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PRESSRELEASE PRESSRELEASE

DECEMBER 14TH, 2006

THE NEW OSCILLATING HAUL-OFF

Since its beginnings in 1989 ADDEX has strived to offer the blown film processors technologies that give them an edge over the competition.

Camber (or the zig-zagging of the film) has been an issue since the inception of the horizontal oscillating haul-off in the late 70's. Today it has become an even bigger issue due to the very high speeds of the downstream equipment particularly laminators. With speeds in excess of 3000 feet (1000 m) per minute having the lowest film thickness variations (overall and of each inside layer), the flattest possible film and a reduced or no camber become major issues. To all these challenges ADDEX has patented answers that supercede the state of the art.

ADDEX's latest development addresses camber. Camber is the left and right zig-zagging of the film when unwound. It is defined as the maximum deviation of the edges of a 33 feet (10 m) long stretch of film to a straight line (Fig 1). The measuring is done by unwinding a 33 foot long stretch of film, placing it on a flat surface (usually an aisle in a plant), flattening it with a broom and stretching a string along the edge. The maximum distance between the edge and string is the camber. Camber is present to one extent or another in all films run through a horizontal oscillating haul-off. Camber varies depending on resin and blown film line between 0.4-0.8". It is caused by the tension the web is exposed to when it makes the up to 90 degree turns over the air turning bars. In all non-Addex haul-offs that happens twice in the same direction (the same side of the web travels over both air turning bars) resulting in the sum of the two "tensions". The highest tension happens at the maximum angle of 90 degrees in the + and - 180 degree positions of the oscillating haul-off. Those are the positions in the web where the camber should be measured.

ADDEX solved that problem with its new GBR (Gauge Band Randomizer) by placing 2 idler rolls with an S wrap between the two air turning bars. This set-up turns the web so that the second air turning bar "sees" the other side of the web. This reverses also the wrap angle over the turning bars and therefore canceling out the tensions.



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In the non-Addex oscillating haul-offs the center is blocked by the set of gears mounted on a vertical axle that prohibits the use of the two S wrap idlers (Fig 2 and 3).

The patent pending GBR features two gear arrangements that leave the center open for the web to travel from one side to the other by S wrapping over the idlers ending up traveling over the two air turning bars from opposite sides. The lack of camber is already noticeable on the idlers that lead the web from the haul-off to the winder. This qualitative advantage is, however, most important when the web is unwound on the downstream equipment, particularly laminators, when applied to non- or low- stretching materials like aluminum foil or paper: the web travels from the beginning to the end of the roll straight through.

Figure 4 shows the new GBR: the take-off reverses on a stable thrustbearing that carries and centers the lower half of the GBR that includes the first air turning bar and the frame that holds the two S wrapping idlers. The gearing for the second air turning bar hangs off an overhead frame that also stabilizes the arms that hold the turning bar. The system is driven by two synchronized AC motors. Each turning bar has its own blower.

The new GBR is available for 20" (500 mm) up to 130" (3200 mm) wide webs in 10" (250 mm) intervals. The patented air turning bars with the grooves around the air holes allow up to 28% VA contents EVA films to travel across without any special coatings. The start up is made easy with the rotating air turning bars that lock into place once the thread up is complete.

This new GBR was shown for the first time last summer at Chicago's NPE.

ADDEX is a producer of high-technology blown film lines