



Hydromer[®]

OUR **LEGENDARY**
TECHNOLOGIES
WILL **EMPOWER YOURS**[™]





Hydromer® is a leading global surface modification and coatings solutions provider for many different applications.

Our solutions add value to our clients' products to differentiate them in the marketplace. As an **innovation-driven, customer-centered organization**, our focus is on meeting our clients' needs, which helps them concentrate on their core strengths and bring products to market faster.

We collaborate extensively with clients to deliver superior, customized polymer-based solutions. Hydromer creates or modifies coating formulations that adhere to a multitude of substrates, and match the unique requirements and geometries of any device. We are also a leader in developing coating formulas and processes that meet a market-driven need for **greener and more sustainable solutions**.

At Hydromer
Your Success is
Our Success

MARKETS WE SERVE

- Agriculture
- Animal Health
- Appliances | Displays
- Architectural | Building
- Automotive | Transport
- Aviation | Aerospace
- Casual & Protective Eyewear
- Consumer Care
- Cosmeceuticals | Nutraceuticals
- Cosmetics & Personal Care
- Drug & Compound Delivery
- Electronics & Sensors
- Food & Beverage
- IOL | Ophthalmology
- LED | Optics
- Machinery | Equipment
- Marine
- Medical | Healthcare
- Military & Defense
- Sports & Fitness
- Many others



Aligning With Our Clients' Goals

By embracing a key role in enhancing the products of our clients, we help them overcome developmental and regulatory hurdles. Hydromer® takes great pride in knowing we're a pivotal part of their successes.

Our chemists and skilled personnel stay up-to-date on evolving material science by pursuing both incremental improvements and breakthrough technologies. That motivates us to remain ahead of industry trends and help our clients carve a unique niche among their competitors so that products can be brought to market faster.

We provide our clients with a superior experience during each step of the customer journey. Our industry-leading support and service to our customers translates into long-term relationships.



MISSION CRITICAL STANDARDS

Mission Critical Standards, Global Compliance

Hydromer's medical device coatings meet strict FDA, ISO and other international standards, which means they are of the highest quality. Our industrial coatings are also developed using high standards, enabling our technologies to provide mission critical solutions to our partners in the medical, industrial, and other fields.

Our familiarity with the standards and rules of regulatory agencies around the world provides our customers with an edge to gain international product approvals.





Your Personal R&D Partner

Hydromer® collaborates to create and customize industrial and medical device coatings with customers that range from some of the world's most trusted Fortune 100 companies, to sole proprietors and startups. Our thorough, thoughtful approaches have allowed us to build trust and success with our customers, many of whom have been with us since our inception.

As a prior device manufacturer, we intimately understand the process our customers go through to advance proof of concepts and bring new products to market. At Hydromer we propel the lifecycle of third-party products in a variety of industries, which is why so many companies contact us when mapping out product development paths.

At Hydromer we focus on helping our customers maximize their in-house resources and **bring products to market faster**. In addition, our formulas and coatings meet U.S. and international regulatory standards, providing clients with an instant leg up on their supply chain, helping them reach goals on time and on budget.

BUSINESS MODEL FLEXIBILITY

Hydromer works with its customers to implement the custom solution that fits their needs. We can:

- Coat your products in our ISO certified and FDA registered facility.
- Deliver solutions directly to you, should you have coating processes in place.
- Implement feasibility testing to determine the best process for coating your product.

In my 30 years in the plastics industry, I have worked in various development projects in the field of plastic coatings with several companies. In my interactions with Hydromer I have found a professional R&D partner, providing

“excellent service and fast response.”

I have found expert people with an outstanding willingness and passion to succeed.

Dr. Fabian Rios,
PhD Plastics Engineering

HYDROMER'S EVOLUTION

1974

Forerunner of Hydromer, Biosearch Inc., was founded by chemist Manfred F. Dyck, to serve the contract research and development and contract manufacturing needs of clients in the biomedical industry.

Development of lubricious, "slippery-when-wet" coatings that can help instruments move through the body wherever water is present.

Research team, led by Manfred Dyck, invents and patents enteral feeding tube made of polyurethane and coated with one of the company's hydrophilic, lubricious coatings. The tube replaces more invasive silicone models and becomes a staple in the healthcare industry.

1981

First in-house Dobhoff pumps, for use in the field of enteral feeding, released to U.S. hospitals.

