per Sq. In.	84 LBS. (Combined Wt.)
"B" Flute Characteristics: Has high resistance to crushing, which makes for excellent printing surface, slots and scores easily.			90 LBS.	90 IN.	275 LBS. Per Sq. In.	138 LBS. (Combined Wt.)
39±3 Flutes/Lin. Ft. ↓	↑ 5/32 approx.		120 LBS.	100 IN.	350 LBS. Per Sq. In.	180 LBS. (Combined Wt.)
"C" Flute Characteristics: Greater resistance to flat crush than "A" or the older "C" flute. Excellent printing surface, with fewer high and low corrugations. The new "C" flute combines best characteristics of "A" and "B" types.		 <p><b>DOUBLE WALL</b></p>	65 LBS.	75 IN.	200 LBS. Per Sq. In.	92 LBS. (Combined Wt.)
90±3 Flutes/Lin. Ft. ↓	↑ 3/32 approx.		90 LBS.	90 IN.	275 LBS. Per Sq. In.	110 LBS. (Combined Wt.)
"E" Flute Characteristics: Double wall board can be made in any combinations of flutes shown. Use when extra thickness and stacking strength is required.			120 LBS.	100 IN.	350 LBS. Per Sq. In.	126 LBS. (Combined Wt.)
Doublewall Combinations			140 LBS.	110 IN.	500 LBS. Per Sq. In.	222 LBS. (Combined Wt.)
A/B			160 LBS.	120 IN.	600 LBS. Per Sq. In.	270 LBS. (Combined Wt.)
B/C		<small>All medium must be 28 lbs. per MSF of board not less than .009" thick. They are usually 100% Recycled. To add strength, CB Sheets can substitute a liner for medium.</small>				
A/C						

Diagram 4

as opposed to buying a board that has a thin layer of plastic on it. Personally we have done a lot of experimenting with the coatings on press.

### Thickness

Let's discuss what we believe to be the shared zone for micro flute and paperboard thicknesses. Starting at 24 pt SUS, we then move up to 28 pt, 32 pt and then we can include CC- and B-flute. Normally the max that we can get up to is about 36 pt because it is pretty hard to find a mill that can make a good 36 because there is a lot of material that goes into it. There are a number of paperboard companies that have developed their own board that is really based on maximum strength, and it's specifically competing with micro flute. There are a couple of companies out of Europe that are coming in with a board that is actually in the 28, 30, 32 pt range, and they are specifically competing in this range.



Diagram 5

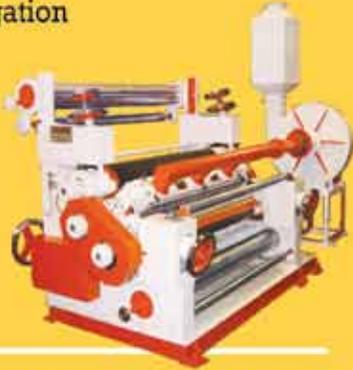
If you look at Diagram 5, you'll see folding carton and micro flute side by side in the beer aisle. This is very common to see. The fluted carton 12 packs are traditional RSC with end handles. They are litho laminated and have high visual impact; the product is a premium-priced beer. The paperboard

cartons are more complex for side load, high speed filling, and are normally 18 to 28 pt (0.018" to 0.028" or 0.46 to 0.7 mm) SUS board. They are produced on a flexo web fed press and diecut on a flat autoplatten at speeds of up to 800 ft/min (244 m/min). Note that the larger 24 bottle

Cont. on -31

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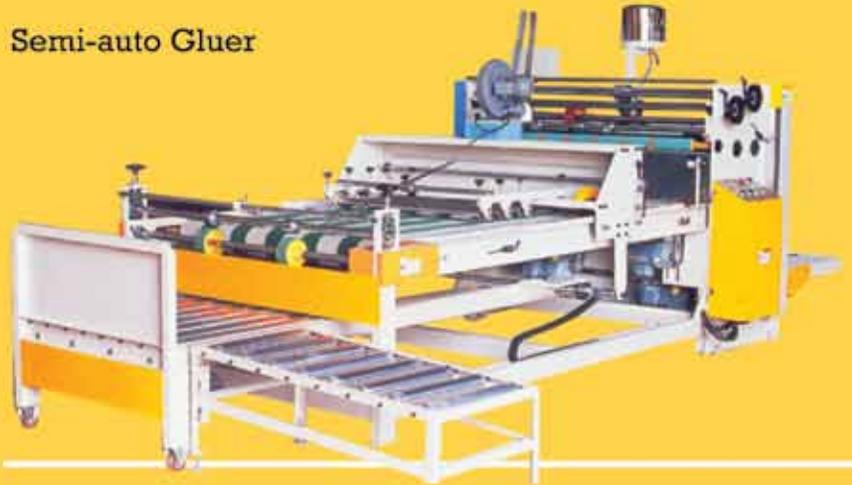
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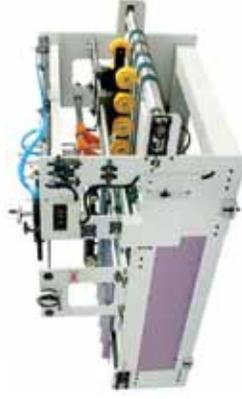
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M/C Dimension	2,800 x 12,000 mm	3,100 x 13,000 mm	3,500 x 13,000 mm
Max. Belt Speed		180 M/Min	
Max. Stitching Speed		85 Sheets/Min	
Main Power		15 Kw	
Sheet Thickness		Corrugated Board 3 - 10 mm	

cartons are C-flute RSC flexo printed on a rotary diecutter.

As an aside, folding carton and small flute are actually both under attack as the paradigm shifts to pouch packaging. For example, while powdered detergent packaging evolved into some small flute work, that is now changing as the new style “pods” are using flexible packaging. So you have to be very careful—if you aren’t paying attention, all of a sudden part of your business disappears and it’s gone.

All of this shows how much closer the corrugated and folding carton options have become. Corrugated now has better graphics, is sometimes used for primary packaging, is thinner and has more variety, has more accuracy and more automation. Folding carton has evolved into even better graphics, even faster and has a greater selection of thicknesses and better strengths.

### Package design

How do corrugated and folding carton compare when it comes to package design? In the past, some things were viewed as unimportant with cartons, but important with corrugated. Does that still hold true?

Diagram 6 is a simple tray, and in the corrugated world this would be kind of difficult to do especially because of multiple out situations. In corrugated, we generally are using thicker blades of steel to make the die because of the more rugged environment that it is in. There is a lot of Bobst type work for corrugated; much of it is competing in the folding carton world by going to thinner cutting blades—2 pt steel rule, 0.028” (0.7 mm) thick. With this steel rule and thinner corrugated, finer details can be done.

It is always preferable to avoid the acute angles (see Diagram 7) formed by two cuts being brought into a point because of the mitering and joining of the rules. So, the question is whether design alterations traditionally made for corrugated even apply at all in the folding carton world. If so, what are we seeing with this migration from thicker to thinner corrugated as

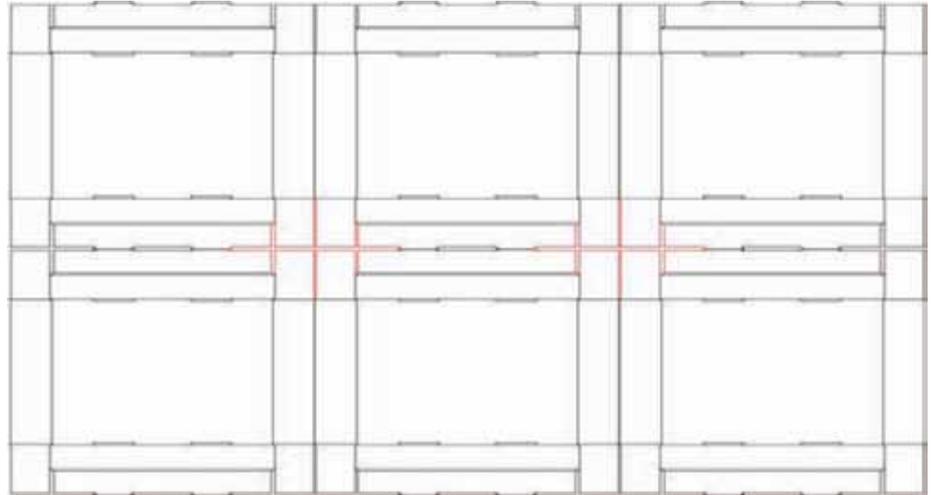


Diagram 6

related to design? Do we design as if it were a folding carton or a thicker corrugated? Is there more latitude of design or more concern with the actual rule joining of the die? Are designs improved with thin corrugated being adopted by the folding carton side of things? These are questions to consider.

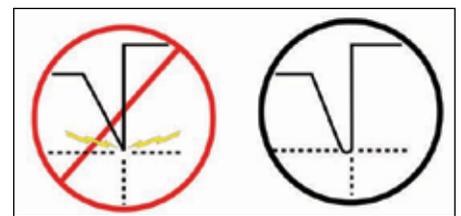


Diagram 7

Diagram 8 is the portion of the example die that is at the joint of the four outs where there are parallel sides, acute angles and very narrow slots. Diagram 9 is showing what would happen in a corrugated world where they would taper the flap slots to help the speed and ejection. It is encouraging that whatever design alterations being done for the rotary side of things to make stripping better can equally be helpful on the folding carton side of things.

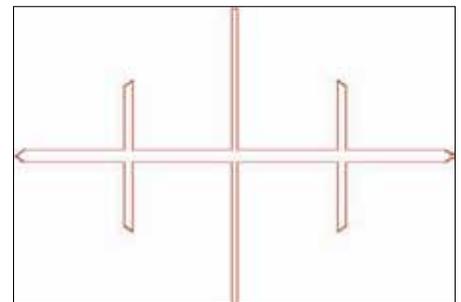


Diagram 8

Diagrams 10 and 11 show the arrangement with those tapered slots and the final situation; a couple of acute angles are coming to a point, and there is a very narrow slot at the junction at the common knife area. Diagram 10 shows that design/redesign, eliminating the slots and the offset that created that. It’s hard to predict how much of this happens in the folding carton world, but it seems it would be beneficial for most converting steel rule die converting processes anyway. So consider this—should we treat carton design more like thick corrugated?

When we talk about the carton design, although it’s not designed the same as corrugated, we still have to consider these

limiting parameters. We don’t have as many of those restrictions because of the fact that it is much thinner; however, it is one of the things we have to do in the folding carton process—whether or not we are using sheet- or web-fed. If it is with a platen diecutter or a rotary diecutter, it all has to do with the stripping and the shape of the piece. So depending on what you are producing, if you take a job from sheet-fed and move it over to web-fed, you may have some issues with stripping. You may have to go back to the customer and ask them to enlarge certain areas or change the shape because it is cylinder pin stripping rather than having a conventional up and down stripper.



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Because of these big considerations, it's a good idea when you are designing something to think about all the possible machines the job could go on. That is what separates a good designer from a great one!

This is true as well for corrugated. In many cases there are cartons that are simultaneously run on flat, sheet-fed and web-fed, and you can't get into variation on the two, so you have to make sure they work equally well. There are fewer restrictions on a sheet-fed diecutter versus a flat diecutter on a web as to where the stripping occurs.

If someone were to ask what the problems are with converting either corrugated or paperboard, they would rank creasing, stripping and then maybe cutting, in that order. Or it might be stripping, then creasing and cutting. But most everyone will agree that stripping and creasing are the big-gest problems in our industry with both of these materials. Back to the design point of view, if we can improve the strip-ping by modifying designs, that's an important factor in all cases. Die design or die engineering is probably one of the most important parts that separate diemakers and their value. And a lot of this stuff is unseen.

Take, for example, a job with slots that are 0.063" (1.6 mm) wide. In corrugated, it is just about impossible to strip that. You will also have problems if you have a 0.063" (1.6 mm) slot on inline. In sheet fed, it can be stripped, but it is a challenge. Whenever we receive a job from our customers, the first thing we look at is all the pieces that need to be stripped out. This determines how we're going to build the tool. It goes beyond laying out the tool according to specs; more importantly, we have to take responsibility in terms of understanding whether or not the tool will actually function on the press. It's possible to create a tool that will cut; but will the pieces then need to be stripped out by hand? And what kind of press is it going on? Is it old? New? Does it hold good registration? Does the operator have the skill set to align something of that nature? Will the tool itself withstand collisions or smash-ups?

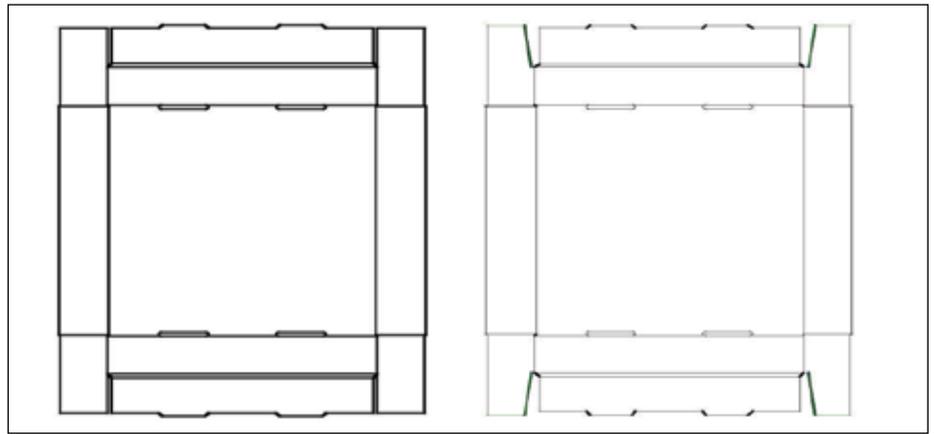


Diagram 9

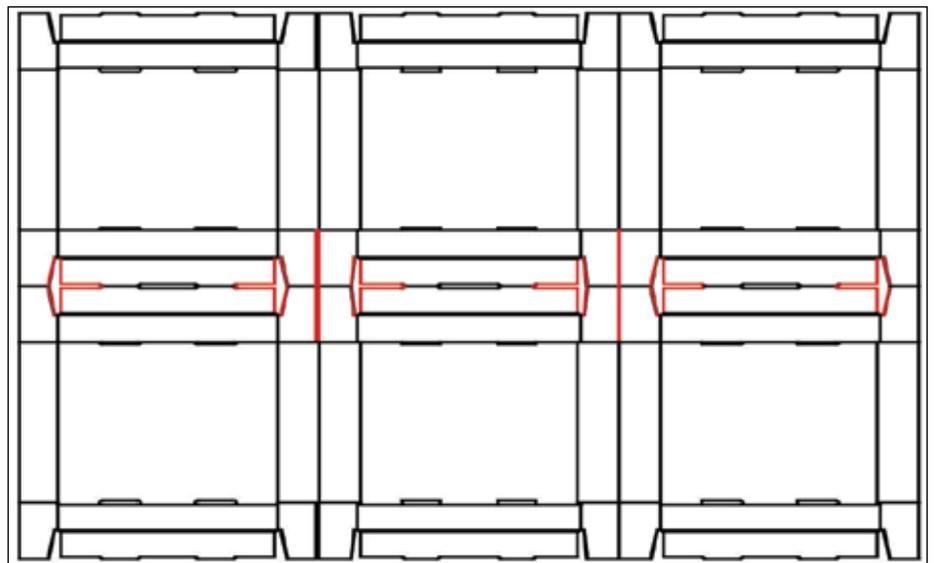


Diagram 10

When we get into the heavier paperboard and the micro flutes, they become very similar in terms of the way they behave when you are stripping them. They don't behave the same way when you crease. Let's look at some examples.

Diagram 13 shows a 23.5" by 15" (596.9 by 381 mm) box that is going to be used for a 48-pack of candy pouches. When you go to Costco, you will see a lot of these boxes; they are called Kliklok tri-seal boxes. You are probably familiar with the closure. You can see the male and female aspect of it, and they are filled automatically and will hold a fair amount of weight. This style is usually used in the paperboard or small flute, but you won't see it in the corrugated B- and C-flute world. The small darts are 0.125" (3 mm), but we were able to strip it because of the fact that it was connected to

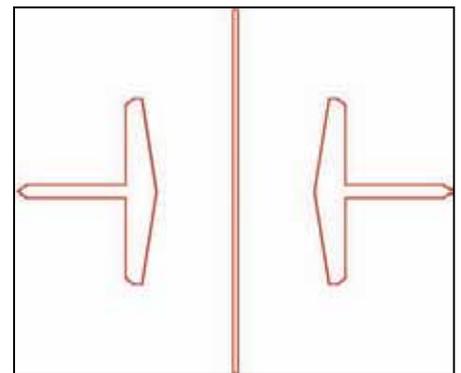


Diagram 11

a big piece of waste. Otherwise, we would never be able to fit the male stripping counterpart in that tight area.

Diagram 14 is a standard box, one-piece top and bot-tom; it has four corners and an attached lid. This is used for frozen



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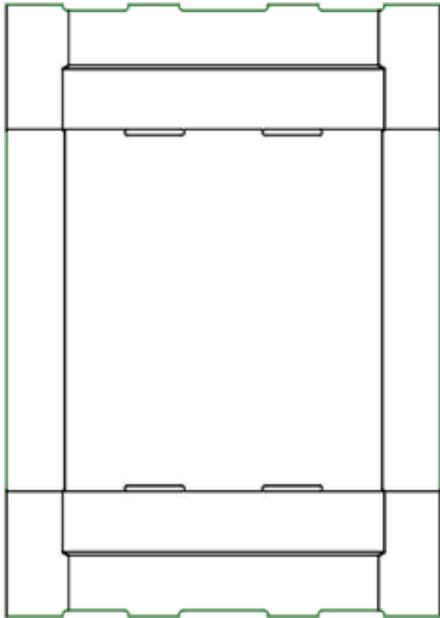


Diagram 12

food, often using small flute or micro flute. A frozen food company chain in Canada called M&M predominantly uses this style, and it's all E-flute with fairly basic printing. They decided to go totally micro flute (the thickness is equivalent to the SBS board that they used previously), and every-thing that goes in there is in a plastic bag. There's no sizing done or poly on the inside of the carton.

Interestingly, if they were using a thicker corrugated, the flap cuts in relationship to the crease line would need to be offset to make room to bypass the thickness of the material when they fold, so this is actually one of those that is a crossover item, but could not be done out of E-flute without any offset. As it is, the only offset on this one is the lid that is maybe a 0.031" (0.79 mm) bigger in one direction and 0.063" (1.6 mm) in the other, and that's just because it has to fit over the base. We don't have to worry as much about the caliper thickness with boxboard.

You might wonder why M&M would choose to go to a micro flute when it seems like they would need to use more material. In terms of the medium we're talking about, the total paper being used is three separate pieces of paper, but in many cases when you take the compressed value of micro flute corrugated, it's smaller than paperboard.

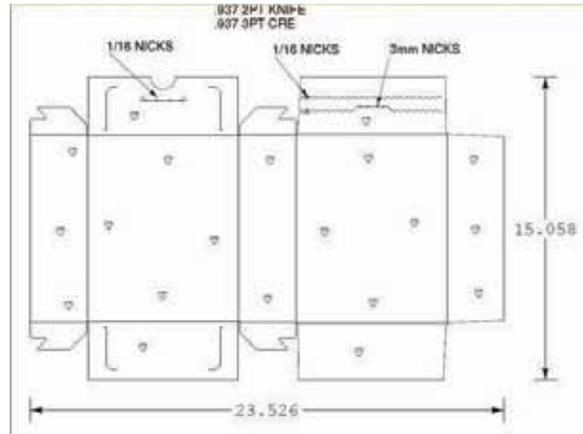


Diagram 13

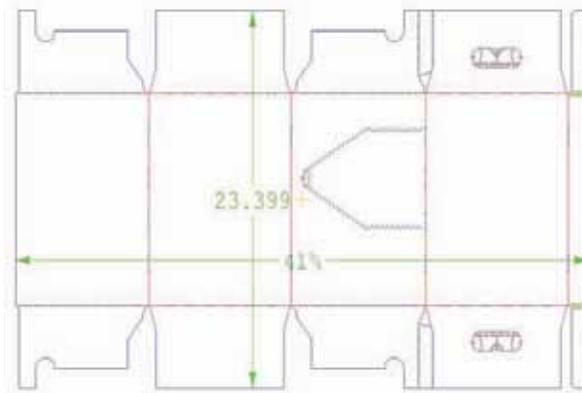


Diagram 14

So if we are talking about the amount of material being used as a comparison micro flute is less than paperboard (it's the volume in comparison). The other factor is that their boxes are done on a flexo with basic 2-color because their theme is an orange and a blue logo—it's not upscale printing. They are taking advantage of the strength of the medium that can compensate for less material, because everything in paperboard is about the amount of material that you use. For the average paperboard carton, 50-60% of the cost is the board itself. The trend is in downsizing; the less material you can use, the cheaper in general the carton is going to be. Of course this needs to be weighed against whether there is more cost for the process.

