



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Introduction

- ➔ Variations of duplex Slitter rewinders and their distinguishing features
 - **DSR FL**
 - **DSR RL**
 - **ULTRASLIT® OHP**
 - **ROBOSLIT®**

- ➔ Some aspects unique to Slitter rewinders in Flexible packaging

- ➔ Methods to reduce changeover time and effort



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

SP Ultraflex has over two decades of gainful experience in the manufacture of Flexible packaging and converting machines. In the year 2005, the management decided to hive off its Printing and Lamination machine business, to focus solely on the design and development of state of the art Slitting rewinding machines.





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Undiverted focus, relentless improvements, constant innovations and an excellent support staff ensure that SP Ultraflex retains its position as the preferred supplier for Slitting rewinding machines.



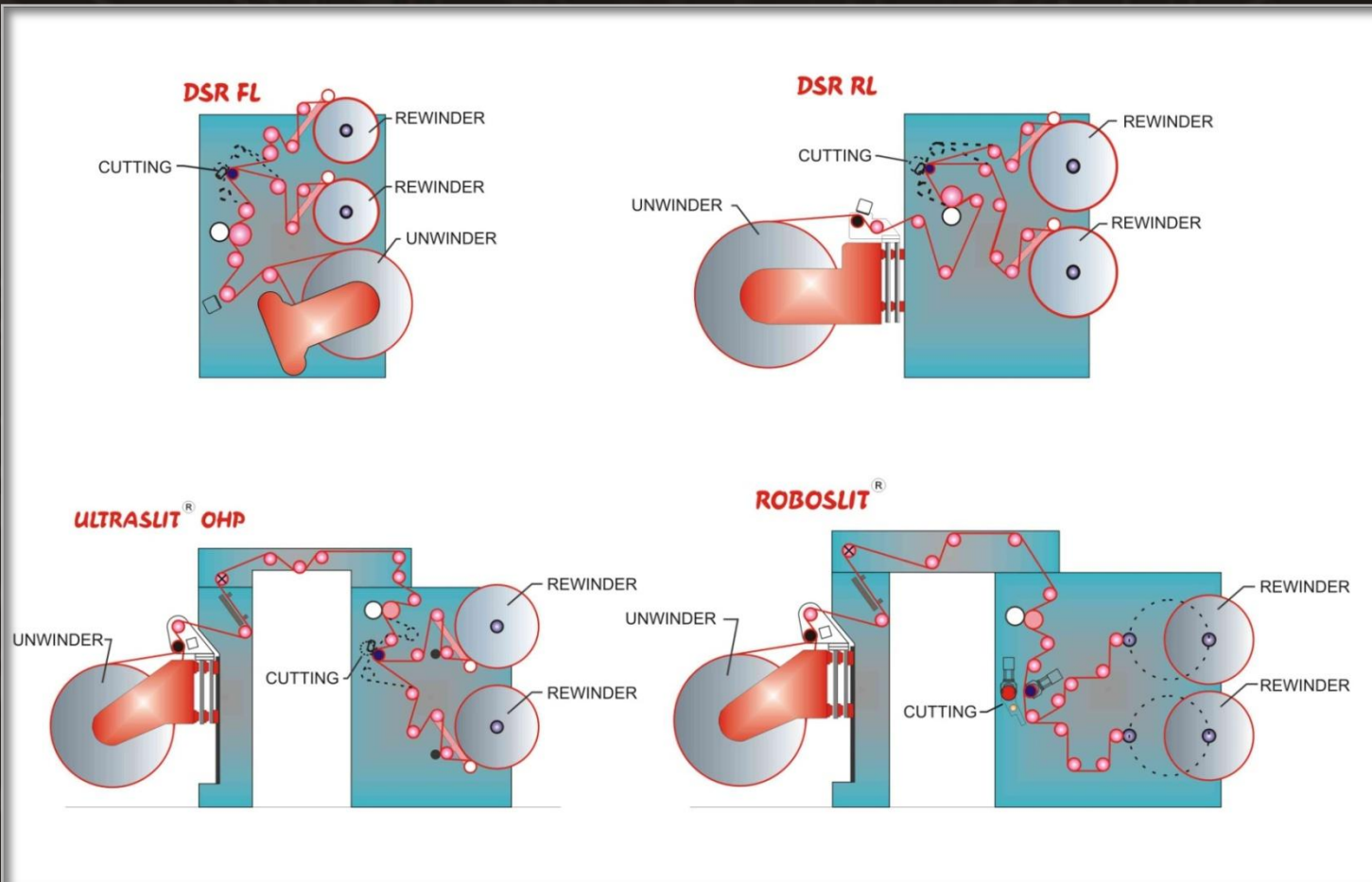


