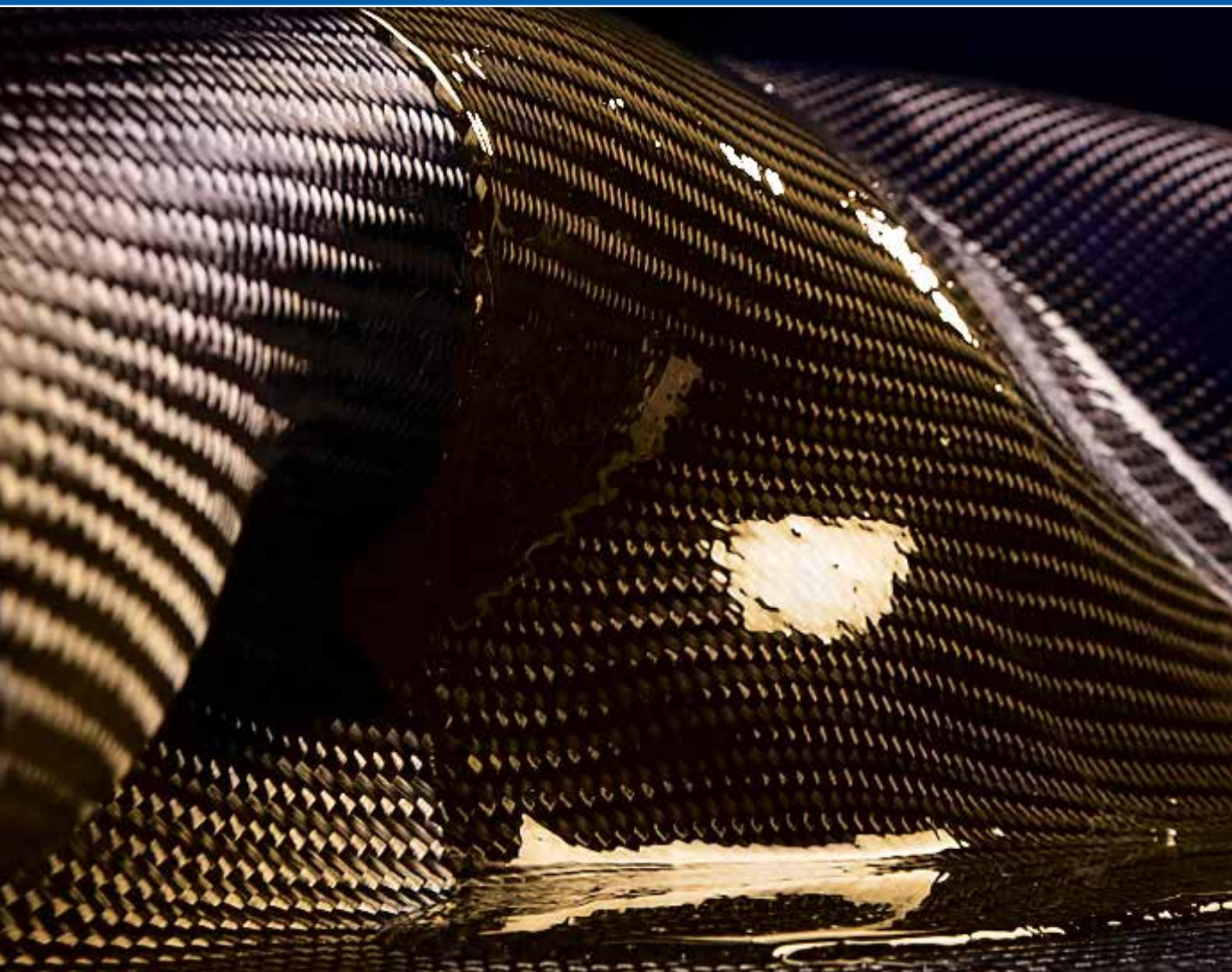




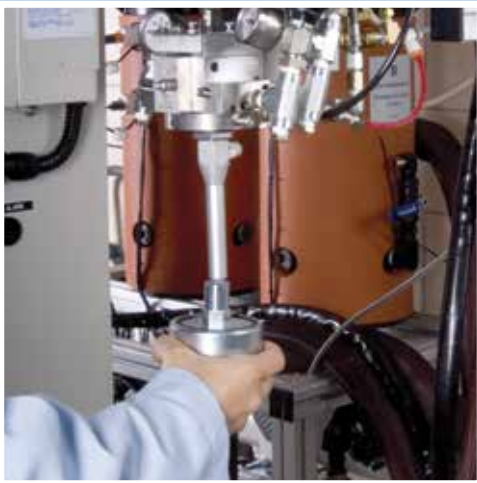
Advanced Composites

Resin Pumping and Metering Solutions



PROVEN QUALITY. LEADING TECHNOLOGY.

Precision Fluid Handling Technology for Advanced Composites



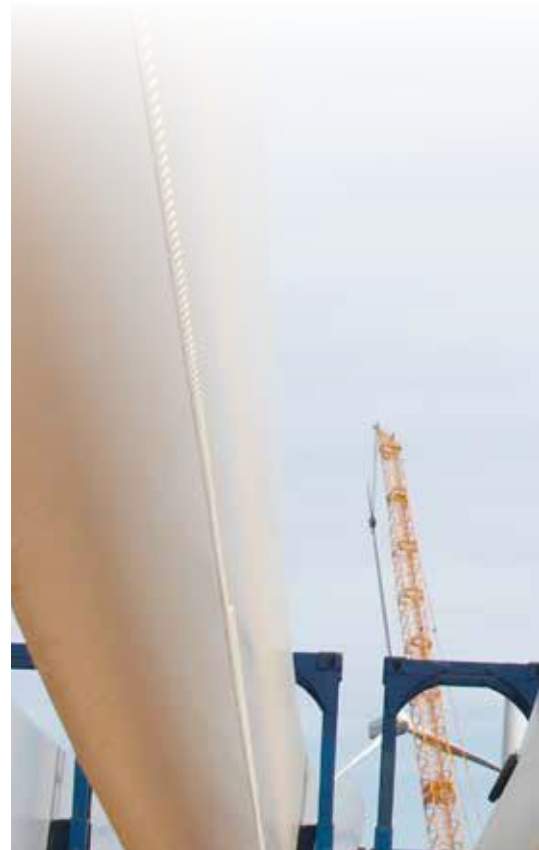
Innovative fluid handling solutions that build your bottom line

Demand for advanced composites is growing on a global scale as these innovative materials are designed into an ever-increasing array of structures. Fuel conservation and performance drive the need for lighter weight aircraft and transportation vehicles. Alternative energy is pushing the limits on composite scale by requiring “super-sized” turbines. Corrosion resistance and cost reduction are primary considerations in storage tanks, pressure vessels and bridge construction.