1980

Hydromer, Inc. was launched.
Consumer razor manufacturer Wilkinson Sword adopts Hydromer's lubricious coatings onto its men's safety razors, to reduce nicks and cuts.

1978

Polyurethane condoms, utilizing patented coatings technology, manufactured.

1988

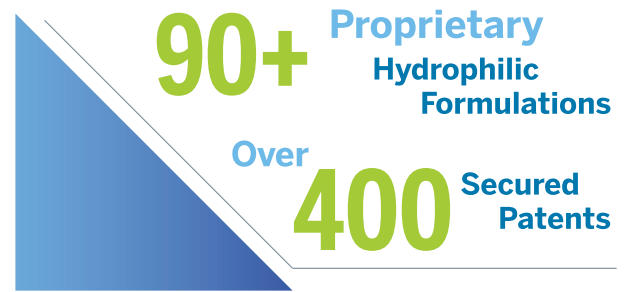
Development of antimicrobial and condensation controlling coatings.

1989

Development of anti-fog/anti-frost coatings.

UNIQUE DEMANDS, UNIQUE APPROACHES

- Innovative ideas and new approaches are often required for the preparation and application of primers and coatings. No matter what your industry or core products, Hydromer is eager to accept challenges.
- We design and manufacture custom machinery to coat substrates with standard and complex geometries.
- We offer technology transfer services to bring manufacturing and testing processes to your site.
- Hydromer® has an established legacy of accessible and responsive technical support and customer service.