an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Variations of duplex Slitter rewinders and their distinguishing features

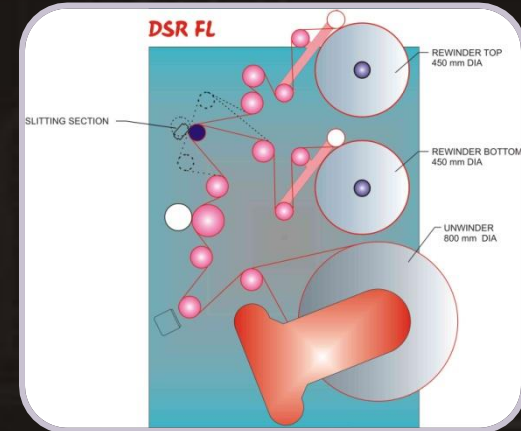




an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



DSR FL



- **Compact layout and easy web threading**
- **Excellent access to the cutting and trim extraction section**
- **One piece, pre-wired design with an integrated control cabinet to facilitate ease of transportation and quick installation**
- **Better overall supervision with minimum operator movement**
- **Speeds of upto 400 m/ min**



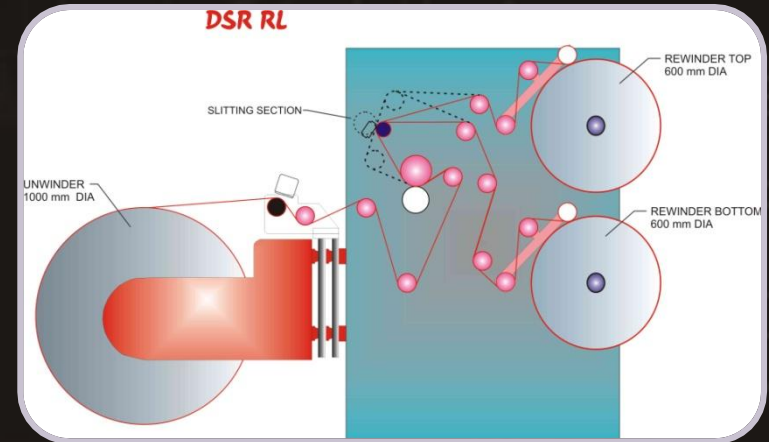
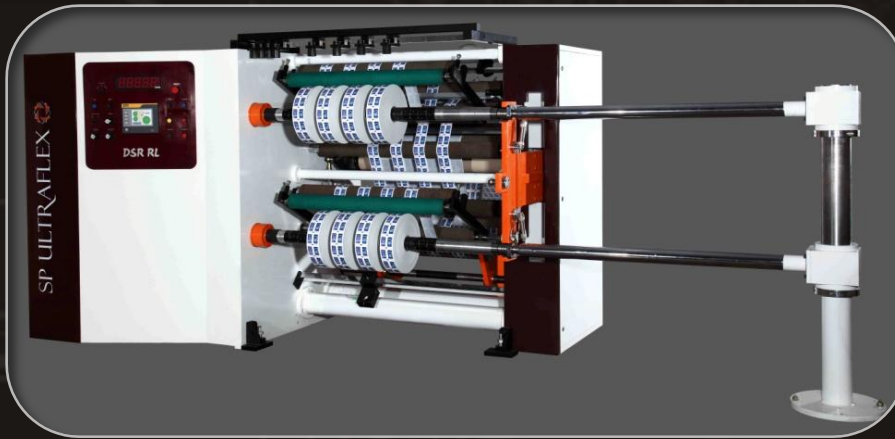


an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

DSR RL



- Reasonably large unwind and rewind diameters in a compact layout
- Easy web threading
- One piece, pre-wired design with an integrated control cabinet to facilitate ease of transportation and quick installation
- Speeds of upto 500 m/min