These are only a few examples of where expensive, manual, slow resin dispensing processes of the past can limit today’s new capacity needs and performance specifications. By integrating Graco® resin dispensing technologies into your manufacturing process, you will meet the demand for more composites, fabricated at higher speeds and at a lower cost.

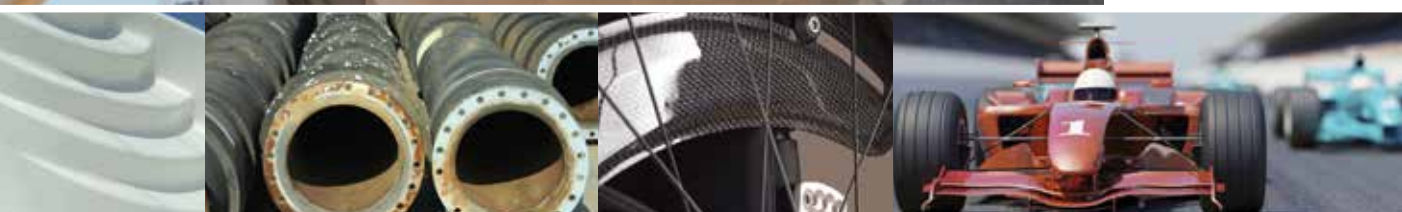
Graco understands automated resin processes and provides the products, engineering and global support you need to manufacture advanced composites. Graco’s heavy investment in research and engineering provides you with the innovations and technologies to:

