



GRAHAM ENGINEERING

Process Technology & Capabilities

A leading innovator of extruders & extrusion systems, Graham Engineering Corporation brings over fifty years of experience & expertise in anticipating & meeting our customers' processing needs & challenges. This is achieved through our extensive knowledge of polymers; the application of proprietary process and screw design technology; expertise in part design; advanced simulation and modeling tools, and empirical laboratory testing services.

Process Engineering

Graham Engineering Corporation has extensive experience in processing all types of thermoplastics, rubber & silicone. Our process engineering has allowed us to develop an expertise in many applications.

- Blow Molding
- Sheet
- Profile
- Tubing
- Wire/Cable
- Blown/Cast Film
- Pipe
- Fiber
- Coating Compounding
- Pelletizing
- Multi-Layer Co-extrusion



As applications & polymers evolve we continually analyze & work to improve our processes so that we can better serve our customers. Our engineering, sales, & service teams are continually interfacing with our customers & in working together to solve challenges, expand our collective capabilities. By taking this systematic approach, we are able to more efficiently develop proof of concept & proof of process, satisfy customer needs, decrease response time & offer more economic options.

Screw Design

As one of the leading providers of OEM & aftermarket Steward barrier screws, mixing screws, and general purpose screws, Graham Engineering Corporation designs & produces hundreds of screws each year covering a wide spectrum of applications. Our engineers are able to design screws that maximize output, improve melt homogeneity, minimize pressure fluctuations, optimize melt temperature, & widen the process window. Using advanced software, our engineers can simulate solids conveying, melting & metering in the extruder allowing them to predict the extruder output, power requirement, torque, melt temperature, melt pressure, & average residence time. This approach allows for customization to match the customer's needs – no matter the output, material or application.

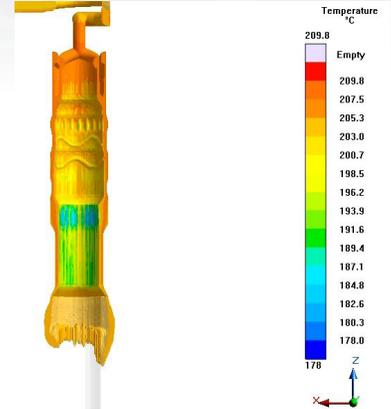




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Flow Analysis

When optimizing our machines to provide our customers with the best product possible we have to be able to ensure a quality melt flow. This is done through our flow analysis process by evaluating head pressure, viscosity and velocity. During flow analysis, we also closely observe for dead-spots with poor flow that can cause stagnation and polymer degradation. This technology, when applied towards melt adapter designs, tooling designs, and specialty die designs, assists in optimizing the mechanical properties of the polymer and ultimately the end product.



Finite Element Analysis (FEA)

Optimal design begins with the end in mind. Whether working with customers to define parameters for part or package performance & appearance or analyzing line forces to inform machine design, Graham Engineering Corporation also applies our OEM experience to help optimize line design, processibility & material reduction. Utilizing FEA, stress points are identified & can be reorganized, enabling material reduction of up to 20%. We have accrued more than 50 years of data into a database which encompasses both physical & rheological properties of polymers. The resulting data is then incorporated into mold design which, while in production, enhance the processibility of parts or bottles, all while maintaining the customer's design requirements & brand integrity.



Lab Testing

Our reputation as a segment leader in sheet, blow molding & extrusion has been developed in partnership with our customers. Nowhere is this more prevalent than in our Lab Testing. Our lab & the services our entire technical staff, with more than 50 years of experience, are available to our customers for consultations regarding equipment or part design & process performance challenges. In combination with our computer simulation tools, our lab enables us to run exact polymers, silicones or rubber on production scale equipment to customize & optimize equipment through empirical trials. This partnership has achieved a high rate of success when testing new polymer formulations. For our clients that cannot work onsite with us, we are able to generate extensive lab reports to provide complete transparency & a full understanding of the material or machine that is being developed & tested for them. In addition to product sampling & production testing, our lab tools enable analysis of rheological properties for multi-layer & barrier extrusions.



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