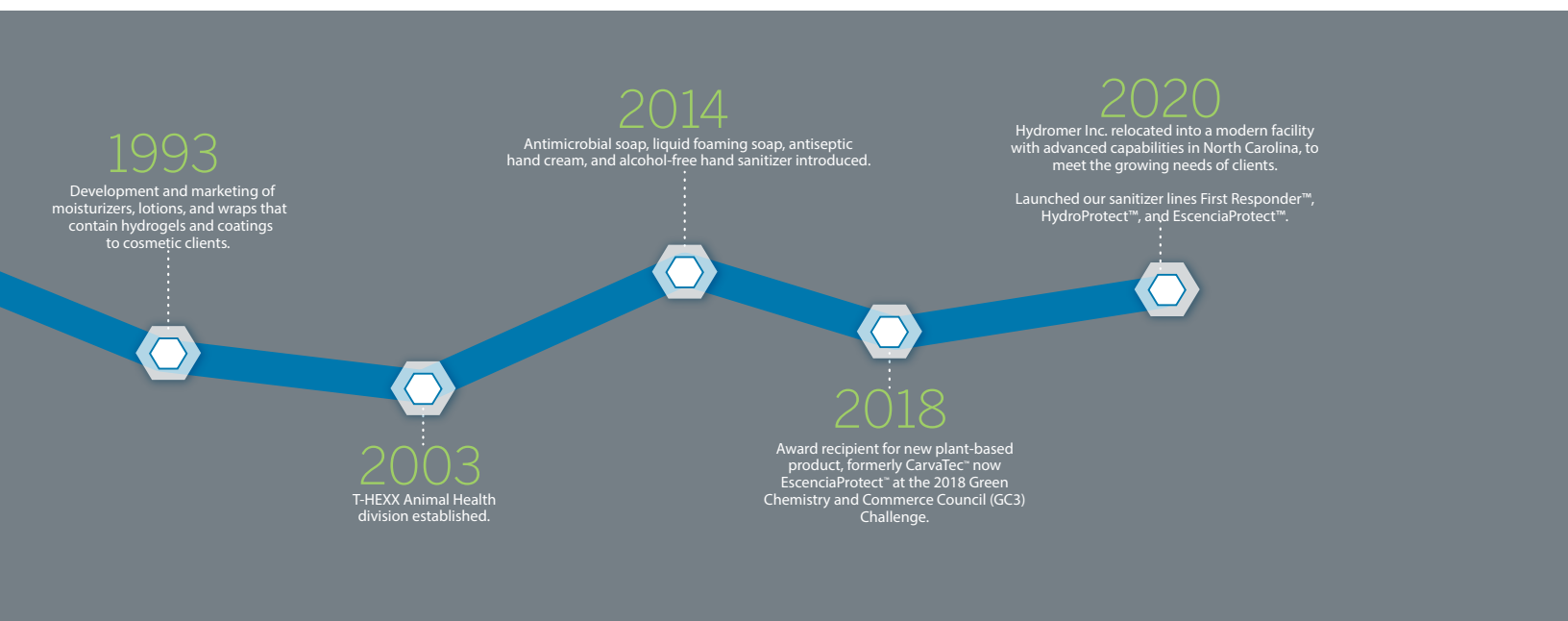
Hydromer's Beginnings

In the mid 1970's, Manfred F. Dyck, a classically trained chemist, visited hospitals and saw that patients with feeding (enteral) tubes appeared to have large rubber hoses protruding from their noses.

The tubes needed to run through the patients nasal cavity and thread through the esophagus before terminating in the stomach. This feeding-tube system was uncomfortable for patients, messy, and would take over an hour to deliver sufficient nutrition. Even worse, these ill-fitting feeding tubes were commonly made of latex and silicone, both having a high friction coefficient and were prone to bacterial build up,

cloggage and potentially triggering dangerous allergies in some patients. Inspired to overcome the challenges patients faced, Manfred and his researchers developed tubes built of polyurethane. This key evolution of material science allowed for a smaller outer diameter (OD) while maintaining the same ID. This not only allowed for more durable, more comfortable feeding tubes, but the polyurethane was safer and less reactive than latex. When paired with a hydrophilic coating, the feeding tubes could easily and painlessly be inserted and make its way throughout the body. A relatively new material at the time, Manfred was the first to utilize polyurethane to it's full potential.

With high demand for this new enteral feeding tube design, and a patent for a hydrophilic coating, the seeds of Hydromer, Inc., and the over 400 patents it would go on to secure, were sown.





Hydromer's Product Portfolio: Ideal for a Wide Variety of Substrates and Applications

Hydromer's medical device coatings are top choice of many companies, from the world's largest and most trusted medical device manufacturers to emerging startups.

Our hydrophilic coatings are formulated to attract and retain water, providing lubricious qualities that reduce potential trauma during invasive procedures. Our medical device coatings combine outstanding lubricity with low particulates, and help improve the performance of your device. Our coatings enable a multitude of devices to navigate through even the most difficult areas of the human body, resulting in more comfortable procedures for patients.

Several of our medical device coatings are formulated using polymers that reduce protein adsorption and platelet activation. Hydromer's broad portfolio of products, that can be applied through thermal curing processes, enable coating of micro- and multiple lumens, inner and outer diameters. Our products also achieve higher film thickness (if necessary) and can coat complex geometries. Hydromer's UV cure products offer quicker cure time and faster throughput benefits. As a supplier with an extensive history, Hydromer's coatings are sought by customers due to their proven performance, better production costs, and easy regulatory paths, compared to other technologies.

Hydrophilic medical device coatings from Hydromer® possess highly sought-after **performance attributes** such as:

- Antimicrobial
- Biocompatibility
- Durability
- Low friction
- Non-leaching
- Better substrate adhesion
- Thromboresistance
- Thin coatings

Hydromer's coatings for medical devices can be applied successfully to a **variety of substrates** such as:

- Chronoflex
- Chronoprene
- Dynaflex
- HDPE
- Latex
- Stainless Steel
- Nylon
- Pebax
- Polypropylene
- Polypropylene
- Polyurethane
- Polyurethane TPU
- PTFE
- PVC
- Silicone
- And many others



As newer substrate materials and processing technologies that enable complex medical devices continue to evolve, Hydromer has the experience to tailor and customize coatings that meet your device's precise performance goals. Our rigorous testing and validation process ensures the best performance of our recommended coating(s) on your device.

Our products are **appropriate for devices** used within the body's cardiovascular, circulatory, neurological, urological, and vascular systems such as:

- *Guidewires*
- *Catheters*
- *Needles*
- *Stents*
- *Implants*
- *Applicators/Inserters*
- *Lenses*
- *Balloons*
- *Pacemaker leads*
- *Shunts*
- *Vascular access*
- *Neurovascular*
- *Cardiovascular*
- *Urology*
- *And many more*



Deep Expertise to Accelerate Customers Around the World

Hydromer's adept support and service results from our strong expertise in manufacturing and medical devices. Our knowledge of medical device manufacturing and coating technologies, as well as a thorough understanding of FDA, ISO, and other medical regulations around the world, enables us to provide the highest level of technical and commercial support to customers. We assist our clients with strategic regulatory planning, submissions, and access to device master files.