- Reduce cycle time
- Improve yield
- Limit hand touch labor
- Reduce scrap
- Reduce cleaning time



With Graco, you can expect:

- Expanded capacity with large-scale, high-volume dispensing capabilities
- Faster cycle times - materials are dispensed faster and more consistently, saving time and material, and maximizing productivity
- Higher yield and less material waste with advanced, accurate control systems
- Out-of-autoclave close mold processing using resin injection technology
- Durability for reduced cost of ownership and faster return on investment
- Global support to ensure manufacturing readiness
- Reliability that maximizes uptime

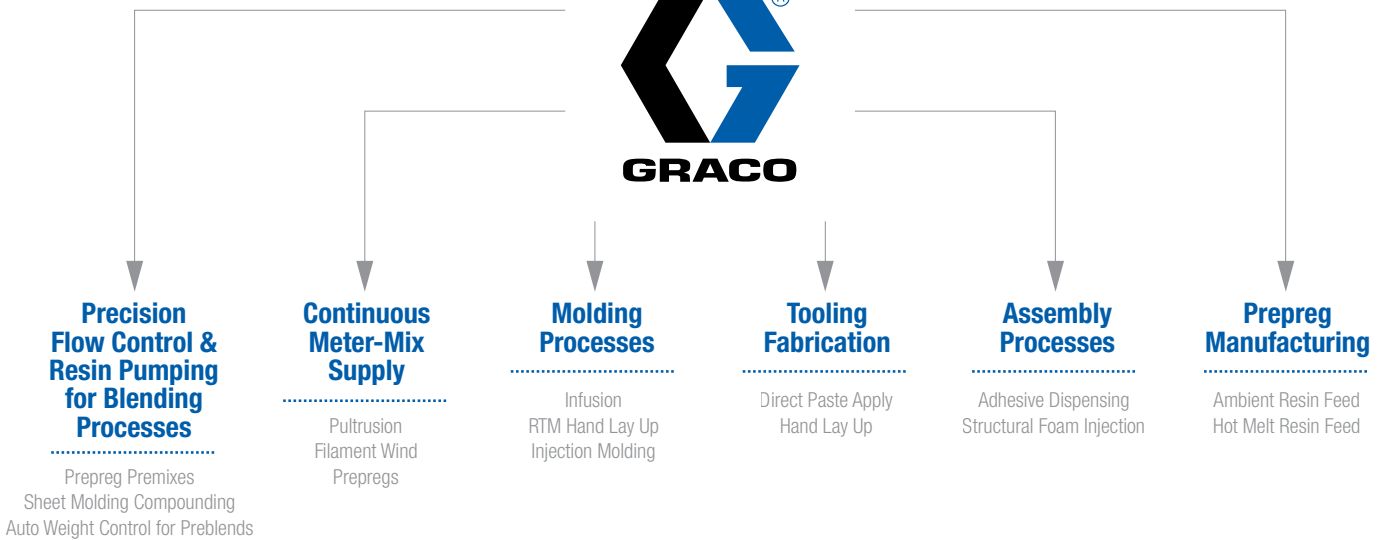


Dispensing Equipment for Advanced Composites Applications



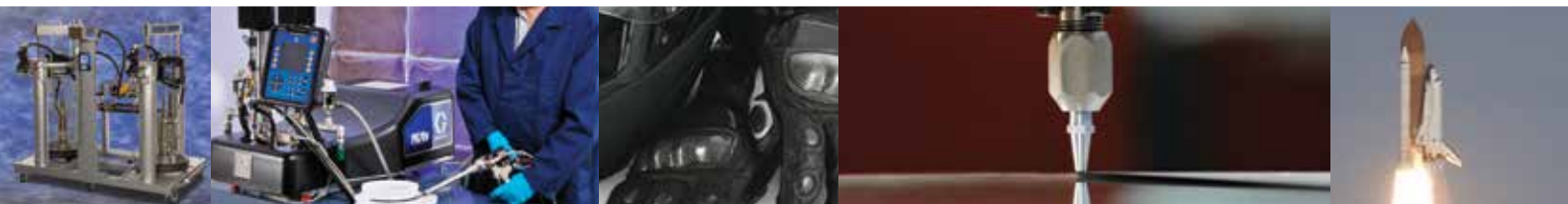
Complete solutions

From precursors to prepreg to final assembly, Graco offers complete solutions for moving, dispensing, and applying fluids in all phases of composites manufacturing.