We have a number of customers printing in E-flute on a litho press, and they are printing on a white top liner. In some cases a folding carton company is driven by their customer's desire or need to go towards fluted material. While they would

prefer not to learn another discipline, many folding carton manufacturers realize they will lose business if they do not.

Speaking of carton strength, Diagram 15 is a beverage box on 28 pt board which is 41.75" (1060.4 mm) wide. You don't often see a blank this big in folding carton paperboard; this is very unusual, and much more common in corrugated. This box is built to hold 40 cans of beer—40 cans in a 20 pt SUS. In order to strengthen the carton, they will put layers inside which they glue to the sidewall. There's also one that is a bit taller that holds 48 cans, and there is also a 60-pack in the works. These kinds of things are possible on paper-board;

this is actually done on an inline web on a flat diecutter. The machine direction is actually up and down, with the paperboard grain in the running direction.

It's very unusual to make a folding carton with the grain going vertically because it wants to curl and turn into a tube when you erect it. We have to add cuts to the vertical folds because we are folding parallel to the grain. The folding scores actually have more cuts and creases in them than in the center score or the glue score. The reason is that in the gluing process in paperboard (and probably similar in corrugated), the glue flap has a pre-break, maybe to 130 degrees, and then they are prefolded so that once they are glued, they will be flat. The other two are folded 180 degrees. This is what happens with paperboard when you want to build strength.

Fluted materials don't present the same challenge as much because there are actually three plies, and then when the

*Cont. on -39*

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flap that gets folded over comes in, by the time it finishes, there are four plies. The “handle” that is formed is actually 4 plies for holding strength. This is common on every beverage box you see on paperboard and SUS board so you can pick it up without tearing, especially when it is wet. Interestingly, some breweries will actually use the same carton size and style as their competitor for filling machine purposes, but they have a different opening feature because they want to differentiate themselves from their competitor.

### The manufacturing process

Let’s do a little bit of comparison when diecutting:

#### Corrugated

Platen and rotary	Platen and rotary
Sheet delivery	Sheet or web
Counters (matrix)	Counters (steel, composite)
Strippers (basic)	Strippers, blankers
Reverse cut, perf	Reverse cut, cut/cut
Retail ready	Retail ready

#### Folding Carton

As you can see, both processes have the platen and rotary vehicles, and they are quite different from the carton side on the rotary. It’s quite a bit different than the corrugated on the soft anvil, but as far as the dynamic of the cutting process, they are quite similar.

On the folding carton side, there will be two methods for cutting—flat (platen) or rotary. Both are a steel knife against a steel anvil. There are two ways to deliver the stock. It will either be on a roll (referred to as web fed) or the roll stock will be parceled into sheets (hence the name sheet fed). On web inline, when we are looking at paperboard again, a lot of it has to do with stripping and with the abrasion of the web running over the plate. When running carton work inline, all female counterparts are generally made from steel. One option for the counter is to be made from phenolic. If you use phenolic, it won’t last very long because of the fact that the abrasive web runs over it. Also, it can

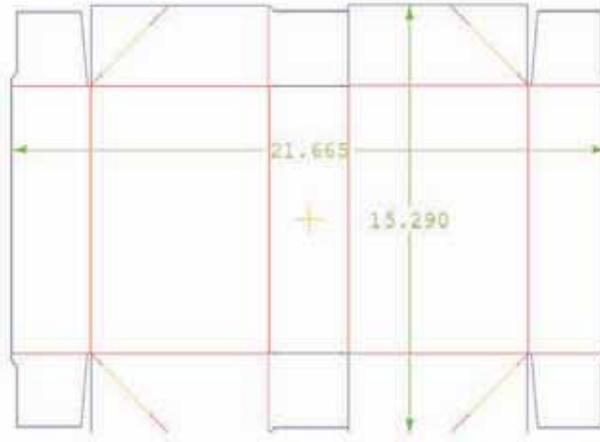


Diagram 15

catch, snag, etc. Generally speaking, if you are running web fed inline, you are going to see a steel counter. If you run sheet fed, it could be steel or, most likely, phenolic.

When comparing the micro corrugated to paperboard, the stripping is not significantly different other than the fact that in folding carton the preference is to run the stripping tools without the use of auto pins. Everybody has different ways of doing it. Another recommended stripping technique is dynamic stripping. This is where you basically deform the piece of waste so you build up potential energy. Then once it fires through, it clears the restrictions of the female, that’s converted into kinetic energy and it will move out very rapidly. It requires a great deal of attention to detail and accuracy because you need to make sure all the scrap pieces are positioned properly on the restrictions so that you can get an even deflection.

I’m not sure actually on the flute or micro flute if that is necessarily being done because it is more rigid, but with paperboard, you must contend with the flexibility. It’s easier with the grain instead of against the grain.

One of the significant differences between blanking a paperboard substrate and a micro corrugated substrate— and we’ve even seen corrugated as thick as B-flute being blanked at high speed—is the male counterpart. It is built a little bit differently where the cartons are joined, and if you

have to break it over a bar or when bending, it will make it crack. One method to avoid this is the outside of the male blanker, the periphery is a sponge or rubber so it can bend down about an inch (25.4 mm) as opposed to paperboard. Or we can leave the harder edge and allow the bend within reason; you may still get some marking because the material takes the

fold, you can get it to bend.

Regarding reverse cuts, with folding carton when you have an opening device where there is a 0.5” (12.7 m) cut, now I call it a score so I don’t get everybody confused because I know in corrugated you have half cuts. A score is what I call a crease and half cut is what I call a score. So it can get very confusing when somebody is ordering something. It is most preferable when you have half cuts coming from opposite directions and when you open it you get the lamination across the fiber. It’s a great opening because it’s sealed and you can tell if it’s been tampered with. With Green Mountain Coffee, you see all the K-cups like this. All those boxes come with a reverse score opening. It’s also being used on the corrugated side. Micro flute is going to be a little easier because you have more density. I’ve seen it done all the way up to B-flute. In folding carton, when you look at the box, it is normally retail ready.

The last two points are the reverse cut and the cut/cut. Rule manufacturers are trying to make multiple heights cutting rule. Very close in the same height or half by half that is cut and cut. Of course, this poses the need to manipulate the counters which are quite interesting because there are a lot of things going on to enhance the folding beyond what we have already experienced with the retail or shelf ready packaging market. This was a big topic on the thicker corrugated side, but we see it across the board as ganged, multiple outs become



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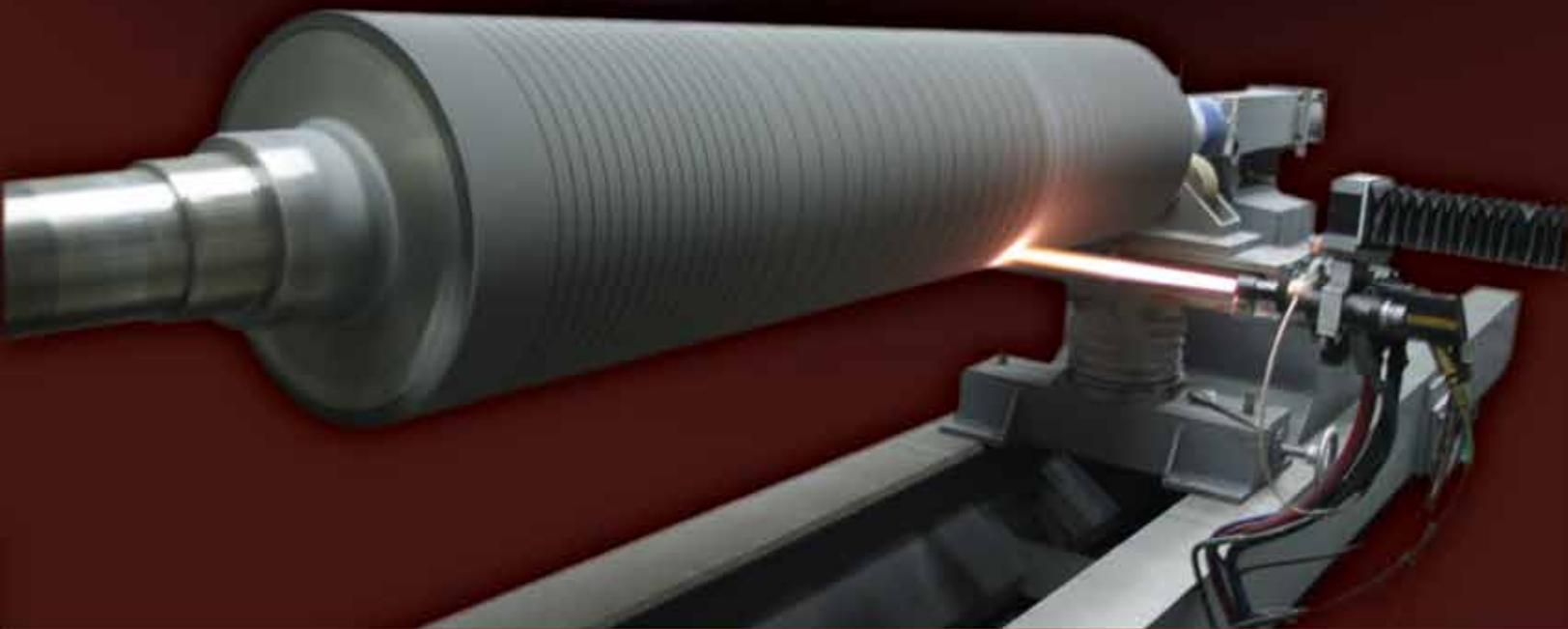


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more and more prevalent. These address the movement for the reduction of the total package, the sustainability part of it. There will be less inner packs, and designers will use a lot of this corrugated migration into just finding more of where the protection sweet spot is and how to open without it looking terrible.

### Does the equipment matter?

The basic answer is yes. As the flutes get smaller and the board gets thinner, you want to make sure that your press feed and grippers can transport that sheet through the press. Some presses will come ready-made with the proper equipment on the feed side of it. The other area that is sensitive to the material is the blanking, so it is most important to check your machine specifications. The majority of Bobst machines are capable of delivering an E-flute with no problem. It would depend on the condition of the feed section and/or if there is a requirement to do a retrofit on the delivery table.

If you are going to do 0.004" or 0.005" (0.10 or 0.12 mm) paper, there is a specific upgrade to handle that. One of the biggest challenges with the micro flute on a sheet fed press is the sheet warp. You don't have a lot of good control over how everything is drying, and we see a lot of challenges with getting it into the gripper because it is warped. It's bad enough on a paperboard sheet, let alone micro flute.

Plant environment conditions such as humidity control are much more important. This winter has been difficult with lack of moisture control, even in converters with temperature and humidity control. Micro flute presents even greater challenges. With micro flute, the air is allowed to pass through the fluting and this makes the combined paper more susceptible to the environment than solid paperboard would be.

The plant needs some kind of control with vapor misters, and materials being brought in require acclimation to the environment before use. We also recommend that once you have printed it, you get it diecut as

soon as possible. When converting micro flute, we suggest having the printer, diecutter and gluer all on one line. Then you can control the process and not get moisture loss, and you can also go back and make changes on the fly. Of course, that is not always doable, but that's where you sometimes have an advantage with web fed printing and diecutting which are done one after the other.

### Creasing micro flutes

There is a good amount of study currently underway regarding creasing micro flutes. One study on the creasing of paperboard versus micro flute actually revealed much tighter creases on micro flute. Numerous IADD programs emphasize the drive towards very, very tight reduced bead creasing. Although reduced bead creasing initially gained visibility in the 90s, success in this area is key to being able to have micro flute cartons perform at the same level as paperboard in regards to filling and gluing.

### Challenges

As the process becomes more automated and the timeline gets compressed, there is no time to make second guesses. A major struggle diemakers have with being able to influence the carton design is that often by the time the die is ordered, the diecutter has already put a sample in front of their customer and has been given a delivery date when they have to make these boxes. The diecutter feels it makes them look bad to go back to their customer and say they want to make a change in their box, and so the challenge is trying to get it right to start with. This means diemakers need to work with their customers' designers to educate them in advance.

A related problem may lie in the CAD system because most of the designers are bringing up a standard design that may have little offsets in there that we cannot do and they don't change them. It's too much work for them to go in and make these small changes. It might be helpful for diemakers to work with the CAD companies to help them understand this

concept, so they can write programs that take these problems into consideration and automatically change them.

### Conclusion

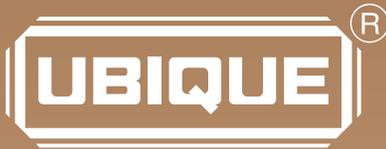
The most important lesson in packaging is to keep your eye on packaging trends, embrace change and use all available resources to move forward.

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With a wide range of equipments for scientific and accurate testing of paper, paperboard, corrugated boards & boxes, Saurashtra stands out as a single window for testing equipments - ably supported by technical backup and prompt service.

Now, Saurashtra also offers equipments for testing plastics and other packaging materials as well as engineering and automobile industry.

## Figures Speak for Precision and Performance !

- Over 50 Years of Experience in Corrugated Packaging
- Over 40 Years Experience in Testing Equipments
- Over 15000 Equipments Supplied in India
- Over 200 Equipments Supplied in International Market
- Over 7000 Satisfied Customers in India and Overseas
- Over 2000 Customers in 400 cities being offered after-sales-service across India

## Other Equipments available

- Specimen Cutter for GSM, Ring Crush & Edge Crush Tests
- Specimen Maker (Flutter) for Concora Medium Test
- Dart Impact Tester
- Torque Tester
- Air Permeability Tester

**All Digital Models are also available with Integrated Computerised Touch Screen Control Panel**

## Box Compression Strength Testers



Measures ability of the container to resist external compression loads during transit and storage. The ultimate test for determining overall quality and performance of the packages.

### Available in:

**UBC1M/1T** - Digital Model

**UBC1M/1T-P** - Microprocessor based Digital Model

**UBC1M/1T-TS** - Fully automatic with computerised touch screen control panel Model

## Bursting Strength Testers



### Available:

2-in-1 Type, Paper Tester & Board Tester in Various models like Dual Pressure gauge model, Digital economy model, Fully Automatic Digital Model, Fully Automatic Microprocessor based Digital Model, Fully Automatic with computerised touch screen control panel.

### Two-in-One Digital Economy Model Paper & Board Tester

- Two Diaphragm Seats
- Digital Indication of readings
- Peak Hold facility
- Manual Clamping

## Crush Tester



Useful for determining Edge Crush, Flat Crush, Pin (Ply) Adhesion of Corrugated Board and Ring Crush and CMT of Paper and Paperboard.

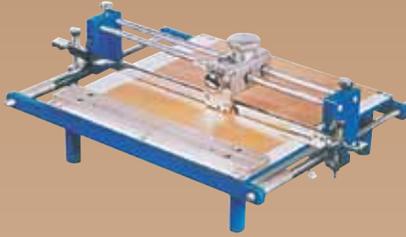
### Available in:

**UCR** - Digital Model,

**UCR-P** Microprocessor based Digital Model

**UCR-TS** Fully automatic with computerised touch screen control panel.

# Conforming to National and International Standards

<p><b>Puncture Resistance Tester</b></p> <p>Gives reliable indication to evaluate fabrication factors along with material values in a composite fashion.</p>  <p><b>Available in:</b>  <b>UPR</b> - Analogue Type  <b>UCR</b> - DIGITAL          Microprocessor based Digital Model</p>	<p><b>COBB Tester</b></p>  <p>Determines water absorption/penetration (cobb value) of paper and paperboard as specified in standards.</p> <p><b>Model: UCOB</b></p>	<p><b>Substance Indicator</b></p>  <p>Measures directly substance of paper, paperboard and other materials in terms of G.S.M.</p>
<p><b>Caliper Thickness Gauge</b></p>  <p>Measures Caliper thickness of variety of materials.</p> <p><b>Available:</b>  <b>UCTG01 &amp; UCTG01-D</b>          With 10mm capacity and least count of 0.01 mm  <b>UCTG001 &amp; UCTG001-D</b>          With 1mm capacity and least count of 0.001 mm  <b>UCTG002-D</b>          With 20mm capacity and least count of 0.001 mm</p>	<p><b>Internal Ply Bond Tester</b></p>  <p>To Determine the Internal Bond Strength of Paper, Board and Laminates</p> <p><b>Model: UIBST</b> Microprocessor based Digital Model supplied with Sample Preparation Station as per the standards.</p>	<p><b>Sample Cutter</b></p>  <p><b>Model: USC</b> for preparing various paper samples for GSM, RCT etc...</p>

## Introducing PAPER MOISTURE INDICATOR

Features	
<b>Pre-set Material Modes</b>	<b>View Saved Reading</b>
<ul style="list-style-type: none"> <li>◆ Paper (4.7- 18.2%)</li> <li>◆ Arbitrary (8 - 100%)</li> <li>◆ Baled scrap paper (6-40%)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Total Reading</li> <li>◆ Min Reading</li> <li>◆ Max Reading</li> <li>◆ Average reading</li> </ul>
<ul style="list-style-type: none"> <li>● Easy to operate</li> </ul>	With Attachments can be used for Waste Paper
<ul style="list-style-type: none"> <li>● Hand held equipment</li> </ul>	Total Memory of 300 readings (100 readings in each mode)
<ul style="list-style-type: none"> <li>● Direct Instant reading</li> </ul>	Low battery Indicator
<ul style="list-style-type: none"> <li>● Back Lit 2 line LCD Display.</li> </ul>	Buzzer sound to alert for out of range readings



**Model: U2100**

Marketed by:



**SAURASHTRA SYSTOPACK PVT. LTD.**

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## The 44th International FCBM Conference. KeralaCBMA puts up a Great Debut Event .

Hotel Le Meridian at Kochi, reverberated to the traditional Kerala drum beats as a precursor to the opening of the 44th FCBM Conference.

The inaugural session had the stamp of a unique distinction of two State Ministers, President of an International Packaging body and one industrialist gracing the inauguration as honoured guests.

The stage was decked up in corrugated sheet lending a unique look to the set up!!



*Inauguration of Smart Pack Expo*



*FCBM MC Meeting*



*Corrugated Creation - House Boat by S. Balavassudevan was a show stopper!*



*Smart Pack Expo*

After the distinguished guests took their seats on the dais, the Presidents of Regional Associations of FCBM were welcomed – escorted by girls carrying the symbols of Associations. A show of unity in diversity!

Mr. Xavier Jose, President, KeCBMA welcomed the distinguished guests and delegates to the Conference.

Mr. R. Suresh, Conference Chairman presented the Thematic Address in his usual Vibrant Style

Mr. P.S. Shah, in his Presidential Address touched upon various aspects - including the activities of FCBM and the current Economic Scenario.

Hon'ble Mr. V. K. Ebrahimkundu, Minister for Public Works, Kerala delivered the inaugural address.

Hon'ble Mr. K. Babu Minister for Excise, Kerala, released the Smart Pack Book – the Souvenir brought out to mark the event.



*Guests of Honour being received*



*Regional Presidents Reception*



*Lighting of Lamp*



*Mr. M. L. Agarwal, Chairman, Conference Technical Committee*



*1st Technical Session*



*Presidential Address*



*Running Machines*



*Keynote Address – Carl Bohm*

Mr. Carl Bohm, President ICCA delivered an inspiring Keynote Address.

Mr. Kochouseph, Chairman, V. Guard Industries, spoke on opportunities for the corrugated packaging industry.

Harlalka Awards and Corrustar Awards were presented by the Chief Guest.

Eminence Lifetime Awards were awarded to Shri. R. Muthaiyah, a veteran of the Industry and to Mr. S. S. Raju another respected personality of our Federation.



*Address by President -Elect*

Mr. M. L. Agarwal orchestrated the Technical Sessions with great dexterity and precision punctuated with humour that lightened the moments.

**There were 5 Technical Sessions spread over 3 days.**

Each session had a unique theme with subjects focusing on various aspects of the theme of the session.

The impressive lineup of speakers, the in-depth presentations, the incisive



*Mr. Kochouseph addressing the delegates*

Presentation of Award to Smt. Sharada M. Rajendran (Mother of Mr. R. Suresh) was a touching moment. The citation, praised Smt. Sharada Rajendran on the distinction of being the first person to start the corrugating industry in Kerala – way back in 1950.

interactions and the innovative solutions offered made the sessions interesting and beneficial to all participants.

Eminent experts from India and abroad held interesting panel discussions and interacted with participants.

The evenings regaled the delegate with delightful music and dance. The fraternal feelings among the delegates were strengthened in the get togethers.

The Corrugated Fashion Show – a brain child of Mr. Dhaarmendra Pandya was a super hit.

**Smart Pack Expo**

Running Machines, International exhibitors, stalls Spread over 3 covered Halls, in the conference venue and serious business visitors, made the Exhibition humming with vibrancy.

The Smart Pack Expo was organized in a professional way with good facilities for exhibitors and visitors.