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

DSR RL



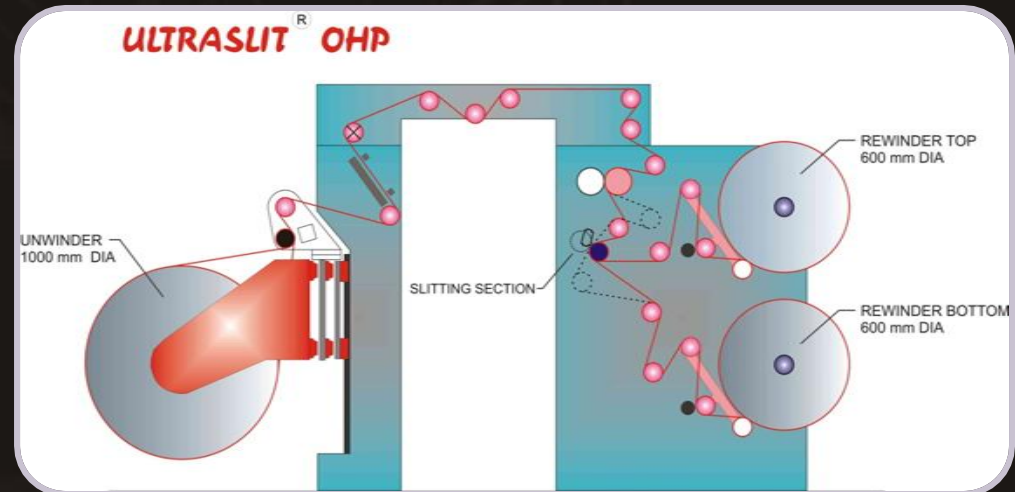


an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

ULTRASLIT® OHP



- **Overhead bridge in place of the traditional foot bridge which ensures a hygienic environment, excellent access/ visibility and makes web threading easier**
- **Virtually endless possibilities of enhancements and upgrades in terms of material handling options, increased reel diameters, on line processes and other specific requirements**
- **Speeds of upto 600 m/ min**



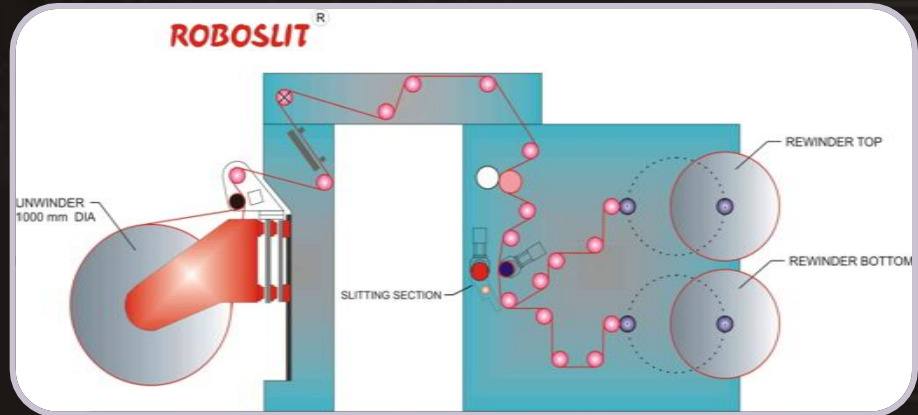


an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

ROBOSLIT®



- Dual turret rewinds which bring down the changeover time to less than 30 seconds by making it possible for other devices to execute the activities related to removal of finished reels and set up of new cores with the machine in operation
- These devices include a cross-cutting device, servo driven finished reels ejector, multi axis off loading mechanism and robotic core positioning system
- Robotic cutter positioning system while cutting in the Tangential rotary mode, resulting in a drastic reduction in the time and expertise required to change slit widths
- Horizontal orientation of the Lay on section ensures that the rewind reels are subjected to constant contact pressure as against the pivoted counterparts in which the contact angle changes with the rewind diameter