Graco DC12 and PosiRatio® High-Volume Metering Systems

- Dispenses tooling paste, adhesives and resin
- Delivers up to 12 kg (26 lb) per minute – for faster processing
- Repeatable on-ratio dispensing – reduces material waste and re-work
- Optional ratio and flow rate monitoring with data collection for quality assurance



Graco Supply System

- Delivers one-component resins, adhesives and other materials from drums or pails to metering and dispense systems
- Integrated air controls offer easy-to-see, easy-to-use controls
- NXT™ Air Motor, Check-Mate® and Dura-Flo™ technologies set the industry standard for durability
- Shared and common parts provide low carrying costs, even when multiple configurations are used

Graco DL High-Volume Meter, Mix & Dispense System

- Independently driven rotary metering pumps or piston pumps
- Delivers accurate continuous material flow and shot dispensing as well
- Delivers up to 100 cc's per second at 1:1
- Variable ratios from 1:1 to 30:1 let you handle more materials
- Available with static, disposable dynamic or standard dynamic mixers
- Operator actuated or integrated with machine automation



Graco Therm-O-Flow® and Warm Melt Systems

- Delivers hot or warm melt materials to metering and dispensing systems
- Therm-O-Flow's Mega-Flo™ platen offers industry leading melt rates for greater production capacity
- Temperature setback conserves energy during production breaks and prevents material charring

Graco PR70 Meter, Mix & Dispense System

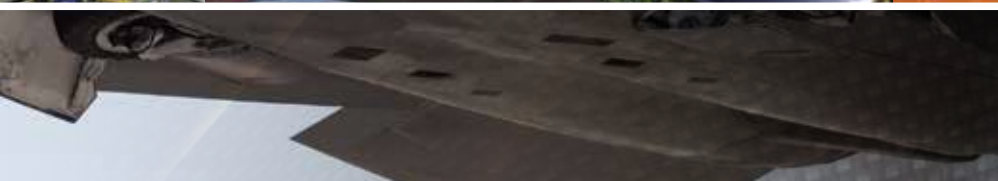
- Benchtop unit provides precise mix ratio and shot repeatability
- Exceptional performance with material ratios from 1:1 to 24:1
- Dispenses water thin to paste consistency materials from 2.0 to 70 cc's
- Available in fixed or variable ratio configurations
- Operator actuated or integrated with machine automation

Graco PCF Metering System

- Dispenses a precise, continuous flow of single component resins or adhesives
- Closed-loop technology provides real-time flow and batch control
- Superior flow control reduces material waste
- Low cost of ownership, fewer wear parts for easy maintenance

Graco HFR Metering System

- Hydraulic fixed ratio metering system
- Processes multiple materials from rigid and flexible polyurethanes to elastomers and epoxies
- Delivers accurate ratio and volume
- Automatically adjusts to achieve consistent material flow or pressure
- Modular design lets you configure components essential for your application