Our expertise can help accelerate FDA and international regulatory processes to help our clients bring their products to market faster.

Hydromer® Coatings For Medical Devices Help Your Strategic Positioning

Hydromer's expertise in coating technology translates into smarter, more efficient working environments for our clients. With over 40 years of experience in developing world class products, medical device companies of all sizes rely on us for their coating needs, while gaining flexibility to focus on their core business areas.

Hydromer supports the coating needs of customers along the entire value chain based on their capabilities and requirements.

- For established manufacturers with in-house coating capabilities, we offer tailor-made coatings that meet specific device needs.
- For emerging manufacturers, we offer turn-key and technology transfer solutions by providing an entire suite of coatings, coating processes, and coating equipment to jump start in-house production. We also offer training on the proper application, testing and validation of our coatings.
- For startups or clients that want to outsource their device coatings, we offer contract services; devices may be sent to our facility and coated with our customized solutions utilizing our clean room and FDA registered facility. Hydromer can contract coat production quantities from small to large, suitable for clinical testing, market introduction, or commercialization.

At Hydromer we thoroughly understand the performance requirements, business targets and production volume goals of our medical device customers. **Our customer focused team of Ph.D. chemists, knowledgeable executives, and skilled personnel** are well versed in best practices to detail the most appropriate approaches to your specific projects. As an FDA registered medical device company with ISO-13485:2016 certification, our laboratory facilities can run feasibility and validation tests on devices to solidify proof of concept and ascertain any coating limits. Additionally, we retain a working knowledge of prototype development.

Look to Hydromer for medical device coatings that have a legendary 40-year track record of use on a variety of metallic, polymeric, and ceramic substrates, as well as on multitude of devices. We look forward to being your strategic partner on your next project.



Broad Product Portfolio and Applications

Industrial coatings from Hydromer® can be applied either via thermal or UV cure process, to match a client's process conditions.

Our product portfolio offers **solutions for many substrates** such as:

- Polycarbonate
- Acrylics
- Polyurethane
- PVC
- Glass
- Teflon
- Aluminum
- Mirror
- Metalized Polyethyleneimine (PEI)
- And more

Our coatings provide ease of use and can be applied using **a variety of techniques** including:

- Dip
- Spin
- Flow
- Spray
- And other techniques

Proven Technologies with Superior Customer Service

Hydromer's industrial solutions are backed by over 40 years of experience, meeting the highest level of challenges in the medical field. We bring that same level of cutting-edge technology and testing to our ever-growing line of products, designed to service a wide range of industrial sectors. Our expert staff will work with your company to deliver high-quality, customized anti-fog, anti-frost, and condensation-control coating solutions for a variety of applications.

Our **Luxere™**, **Glacial™** and **Brilliantz™** hydrophilic industrial coatings are more optically clear, heat stable, UV stable, and can provide water sheeting and protection from temperature and humidity conditions.



Hydromer's industrial coatings feature many superior attributes:

- Available in solvent or water-based more environmentally friendly formulations.
- Better substrate adhesion.
- Heat and UV stability.
- Enhanced water sheeting and anti-fog characteristics.
- More easily applied, including single coat systems.
- Available in primer and primer-free versions
- Easily fit into new and existing coating processes.
- Meet demanding industry requirements.



Example Applications

Hydromer's industrial, anti-fog, anti-frost, and condensation coatings are suitable for use across a wide variety of industries. Some of our innovative solutions include:

Freezer Window Frost Control

- Our clear formulas optimize energy efficiency, demonstrate environmental leadership, and lead sustainability initiatives.

Greenhouse Panels

- Our non-yellowing, optically clear, condensation-controlling formulas provide efficient water sheeting surfaces, control light transmission, and enhance plant growth conditions.

Other applications include:

- Drones
- Aerospace visors
- Roadway/Runway reflector
- Optical sensors and cameras
- Goggles
- Robotics and AI equipment
- Outdoor rugged portable PCs
- Emergency breathing hoods
- Military
- Automotive headlights
- Instrument covers
- LEDs



Meeting Demanding Consumer Needs and Stricter Regulations

Consumer awareness, a growing demand for non-hazardous, nature-based ingredients, and ever changing regulations worldwide are driving companies to remove hazardous or environmentally questionable components from their products. As an early adopter and supplier of **green, sustainable solutions**, Hydromer® has continued its legacy of staying ahead of evolving market conditions.

