POLIPAK — RODA WIELKOPOLSKA, POLAND

# Film Processor Automates Complex Resin Management, Blending & Distribution System

## Polipak moves to BlendSave system to support sustainability and Industry 4.0 objectives.

By Jim Callari
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Polipak, a processor of multi-layer PE film for the Central and Eastern Europe markets, recently faced the challenge of efficiently and accurately combining blends of various recycled materials with virgin resins and delivering them to numerous extruders in the plant. This challenge is part of Polipak's commitment to the circular economy and sustainability. Equally important to Polipak is automation for the future to enhance production efficiency and quality, as part of the company's goal of innovation in manufacturing with an Industry 4.0 production environment.

At the beginning of 2022, Polipak moved from two older plants to a new state-of-the-art facility in Poland. In the older plants, manual labor was used for every aspect of the production process. For example, in resin blending, the resin/PCR/regrind blends required manual weighing of each ingredient. Sixty extruders were fed by a turn-head distributor that delivered one weighed virgin resin to several mixers. Then, employees would pour additional PCR and regrind materials into the mixer with the virgin material.

The mixed blends were then transported to the extruders by a vacuum conveying system. This manual blending process resulted in numerous errors in blend ratios and required additional maintenance because of spilled materials. Plant engineers were responsible for providing production instructions for these blends for each extruder for every run around the clock.

As the company started to design its future Industry 4.0 plant, Polipak searched for the best available solution to automate blending of any batch from the selection of 40 different resins and PCR materials, and to deliver individual blends automatically to each of the 100 extruders. Polipak turned to the LIAD Smart patented BlendSave technology solution from Ampacet. BlendSave's automated resin management, blending and distribution system provided Industry 4.0 technology and offered a simple, streamlined workflow to facilitate "lights-out" operation.

To meet Polipak's specifications, LIAD engineered two BlendSave systems, each consisting of four basic BlendSave units, and with each unit consisting of 10 weighing channels; each BlendSave system accommodates 40 individual weighing chambers. Polipak's 40 grades of resins, regrind, and PCR are now fed directly from silos to each of the dedicated 40 BlendSave intermediate hoppers, which then feed each dedicated weigh hopper, eliminating any threat of contamination. Each of the two BlendSave systems has an OctoBatch distributor that automatically channels each individual blend to 50 dedicated buffers, which in turn deliver the blends to the individual extruders in the plant. The process is managed entirely digitally.

**Polipak's switch to BlendSave provided it with automated and optimal management of multiple ingredients and processing-machine combinations. (Photo: LIAD)**

Polipak uses MES software and LIAD's software to transfer the recipes for the 100 extruders to the appropriate BlendSave PLC. The two PLCs transmit all the jobs' historical data via LIAD's software to the MES. According to predetermined recipes destined for particular extruders, each BlendSave unit simultaneously and accurately weighs the recipe's raw materials and combines them as a batch. Each batch is distributed by the OctoBatch distributor to a buffer linked to one dedicated extruder. Once a signal is received from the extruder's vacuum receiver, material from the linked buffer is transferred via a delivery pipe to the extruder. In each buffer, a level sensor signals to the PLC to refill it.

The result has been a significant step forward in achieving a total Industry 4.0 plant environment, with dramatic increases in overall plant efficiency and greater quality control, as well as lower labor and maintenance costs, notes Polipak General Manager Tomasz Trams.