**Lifetime Eminence Awards**



*R. Muthaiyah receiving the award on behalf of K. Ramasami*



*MVM Bharat receiving the award on behalf of S.S. Raju*



*Smt. Sharada Rajendran*



*Harlalka Award to Mr. Ramchand Arora*



*Inaugural Address by the Chief Guest*



*B. K. Dosbi Award to Micro Engineers*



*Corrustar Winner*



*Release of Smart Pack Book  
- The Souvenir*



*B. K. Dosbi Award to  
Mr. Dharmendra Pandya*



*Corrustar Winner*



*Section of Audience*



*Appreciation Plaque from Reed Exhibitions to FCBM*



*Vote of Thanks - Mr. I A Peter*

### 3 days – 5 Power Packed Technical Sessions – 21 Eminent Speakers



*Some of the speakers*



*Cultural Programmes*

*Corrugated Fashion Show*





## Corrustar Award Winners 2015

- Consumer Pack** - Akshar Printing & Packaging Works, Kolkata
- Material / Fittings** - Latha Industries, Chennai
- Transport Pack** - Devashish Food Pack & Research Pvt. Ltd., H. P.
- Innovation Pack** - Latha Industries, Chennai
- POP Display** - Packers Products, New Delhi
- Best Printing** - Eskay Cartons P. Ltd., Chennai

## Annual General Meeting



*Congratulations & Jubilations!*



*Change of Guard*



*The Presidents!!*



*Galaxy of some of the Past Presidents*



*New Team FCBM 2016*

At the 43rd Annual General Meeting of FCBM, the change of guard took place with all the cheer and celebration associated with the event.

Mr. N.X. George took over as President for the year 2015 -16

FCBM Team 2015-16	
<b>N. X. George, President</b>	
<b>Greesh Sardana, Vice President I</b>	<b>Pradip Bosmaya, Vice President II</b>
<b>Bharat Parekh, Hon. Secretary</b>	<b>Vinay Patel, Hon. Treasurer</b>

# Thematic Address



Mr. R. Suresh

I have great pleasure to welcome you all to this 44th FCBM Conference at Kochi, the queen of Arabian Sea.

We the members of Kerala Association are very much thrilled and happy to receive the stalwarts of corrugated industry in India and also from USA, China, Germany, Malaysia, Dubai and also from Japan and Sri Lanka.

This is the first time in the history of Kerala Association in its 36 years of service we have got this opportunity to host the Conference.

The theme of the Conference is **“Packaging for Tomorrow, Futuristic Ideas and Solutions”** which is quite relevant for the development of the packaging industry. To sustain in this industry and to develop further we have to think about future plans in a systematic manner adopting latest technology and also find out solutions for our problems.

We have arranged 5 Technical Sessions with maximum number of panel of faculties with different subjects. We have also very efficient and very able and enthusiastic faculty who are all well versed in the packaging technology. I greatly appreciate Shri M. L. Agarwal who is our Advisor for the technical seminar. He was instrumental in selecting apt subjects and organizing faculty.

I also remember with gratitude the timely assistance rendered by our great President, Shri P. S. S. hah. Our President-Elect, Shri N. X. George was behind all these arrangements.

We have also arranged Packaging Exhibition ‘**Smart Pack Expo**’ with the support of Buy Sell, Chennai.

The leading packaging machinery manufacturers in India and abroad are participating with their machines. I thank Mr. Ravi and his team for their dedication in organizing the Exhibition.

As we all know the corrugated industry is on the verge rapid changes. We must realize that the market for packaging production have undergone dramatic transformation. More attention is to be bestowed in creating innovative designs to suit the present day packaging needs.

Let us hope the year 2016 will be brighter compared to the current year.

We have to work hard under the umbrella of our great Federation to bring more harmony, oneness, co-operation and betterment of the packaging industry. We have got to think about the Packaging for Tomorrow an finding new ideas and solutions.

I thank each and every one who is participating in this great event.

I wish you all a very interesting and enjoying annual conference.

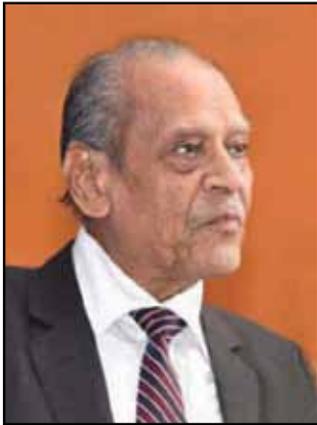
## The Innovative Desk Top Convenience by ACME

The pack itself unfolds to a neat desktop pen and paper holder. Tear-off paper pad, and Post-its are neatly placed.

Congrats to Acme Machinery Co., Mumbai for this simple and useful compliments at the Conference.



# Presidential Address



**Mr. P. S. Shah**

Respected Chief Guest, Shri V. K. Ebrahimkundu, Hon'ble Minister For Public Works, Govt. Of Kerala; Mr. Carl Bohm, President, International Corrugated Case Association; Shri Kochouseph Chittilapally, Chairman, V Guard Industries; Conference Chairman, Mr. R. Suresh; President - Elect Mr. N. X. George; President of Kerala Corrugated Box Manufacturers' Association, Mr. Xavier Jose, my colleagues on the dais, distinguished speakers, invitees, delegates, exhibitors from India and abroad, our valued customers and suppliers, friends from media, Ladies and Gentlemen.

We are indeed grateful to Shri V. K. Ebrahimkundu, for gracing this occasion as Chief Guest and thankful to him for his vision, which we will share on how we can move ahead with "Packaging for Tomorrow."

We are also thankful to Hon'ble Shri K. Babu, Minister for Excise his gracious presence at this Conference.

We are also happy that Mr. Carl Bohm, President ICCA, who is with us today will be delivering the inspiring Keynote Address.

Our grateful thanks to Mr. Kochouseph Chittilapally our Guest of Honour, for his presence here.

FCBM and KeCBMA places on record their grateful thanks to all these eminent personalities for their enhancing the glory of this inaugural event by their esteemed presence.

Good Evening to all of you and very warm and hearty welcome to Kochi – God's own Land.

As President of FCBM, an apex body of India's Corrugated packaging Industry with 12 Regional Associations and over 2200 members across the Country, it is my pleasure & privilege to address you, on this inaugural function of the conference having a most appropriate theme "Packaging for Tomorrow – Futuristic ideas and solutions."

I would like to convey my deep appreciation for the admirable efficiency and warm welcome by the Conference Committee Chairman Mr. R. Suresh and his team.

## The Federation

Our Federation was formed with certain objectives. The first and foremost, it acts as a spokesperson of the Industry and effectively represents issues to concerned authorities. For the betterment and growth of our industry, it encourages and initiates Research & Development in corrugated packaging.

FCBM believes that outcome of research should not be confined to Research Laboratories, but shared with members to help them in innovation & research.

Several publications such as the Practical Standards for various Test Methods, Proceedings of the Technical sessions of Conference and Industry surveys have been brought out by FCBM and circulated.

The Federation confers Awards presented annually for excellence in corrugated packaging



FCBM publishes a quarterly magazine "The Corrugator" which covers the activities of the Regional Associations & the Federation itself, besides the informative articles on our industry by learned authors throughout the world.

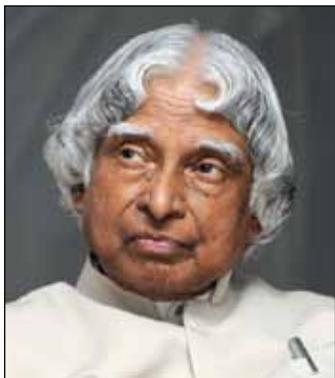


The Federation works to create healthy fraternal feelings among members by supporting growth of Regional Associations. It extends financial support to member associations to organise seminars and Workshops to educate the members and to attract the young talented persons to the Industry and equip them with the knowledge, information and wisdom suitable for the industry

For the organization to move forward, we must march and progress in unity and solidarity.

As President of the Federation and staunch follower of positive approach, I wish to quote Late Hon'ble A. P. J. Abdul Kalam.

*"That since wars begin in the minds of men it is in the minds of men that the defences of peace must be constructed"*



I think peace finds its root in friendship while the basis of friendship among members lies in mutual respect, understanding & tolerance.

As President of the Federation, I have followed the principle of mutual respect and equality for the future development of the organisation.

### Activities during the year

Our member Regional Associations have conducted Seminars, Courses, and Workshops during the year for the benefit of members. The highly successful WICMA Symposium at Goa had Mr. Francisco D'souza the Dy. Chief Minister of Goa as Chief Guest.

A record - breaking number of delegates visited "Sino Corrugated – 2015" exhibition at Shanghai, China and showed keen

interest in the latest technologies with live demonstrations of new machinery and equipment. A unique event took place on 15th April 2015 at Shanghai-China when the organisers of Exhibition M/s. Reed Exhibition hosted "India Day" in honour of the huge delegation from India.

The Federation joined the International Corrugated Case Association as member last year. This year Mr. M. L. Agarwal, Mr. Anil Reddy & Mr. M. V. M. Bharat attended the ICCA Global Summit and Board Meeting at Shanghai & Taipei. We were honoured to have Mr. Carl Bohm, President, International Corrugated Case Association, and Mr. Dennis Colley, President Fiber Box Association join us during the APCMA Golden Jubilee Celebrations held in June this year.

An initiative launched and hosted by APCMA and supported by the Federation's Paper Mill Co-ordination Committee, was



the ICCL (India Corrugated & Cardboard league) Match - for the first time, a cricket match between Paper Manufactures and corrugated Box Manufactures was held, followed

by a buyer-sellers meet on the next day, where considerable number of Paper Manufactures met FCBM members and discussed problems faced by each other in a pleasant and cordial atmosphere.

The Federation, through its Paper Mills Co-ordination Committee has been over the last few years, trying to get Paper Mills to issue Test Certificates with every consignment of kraft paper certifying adherence to set quality parameters. The constant efforts and follow-up by the PMCC and APCMA resulted in a pioneering achievement. Tirumala Venkateshawara Paper & Board Mill, Telangana installed a linear measurement system and I had the opportunity to inaugurate their system. This is a major



achievement by PMCC in its efforts to get Test Certificates from Paper Mills. This is just the beginning & I hope others will soon follow suit.



Federation supported and participated in INDIAPACK 2015 exhibition organised by IIP. The FCBM stall generated a lot of interest. I thank the members of Kerala Corrugated Box Manufacturers' Association, who personally manned the stall and created awareness about our product.



## Economic Scenario

Under the current scenario India has a greater opportunity to become an attractive investment destination.

The 12 slot jump in India's ranking in the World Bank's Ease of doing business survey has come as a shot in the arm for the Narendra Modi – led Government, which is, battling to revive growth, attract investment and remove the regulatory and bureaucratic hurdles to business. To support these efforts, a 10-member panel has been formed to simplify the 50 years old Income Tax Act, a move aimed at ensuring certainty in tax policy for ease of doing business.

Mrs. Nirmala Sitaraman, Minister of State for Commerce and Industry has specified that the Government is taking all possible measures to promote exports by Small & Medium Enterprises. All the possible help for technology up gradation to MSMEs will be provided.

The turbulence in market seems to be settling down. India is in a strong enough position not to be unduly affected by global instability. We are strong in fundamentals and despite any temporary ruffles the outlook on Indian economy continues to be strong and positive.



The World Bank says India, now the world's fastest economy is relatively well positioned to weather the global volatility. The latest India development's update expects India's economic growth to be 7.5% in 2015-16. The softer oil prices together with the structural reforms have also given boost to domestic demand.

India has seen a whopping 21% increase in the wealth over the last 15 years – much higher than the US, UK, Japan, France, Germany or Brazil.

We are conscious of our challenges and are fully confident of leading in packaging in the near future. We do this with commitment to our future.

## About the Industry

The demand for paper & paper board has been increasing, which helped to offset the rising cost of production. This spurt in demand stems from India's all round industrial development, which has prompted some foreign industrial giants to acquire the Indian paper mills.

There is a general consciousness on quality up gradation in our industry. With more and more new educated enterprises entering the industry the emphasis on quality and productivity is on the increase.

If we update ourselves to keep up with changing circumstances and the changing world with new generation-ideas and values, we will have an opportunity to be more creative & productive than ever before.

Let us step up right from now and get ourselves prepared to meet any demand in future with advanced technology and in – depth knowledge and open up R&D centers & lab in all our Regional Associations. I know many of them have already got R&D centers and are working amazingly in the interest of their members, but those who are still thinking should hurry up because it is the demand of the day.

## Conference

The 3-day FCBM Conference is an interactive platform for business & industry to deliberate the key issues concerning the corrugated packaging sector. The theme for this year is "Packaging for Tomorrow – Futuristic Ideas and Solutions". The learned speakers at the technical sessions will impart knowledge that will equip you to face the challenge of not only keeping up but also emerging as victors in the race for progress.

I am sure that business pre-occupations will not keep you from enjoying our splendid surroundings and the warm hospitality of our Hosts, Kerala Corrugated Box Manufacturers Association and you will take back with you beautiful memories of your sojourn in God's Own Country.





MPCBMA Meeting together with M/s. Gayatrishakti Paper & Boards Ltd. Customer Meet on October 3, 2015

MPCBMA held its meeting on October 3rd, 2015 and discussed on various topics like present scenario of the industry, reducing business, realization from customers, kraft paper prices, new membership drive to achieve 76 members'. M/s Gayatrishakti Paper & Boards Ltd, Vapi together with M/s Jigar Trading Co., Mumbai held their customer meet followed by dinner.



In fact lots of members were interested in doing such session in their cities so members from that particular city will get benefited.

The Know Your Industry Session with Wastage Control Mechanisms as Subject held on 28th November 2015 at Keys Hotel, Pune, went really well. We got great response as more than 50 participants attended the session.

The session was divided in two parts, one part was taken by Mr. Pankaj Shah and other covered by Mr. Ramkumar Sunkara. It was largely an interactive session. Participants gained immensely from the session.





SICBMA organized a trip to Thailand to the “PACK PRINT INTERNATIONAL 2015”, at Bangkok between 26-29 August.

A total of 40 members travelled to the Exhibition. For travel costs, SICBMA applied to MSME and received an in principle sanction of Rs. 5 Lakhs.

The trip was marked with interaction meeting with members, Exhibition visit, Paper Mill visit etc.. and was well received and appreciated by members.

Continuing on their “Grow Together” theme, SICBMA held a friendly cricket match, the “SICBMA CRICKET LEAGUE” in which members from SICBMA and the Tamilnadu Kraft Paper Mills Association participated with their families.

The event was well attended and saw enthusiastic participation from Paper Mills Association.

In the evening after, the participants with family enjoyed the SICBMA CARNIVAL.

The event was held at Korattur Lake View on 9<sup>th</sup> August 2015.



SICBMA Team at Pack Print



SICBMA CRICKET LEAGUE



### Presentation of Lifetime Achievement Award



Mr. Santosh Lath

The 42<sup>nd</sup> Annual General Meeting of SICBMA was held organised on 10<sup>th</sup> October 2015.

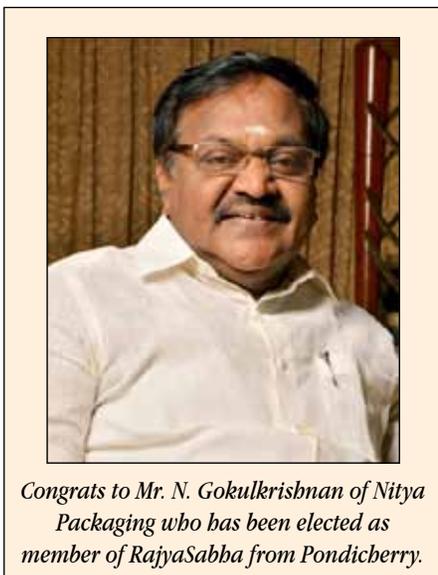
A Technical Seminar was organised and SICBMA Lifetime Achievement Awards were presented to 3 veterans of the Industry.



Mrs. Prabha Manjunath



Mr. Durai Babu



## OBITUARY



It is with great sadness that we inform readers about the demise of Shri. S. S. Raju on 15th December 2015.

Mr. Raju entered the field of Corrugated Packaging in 1962. He was a pioneer in Andhra Pradesh and one of the early starters across India.

He was also one of the very few to start Automatic Corrugated Plant in 1972.

He was founder member of Andhra Pradesh Corrugated Box Manufacturers' Association and also of FCBM.

He was instrumental in the Hyderabad branch of IIP being setup and nurtured it like his baby. He was a very active Rotarian from 1963 till his death.

In addition, he served as President of Federation of Andhra Pradesh Small Scale Industries Association and as Managing Committee Member of Federation of Andhra Pradesh Chambers of Commerce & Industries.

A veteran of the highest order, vibrant and friendly Raju had always made his presence felt and was vociferous about preserving the unity and sanctity of our Federation.

At the recent Kochi Conference KeCBMA had felt it a privilege in honoring Shri S. S. Raju with Lifetime Eminence Award.

Every one in FCBM will miss Raju – whose absence can never be filled.

We pray for his soul to rest in peace.

**-- Editors**

**Readers are requested to intimate change of address of their companies to ensure that The Corrugator reaches them properly and not returned by the courier.**

**Please intimate change of address along with Pincode to FCBM office**



# Keynote Address – at Kochi Conference

He began his presentation saying that the key point he wanted to make was how well India is doing in the economic sphere and the tremendous opportunities India has for its Corrugated Packaging Industry

## ICCA Introduction

- The International Corrugated Case Association or ICCA has been serving the global corrugated packaging industry continuously for over 54 years
- Founded in 1961 by the executives of the Fibre Box Association (U.S.) and the European corrugated box association, FEFCO
- Today, ICCA is comprised of members from the global corrugated industry including
  - India (FCBM, ICCMA)
  - Canada (CCCA)
  - U.S. (FBA, AICC)
  - Latin America (ACCCSA), Brazil (BCCA), Coast Rica
  - Europe (FEFCO)
  - Japan (JCCA), Taiwan (TCCA) and Korea (KCCA)
  - S. E. Asia (ACCA) and Australia
- Primary purpose is to promote corrugated packaging and address industry related issues world-wide
- ICCA also collects corrugated statistics by country and produces a five year global corrugated forecast for its members
- ICCA and the World Containerboard Organization (WCO) organize a bi-annual, executive-level containerboard and corrugated packaging summit.
  - The 2015 Global Summit was in Taipei and Shanghai
  - The next Global Summit will be in Brazil in 2017 and hosted by Klabin



Carl Bohm, President  
International Corrugated Case  
Association (ICCA)

## 2015 ICCA Global Corrugated Forecast

Confidential Report Prepared by Freedonia Custom Research, Cleveland, Ohio

Distributed to the Members of the International Corrugated Case Association (ICCA)



## ICCA Helped to Develop the Corrugated Common Footprint



Cont. on - 63



## ICCA Created and Owns This Trademark

- Corrugated Recycles symbol is trademarked
- It is widely used in the corrugated industry



Auto feed Four Colour Flexo  
Printing, Slotting & Creasing Machine



Semi - Auto Gluing Machine



Flute Laminator



Chain Feed Rotary Creasing  
& Slotting Machine



Chain Feed Rotary Die Cutting Machine



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A unique combination  
of expertise & innovation

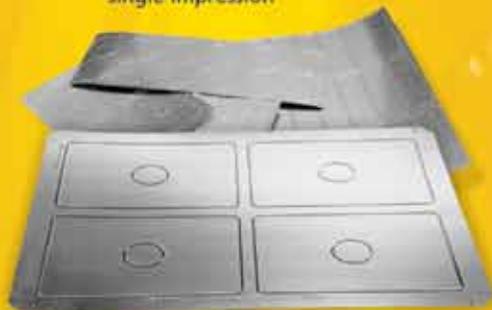
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  - Rotary Dies  
For all corrugated cartons
  - Flat dies  
Stripping dies  
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Pertinex Counter Dies  
Special-Steel Counter Plates  
For folding cartons & e-flute cartons
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(Male & Female)
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  - Embossing Blocks  
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The new technology involves innumerable number of innovative techniques to improve the die quality. Immaculate computer aided designing, precision laser cutting, optimum knife joints, perfect rule fit in the Die board, perfect ejection rubber are just a few quality features to mention.

#### Raw Materials

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#### Quality

The emphasis is on dimensional accuracy, high cutting performance and long life of the Die for more number of impressions. German technology & training, highest quality standards of raw materials, highly skilled technical man power contribute to an unparalleled perfection and innovation in Die making.