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Some aspects unique to Slitter rewinders in Flexible packaging

1. Downtime- futility of increase in speed

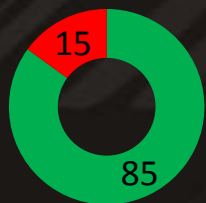
Changeovers on nonstop Rotogravure Presses and Lamination equipment occur only when switching from one job to another, making the cycle time for reel changeover irrelevant.

On an average a changeover in a Rotogravure Press occurs twice in 24 hours, each changeover taking about 1.5 hours. Accordingly you can expect downtime to account for 15 % of the total time.

As against this, changeovers on a secondary Slitter Rewinder are required with the build up of every rewind set, expiry of unwind reel and tooling changeovers.

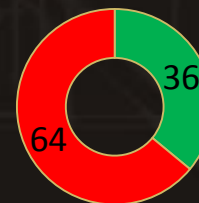
Considering an average of 9 minutes per cycle with 3 minutes run time, 4.5 minutes rewind changeover time and another 1.5 minutes being the proportionate allocation of unwind and tooling changeovers, we come to the eye opening conclusion that a duplex Slitter Rewinder has a downtime component which is as high as 64 %.

Printing/ Lamination



■ Runtime
■ Downtime

Slitter rewinder



■ Runtime
■ Downtime



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

What this means is that the increase in output for a given increase in speed is quite substantial in the case of Printing and lamination machines. From the above example, we can see that increasing the speed in case of these processes will yield an increase in output which would be as much as 85% of the increase in speed. Say we increase the speed of a Printing Press by 50% from 200 m/ min to 300 m/ min. The resulting increase in output would be 50 % of 85 % which is 42.5 %.

Whereas increasing the speed in the case of the Slitting Rewinding operation will yield an increase in output which would be only 36% of the increase in speed. Say we increase the speed of a Printing press by 50 % from 400 m/ min to 600 m/ min. The resulting increase in output would be 50 % of 36 % which is 18 %



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



2. Operator Fatigue

The large diameters and lengths processed on Rotogravure Presses and Lamination equipment also mean that the cycle time is quite long and the operating personnel are rested for long stretches of time between material and changeover activities, keeping them relatively fresh during the course of the shift.

As against this, the operating personnel on a duplex Slitter Rewinder would be required to carry out the strenuous activity of rewind reel changeovers once in every 10 minutes, 6 times in an hour and 144 times in a 24 hours day. Add to this the fact that unlike Printing and Lamination equipment, the operator has to physically displace and lower to ground level not just one but several rewound reels during each cycle. As a result a marked drop in output levels is observed as the shift progresses, both due to physical fatigue and the tendency of the operator to increase the cycle time by lowering machine speeds.



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

3. Factors restricting high speed operation

Being primary converting operations, Printing and Lamination processes can usually be carried out at constant speeds near the rated machine speed, mainly on account of the fact that these machines, in particular the Printing press is equipped with Automatic registration control, Defect detection systems, Viscosity controls and other such equipment with which there is a minimal need to reduce the machine speeds for any reason.

On the other hand, the material being converted on the Slitter rewinder has gone through a number of processes and contains portions with defects which are marked. The Slitter rewinder is often slowed down or sometimes even stopped to examine/ remove these defects.



