



**GRAHAM**  
ENGINEERING

**Advanced Medical Tubing Solutions**



## UNMATCHED EXPERTISE

Graham Engineering (GEC) and our American Kuhne brand have long been synonymous with innovations that have helped transform the plastics industry. GEC is known worldwide for state-of-the-art technology, quality, reliability, and productivity. GEC equipment produces a wide array of high-quality plastic products year after year.

*Our vision focuses on delivering innovative medical solutions to a diverse customer base.*

Continuous technological innovation, client/partner relationships, product line diversification, and strategic alliances are all part of the GEC vision – a commitment to leadership tied directly to the needs of our medical customer base.

### A Tradition of Engineered Solutions

We are a leader in supplying extruders & complete extrusion systems specifically designed to meet the increasingly stringent demands of the medical marketplace.

We work closely with our customers to provide custom engineered solutions backed by a superior level of service & support with expertise in the following applications:

- FPVC & non-FPVC tubing with optional high speed (up to 800 f/min / 244 m/min) production arrangement
- High temperature tubing (PEEK, ULTEM)
- Fluoropolymer tubing (FEP, PFA, etc.)
- Multi-layer tubing
- Bump/Taper tubing (Profile tubing)
- Micro-tubing
- Multi-lumen tubing
- Co-extrusion tubing with encapsulated radiopaque stripes
- Continuous & discrete length wire coating
- Braided or spiral reinforced tubing
- Thermally bonded tubing
- Specialty medical profiles

### Technologies to Give Customers Every Edge

In today's competitive market and high production environments, GEC is continually looking for ways to help customers improve production quality and speed. We strive to enhance the value of the products made on our machines and achieve our customer's sustainability goals through source reduction.

### Service That Maintains Peace of Mind

GEC is firmly committed to providing the highest levels of customer support. Our service professionals can respond around the world to ensure that every machine exceeds customer expectations and helps your company achieve the highest possible standards of success.

*Our experience brings confidence, trust, and peace-of-mind.*

GEC's professional team of highly experienced field engineers are always ready to provide all the on-site services your operation may need. Also, remote diagnostics enable us to troubleshoot and solve many problems from anywhere. Our service and spare parts groups focus on a single goal – superior customer satisfaction, based upon maximizing your ROI.

# Advanced Solutions for the Medical Market



## TURN-KEY SYSTEMS

Our expertise lies in creating complete turn-key extrusion systems featuring advanced closed-loop control systems. We ensure the best possible performance by paying close attention to each detail in the system. We offer complete system integration and engineering services backed by a full process/product guarantee for line speeds & dimensional tolerances of the finished tubes. Before any equipment is shipped we perform a comprehensive factory acceptance test at our state-of-the-art facility. We also include comprehensive training and start-up assistance to ensure optimal performance & profitability after the system is installed at the customer's facility.



## THE ULTRA MD

The ULTRA can also be designed for the medical environment. The ULTRA MD is designed exclusively for various medical applications and is well-suited for a cleanroom environment. The ULTRA MD has closed-loop AC vector or optional servo motors for improved speed regulation. Replaceable feed section liners provide the flexibility to configure the feed geometry and pressure to suit the application best. All extruders are supplied with a special urethane-based medical paint that is chip-resistant & does not "yellow" over time.



## THE COMPACT MODULAR MD

The Compact Modular MD Series extruder is explicitly designed for cleanroom and/or controlled environments. The electrical controls are easily serviced and integral with the extruder frame, providing the benefit of reduced machine width and reduced floor space. While the low profile control panel enables the operator's unobstructed view, this machine can be used as a primary or co-extruder and is designed with smooth external surfaces and rounded corners that allow for quick and easy wipe down. A melt pump can be fully integrated at the time of order or easily added in the future. This machine is available with an option to include the entire main frame and safety guards to be made of stainless steel in place of standard painted steel.



## THE ULTRA R/S EXTRUDER FOR SILICONE

The ULTRA R/S Extruder features multiple innovations that provide dramatic improvements in process performance, serviceability & longevity. As the most advanced silicone extruder available on the market today, the ULTRA R/S extruder design features a proprietary hinged roller feed assembly that is easily opened by loosening two simple swing bolts. This provides quick & total access for common service & maintenance including fast & thorough cleaning.

The XC Navigator® control system provides complete eXtrusion Control for all our extrusion solutions, from stand-alone machines to complete medical tubing lines. The XC platform is offered in three levels (XC100, XC200, XC300) depending on the complexity of the extrusion application. All three solutions leverage the same powerful technology in our other Navigator® products. Our XC100 solution provides comprehensive control for stand-alone extruders in a package that includes closed-loop temperature control for barrel and die zones, extruder speed control, and optional pressure control. Our XC200 solution provides expanded control for up to 3 extruders from a single HMI, with up to 10 die zones and integrated melt pump control. Our XC300 solution is a highly flexible, modular solution that provides unified control of up to 3 extruders that can be operated independently or linked together in a plug-and-play configuration. The XC300 also offers connectivity to a wide range of downstream equipment, including air systems, vacuum tanks, gauges, pullers, cutters, conveyors, and coilers. The entire suite of XC products includes a full suite of diagnostic tools. The robust design of our XC platform is highly flexible to optimize each specific extrusion application.



Graham Engineering's exclusive PC-based control system is designed specifically for extrusion and extrusion blow molding machinery. Developed in 2001 as a replacement for traditional PLC-based systems, it provides more flexibility, a higher performance, with a lower cost. The Navigator control system comes in various versions to fit your needs. XC100, XC200, XC300, XBM, and XLS provide varying integration, optimization, and customization levels to your Graham Engineering extruder.