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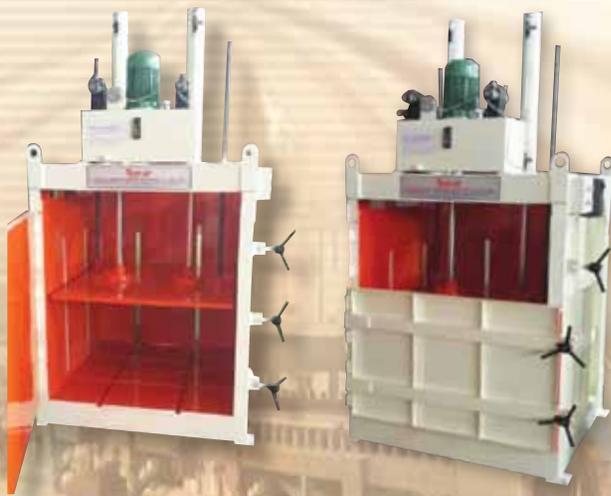
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### Introduction, Approach and Method

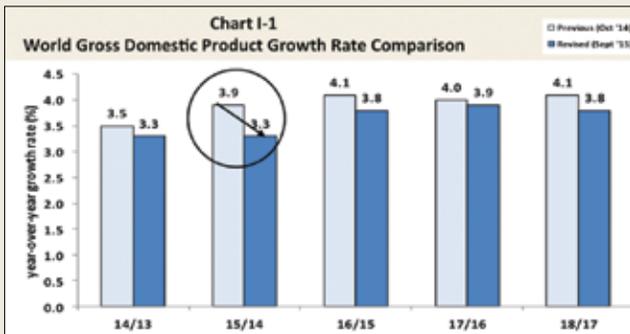
- Freedonia Custom Research conducted primary and secondary research for this forecast
- Statistics are reported for both corrugated production and demand across all global regions and in-scope countries (U.S., Canada, Europe, India, Japan, China, etc)
- Economic forecasts were developed from a consensus of such agencies as the International Monetary Fund, World Bank, OECD and European Commission
- Industrial production data were sourced from Oxford Economics
- The scope of this study included all of the major corrugated regions around the world

### Section I

#### Global Economic & Manufacturing Overview

- **Global Economic Overview**
  - World
  - North America
  - Europe
  - Central & South America
  - Asia
  - India
- **Manufacturing Overview**
- **Economic Risks**

### Gross Domestic Product – Worldwide



**World real GDP growth (ie, inflation-adjusted) has been revised downward**

- Falling oil prices will benefit oil-importing countries while impacting oil-producing countries
- An economic slowdown in China has reduced demand for commodities world-wide
- The US Federal Reserve is expected to raise interest rates for the first time since the global recession, leading to a reduction in investment in emerging countries

### Gross Domestic Product – North America



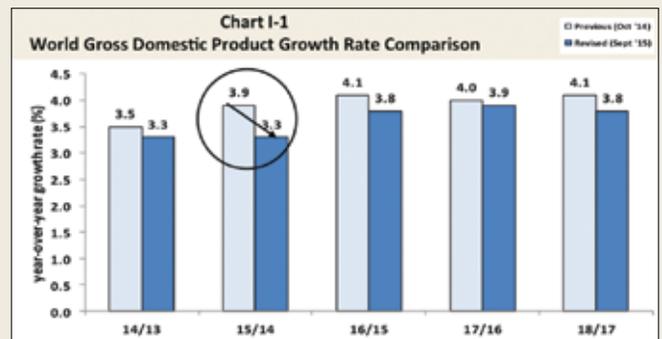
**Growth in North America is expected to be more gradual than previously forecast, at 2.6% per year from 2013 to 2018, reflecting a change of -0.5% from the 2014 GCF**

- US activity was weaker than expected as a result of sharp declines in capital investments
- These factors have had a significant impact on the 2015 forecast, but improving consumption and investment should continue in the near-term

### Manufacturing Environment – U.S.

- Although North America continues to experience economic growth in most sectors, a strong US dollar and weak investments in oil have led to a downward revision in the near and long-term forecasts for manufacturing
- Forecasted growth in industrial production for 2015 has been revised substantially downward, from 3.5% in the previous forecast to 1.5% currently
- In the long-term, industrial production is still expected to grow 3.1% per year through 2018, reflecting a change of -0.5% from the previous forecast.

### Gross Domestic Product – Europe





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### Gross Domestic Product – Europe

In Europe, the 2013 to 2018 annual growth rate was revised downward for 2015

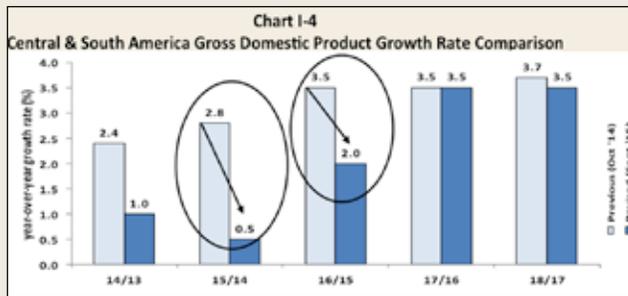
- A weakened euro will support exports and has led to an upward revision in some European countries
- Continued geopolitical tensions over the conflict between Russia and Ukraine, coupled with low oil and commodity prices, have caused a contraction in Eastern Europe's GDP and a downward revision in the near-term forecast

### Gross Domestic Product – Asia/Pacific

In Asia/Pacific, the GDP forecast has been revised downward slightly, largely due to China

- Many years of rapid growth in China have led to
  - Overcapacity in the industrial sector
  - A bubble in the housing sector
  - High debt and high bad-debt levels
  - A stock bubble that burst in August
- In India, the economy has performed better than expected over the last year, especially as tightening of monetary policy has reduced inflation and increased disposable incomes

### Gross Domestic Product – C&S America



Central & South American GDP has been revised downward significantly for 2015 and 2016.

- Caribbean countries have benefited from the US recovery but most of S.A. remains in economic turmoil, with falling oil and commodities prices leading to a significantly lower near term outlook
- In Brazil, the region's largest economy, a corruption scandal involving Petrobras, large fiscal deficits and increasing inflation have reduced consumer & investor confidence
- Argentina and Venezuela's economy affected by commodities, oil and political issues

### Indian Economy

Key Indicators	2015/2014	2016/2015	CAGR 2018/2013
India's GDP	+7.20%	+7.60%	+7.30%
India's MVA**	+7.60%	+7.80%	+7.00%
India's Industrial Production	+4.90%	+6.60%	+5.00%

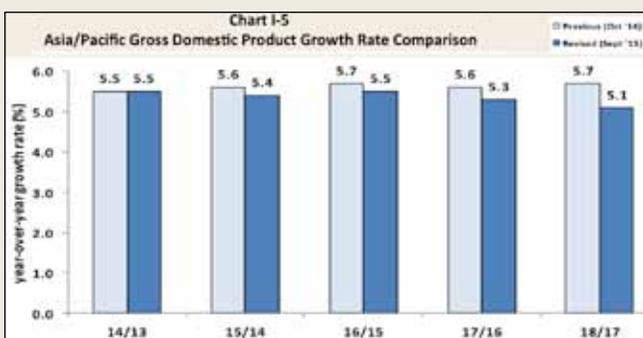
Source: Freedonia Custom Research

\* GDP=Gross Domestic Product

\*\*MVA=Manufacturing Value Added

- The near-term growth outlook for India's economy is very positive given the global economy
- India's economy is performing better than all other developed and emerging countries' economies

### Gross Domestic Product – Asia/Pacific



### Median Forecast of Macro-Economic Indicators: Source-Reserve Bank of India-November 2015

India's Key Indicators	2015-2016	2016/2017	Average Growth Rate
Real GVA	+7.40%	+8.00%	+7.70%
Agriculture & Allied Activities	+1.50%	+3.00%	+2.30%
Industry GVA	+6.70%	+7.20%	+7.00%
Services GVA	+9.00%	+9.80%	+9.40%
Money Supply	+12.00%	+13.50%	+12.80%
Bank Credit	+12.50%	+14.20%	+13.40%
CPI Combined Headline Inflation	+4.90%	+5.40%	5%

- "The Indian economy is expected to grow around 8% in the next 10 years on average while the CPI headline inflation is likely to fall below 5%"
- By any economic standard, India's economy looks like it has a bright future

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### Economic Risks Affecting the Global Forecast

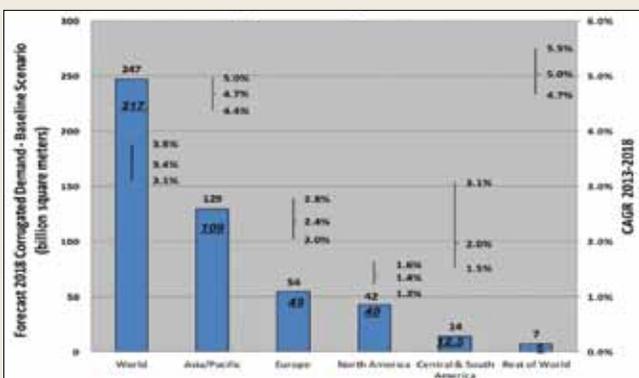
- Slower economic growth in China (below 7%) negatively impacts the global outlook for economic growth
- The U.S. Fed raises interest rates either too early and/or too quickly impacting economic growth and capital flow
- Oil and commodity prices falling to low levels affect oil and commodity producing economies
- Turmoil in the Middle East, Ukraine and Greece could destabilize growth
- In Central and South America downside risks result from weak economies, falling commodity prices and scandals

### Global Economic Outlook Summary

- Slower global economic growth is expected in the future
- U.S. expected to continue to enjoy positive economic growth in the manufacturing sectors albeit at lower levels
- Oil prices are expected to remain moderate due to the subdued economic outlook and China's reduced demand
- Commodity prices for such things as iron, copper, aluminum and other metals remain low in the near-term
- The Fed's actions is being closely watched and they are expected to take only modest actions—perhaps as early as December 2015 or early next year

### Corrugated Market Size & Forecast World – Demand Outlook by Economic Scenario

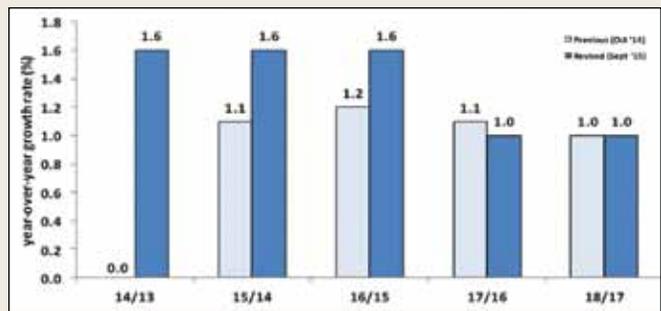
Chart II-1  
World Corrugated Demand by Economic Scenario



XX% High Growth Scenario  
 XX% Baseline Growth Scenario  
 XX% Low Growth Scenario  
 (CAGR 2013-2018 right axis)  
 Xx represent 2014 demand #'s

### Corrugated Demand Growth – North America

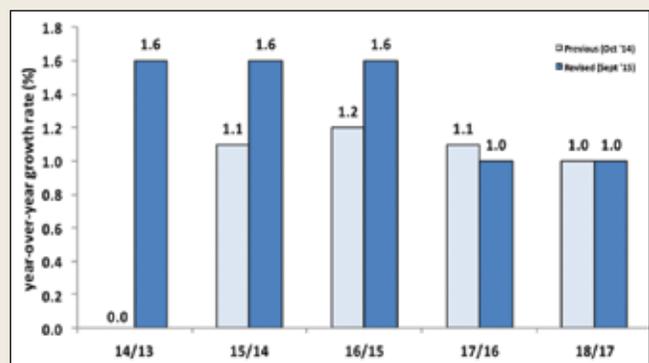
Chart II-2  
North America Corrugated Demand Growth Rate Comparison



- Demand in all three N.A. countries (Canada, U.S., Mexico) performed better in 2014 than previously forecasted
- Although the outlook for U.S. mfg is less optimistic this year, food and beverage and personal consumption are strong resulting in an upward revision in the U.S. forecast
- A slowdown in Mexican food and beverage manufacturing and low consumer expenditures have led to a downward revision in the forecast for corrugated demand in Mexico

### Corrugated Demand Growth – Europe

Chart II-3  
Europe Corrugated Demand Growth Rate Comparison



**Overall corrugated demand in Europe performed as expected with demand in France, Italy, Spain and the UK outperforming the previous forecast**

- Conversely, Germany fell well below target, with demand contracting 1.6% in 2014
- Italy and Spain have seen strong improvements to their food and beverage manufacturing outlooks, leading to upward revisions to their long-term corrugated demand forecasts
- Manufacturing in other European countries has been strong despite current economic challenges

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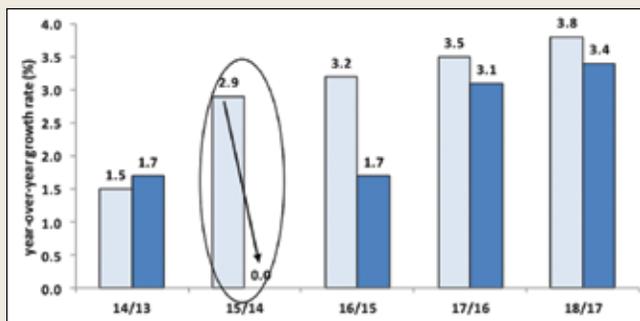
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### Corrugated Demand Growth – C&S America

Chart II-4

Central & South America Corrugated Demand Growth Rate Comparison



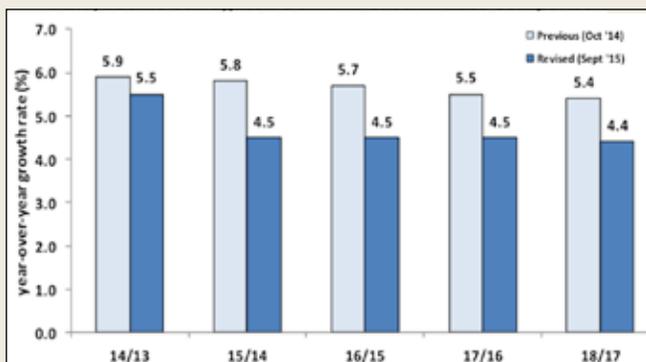
#### Demand for corrugated in Central & South America has been revised downward significantly for 2015

- Falling demand for commodities and high inflation in the Brazil, Argentina and Venezuela have halted investments and consumer expenditures
- Demand for corrugated in the Caribbean and Central America will be the bright spot, benefiting from exports to the US

### Corrugated Demand Growth – Asia/Pacific

Chart II-5

Asia/Pacific Corrugated Demand Growth Rate Comparison



#### Asia/Pacific 2014 demand overall was weaker than previously forecasted – growing 5.5% over 2013

- The slowdown in China will decrease the near-term forecast for corrugated demand in the entire region during 2015
- Both Australia and Japan showed stronger growth
- India's corrugated growth while challenging in 2014 is forecast to improve in the near term

### India's Corrugated Mkt Size & Forecast

Corr Mkt	2014	2015	2016	2017	2018
India*	6,503E*	6,800F	7,230F	7,700F	8,155F
% Growth	1.60%	4.10%	6.30%	6.50%	5.90%
China*	61,000E	65,135F	68,710F	72,335F	76,060F
Japan*	13,650A	13,575F	13,750F	13,885F	13,980F

\*Stated in Millions of Square Meters

\* Estimates for India's corrugated market range from as low as 5.5 million tons to ICCA's higher estimate of 6.5 million tons based on a survey taken in 2013 by ICCA

India's growth and corrugated growth forecast is higher than last year due to the stronger economic growth being forecasted

"India's rapidly growing middle class consumer market is estimated to become the biggest in the world by 2030" Source: The Economist, October 2015

### India's Key Market Demand Segments

	2014	2015	2016	2017	2018
Food & Bev MVA *	129	140	153	165	178
% Growth		+8.50%	+9.30%	+7.80%	+7.90%
Personal * Consumption	4,245	4,527	4,839	5,215	5,605
% Growth		+6.60%	+6.90%	+7.80%	+7.50%

If India's growing middle class is anything like the rest of the world, the need for corrugated packaging has the potential to grow even faster

### Closing Messages

- Uncertainty characterizes economic outlooks around the world with China having downside potential
- Global corrugated demand is expected to grow 3-3.5% through 2018
- Despite low, slow growth, the U.S. is doing better economically than many regions around the world
- India has one of the best corrugated growth forecasts
- India's improving economic outlook and growing middle class consumer will favorably impact corrugated demand growth in the long-term
- The challenge for India's corrugated companies will be how to capitalize on the improving economy and the growing middle class consumer

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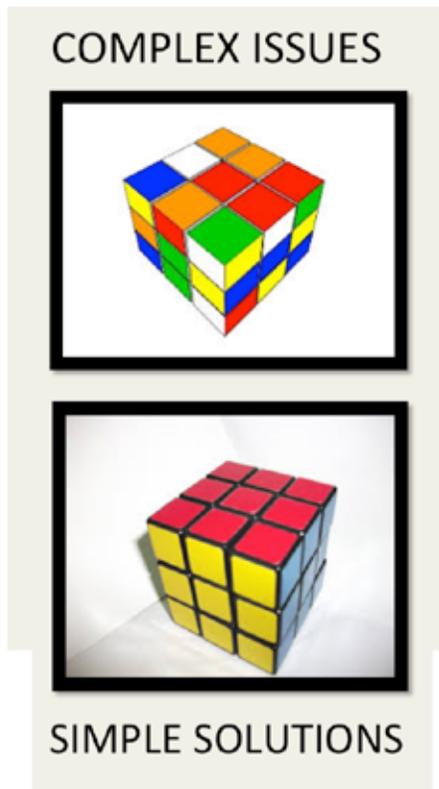
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# Mantras of Business Evolution

Every issue we have seen is a complex issue. And how do we go about solving those issues is to simplify those issues. Today we are talking about how we can simplify things so that they can be done.



A complex issue is personified by Rubik's Cube. There are so many ways to solve this puzzle. Number of solutions have come. Each one had been what was comfortable for the person who is solving it. What is important is every complex problem has a simple solution and the solution is an individual solution. It cannot be a generalized solution because a generalized solution can be an option. It cannot be the solution.

I am going to explain how we go about changing the concepts to bring in the change.

First thing is to conceptualize customer centric concepts. That is the key to actually bridging the gap between the vendor and

the customer.

Let us take the instance of coffee. There is a chain called India Coffee House. It was one of the places where the city's irrespective cast creed, social status right from students to businessman, a politician to a journalist, everybody converged on that point and it became a meeting point. India coffee house had deep penetration all over the country and suddenly it went out of scene, that is when the chain lost contact with the customer. A strong brand name like India coffee House could lose contact with the customer, because their customer centric approach was lost. With that particular thing you need to do is like what has happened in the recent past. Café Coffee Day, Costa Coffee, Barista etc. all have come into the country. Now they have brought out a new concept where they can relate to the customer and it is a booming business.

A cup of coffee which could sell for ten rupees somewhere now calling for 250 rupees – and it sells and sells as hot cakes. That is what we have to look at. How do we become customer centric. Each industry has its own customer and its vendors.

For this, the industry has to become a driver, to identify how do we become customer centric and bridge the gap until and unless you don't drive across what you want, where you want to reach, it is difficult to survive. That is the key we are going to be talking about.

The second example is oxygen. I have taken the example of oxygen because we don't even realize that we are inhaling



Abhay Bhargava

oxygen because it is taken for granted, the more we take it for granted, the situation becomes that it has no value.

Since we are born, we are inhaling and till the time we live we will be inhaling. The situation changes when it becomes difficult to breath. We look at a packed oxygen in a cylinder and that is where the value addition comes in. The second example tells us that it is need based and it is a driven market.

There is a two-kind situation – you are a driver and the other is when you are driven by it. The combination of both is the key for moving forward in any kind of business.



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- No drying time required
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- Reduces ink, electricity cost substantially
- Variable speed drive
- Can operate both with spirit-based and water-based inks

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The industry's survival depends basically on two issues – one is - if you are customer centric and that is being a driver and the second is when you are driven, that is the need based. Now I will get more specific about corrugated box industry. I did go through the industry's perception how it is doing and what are the things, I did a little bit of research, and I found the challenges, the issues faced by the industry and I had the opportunity of talking to some people from the industry and I realized that there were three major issues, challenges faced by the industry. It is a paradox. The paradox is while on one side you have a growing market, above average growth in the industry and on the other side there are shrinking profits.

The causes are easy entry, because it is low cost investment to start this business and there are lot of people coming into the industry creating a kind of mushroom growth, which leads to

## CHALLENGES



unhealthy competition which results in price cutting and the third one is all this leads to shrinking of margins. An industry which is faced with shrinking of margins irrespective of whatever you do, you need to break out of competitor, beat the competition rather than trying to be part of that competition.

Here I would like to talk about the mantras for business evolution. It is a general mantra for all the industries. But specifically about the corrugated industry, there are five of them.

## MANTRAS OF BUSINESS EVOLUTION

- Introspection
- Market Trends
- Challenge the Conventional & Seek the new
- Invest in Intangibles
- Resources



### INTROSPECTION



The first is **introspection** – is the key for knowing what we need to do. The second is **market trend**. Look at the market trends.

The third is **challenge the conventional & seek the new**. The fourth is to **invest in intangibles** and fifth is the **resources**.