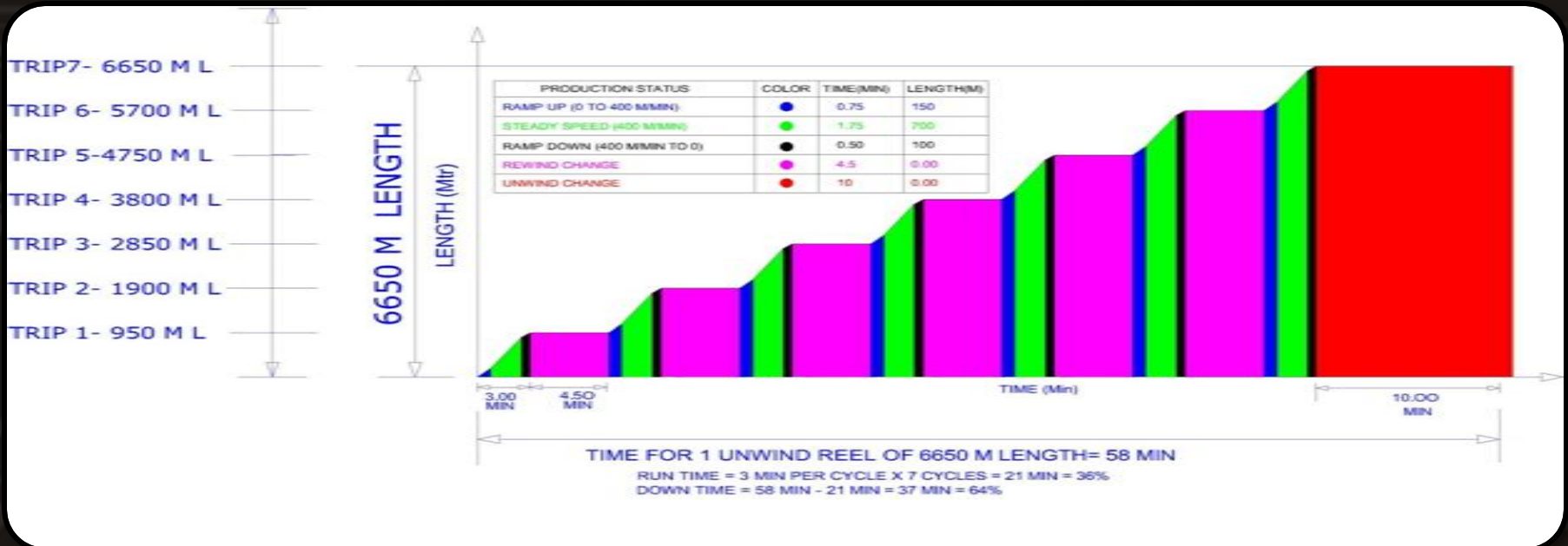
an exclusive range of slitting rewinding machines
SP ULTRAFLEX
 SYSTEMS (P) LIMITED



PackAge
 2011

4. Need to bring down ramp times

As the graph below illustrates, even when the machine is running, full rated speed is maintained for only about 60% of the run time; the remaining 40% is the time taken to accelerate to and de-accelerate from the steady speed. Hence reducing the acceleration and de-acceleration times assumes much greater importance than in the case of non-stop Printing and Lamination operations. Servo motors, higher end drives and complicated programming algorithms need to be used to achieve this objective. It is in fact the Slitter rewinder, due to the frequent stop-start conditions, where the performance and ruggedness of drives are truly put to the test.





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

5. The quality aspect – importance of quality Slitting rewinding equipment

Last but not the least, the Slitting operation is in most cases the final process after which the finished reels are dispatched to the customer. It is the look and finish of the slit reels which first catches the eye of the customer.

Hence the importance of good quality Slitting rewinding equipment cannot be over- emphasized in the overall set up of a Flexible packaging and converting unit.





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Methods to reduce changeover time and effort

Rewind changeover- Fully automatic

Single touch operation for ejection of reels onto an off loader which swivels in two planes before lowering the reels to floor level. Reduces changeover time by about 2 minutes.





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Rewind changeover- Semi automatic



180° Indexing for easier removal- brings the reels of the upper rewind to a more manageable level for ease of removal



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Rewind changeover- Pneumatic swivel

Pneumatically actuated Off loader for rewind reels, interlocked with the machine controls for safety and attached to the main machine to reduce floor space requirements and installation time.





