



GRAHAM ENGINEERING CORPORATION  
Revolution MVP®



GRAHAM  
ENGINEERING

Revolution MVP® Rotary Wheel  
Blow Molding System



## THE WHEEL, REINVENTED™

The Graham name has long been synonymous with innovations that have helped transform the plastics industry. Graham Engineering Company, LLC (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 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 customer base.

### The Revolution MVP®

The Graham Engineering Revolution MVP® rotary wheel blow molding system provides the precision & output of a Graham wheel with the flexibility of a shuttle.

Key features of the Revolution MVP system:

- Reconfigurable between 12-24 stations
- Able to produce bottles up to 16" (41cm) tall
- Capable of varying bottle height up to 28% within a configuration
- Quick-Change™ molds ~5 minutes per station
- Capable of up to 8 RPM & 11,520 BPH (single parison)
  - 46,080 BPH (dual parison, neck-to-neck)

Our Revolutionary new Modular clamp design combined with the new Variable Pitch feature form the basis for the Revolution MVP. Combined with our Quick-Change mold system, this radical, new design offers the precision & output you expect of a Graham wheel along with the flexibility & ability to reconfigure of a shuttle.

### Unprecedented flexibility

If you want to simply change out molds and/or height within a configuration to run a different bottle, the Revolution MVP readily enables. Or if you need to change the wheel to a new configuration with a different number of stations, the system likewise enables. From 12 to 24 stations, the choice is yours. And with the Variable Pitch feature, there are 100 possible positions, all on the same platform.

### 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

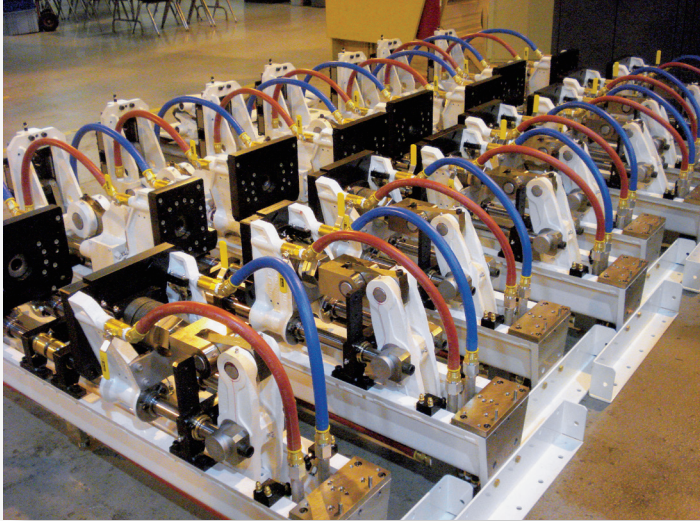
GEC is firmly committed to providing the highest levels of customer support. Our service professionals can respond around the world to ensure that every machine exceeds customer expectations and helps your company achieve the highest possible standards of success.

*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.

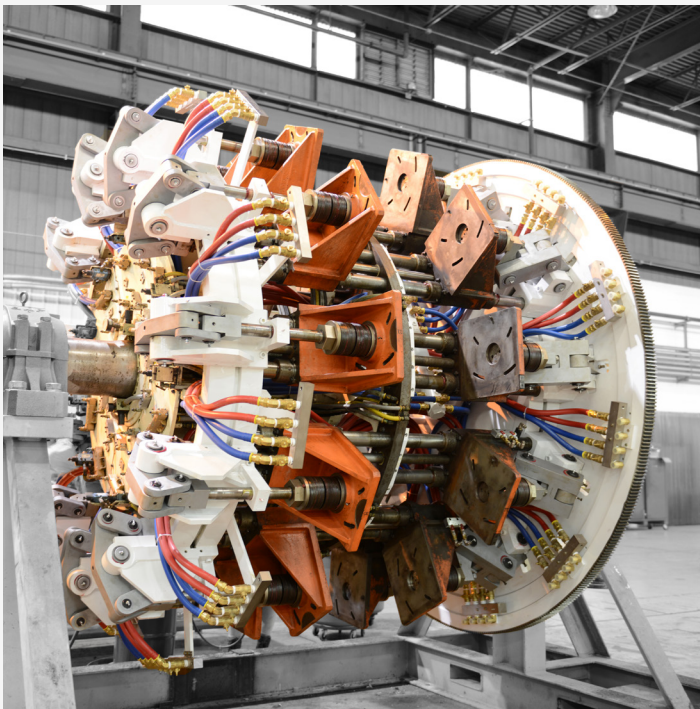


# The MVP's Innovations



## **INNOVATION #1: THE MODULAR CLAMP STATION**

A key Graham Engineering innovation at the heart of the Revolution MVP is the modular clamp station. Each clamp station is independent of the others & all forces are self-contained within the clamp. Water manifolds through the platens & individual clamps can be removed for offline maintenance to reduce downtime. This modularity enables the number of clamp stations to vary from 12 to 24. This in turn enables the configuration of the wheel to vary based on application & bottle height.



## **INNOVATION #2: VARIABLE PITCH**

While the modular clamp design enables the number of stations to vary from 12 to 24 on the same platform, the variable pitch innovation creates a multiplier effect enabling 100 possible positions. This not only enables a range of bottle sizes up to 16" in height to be run on a single platform, but also provides flash optimization at each bottle height, particularly important for multilayer applications. Each clamp station is adjustable from 39" to 47" in 1" increments. It takes ~5 minutes per clamp station to vary the pitch in a simple process whereby bolts are loosened on each side of the clamp, the radius is adjusted inward or outward, the pin reset & the bolts retightened.

Though the Revolution MVP offers unprecedented flexibility, it can be custom configured for your range of applications. The system can comprise up to ten extruders in sizes from 40mm up to 175mm for monolayer, trilayer, multilayer coex, or view stripe applications.

Easy to start up, the Revolution MVP produces good bottles in 4-5 revolutions with a stabilized process in 10-15 minutes. Single or dual-sided IML is an available option at rates up to 120 BPM. Takeout options include rotary or star wheel.

Integration with downstream components is carefully engineered to maximize the throughput & quality of the desired end product.



The XBM Navigator® control system provides complete machine control for our eXtrusion **B**low **M**olding equipment. The PC-based control system employs hardware designed and tested for industrial environments. The industrial PC is compact, mounts directly to the DIN rail, and provides outstanding CPU performance with real-time characteristics for precise control of machine functions. The touch screen interface is highly intuitive and allows the operator to control the process from pellet to finished product. Key features include closed-loop temperature control, 180-point parison programmer, clamping unit control, and seamless integration of downstream conveyors and trimmers. The system also includes a full suite of diagnostic tools. The comprehensive documentation package is fully integrated into the HMI. The entire system is explicitly designed to minimize downtime and maximize output.



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.