We have always heard the word 'Mana'. Until & unless we do not introspect, it is very difficult to know what are we doing. The introspection is in the market, location and technology. Which is the market we are catering? We have to identify which is the market, we are catering, who are the customers. By market I mean customers. Are these customers part of growth sector? What is the potential of these customers? Our growth depends on these customers, so are these customers where I am in the Growth Sector? Will I have my future prospects with them in that particular segment?

Now comes product range. The speaker from HP showed us a slide – on one side there are cluster of boxes and on the other slide there is a colourful fancy looking

boxes. That was the slide where he talked about innovation and product range.

Are we in that product range? Do we have that capability to make such product to meet the future requirements? Can we have the products for the future? Here is a slide showing futuristic ideas, we have to be on line with that and that's the key. Because until and unless we do not evaluate, we can not decide on our product.

This is a continuous process. We have evaluated that this is going to be the product which is going to be the future. Now, we ask our selves, - do we have the product to meet the future requirements.

Location plays a very important role as far as the market is concerned. There is a recent case study which shows the location has shown that recovery of eight years could be made up in eight months. This case study is from your own industry.

So the question is where are you located? One will have to see where we are located. Can we cater to the market we are looking at?

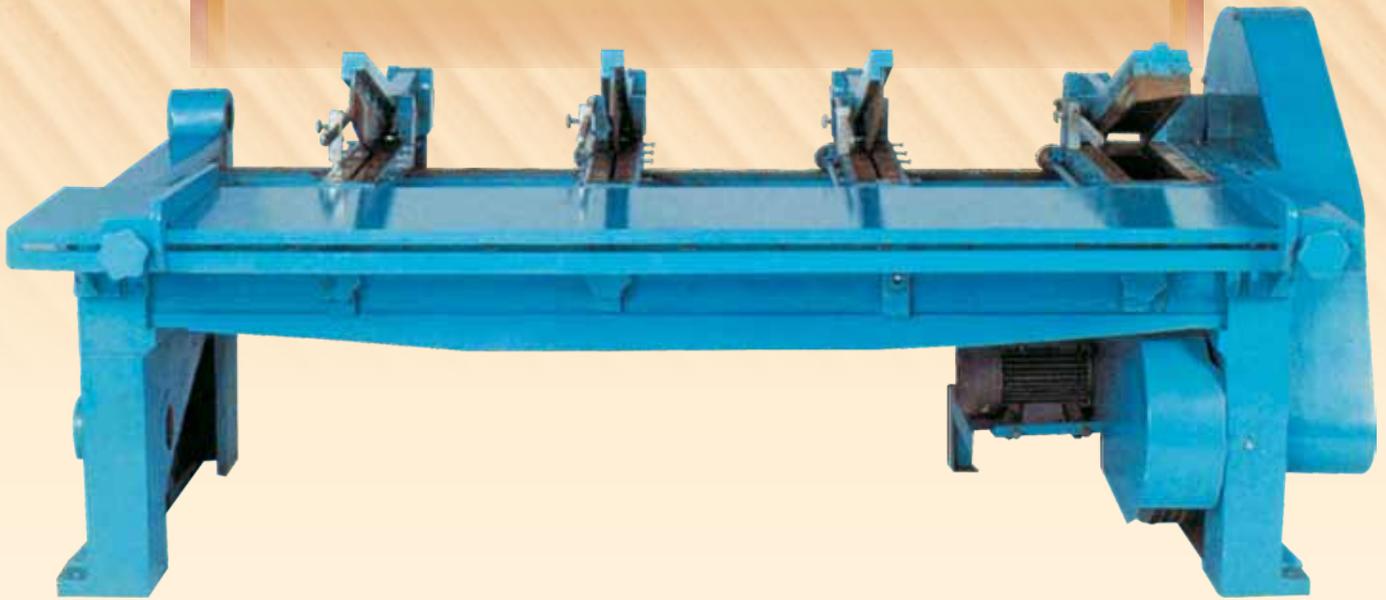
And the last thing is Technology & employment. Innovations in technology are happening all over the world. But those are options given to you. What you need to look at is - do I have the right technology for the product that I am going to be in. All the speakers who have spoken till now have been giving you options, but the point is what kind of product would you select for yourself.

Cont. on - 79

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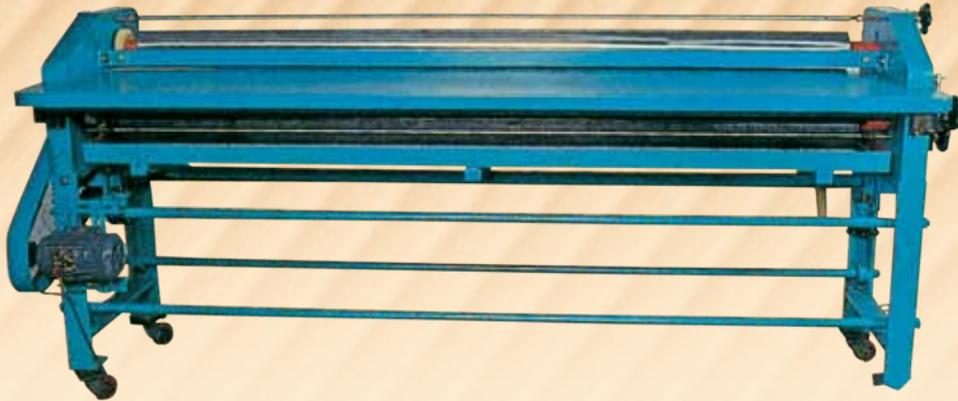
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- 7) Max Sheet Size: 3000(L+W)x2 = 6000 x 2850mm
- 8) Automatic Counter Ejector

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AS016A with (Servo Drive & Touch Screen)

- 1) Made in Taiwan
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- 3) No Training Required
- 4) One minute quick order change
- 5) Single/ Double and Tie nail stitching (//////, // // // //, // // // //)
- 6) Max Sheet Size: 3700 x 1515mm
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That is the point of introspection I am talking about. When you select a technology, do you have the right technology for what you do. That is something which you need to assess. This is what I mean by introspection, which depends on the individual. The choice is yours. It is your product, you have to introspect on that and see that where you stand with what you have today.

**Market trends:** It is a sunrise market. The industry is a sunrise industry. If this boom cannot be encashed it will be a very sad situation. Considering what has all come into it today it is a second or third boom, it is a boom for this industry, particularly when consumerism is onslaught. The consumers are aware of what they want and the way they want it. With this comes

the rising expectations of the consumers. They know what are their needs and how they want them. Customers expect quality and customers' demands are benchmarks that are certainly going up. The people who are your customers want to create a brand equity for themselves. And when they want a brand equity, every aspect of the product is used to help creating a brand equity and you as an industry are a partner in that. Because it is not just a secondary packing of a corrugated box that goes across, but they are looking at the solutions from the industry. Whether you can give them the solution, this is very important. Because they are looking for all-round development. These customers are from Amazon, Flip-cart, Net-mate etc. the markets are opening up.

Suppose you went to your retail chemist. He gave the commodity in a paper bag which is likely to be substituted with Net-mate coming. This is not going to be a large market. But certainly if they are shipping your medicines to you, they need some carton to do that. Imagine medicine coming to you for home delivery in a carton, that's the kind of situation which is going to be coming up. Are we geared up for that? You need to be abreast of market all the time to see what trends are coming up.

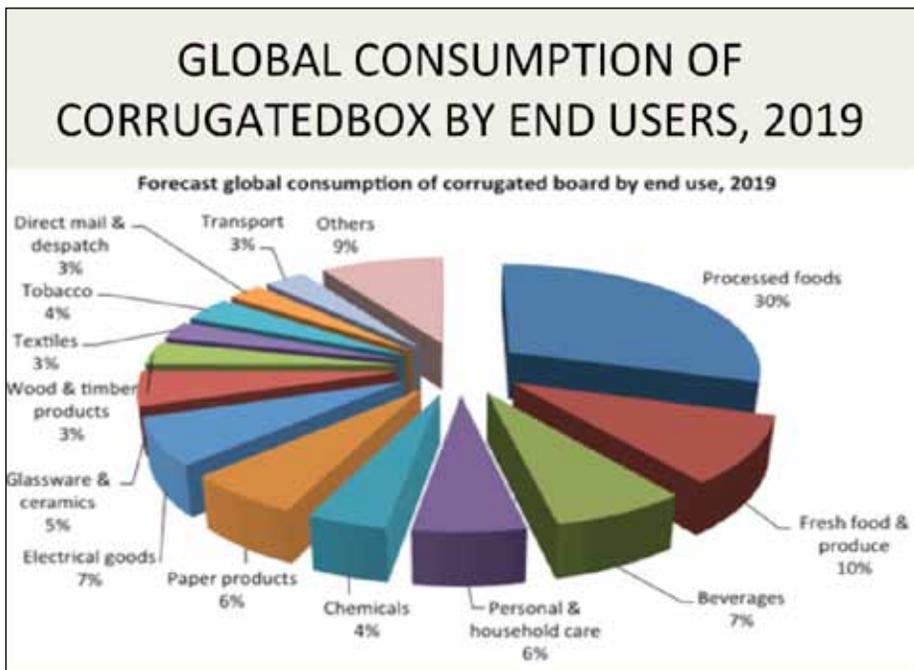
With this situation and when in this industry above all, the growth prospects are so bright, it is above the average industrial growth in the country. Industry is looking at a boom which is there already. Are we geared for it? That is more important. That is the key which is going to be driving you across.



I saw a picture. It is about three year's perception, perspectives of the growth prospects that are going to be there for this industry, particularly globally. Out of this, if 54% is based on processed food, fresh fruits and beverage. Considering that this is a growth area in India also. You need to see the pie is so big that you can choose what you like out of these ,

but you need to identify a niche for yourself in this particular growth area and the consumption patterns. When you decide on a niche market for yourself, whom are you going to cater. If you choose to cater to a general base the product can not be specific. So you need to have a product which is specific as per your preference, as per your resources as per your own factors which will determine what you want to do, that could be B to C or B to B and you could be catering to automobile or food. So the first thing is to decide on this niche market, that is whom are you going to cater to.

Look at this slide showing ice box. It is for cooling while on the right side there is a carton with a beer in it and it is chilling.



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## CHALLENGE THE CONVENTIONAL

- Innovation



- Be a part of Solutions

It was in mid 2012 when packaging CRP Packaging in UK came up with this new concept while beer market down by 5.1% in UK millers share in the market went up by 4.4 % that is the kind of situation where you can turn around and be a partner in the growth of the product you have selected for yourself. You need to be a part of the solution for your customer and you need to make innovations based on that. This is what is challenging the convention. The cartons we see in the market and if we follow the same trend it is history we are following and not looking at what is the futuristic reference we are making in this conference. Find some thing that the customer will be looking to in future. That is what the innovation is. That is what being a partner in solution is.

How do you reach this? It is through investment in intangibles. It is time we have burnt our money in creating intangibles. This is going to give increased profitability and increased margins. Because you are giving a solution. The customer is asking you why should I give you something higher than what I am giving you today. You ask yourself this question.

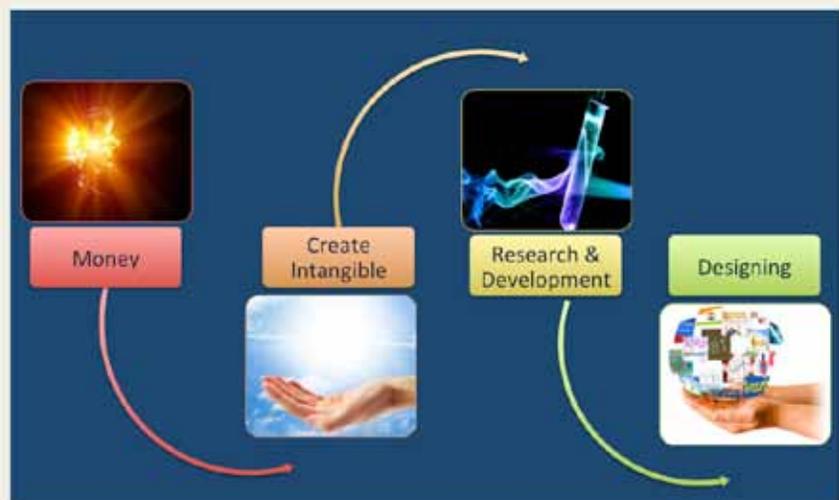
Do you have a product where you can command a price? Why are you being undercut? Because there is somebody who may not be giving the same thing but undercut your price. I would like to

refer a particular case. There is a company which is supplying a particular box for 10 Rs. This has happened only 15 days back. When the next order came, the customer said I am going to pay 8 Rs. The 2 rupee drop has happened and why. The customer said I have a vendor who is supplying at 8 Rs. Till it was 10 Rs., the product was innovative it was meeting the demand and you could demand a price, but today there is almost 20% drop in the price. How did this happen? If there are more people who can operate at cheaper prices this is bound to happen.

Until and unless if your intangibles are so strong, you will not be able to meet the competition that is going to come in. By intangibles, I mean conceptualising what is going to be in future. The most important thing is that the concept has to be created and you need to be working on it. You go into Research & Development which means how your product can be improved. The industry must be doing this and you can employ out side R & D experts for this. In house it is not possible. It could be a collective move or it could be individual move. Depending on your resources, you need to invest in Research & Development. Once you do it, you will be beating the competition.

Corrugated boxes are losing out to plastics, what have you done about it? Have you thought of where this loss can be recouped? Plastic came back so long back But the innovations and the multiple uses of the particular product has brought into competing with everything so much that where we have got 3D printers where plastics have come in so strongly. The use of particular product, you need to look at where you can have new horizons to developed where you can find situations, where you can recapture what you have lost. This can come only through Research & Development where people can bring out solutions for you and your

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industry. Once you have a product which is developed, then you look at designing. We have heard about the advertising agencies doing designing.

Take the case of Colgate of way back which still holds good. Tooth Paste used to come in aluminum tubes and then innovated in plastic tube. One day

somebody came up with a new design where the size of the mouth was increased for toothpaste dispensation. The result was the dispense of the toothpaste was much larger than the earlier mouth. That increased the sales. If I go back to the example of beer carton, which gave a 4% increase in the market share of 'Millers', and it was greatly attributed to and recognised by Millers that these sales came from that particular packaging.

Until & unless we do not increase the horizons of our thinking and keep ourselves to a particular enclosure, it is difficult to be challenging and create something useful. The whole thing is to increase our concept and think of beyond not restricted to and follow a trend like what is happening. The carton that we see is history today. What have we done today to develop a carton which could sell six months down the line. The vendors who have just come in into business are very competitive. It is a fast changing industry. You need to be one step ahead of it. That can come out of designing and R&D.

All this ultimately leads to when you need to be burning money and when you need to be looking at your bottom line and need to be looking at new avenues.

All this requires **resources**. We are living in a climate where resources are not a constraint as they used to be. It is not a constraint provided you develop to investors' comfort in what you are doing. If you have a proposition which can



withstand the scrutiny of an investor then there is no restraint for resources.

You are all aware of Flipcart. You have Snap Deals. Their valuations are in billions of dollars. While the inside story which has come up in last three months is that these figures are questionable. But despite of that there is enough money which is being poured into them.

They are just distributors. You are the vendors to them. They are having huge marketing penetration and you are banking on them and that is where the money is coming in. High net worth people have come in to put their money, because they feel that there is an opportunity here. So, we can develop the investors comforts and we can create a perception about ourselves that look this is an industry where the risk is mitigated and reduced so they can come up with the resources you need.



Banking institutions, venture capitalists etc. are always there. Considering all these things are there, you don't need to think of constraints for growing. The funds are available for you.

Lastly, I talk about **Strategic Alliance**. In the resource it plays the most difficult part. Cost of funds when you are borrowing is high and subject to market risks. The moment you borrow and the market goes down, it is very difficult to come out of debt trap. How do you mitigate this risk? You can mitigate this risk by getting partners.

I can put before you so many cases of successful strategic alliances. The business which is on the brink of closure will get a lease of life if there is viability.

**Strategic Solutions** are what we are looking at now. Reach out, innovate the product, adopt new technology, find yourself a location which is going to be beneficial to your product.

Crisis brings changes. Improve efficiency when you are vulnerable. That's the key.

*Be in the Box and Think Beyond.*



*Abbay Bhargava is basically from Corporate Finance. He has been CEO for large Indian Groups. Later he changed his area was working and till very recently heading Hospitality vertical for Sabara Prime City Pvt. Ltd.*

*Corporate Finance has been his been his forte. He has been looking at this particular environment very closely and for last two and a half decades, and intriguingly involved with this not only India, but overseas.*

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## Drop Tester

Determines the performance of a packed box during handling and transportation.



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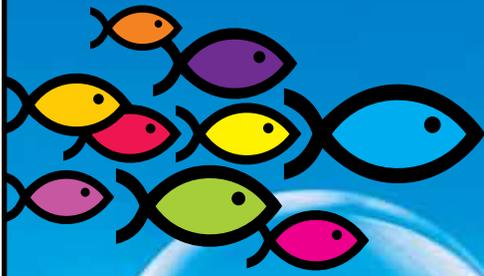
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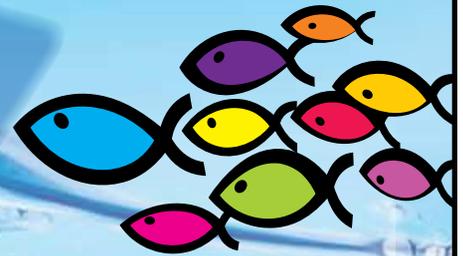


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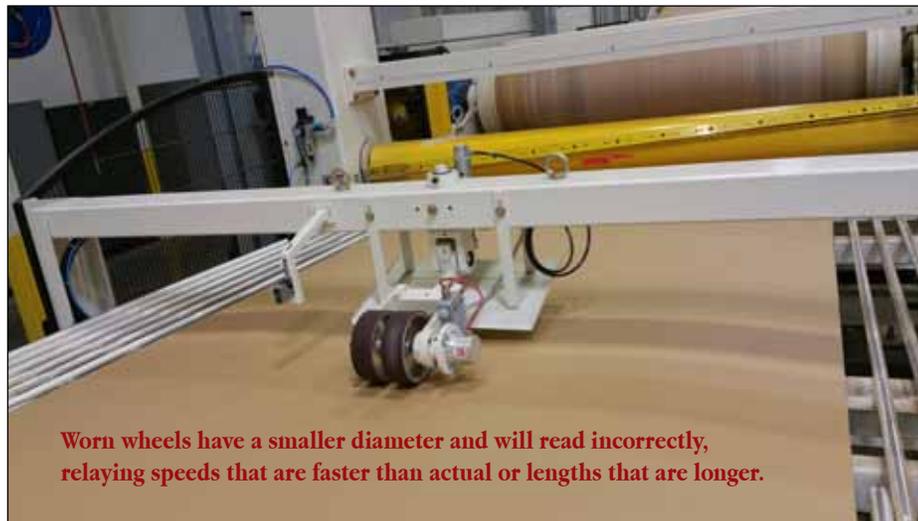
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# Corrugator Control Systems

In this article we will take a look at a system that works in the background to integrate the functions of those components. Corrugator control systems actively monitor the separate components of the machine and coordinate their operation so they will work together efficiently. Corrugator control systems are arguably the only aspect of a corrugator that has been modernized with computer controls and have brought a degree of automation to the board making process. As corrugators continue to increase run speeds, there is so much going on and so little time to react that a computerized system becomes a necessity.



**Rex Woodville**  
Manager, HarperLove



**Worn wheels have a smaller diameter and will read incorrectly, relaying speeds that are faster than actual or lengths that are longer.**

When automatic systems are working properly, they can significantly increase machine efficiency and reduce waste. For them to achieve this, they have to be allowed to do their job and that means running in automatic mode. This will only happen if the operators trust the system to work properly. A splicer that misses splices on automatic or a bridge control system that allows the web to tear out will not be trusted to run on automatic and will be operated in manual mode. It is, therefore, imperative that the system be well maintained so it performs as designed. This will promote a culture amongst the operators of trusting the machine.

**Make Sure any Encoder's Attachment Points are Snug and Without any Slack or Play.**



Due to their proximity to moving paper IR sensors should be checked for dust buildup and cleaned regularly.

Control systems are only as good as the information they obtain. If the sensors and other measuring instruments are not maintained in good working order, they will relay inaccurate or inconsistent information. Here are some things to consider to ensure the control system functions well.

**Temperature:** Check IR sensors against an accurate heat gun and calibrate them frequently. Due to their proximity to moving paper they should be checked for dust buildup and cleaned regularly. Make sure they are pointed at their intended

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targets and that they haven't been knocked out of position. IR sensors can't read accurately through a steam cloud, which is one more reason to ensure there are no steam leaks.

**Speed:** Tachometers or pulse generators are often called "speed wheels" when they are used to measure paper speed. Worn wheels have a smaller diameter and will read incorrectly, relaying speeds that are faster than actual or lengths that are longer. This inaccuracy will cause problems with any calculation that relies on accurate length or speed, such as paper caliper. If severe enough, in some systems, the inaccuracy may even affect splice synchronization.