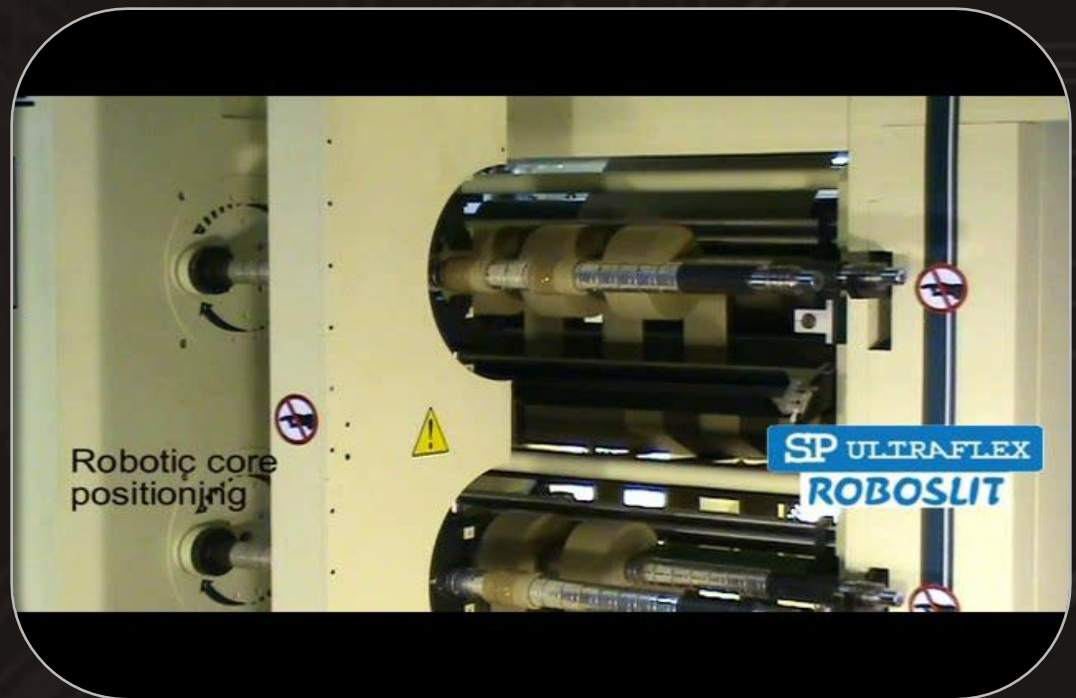
an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Robotic core positioning

Pick and place mechanism to position the fresh cores as stored in the job recipe with the machine in operation.





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Unwind floor lift



Shaftless, self centering floor lift mechanism conceived without the use of hydraulics to meet the hygiene requirements for secondary packaging.

More convenient trajectory of lifting movement which is vertical, as against angular in most contemporary machines.



an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Slit size change

This activity consumes a lot of time, especially in case of rotary knives. A tangent cut system without separating spacers reduces set up time.

More advanced solutions include pick and place mechanisms to position the cutters cores precisely and as in the job recipe.

Robotic cutter positioning

2 minutes for 7 cuts

Pre programmed cutter positioning

SP ULTRAFLEX
ROBOSLIT





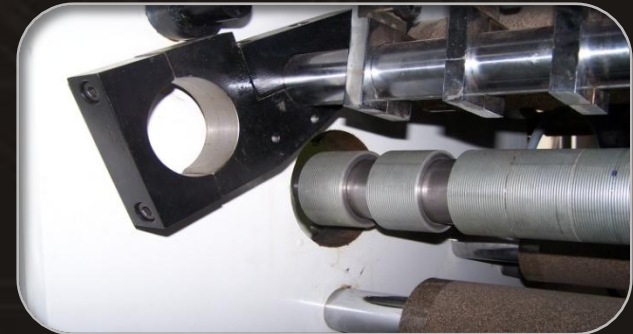
an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Slit mode change

A well designed cutting section includes features to reduce the time and man power required to change from one slit mode to the other.





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

Replacement of worn slitting tools



Razor blade change

Rotary top cutter change





an exclusive range of slitting rewinding machines
SP ULTRAFLEX
SYSTEMS (P) LIMITED



PackAge
2011

THANK YOU FOR YOUR ATTENTION

