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Process Energy Measurements for Detailed Process Evaluations

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Non-invasive energy measurements at low and high sampling frequencies have provided a new window into developing understanding of processing of polymers. In injection moulding on servo-electric machines, appropriate signal analysis at high sampling frequency can provide data similar to that obtained from a nozzle pressure sensor and an injection screw displacement sensor, to provide shot by shot trend analysis of processing. It is also possible to determine particular contributions to energy consumption from different elements of the process and machine. Energy comparisons from various injection moulding systems are made, including fluid-assisted injection processes, along with data from extrusion processing, including recycled materials.