**Position:** Encoders and transducers measure and relay distance or position feedback about machine components such as metering rolls or wrap arms. Make sure their attachment points are snug and without any slack or play. Some of these instruments are measuring thousandths



of an inch so even a small bit of play can greatly affect accuracy. It is also important to have them perform their calibration run by going all the way to their "home" position allowing them to have an accurate reference point so they can "zero" themselves.

**Interference:** Analog control signals, such as a speed reference, can be low voltage current. Zero to 10 volts DC is typical for electric motor drives. Due to their low voltage, they are subject to corruption by induction. Wiring for analog control signals should not run next to high voltage power conductors, such as those that feed motors. Sometimes erratic speed reference behavior can be traced to large power wires running near control wires. When changing or adding wires carrying low voltage it is preferable to use a shielded conductor and run them separately from the wire troughs that carry power wires.



**Corrugator Control Systems can be very valuable tools, Particularly the ones that are Entirely Integrated.**

**Recipes:** A useful feature of some control systems is the ability to save the "best run settings" for a particular order and to use

them as a guide the next time the order is run. Make sure your recipes are correct. Check them by comparing the recipe's suggested setting to the actual setting at which the order ran best. Does the recipe need to be updated? Has a change in the equipment allowed you to run faster so now you need to bring them "up to speed?" To ensure that recipes are effective, implement a program to keep the recipe updated and current.

**Targets:** Realistic targets are required for the control system to work as intended. The system can be defeated to allow the machine to be in automatic mode, yet still be controlled manually. For example, auto splice speed can be set unrealistically low, allowing the operator to splice at will while still in automatic mode. Alternately, requesting a paper temperature of 350F (which will never be attained) will keep the wrap arms at full wrap and never move them. Corrugator control systems can be very valuable tools, particularly the ones that are entirely integrated. However, to fully realize their potential, it is necessary to have the crews confident in the system's ability to perform consistently in automatic mode. This requires vigilant maintenance of all components.

*Rex Woodville-Price is the Special Projects Manager for HarperLove and recently celebrated his 15th anniversary with the Charlotte, N.C.-based company. He has been in the corrugated industry for 26 years as a Project Engineer for Interfic, Sales Engineer for Goettsch, and Packaging Maintenance Engineer for Chiquita's Packaging Division.*

*We sincerely acknowledge that this article is originally printed in IPBI and is printed in The Corrugator with the permission of the author.*

*Source:  
International PaperBoard Industry.*



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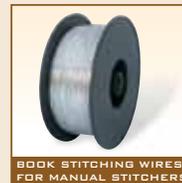
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# The Great Fall of China?

## Is The Chinese Corrugated Market On The Verge Of Serious Stagnation?

### What are the implications of a 35-40% likelihood of a global recession?

There is a school of thought that suggests a global recession has a 35-40% likelihood of happening. Their hypothesis is that there is currently a tension between a generally recovering set of developed economies (i.e. Europe, Japan and the US) that may be overwhelmed by the threat of recession amongst emerging economies.

China's reaction to its slowdown has prompted a policy change that seeks to change the Middle Kingdom from global customer to global competitor. Notably, the recent devaluation of their currency aims to support Chinese manufacturing, which will inevitably put further pressure on competing nations.

The underlying situation in China is indeed at a pivot point. The 30-year investment boom in China is drawing to a close; even a country with a population of 1.4 billion can't defy gravity forever with perennial 10%+ annual growth rates. With circa 700 million people now residing in urban areas, China has reached an important tipping point in its evolution from an agrarian to industrial economy. They have built more than 500 empty cities since the Cultural Revolution in 1978, with hundreds more scheduled to come online by 2020. Over a million villages have been wiped off the map during a development boom incomparable to anything in human history.

Whilst this is deeply impressive progress, the limitations of central planning have combined with far more money than anyone can wisely invest (their central bank has \$3.66 trillion in foreign reserves and China has circa 2.5 trillion of US Treasuries) to deliver significant levels of overinvestment in many areas of industry and building. Their housing bubble has burst; a handful of facts bring home this point with sobering clarity:

- In addition to 3.5 million new homes that are unsold, there are 49 million homes (22.4% of the total) in Chinese cities that are empty. As of August 2013 the amount of mortgage loans outstanding on vacancy homes reached \$674 billion.
- The amount of empty office space in China would cover an area equivalent to Madrid (i.e. 600 km<sup>2</sup>).
- China has used more concrete in the last three years than the USA has in the previous 100 years. By way of example, the picture opposite shows the new city of Kangbashi, which rose from the outskirts of Ordos in central Mongolia in 2003 and has capacity for one million people...it currently has a population of 30,000.



**Raj Bhardwaj**  
Editor of the Know It

A notable consequence for the rest of us is that the global supply-demand balance for commodities has tilted to deflationary levels. For example iron ore prices have plummeted from \$190 / tonne to circa \$50 in four years. Elsewhere, with the price of crude oil having halved, the number of rigs drilling for oil in the US has fallen by 59% from its peak last October. Debt levels of US shale producers have increased from \$80 billion at the end of 2010 to \$169 billion at the end of June 2015. Indeed, debt levels increased by \$32 billion in the six months to June alone...that is an unsustainable increase that will prompt contraction and consolidation in the shale oil industry.

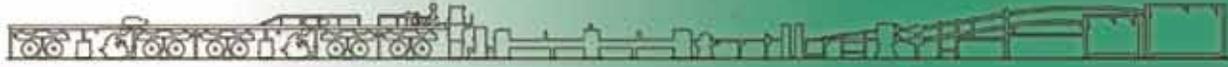


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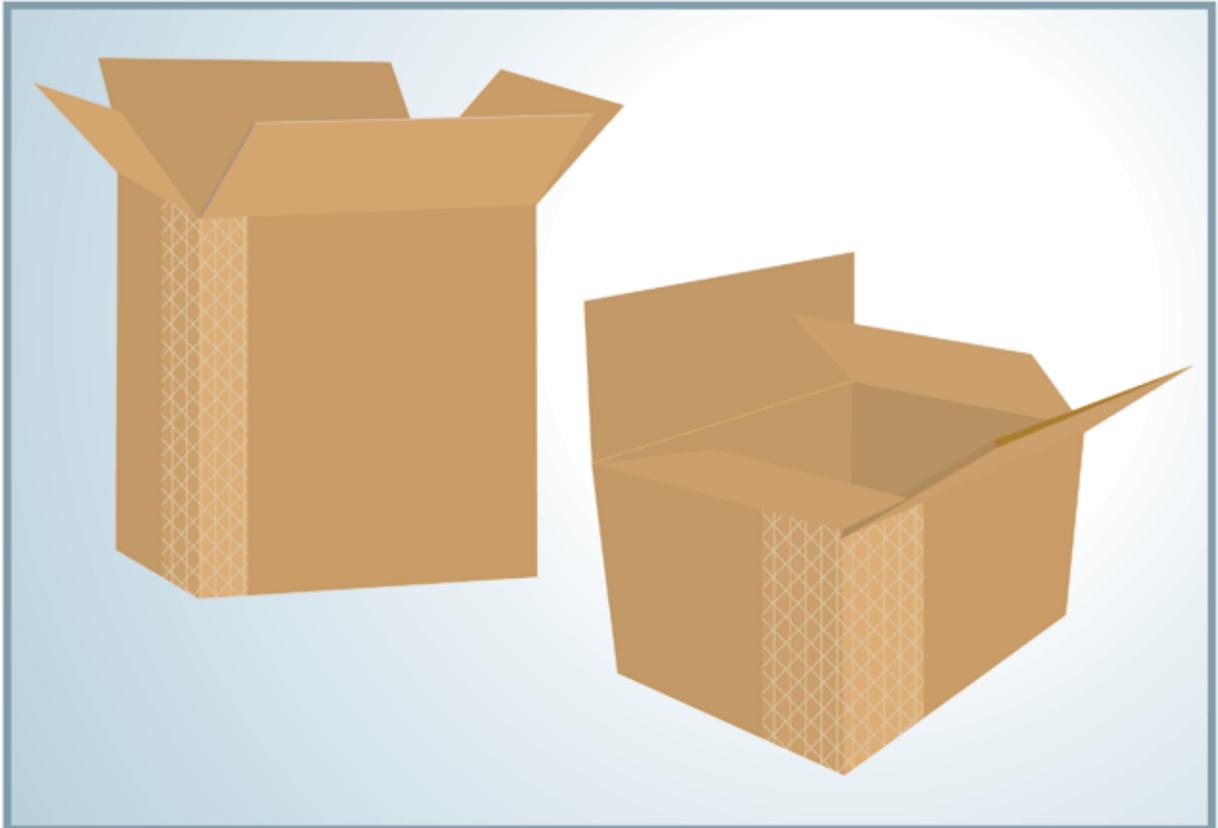
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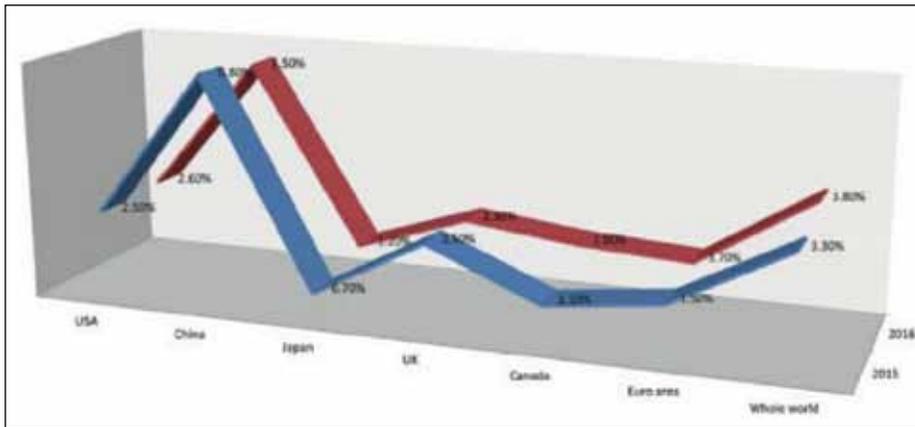
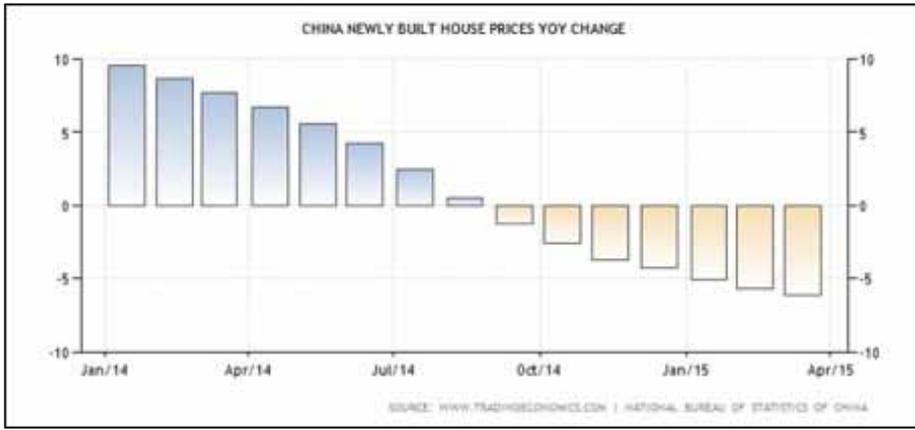
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As a result, the era of low interest rates which was initially an emergency measure in response to the financial crisis of 2008-9, looks likely to continue for some years as inflation remains subdued worldwide and is on the cusp of deflation in some economies. Indeed the low rate era is challenging growth models for economists and policy makers...inflation figures have stayed low even as the UK and US economies reach relatively high levels of employment compared to historical norms.

On the one hand, one can see that the long US economic recovery has been augmented by recovering economies (albeit sometimes weak and fitful) in Europe and Japan. Growth here should lead to higher demand from other economies and thus support worldwide growth.

So what's the lesson for senior people in the packaging industry? On balance, the world economy should escape recession but the prospect remains a very real risk. Review your key customer list and consider the likely impact on their box usage in the

event of a global recession. What would be the net impact on your demand levels and subsequent levels of profitability? I would suggest having a 'hibernation plan' ready to implement at short notice if required – which would reduce costs in line with the likely reduction in net margin in the unhappy event that a worldwide recession comes to pass.

*Author Raj Bhardwaj is Editor of the Know It All newsletter and also offers software and consultancy with a focus on the packaging sector. You can contact him via e-mail: raj@knowitall.co.uk*

*This article was originally published by International Paper Board Industry and our thanks to the editors of the magazine and the author for permitting us to reprint this article in The Corrugator*

## Corrugated board baby crib on wheels

Delivered flat-packed, very easy to assemble, the Customizable Corrugated Board Cot with large wheels to make moving it easy, is one of the weirder flat pack products out there. Comes with a 3 – 4 cm thick mattress and complies with all the safety and comfort standards you would expect for a baby's bed. You can decide to keep it plain – simply stamped with the brand's logo on the side – for the super chic industrial living look. Or you can customize it, paint it, or simply decorate it with your child's name.

So it may feel a little weird to put your new born baby in a Corrugated Board Box, the in-laws may look on in horror as their adorable grandchild is placed tenderly in the recycling and cleaning burped up milk off of paper products may not be the most practical solution, but it is kinda cute



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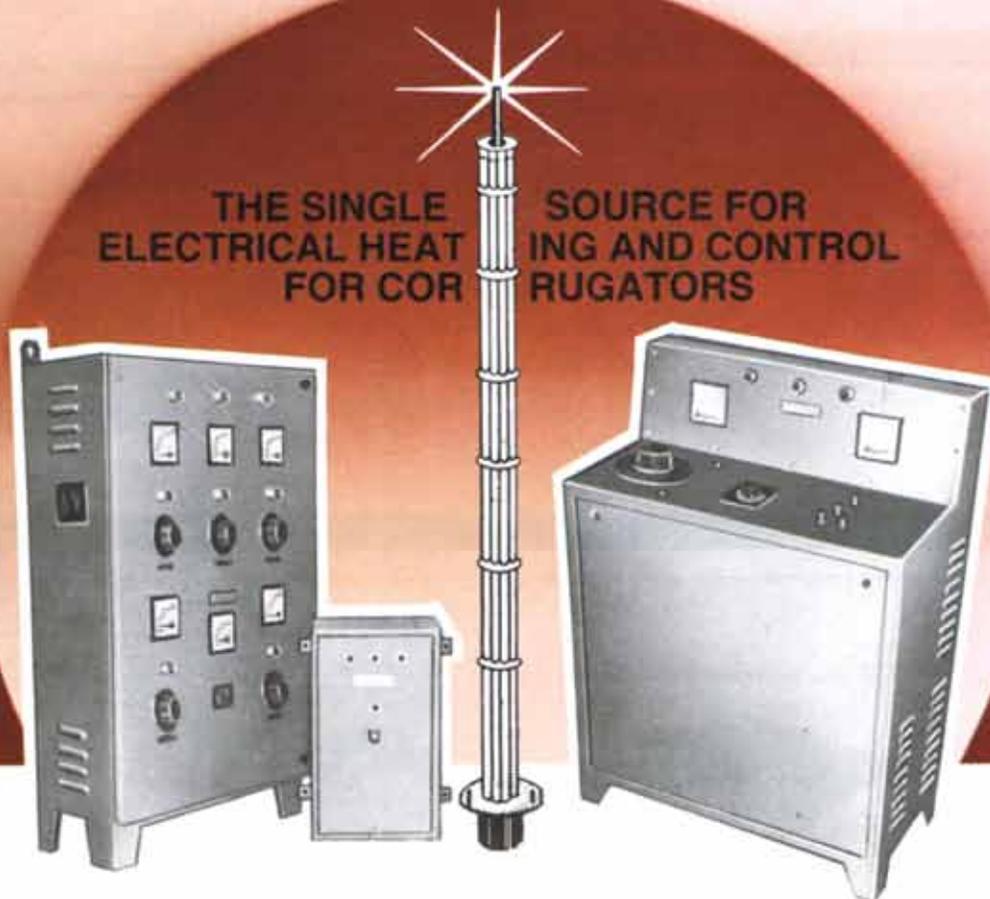
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# Industry News

## U.S. Corrugated Industry Improves Environmental Performance from 2006-2010

A new U.S. corrugated industry life cycle assessment (LCA) study shows a significant 32% reduction per unit in the industry's greenhouse gas (GHG) emissions between 2006 and 2010. Additionally, the industry improved in other environmental impact indicators. Effects of nutrient releases on receiving waters and soils (eutrophication) decreased by 22% and effects of particulate matter emissions (respiratory effects) decreased by 14%.

Containerboard mills also helped reduce GHG emissions by decreasing the overall use of fossil fuels and switching to less carbon-intensive fuels like natural gas. This combined with modern technologies allowing for the efficient and affordable filtration or chemical conversion of pollutants resulted in the kind of transformation seen in the photo below. On the left is a “vintage” paper products mill releasing products of combustion in a smoke-stack. On the right is a modern version of the same upgraded mill releasing only white clouds indicative of clean low-pressure steam release.

and contribute to maintaining a sustainable corrugated packaging industry.

The LCA showed that both the 100% recycled and industry-average corrugated products have environmental advantages in different impact categories. One is not better than the other across all environmental impact indicators, and the corrugated industry must maintain a supply of new fiber to augment those fibers that are recovered and used for production. The worldwide market needs both new and recycled fiber to produce the best quality of corrugated material and ensure a consistent and sustainable supply.



The peer-reviewed study, commissioned by the Corrugated Packaging Alliance (CPA) and conducted by the National Council for Air and Stream Improvement (NCASI), measures the environmental impacts of a 1 kg industry-average corrugated product manufactured in 2010 and shows substantial improvements over the industry-average product manufactured in 2006, as reported in the industry's first baseline LCA.

The reduction in GHG emissions per unit is primarily attributed to the increased recovery for recycling of corrugated materials. The recovery rate for old corrugated containers (OCC) increased from 72% in 2006 to 85% in 2010. As more corrugated material is recovered, less goes to landfills, thereby reducing methane emissions.

Dennis Colley, executive director of the CPA, said that “we're very pleased about our reduced greenhouse gas emissions and overall environmental impact reductions, driven by our industry's historic commitment to continuous improvement and environmental stewardship. We've been proactively improving on our environmental footprint for decades, and through the use of LCA, we're able to document the results of our efforts.”

The study also examined the relative impacts of industry-average corrugated products (which contained 46% recycled fiber) and 100% recycled corrugated products made in 2010. Corrugated products can be made from 100% new fiber, 100% recycled fiber, or a blend of these fibers. All types of fiber have benefits

The LCA examined effects on seven environmental impact indicators: global warming potential (greenhouse gas emissions), eutrophication, acidification, smog, ozone depletion, respiratory effects, fossil fuel depletion, and four inventory indicators—water use, water consumption, renewable energy demand, and non-renewable energy demand. It was conducted in accordance with ISO 14040/44 standards and guidelines for life cycle assessment studies and was subjected to review by a third-party critical review panel.

Source: Internet

*Cont. on - 102*



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After drying, sheet does not delaminate.
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Best Tackiness.
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Method Of Preparation
Take out Caustic Soda Packet from the bag
Take 100 Lts. water.
Start Stirrer & insert the powder.
Stir for 2 minutes.
Insert Caustic Soda.
Stir for 30 minutes.
Add 70 Lts. Water.
Set the Viscosity as mentioned below

Technical Specifications				
	CG30 / CG35 / CG40	PG30 / PG35 / PG40 / PG50	PG50	DDG40 / DDG50
Purpose	For Corrugation Sheet Bonding	For Pasting Sheet Bonding	For Flute Laminator Machine	For 3 PLY / 5 PLY / 7 PLY Automatic Plant
PH of Liquid Gum	9-10	12-13	12-13	9-10
Viscosity of Liquid Gum (As B4 Visco Cup)	28-32	28-32	40-45	50-55
Powder's colour	Off White	Off White	Off White	Off White
Liquid Gum's Colour	White	Honey Shade	Honey Shade	White

Note – Method of preparation for PG50, DDG 40 and DDG 50 differs slightly.

### Results

CG in 30/ 35/ 40 Kgs. which will give 200 Kgs. liquid Gum for application.

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## **BOBST wins Gold award for best innovation at FEFCO 2015.**

At the recent FEFCO Technical Conference in Barcelona, the BOBST digital printing press for corrugated won the Gold Award for Innovation, the FEFCO jury recognizing the radical capabilities of this new press technology. At the show, BOBST revealed to delegates the design and further technical specifications of the press, which is currently being beta tested at two European corrugated box plants. BOBST also premiered two brand new flexo printing lines, the FFG 8.20 EXPERTLINE flexo folder gluer and MASTERFLEX-XL high quality post-printer, confirming its commitment to both digital and flexo printing technologies.