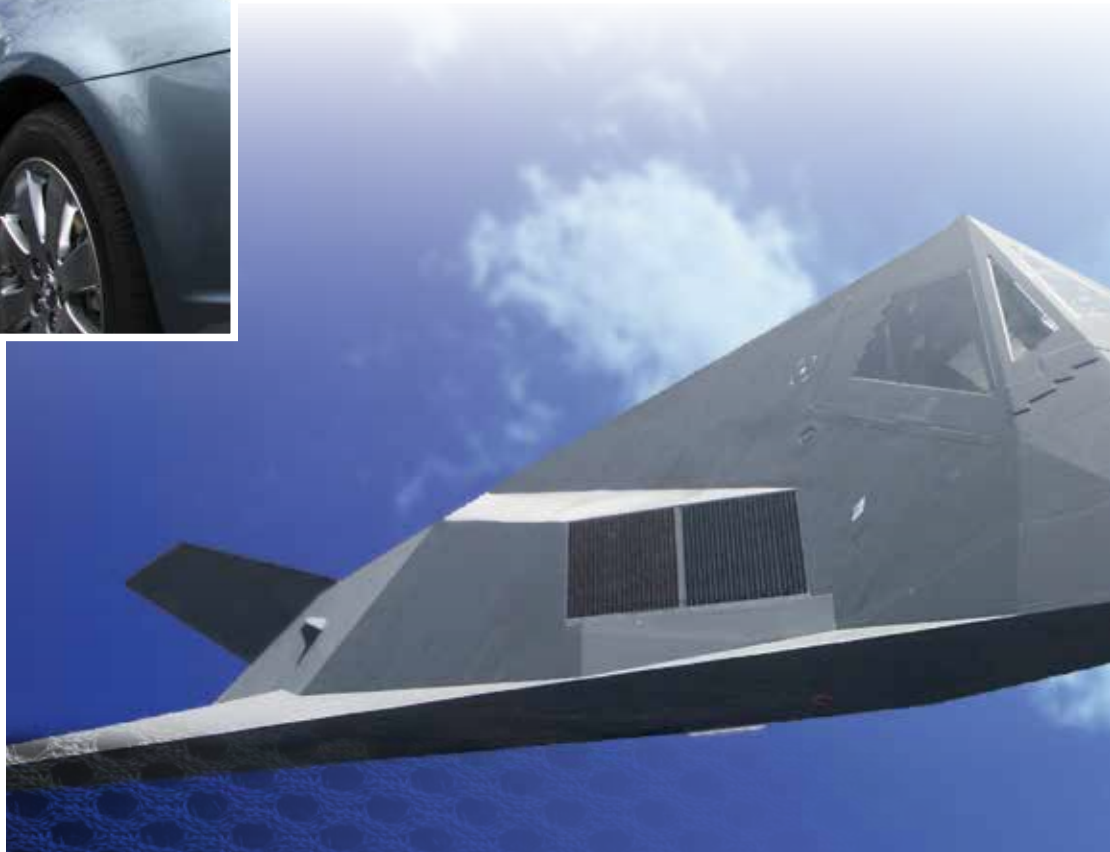
A Global Network of Support

Engineering expertise

Graco's engineering teams support your operation with everything from simple equipment modifications to complete custom configurations. Graco works closely with you to analyze your operation, materials and unique challenges.

Proven track record

Graco has close working relationships with many of the world's leading manufacturers and material suppliers serving the composites market. With Graco, you can expect responsive service and support, as well as the accuracy and reliability you demand from your manufacturing equipment.





Global distribution for local support

With more than 30,000 distributors worldwide, you can count on quick turnaround times for replacement parts and service.

With Graco's authorized distributors, you have access to experts who understand the unique needs of your business.



Global manufacturing

- Minneapolis, Minnesota USA
- Rogers, Minnesota USA
- Anoka, Minnesota USA
- Sioux Falls, South Dakota USA
- North Canton, Ohio USA
- Suzhou, China
- Maasmechelen, Belgium

Global support

With infrastructure throughout the world, your company will benefit from Graco's knowledgeable, global network of professionals.

Find out more

In addition to dispensing equipment for advanced composites applications, Graco also offers a full line of FRP equipment.

Visit www.graco.com/composites for details.





ABOUT GRACO

PROVEN QUALITY. LEADING TECHNOLOGY.

Founded in 1926, Graco is a world leader in fluid handling systems and components. Graco products move, measure, control, dispense and apply a wide range of fluids and viscous materials used in vehicle lubrication, commercial and industrial settings.

The company's success is based on its unwavering commitment to technical excellence, world-class manufacturing and unparalleled customer service. Working closely with qualified distributors, Graco offers systems, products and technology that set the quality standard in a wide range of fluid handling solutions. Graco provides equipment for spray finishing, protective coating, paint circulation, lubrication, and dispensing sealants and adhesives, along with power application equipment for the contractor industry. Graco's ongoing investment in fluid management and control will continue to provide innovative solutions to a diverse global market.

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