New Record Set for Making Extra Large-Diameter HDPE Pipe

By PPN Editor

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In a significant leap forward in plastic extrusion technology, Battenfeld-Cincinnati has established a new record by introducing the first extrusion lines capable of manufacturing Polyethylene (PE) pipes with a staggering diameter of three meters, targeted for large-scale projects.

These innovative extrusion lines are a marvel of engineering, designed to produce up to **3-meter OD** giant PE pipes, breaking all previous limitations regarding size and quality. Such advancements are crucial as they cater to the growing demands for robust fresh water and wastewater infrastructure systems capable of handling substantial capacities.

Battenfeld-Cincinnati’s design effectively integrates various components—from the material dosing system to the cutting unit—ensuring seamless operation without any interface issues. This integration is part of the company's broader strategy of leveraging its vast experience in constructing large-diameter pipe systems to enhance product quality and efficiency.

The lines utilize high-performance extruders from the solEX NG series, which provide up to 25% higher output than earlier models. These extruders feature an internally grooved barrel along with a matching screw and grooved bushing geometry that lowers the axial pressure profile, thereby reducing wear and tear while maintaining high output rates at lower temperatures and screw speeds. This innovative design results in a gentle yet effective melt processing, which is crucial for maintaining the integrity of the pipes.

Moreover, the integration of the OptiMelt static mixer between the extruder and the die contributes to an additional reduction in temperature, optimizing the melt flow and quality. The helix pipe head tooling, with its two-stage concept, ensures an even melt distribution with minimal pressure build-up, vital for producing high-quality, large-diameter pipes. The system also includes an effective internal cooling mechanism that helps maintain stable melt flow from the die, crucial for preventing sagging and ensuring uniform wall thickness without ovality.

Energy efficiency and environmental sustainability have not been overlooked. The downstream components of the extrusion line, such as the vacuum and spray baths, utilize frequency-controlled vacuum pumps that cut energy consumption by about 50% compared to traditional systems. Additionally, a closed water circuit within the complete calibration system drastically reduces water usage to just 4.41 gallons per minute, underlining the company's commitment to sustainable manufacturing practices.

This technological breakthrough not only sets a new standard in the manufacturing of large-diameter HDPE pipes but also significantly enhances the capability to meet the infrastructure needs of growing economies. The successful deployment of these extrusion lines promises to revolutionize the construction and operational efficiency of large-scale water management systems, providing a robust solution that meets modern demands.

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