Jakob Bovin said, "By using KODAK Stream Inkjet Technology utilizing aqueous based inks, our press can continuously deliver over 50 billion ink drops per second from its four, CMYK, print units. We can match a very broad range of the Pantone gamut and print at speeds of up to 200 meters per minute. The press delivers very high print quality, with a print resolution of 600 x 900 dpi. We have designed a brand new vacuum belt sheet transport system in order to guarantee the registration accuracy needed when printing at such high resolutions and high speeds. The press also incorporates our BOBST iQ400 quality control system and an ejection process for any non-conforming products."

As previously announced, the press is a stack-to-stack solution ideal for integration into corrugated plants' existing logistics systems. The pre-coating unit allows the press to print onto a wide range of corrugated substrates, giving the converter maximum flexibility in production.

The current beta testing phase of this new printing solution will continue in 2016 with the installation of two additional presses.

### **New flexo lines**

Two other Spotlight sessions at FEFCO saw details revealed of two new BOBST flexo press lines.



The MASTERFLEX-XL is a high quality flexographic printing press than can be installed offline, or inline with either a BOBST rotary or flat-bed die-cutter. The press features BOBST's Start and Go system, which sets and then maintains register in conjunction with its Registron™ S5500 register control and a new SC500 adjustment system; a no-crush feeder; iQ300 image control which ensures any out of conformance print is ejected; vacuum transfer; sheet cleaning; and an automated stacker. The press has an offline speed of 12,000 sheets per hour.

Gilbert Joux, Product Marketing Director Corrugated Board for BOBST, said, "MASTERFLEX-XL is about printing a quality product at high speed. Whether it is used offline, or inline with a MASTERCUT or DRO type die-cutter, the onboard systems ensure that consistently high printing quality is achieved, while at the same time delivering high productivity, superb flexibility and an attractive total cost of ownership.

Flexo printing still has a huge amount to offer the corrugated industry and this



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# GUM POWDER PLANT FOR PASTING & DEXTRINE

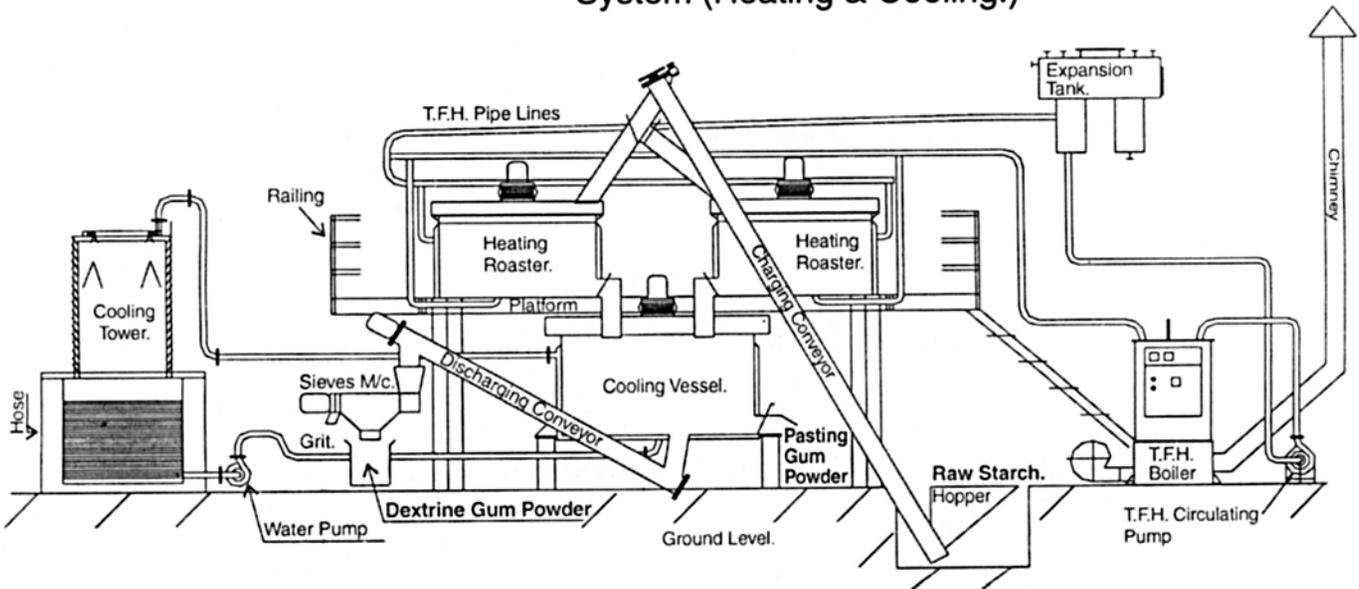
PLANT CAPACITY : 2 Tones / 4 Tones Per Shift

## Feature:

- Increases Production Capacity.
- Decreases Fuel Consumption.
- High Mixing & Roasting Capacity.
- No Explosion Hazards.
- Controls Dusting Of Powder
- low labour Cost.
- Fast & Easy
- Charging & Bag
- Filling System
- Immediate Transferring
- System (Heating & Cooling.)

## OTHER PRODUCTS.

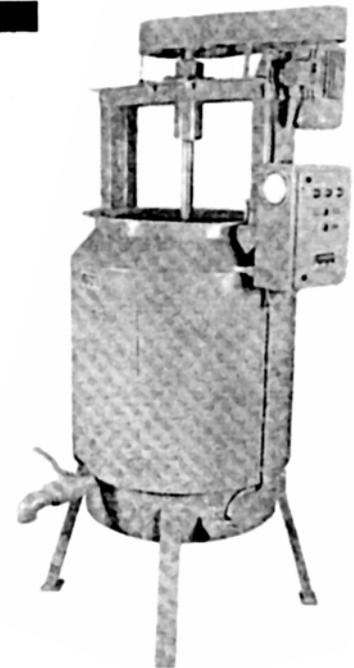
- Liquid Gum mfg. Plant
- Gum Cooking Vessel.
- Synthetic Resin Plants.
- Fast Cooling System.



# GUM MIXING (COOKING) VESSEL

*Total solution For Cooking the Gum from powder Adhesives*

- APPLICATION :** - To boil Glue  
- To Cook Gum / starch
- ADVANTAGES :** - Easy to operate.(Unskilled person can operate)  
- Lower Labour cost / maximum time saving.  
- Produces best quality products.  
- Reduces consumption of gum.  
- No pollution.  
- Low wastage of Raw Material and product.  
- Reduces cost of Inventories.  
- Minimize the cost of production.
- FEATURES :** - Compact Unit.  
- Long Life  
- Lowest Maintenance.  
- No consumption of heating oil.  
- No electrical Hazards.  
- Highly Homogeneous Mixing Efficiency.



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## ECO Line Launched by BHS Corrugated

BHS Corrugated launched successfully the new ECO Line on a Product Launch Event which was held near Delhi, India. The new ECO Line stands for Economic, Competitive and Outperforming and comes with the known BHS quality, a guarantee and a promise that we give to all of our customers.

### ECO Line

- **Economic** because of low energy consumption due to the award winning drive control as well as a low raw material consumption plus less waste for daily savings in production.
- **Competitive** because of a high board quality due to automatic individual machine setup. In addition to that the high uptime ensures a on-time delivery.
- **Outperforming** because of a special design for an easy operation and low maintenance as well as a high automation to ensure a constant production speed.

The ECO Line is available in 1800 mm and runs with a production speed up to 150 m/min. In addition to that, there are a plenty of new BHS developments available for your needs. To meet the challenges of the future, and to counter the rising cost of energy the ECO Line is equipped with the BHS “AC Energy Pool” System to optimize energy distribution to ensure a long time savings in energy consumption. In combination with the constant running speed our customers are able to reach with the ECO Line highest possible savings on steam and glue as well as a significant reduction in waste. Most important is that due to the well-known BHS assembly quality and the overall automation of our corrugators, the ECO Line is able to

produce top board quality according to international standards.

In addition to the great Exhibition performance in India, BHS Corrugated is already preparing the next Events to inform potential and existing customers constantly about the latest product developments. BHS Corrugated thanks all who have contributed to their successful fulfillment in India.

In the words of Mr. Sachin Patil, Head of BHS Corrugated India



We believe ‘it is not a solution to given market if it is not affordable by that market’.

The Indian corrugated box industry has

faced numerous challenges and hurdles in its growth pace.

The shift from semi – automatic plants to state-of-the art plants is rapidly increasing. The existing industry stake holders are migrating towards automation either by choice to remain competitive & grow or on the insistence of their customers. Today, every other player is at least contemplating of up grading technology.

In current economic scenario, where there is cut throat price competition, input cost is continuously rising, the profit margins are under tremendous pressure. I think, the only solution to survive this scenario, is to bring in cost-effectiveness in their operation. Highest productivity with lowest cost and wastage is the only solution to remain and grow in the business. To be most cost-effective in operation, the machine has to offer highest uptime for production in first place must comprise high level of automation for faster and quicker change over, operator must be well trained for running machine with most optimized settings.

### Our Strengths

1. We assist the entire project, from plant layout to process optimization. We have known how and highly experienced international experts for suggesting the best plant layout, optimize the specifications and process.
2. We have internationally trained team of service engineers, who can do installation, commissioning, start-up and training. Our engineers have been well trained at installation sites in Europe, South East Asia, and Middle East.



new machine shows that at BOBST we are standing strong in our commitment to flexo technology development.”

The second line announced was FFG 8.20 EXPERTLINE, a fully automated line for box production, integrating a BOBST FFG 8.20 EXPERT with automated loading and end of line palletization.

Yves Bletterie, Area Sales Manager for BOBST Lyon, said, “The FFG 8.20 EXPERT has been a huge success, with over 45 machines installed since we launched it three years ago. Now, with the EXPERTLINE, we can offer a complete end-to-end automated production line which can deliver 24,000 boxes an hour, be set in just one or two minutes and which needs just two operators to run. It really boost the productivity of users and makes even low margin boxes profitable.”

FFG 8.20 EXPERTLINE uses sequential order change (SOC) to achieve ultra-quick set-up times. Each part of the line, EXPERTLOADER, FFG 8.20 EXPERT and FFG PALLETIZER, begins its set-up of the next job while sheets from the previous order are still clearing its downstream units. The FFG 8.20 EXPERTLINE has already seen record achievements by early adopters, including 144,013 boxes produced in an eight hour shift with 10 order changes at a plant in Florida, and 71 setups in eight hours at a plant in Minnesota, producing 59,500 boxes.

Source: <http://media.bobst.com/>

## **BHS Corrugated prepares for the future- Corrugated 4.0**

Lars Engel, one of the managing directors of BHS Corrugated, fascinated the audience at the FEFCO Technical Seminar 2015 with a presentation about the topic Corrugated 4.0

Thereby he pointed out, why the fourth industrial is of crucial importance for the development of the corrugated board industry.

Lars Engel explained that corrugators already guarantee the highest level of value

in the use of smart technologies. In the very near future, the packaging material itself will know from what sort of paper it has been made, in what kind of box it has been processed, what sort of products it carries and where or to whom it is eventually transported. All of this can be done with the resources available to us today.

So the development of the next few years will have a considerable impact on the corrugated board industry, as it will determine the competition both between corrugated board manufacturers and between machine and plant manufacturers

Lars Engel explained how automated corrugators would work in a 4.0 environment. “Corrugated 4.0 is all about preventing human errors and reducing complexities. In the future, it should be possible to run a corrugator with three people or less,” he said. He predicted that the entire added value chain would be interconnected to the internet of things. “So personnel reduction, precise quality and quantity, no bottlenecks, high speed. It is a clear paradigm change.”

## **Corrugated Board Packaging Market Projected to Hit \$67 Billion by 2017**

The corrugated board packaging industry, worth \$52 billion as of 2011, is set to see its value swell by an additional \$15 billion over the next five years.

A new study - The Future of Global Markets for Corrugated Board Packaging to 2017 - examines the development of the containerboard packaging market over the 2007-2012 period and provides forecasts for the evolution of the industry until 2017. The 558-page report links the rapid expansion of the sector - a growth of 29% - to increasing demand for certain end-use products which correlate with the hectic lifestyle of the modern consumer.

Actual consumption of corrugated board currently stands at 102 million tonnes as of 2011, itself a significant increase on 99.5 million tonnes for the preceding year. This

figure is expected to undergo an average annual growth of 4.4% throughout the timescale of the study, achieving an end value of 130 million tonnes.

Packaging for chilled, takeaway and ready-cooked foods is set to be a primary factor for growth in the market, with Smithers Pira identifying the rising demand for convenience as a key propellant. It is increasingly clear that the ever-accelerating momentum of urban life is generating a need for time- and effort-saving solutions that fall within the corrugated board packaging market's remit.

Environmental concerns also are acting as a catalyst to drive research, such as new developments in lightweighting and resource-effectiveness. As such, contemporary realities both require and provide that corrugated board packaging remain a technological and scientific leader. The report investigates some of the industry's upcoming cornerstone developments for the near future.

The balance of consumption is likely to shift ever further towards economically developing regions such as China, India, Brazil and Eastern Europe, indicative of the increasing urbanisation and growing consumer markets present in these areas. Already the largest containerboard market, Asia is set to dominate demand with over half of corrugated board consumption in the next 5 years. China, especially, will be accountable for 70% of the net rise in containerboard production. Conversely the North American and Western European markets are both likely to shrink in relative importance, each contracting by around 3% by 2017 according to Smithers Pira's projections.

## **Global consumption volume of corrugated board by end use and volume, 2011**

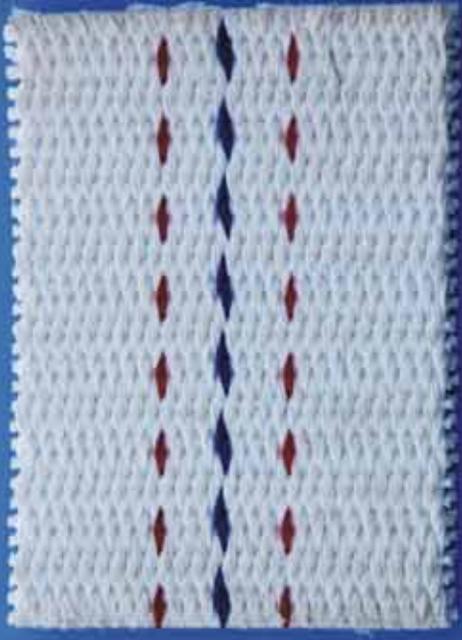
Processed food currently forms the single largest segment for end-use corrugated board packaging, encompassing a quarter of all consumption, while fresh food and produce represents 9% and beverages 7%. Non-food products however still compose



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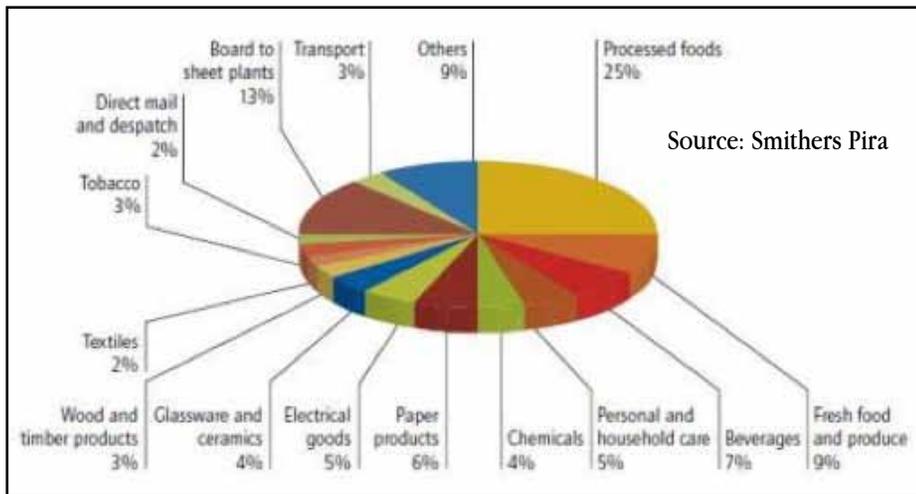
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**High-speed Kevlar belt**

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confirms 100% of our visitors have rated their experience as outstanding and we've received comments from customers such as 'thought provoking', 'visionary' and 'inspiring.'



Matt Brown, brand director at United Biscuits, said his team was able to get an in depth (and 360 degree) understanding of best practice in terms of retail ready packaging (RRP) design and the store environment allowed it to explore its application in a 'real' store environment.

"This importantly enabled us to put ourselves in the shoes of our consumers and so we were able to gain key insights in terms of how we need to develop our current RRP solution."

Stuart Caborn, purchasing director at Young's Seafood, added: "What DS Smith has created with the Impact Centre is a virtual world that allows free thinking, thought provoking creativity with a commercial focus. Combine a virtual store environment, with great creative professionals, whilst maintaining the focus of reducing waste, increasing sales and reducing costs is truly innovative."

Source: <http://www.packagingnews.co.uk/>



an absolute majority, providing relatively flexible opportunities in all sectors of the market. Smithers Pira predicts packaging for electrical goods and personal and household care products to be the richest sectors for growth, again connected to trends in urbanisation.

Corrugated board is defined as containing at least three layers of board, those on the outside flat and on the inside fluted. The internal triangular structure of this fluting provides the board with its trademark strength and durability. Corrugated board is extremely versatile, with prominent packaging applications ranging from food to ceramics to tobacco.

Based on data garnered from over 750 board mills and 80 corrugated converters worldwide and supplemented with desk and telephone research, The Future of Global Markets for Corrugated Board Packaging to 2017 spares no effort in scrutinising the past, present and future of the corrugated board industry in terms of material, end-use and geographical segmentation. Compiling hundreds of tables covering every possible market angle and annotated with quality expert analysis, this major new study is the definitive handbook for benchmarking and strategic planning in the corrugated industry of today and tomorrow.

Source: <http://www.smitherspira.com/>

## DS Smith Impact Centre surpasses 3,500 visitor mark

More than 3,500 customers, retailers and business analysts have visited DS Smith's 'visionary' Impact Centre following its opening seven years ago

The corrugated giant said brands such as McVities and Young's Seafood have used the centre in Ely, which is similar in scale to an average sized high street convenience store, to help them understand retail trends and how they influence packaging design.

The Impact Centre works as part of DS Smith's overall objective, to help customers generate more sales and reduce supply cycle costs.

Laid out as a complete retail store, it is designed to help retailers, marketers and packaging buyers explore what the right packaging can achieve whether in store, at the moment of truth with shoppers or at all stages of packing, storage and distribution.

The practical environment helps customers to visualise how well-designed corrugated packaging, that is tailored to their individual needs and supply cycle challenges, can reduce complexity, bringing down waste levels and overall cost, as well as improve product identification and boost sales.

Tony Foster, sales and marketing director for DS Smith's UK packaging division, said: "The response we've had for our Impact Centre has been overwhelming. A recently introduced feedback method



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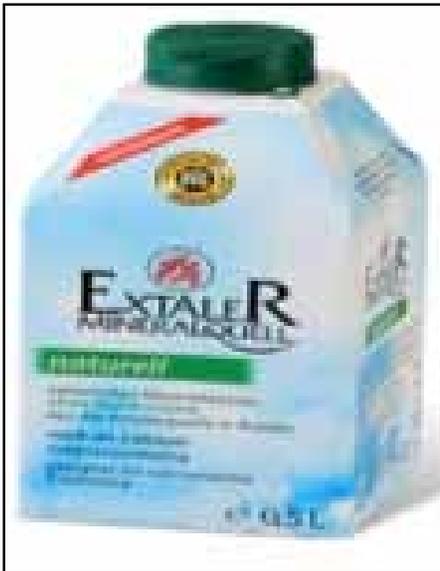
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# Product Profile

## On-the-Go Combidome Now Available In 500 ml Carton Bottle

Combidome, the carton bottle from SIG Combibloc, Germany, is now available in a package volume of 500 ml—a perfect volume for “on-the-go” products that can be consumed anywhere. The company WeserGold Getränke GmbH & Co. KG now offers Extaler-brand mineral water in combidome 500 ml.



Margarita Maier, Product Launch Manager Europe at SIG Combibloc, said that “convenience remains one of the big issues for consumers when it comes to food packaging. Besides protecting the product, packaging needs to be easy to use, secure, and give consumers peace of mind that they contribute to a sustainable environment. These are becoming increasingly important all over the world as more people are on the go, more often, whether it’s for work or leisure.”

People’s mobility behavior has an impact on their consumer buying habits, SIG Combibloc points out, adding that what’s in demand right now is on-the-go products

that people like because they taste good, are healthy and nutritious, and give consumers the good feeling that they haven’t been eating junk food. The packaging helps showcase products such as these to best effect. In this respect, Combidome, the carton bottle from SIG Combibloc, “does it all,” the company says. Combidome is ideal for drinking straight from the carton pack, because the 28-mm single-action screw cap is positioned centrally on the top of the pack, creating the perfect angle to make drinking from the carton easy, SIG Combibloc emphasizes.

