Culisse Winder

The Culisse winder is a multi-lane slitting and winding machine, now in the fifth generation, which finds more and more new fields of applications thanks to the utilization of advanced control systems.

The winder is designed for speeds up to 1,100 m/min and working widths up to 4,500 mm (depending on the product), and reel diameters up to 1,500 mm. The winder can be integrated in both extrusion lines as well as other machines such as printing machines.

The multitude of materials to be cut and wound includes very thin and highly flexible films for sanitary applications, embossed films, food packaging films, industrial and household stretch films, protection films, non-wovens and laminated multi-layer combinations as well as thin paper and aluminium.

The standard version of the winder already includes a high-performance PLC-based control system. Using modern AC servo-drive technology, the winding procedure is realized with high precision even in case of sensitive winding materials.

The winder is operated via touch screen which is integrated in a movable control panel in front of the winder. The user-friendly and intuitive menu prompting enables the machine operator to handle the winder easily. Remote maintenance via modem also belongs to the standard scope of delivery.

An outstanding feature of this winder is the high effectiveness which is obtained in most cases of application by multi-lane winding in a single operation, thus a costly and time-consuming rewinding is avoided. Depending on the application, the winder operates largely scrapless as bleed cuts between the single lanes are unnecessary.
Operation:

1. The active roll is in winding position. The passive winder shaft has already been discharged and equipped with a new set of cores. The main lay-on roll provides an exactly given gap or lay-on pressure.

2. The main lay-on roll which has been in function until now is going to be followed by the auxiliary lay-on roll (alternatively in the mode contact or gap winding). A short-time overlap of the functions of the two lay-on rolls provides a smooth transfer.

3. The active roll moves precisely controlled into the direction of the turret bull gear centre. The auxiliary lay-on roll follows this movement keeping the precisely given functional curves, controlling the position in gap mode or the lay-on pressure in contact mode.

4. As soon as the active winder is in the centre of the turret bull gear, the actual turret indexing takes place. Unlike the normal turret winder the winding quality is not negatively influenced hereby, because this kind of turret procedure does neither change the web tensions nor the free length of web path of the winding material.

5. The winding procedure is continued until the prepared new winder shaft is only a few millimetres away from the winding material.

6. Various film take-over mechanisms are initiated for taking the winding material over to the empty winding core: A lay-on cave will be positioned for controlled take over, an air shower and/or an electrostatic charging will be activated between winding material and core.

7. The cross cut takes places within few milliseconds with a high speed cross cutting knife. The above mentioned take-over mechanisms take care that the fold back of the winding material is reduced to a minimum or completely avoided. Thus it is not necessary to prepare the winding cores with adhesive tape or similar.

8. The combination of high speed cross cutting knife and take-over supports provides a reliable winding at multiple lane slitting (down until ca. 100 mm lane width).

9. The main lay-on roll takes its function over at the same time as the cross cut takes place.
10. The auxiliary lay-on roll loses contact to the final roll. Cross cutting knife and take-over supports are deactivated and led back to the waiting position.

11. The discharge carriage and the finished roll itself are moving simultaneously to the discharge position without influencing the winding process. The single side clamping device for the winder shaft does not open before the discharge carriage is in position and a support mechanism temporarily takes the weight of the finished roll.

12. The auxiliary lay-on roll has now stopped its function and is moving to the waiting position below or above the active winding roll depending on the selected winding direction in order to take the place of the main lay-on roll later on.

13. The discharge carriage is lifted with an hydraulic cylinder until the rubber padded contact surfaces have taken over the complete weight of the finished roll including the winder shaft. Precise contacts facilitate the control of the automatic discharge procedure.

14. With increasing diameter of the active roll, the positions of the main lay-on roll and the winding roll are precisely moving towards each other in order to achieve constant winding conditions during the whole winding procedure.

15. The finished roll is taken off laterally from the winder shaft. Depending on the quality of the winder shaft, individually adapted shifting devices provide a gentle handling of the finished rolls.

16. A pivoting mechanism takes care that the finished rolls are placed on another table where they can be weighed, labelled and packed.

17. The discharge carriage now lowers so that the empty winder shaft can be loaded with new winding cores. This can be made manually, semi-automatically or - with a core magazine – fully automatically.
Technical Data:

- working widths: from 800 mm up to 4,500 mm, net
- roll diameters: up to 1,600 mm max., depending on the design and number of reels
- winding shaft diameters: 3" (76.2 mm), 6" (152.4 mm), 8" (230.2 mm)
- speeds: up to 700 m/min for film and non-woven
  up to 1,100 m/min for composites
- winding materials: flexible mono and co-extruded films,
  non-woven, laminated paper, aluminium and other composites
- thickness ranges: 8 – 250 μm for film, up to 450 g/m² for composites

Special features and options:

- automatic core feeding with core magazine
- lane slitting with or without bleed cut
- winding of new roll with low or without fold back supported by effective lay-on mechanisms
- readjustment of the lay-on support for various winding shaft diameters by just hitting a key
- integrated recipe management for highest flexibility
- gap winding
- both winding directions can be selected

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