The carton’s four display surfaces and the distinctive dome of the carton pack, which is made entirely from a cartonboard composite, can be fully printed, and thus used for the right “message on a carton.” This gives beverage manufacturers plenty of scope to communicate information and to attract consumers’ attention to the product. In this way, the design on the printed surface becomes the perfect complement to the unique shape.

A single Combidome filling machine can be used to fill carton packs with volumes of 1,000, 750, and 500 ml. A volume change takes just a few minutes, offering manufacturers the option of positioning products in quantities that are tailored precisely to the intended target audience. Alongside this volume flexibility, the Combidome filling machine, which can fill up to 12,000 carton packs per hour, also offers the design and product flexibility that customers have come to expect from SIG Combibloc filling machines. A change of carton design can be implemented without interrupting the production process, and with no wastage at all. All you need to do is switch the carton sleeves in the filling machine magazine.

In addition, the product flexibility of the Combidome filling machine from SIG Combibloc provides the basis to implement modern concepts for products with low and high viscosity levels, in line with current consumer trends.

*Source: Internet*

## Ingredient Endeavours to Develop ideas and Deliver solutions.™

Ingredient is a global ingredient solutions company making sweeteners, starches and unique ingredients from plant sources such as corn, tapioca, rice, sago and potato. They provide solutions and innovate for almost 60 industry sectors across more than 40 countries.

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Increase your margins—or add a price-reduction, front-of-pack claim—by creating better products more efficiently. They can help you achieve your performance, sustainability and productivity goals with their holistic save-money expertise.



*Cont. on - 115*

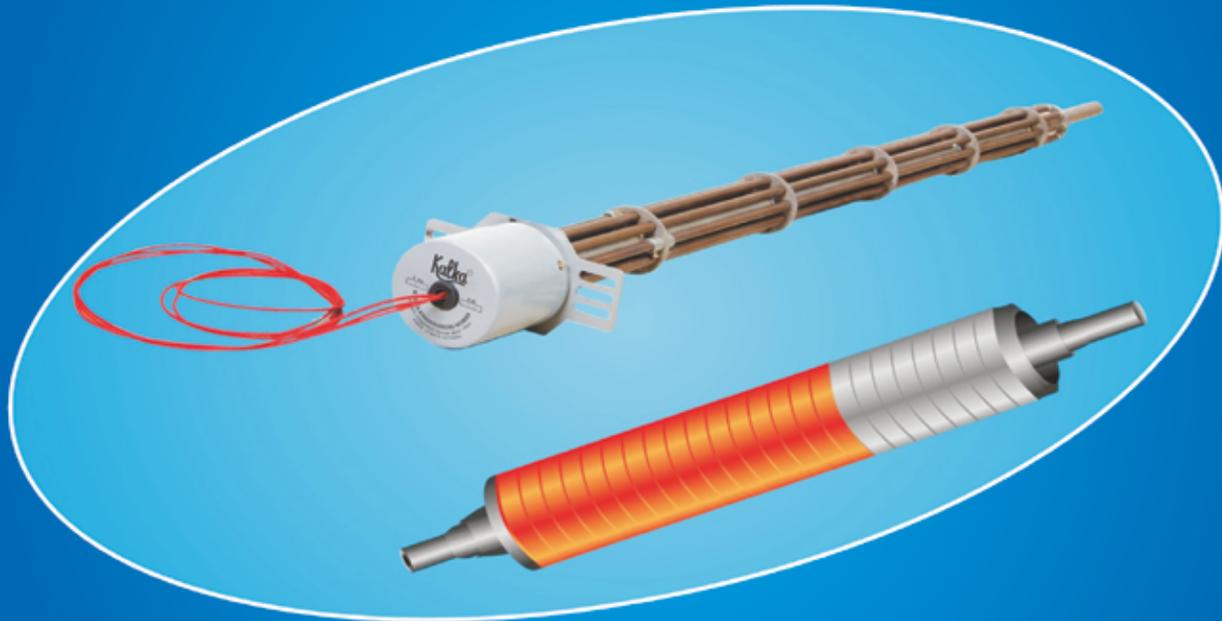
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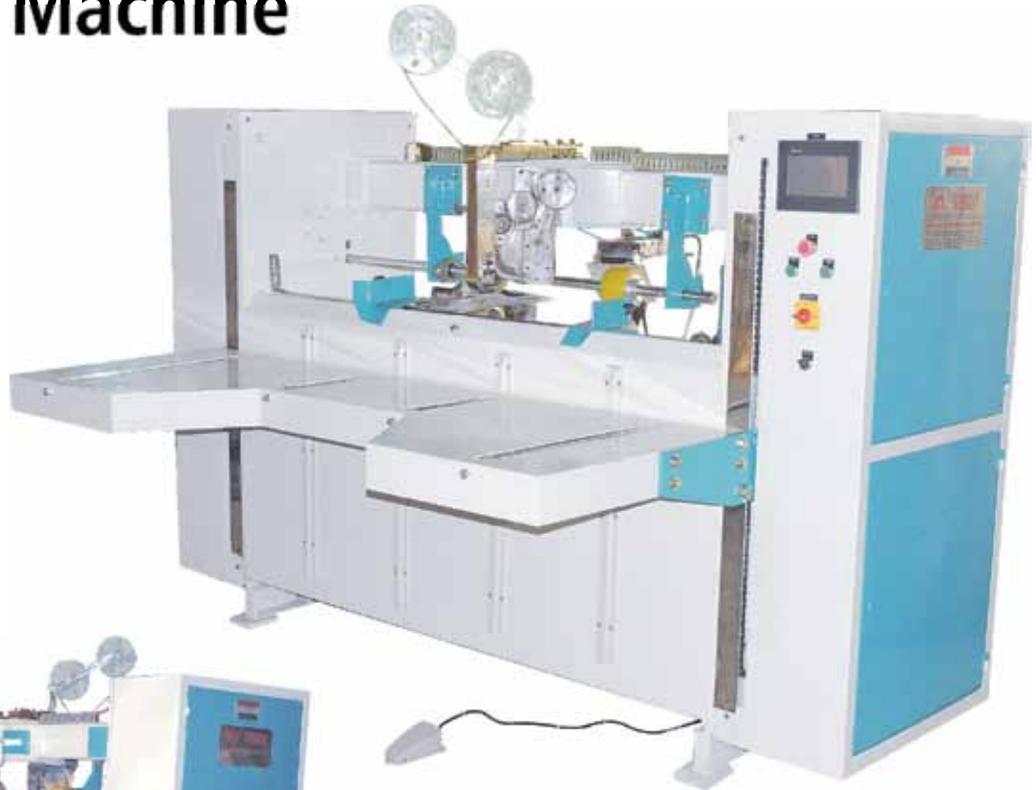


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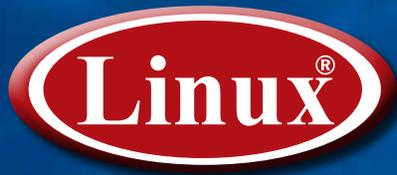
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New

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**Recommended for:** Paperboard, Paper, Corrugated board, Nonwovens, Textiles, Geotextiles, Film, Tissue, Tobacco Leaf etc.



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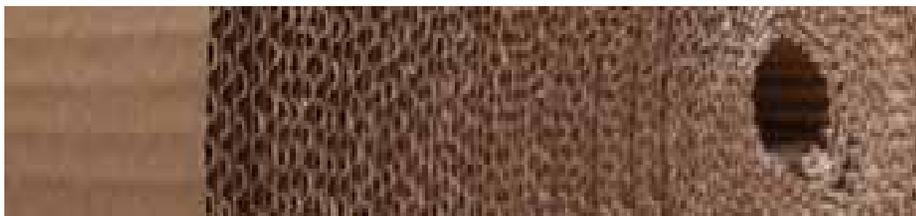
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Achieve the highest corrugation quality with smoother operating and faster machine speeds with AMYLOK™ and OPTAMYL™. Improve strength, cut costs and reduce waste too.

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- Achieve high quality boards in less time using unique OPTIPRO™ technology. It reduces the need for chemicals and goes to work instantly.

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**EVEREST-GIANT**  
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## HP Scitex 15500 Corrugated Press

### Digitally print corrugated applications that grow your business—and profit potential

This Press is Designed specifically for corrugated converters that produce temporary displays, permanent displays, retail-ready packaging, and other short-run corrugated applications.



### Produce higher volumes of short runs—at a low cost

Quickly turn around corrugated jobs. With cost-effective inks and a media handling system that enables printing on severely warped media, you can improve margins—and the break-even point. Compelling economics help you convert more pages to digital.

- Improve conversion, breakeven—we can help profitably convert over one million m<sup>2</sup>/year— at 1,000 pieces per order.
- Smooth operation on industrial-grade standard board—HP Scitex Corrugated Grip handles severely warped media.
- Save time and labor—hands-free and stack-to-stack operation, auto loading, zero setup, print direct to board.

- HP HDR230 Scitex Inks are designed for economical corrugated printing on paper board media.

### Grow your business—add high-value corrugated applications

Expand your portfolio and offer your customers more. This HP Scitex press enables you to print high quality graphics on a wide range of corrugated media. Take advantage of the opportunity to grow your business with additional capabilities.

- Meet customer demands. Produce the superb quality needed for high quality graphics boxes and displays.
- Print on a wide range of corrugated media, including industrial-grade media, with HP Scitex Corrugated Grip.

- HP HDR230 Scitex Inks are designed for high-value, low odor1 prints for indoor corrugated applications like counter displays and free standing display units.
- Benefit from HDR: automatically use small ink drops for quality, large drops for speed—all on the same print.

### Confidently grow with your digital investment

Going digital has never been so easy. HP offers end-to-end solutions, including prepress and workflow support, a broad services package, and management tools that help optimize performance. Built-in upgradeability protects your investment.

- Rest assured your digital investment is protected with a press that's fully upgradeable.
- Work with an ecosystem of HP and partner solutions—from prepress to finishing, management software, services.
- Rely on HP's broad portfolio of training, support, and productivity services.
- Optimize press performance—HP Scitex Print Care and HP SmartStream Production Analyzer.

*Cont. on - 121*

**Create Project suitable to your Space & Capacity  
of  
Automatic 3 / 5 Layer Corrugated Box Making Lines  
with  
Knowledge, Installation of Plants & Services**



PRINTER SLOTTER MACHINE



PRINTER DIE CUTTER MACHINE



AUTO FOLDER GLUER MACHINE



STITCHING MACHINE



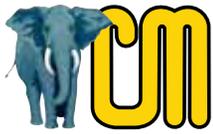
BY  
**N M C ENGINEERS**

**COMPLETE SOLUTIONS FOR CORRUGATED BOX MAKING MACHINES**

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Tel.: 91-11-41015496 / 45037496

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# CONGZHOU MACHINERY



## PREMIUM 03/05/07 PLY PLANT



## FIRST TIME INTRODUCED FOR INDIAN MARKET

### Hi-Speed 03/05/07 Ply Automatic Plant

- **Speed:** 60-100 mtr. in Economic Model
- **Speed:** 100 -250 mtr. in Premium Model
- **Production Qty.:** 25-100 Ton
- **Corrugation Roller Dia:** 300mm/320mm/340mm/360mm/380mm
- **Flute Type:** UV

**PRICE RANGE: 80 - 450 Lacs**



### Case Maker / In-Line Folder Gluer

- **Case Maker:** Inline Folder Gluer Attached to Printer Slotter
- **Speed:** 80-120 Box/Minute
- **Folding Type:** Bottom Folding
- **Control Panel:** PLC based with Touch Screen Control Panel

**INTRODUCTORY PRICE: INR 64,00,000**



### Lead Edge Feeder Printer Slotter Die Cutter

- **Auto Feeder:** Lead Edge Feeder
- **Speed:** 80-120 Box/Minute
- **Printing Quality:** Better than Chain Feeder
- **Control Panel:** PLC based with Touch Screen Control Panel
- **Printing:** 01-04 Color

**PRICE RANGE: INR 18 - 75 Lacs**



#### Marketing Team:

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E-mail: info@congzhoumachinery.com

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#### Corporate Office:

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#### Plant II:

Plot No: I, Survey 45/3, Margao Industrial Area, Margao Goa



[www.congzhoumachinery.com](http://www.congzhoumachinery.com)



+91 9225980113 / 118

# PACKLINK<sup>TM</sup>

## INDUSTRIES



### High-Speed Rotary Sheet Cutter

(PLS-01)

Size - 44" / 54" / 64"

### Flat Bed Die Punching Machine

(PLF-99)

Size - 50"x80" / 60"x90"

70"x120" / 80"x130"



### Flexo Printing Machine

(PLF-02)

Size - 50" x 60" / 52" x 72"

60" x 90" / 70" x 100"

### Side Flap Gluing Machine

(PFG-11)

Size - 75" / 85" / 95" / 105" / 110" / 120" / 130"



### We Can Offer

- Eccentric Slotter Machine
- 4-bar Rotary Creasing & Cutting Machine
- Double colour printing machine
- Box Stitching Machine Angular / Straight

For further information please contact :  
SATPAL S. BHURJEE / PARMINDER S. BHURJEE

*Due to continuous innovation, specifications are subject to change.*

# PACKLINK<sup>TM</sup>

## INDUSTRIES

D-6, Bhaichand Textile Mill Compound, L.B.S. Marg, Near SBI Bank,  
Bhandup (West), Mumbai - 400 078.

Phone : 022 - 25941376 • Mobile : +91 9821441671/+91 9870241186

Email : enquiry@packlinkindustries.com • Website : www.packlinkindustries.com

### Enhance your productivity with HP Services

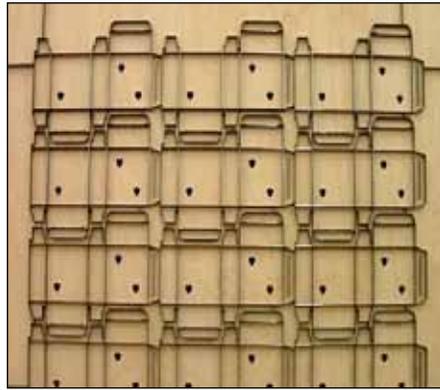
HP Services offers you the broadest portfolio of proven service programs to keep your business running productively. Our certified service teams are committed to meeting your end-to-end needs, driving your business productivity and sustainability for a profitable printing operation. Learn more at [hp.com/go/scitextservice](http://hp.com/go/scitextservice).

### PURANDARA - Your Partner in Die Cutting

Any Product is only as good as the tool that helps in creating it. Even though the die cutting process is so critical it is still one of the lesser understood processes in packaging and printing. Purandara, your partner and solution provider comes to you with the right knowledge in tool creation and design. Their structural design team makes sure your carton sits right and locks proper.

The first of its kind in the state of Kerala, uses state of the art Laser and CNC Rule processing equipment to produce dies of high standards of accuracy and quality. Equipped with the latest available tooling kit, they also have the domain knowledge to do all kinds of demanding diecutting applications. An experienced team makes sure your carton is designed right and the finish is perfect. No compromising on the quality of raw material used in the dies. The quality control team chooses raw material with care at the same time making sure the dies are cost effective. They endeavor to offer the right kind of die for the right kind of job.

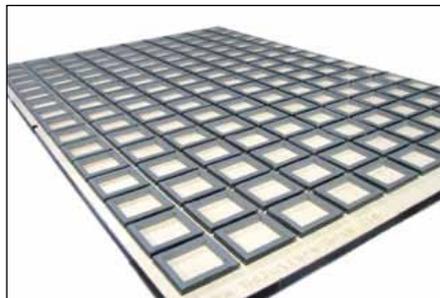
### Their product range includes Folding Carton and Corrugated Carton Dies



Stripping Dies



Stripping Dies



Special Applications

### Maya Printers

Maya Printers located at Tripunithura, specialize in printing of Multicolour brochures, leaflets, calanders, books (hard & soft bound), posters and corrugated carton printing. We have state of the art inhouse facility from Designing, Processing, offset & Post Press.

Established in 1955 as a letterpress printer, Maya Printers has kept evolving and is now ... Ajay Kumar, partner, Maya Printers, with the new CD 102 ... years ago when it bought a brand new 4-color Heidelberg PM 74 offset press. ... CD102 is the best-seller in the 70 × 100 format press series worldwide.





## 2016's Mega 4-in-1 Packaging Expo Set for Dongguan

In order to promote technology development in China's packaging industry, to improve the technical content of Chinese packaging equipment, and enhance communication within the industry, Reed Exhibitions will host SinoCorrugated South, SinoFoldingCarton, SinoFlexoGraphy and China Packaging Container at the GD Modern Exhibition Center in Houjie Town, Dongguan, from April 14 to April 16, 2016.

The combined events will integrate all kinds of local and international packaging science and technology resources, leading to packaging and printing technology innovation and development.

The exhibitions will fully integrate multiple industry resources, thereby providing an all-in-one platform for trade, visiting, studying, investigating and networking. A greater number of buyers with big budgets and high purchasing intent will be onsite. These will include end users of food, commodities, and medicine packaging. Exhibitors will be well placed, therefore, to better

understand market demand, secure orders, and break through trade bottlenecks.

Visitors will see more products, updated technologies, end users, comprehensive market trends and superior solutions to help researchers and purchasing decision makers keep up-to-date with industry information, follow development trends, network with industry peers, and develop business.

### Four Collocated Exhibitions: A New Phase for Industry Development

SinoCorrugated South 2016 will be a trade show for corrugated equipment, consumables and technology in Asia-Pacific. The event will display corrugated, cardboard equipment and related consumables, driving development in the corrugated industry. SinoCorrugated South is an excellent platform on which to meet purchasing buyers, find business matches, expand into emerging fields, promote your brand and network with industry peers.

The combined exhibitions, together with the inclusion of industry elites and the participation of corrugated professionals, will elevate the shows and place participants in position to reap lasting rewards from this exercise in the future.

### SinoCorrugated South

SinoCorrugated South 2016 is an Asia-Pacific professional trade show for corrugated equipment, consumables, and technologies, displaying cutting-edge corrugated box, cardboard manufacturing equipment, and related consumables.

**For press information,  
please contact:**

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# The 4-in-1 Mega Expo for the Whole Packaging Industry Chain

Organiser



April 14-16, 2016  
GD Modern International Exhibition Center,  
Dongguan, China

## Contact Us:

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[www.sino-corrugated.com](http://www.sino-corrugated.com)



## SinoFolding Carton 2016

Asia-Pacific's Professional  
Platform for Innovative  
Post-Print Solutions

[www.sino-foldingcarton.com](http://www.sino-foldingcarton.com)

## SinoCorrugated South 2016

Asia-Pacific's  
Professional Corrugated  
Manufacturing Show



# PACKCON

CHINA PACKAGING CONTAINER EXPO

Professional Platform for Packaging Containers



## SINOFLEXO GRAPHY 2016

We Are Green Packaging

# Forthcoming Events

14-16 April 2016



**Venue: GD Modern International Exhibition Center, Houjie, Dongguan City, China**

SinoCorrugated South is the most prominent event in Asia-Pacific's corrugated manufacturing industry. It showcases the latest corrugated box equipment, consumables and advanced technologies. This trade show not only features the industry's latest trends and developments, it also provides numerous opportunities for exhibitors to interact directly with key manufacturers and buyers of corrugated cardboard products. As an organizer of internationally renowned events, Reed Exhibitions excels at satisfying exhibitors' needs by offering multiple channels through which to secure exceptional business deals.



## Co-located Shows

**SINO FOLDING CARTON 2016**  
**SINOFLEXO GRAPHY 2016**  
**PACKCON**

13-15 Jan 2016



**Venue: Tokyo Big Sight, Japan**

**Variety of Packaging Technologies for IC Devices**

Advanced products/technologies/services will be showcased, necessary for downsizing and advance of semiconductors, LEDs, power devices, sensors and MEMS devices.

24 - 25 February 2016



Packaging Innovations 2016 is dedicated to bringing the packaging industry together to demonstrate new innovations, inspire developments and new approaches, and discover the latest trends and technologies. As the leading event in the UK, the show provides essential networking for all those involved in all aspects of packaging.

2 - 5 March 2016



**HITEX International Exhibition Centre, Hyderabad**

**The Total Packaging, Processing and Supply Chain Event**

PackPlus South is the premier packaging exhibition that explores the markets of the south and west India in depth and provides a platform for Indian and International suppliers to meet industrial customers with needs across the supply chain

31 May - 10 June 2016



**Drupa 2016**  
**Messe Düsseldorf, Germany**

The print and media industry is changing. New technologies are establishing themselves. With the highlight themes of print, functional printing, packaging production, multichannel, 3D printing and green printing, we are responding to this change and are opening up new visitor target groups with state-of-the-art technologies and new solutions.

[www.drupa.com/](http://www.drupa.com/)

24 - 26, JUNE - 2016



**India's Premier Packaging Expo**

Chennai Trade Centre | Chennai | India

COMPACK is the only dedicated Packaging Expo in the country. The focus is primarily on the end-users of innumerable products - be it Consumer or Industrial, to cater to all the needs related to Packaging - machines, materials and systems.