Conventional preservatives are often included in product formulas for the purpose of preventing microbial growth and extending shelf-life. But many raise concerns such as skin sensitivity, toxicity, and endocrine disruption, along with other health and safety considerations.



Hydromer, as part of its mission to help **enhance the products of our clients** so they may reach markets faster, offers green, more sustainable technologies to innovative manufacturers that seek to stay ahead of regulatory issues and market demands. We offer a wide range of plant-based preservatives that are antimicrobial and offer many other benefits to cosmeceutical and consumer care markets. We can help your company with our natural, plant-based product **EscenciaProtect™**

EscenciaProtect™ was the award recipient for a new plant-based product, formerly CarvaTec™, at the 2018 Green Chemistry and Commerce Council (GC3) Challenge. And was one of the only seven award recipients at the competition that was sponsored by several of the world's largest and most respected healthcare, chemical and consumer companies.

PERSONAL CARE/COSMETICS

At Hydromer, we know how important it is for you to trust that your products will be made to the highest standards. With Hydromer's 40+ years of experience in the personal care and cosmetic industries, and backed by our medical industry credentials, you know you can depend on us.

Our product line of viscosity/rheological modifiers and hydrogels provide a number of benefits such as: moisture barriers, enhanced water-resistivity, delivering vitamins and other active ingredients transdermally and much more. These properties can enhance your lotions, creams, or powder based products.

Customers are becoming more aware of harsh ingredients in the products they buy. That's why we offer our patented greener, more sustainable solutions for your cosmetic and personal care products, assisting you in reducing harsh chemicals, while keeping the integrity of your product.

Example applications:

- Vitamins
- Mascara
- Hair Products
- Skin Care
- Deodorants
- Sunscreens
- Face Masks
- Mousses
- Powders
- Creams
- Lotions
- Oral Hygiene
- And more



Sustainable chemistry, also referred to as Green chemistry, is a philosophy of research and engineering focused on the design of products and processes that minimize the use and creation of hazardous substances.

At Hydromer®, we pride ourselves on exceptional quality. From the initial **Procurement**, to the **Process**, and the final **Product** technology, our green chemistry innovation is paramount in an ever-evolving industry,

Three P's of Sustainability



Procurement is the source of the greenest products. We strive to utilize more natural, sustainable ingredients for our technologies.



Process is to create the best technology, while keeping our footprint small. Thus keeping your footprint smaller!



Product Technologies are more sustainable and greener! That means we can provide you with a more natural, sustainable, organic, and environmentally-friendly finished product.

As an early adopter of more sustainable and greener alternatives, Hydromer has always been ahead of the curve. Even before FDA regulations joined the trend, Hydromer was looking for safer more sustainable alternatives.

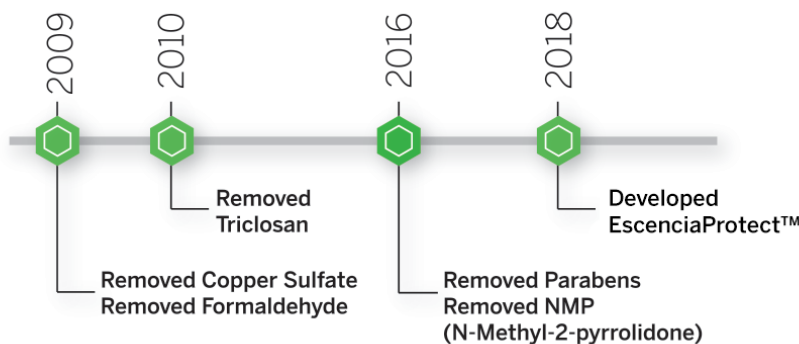


“The very birth of Hydromer was the result of seeking a safer alternative to a common problem.”

We have a history of taking measurable steps, in advance of regulatory action and marketing demands, to remove hazardous and non-environmentally friendly ingredients. Our demonstrated track record of researching safer, more environmentally friendly ingredients and greener formulas, helps our clients move ahead with their sustainable projects with greater confidence.

Hydromer CEO, Peter M. von Dyck

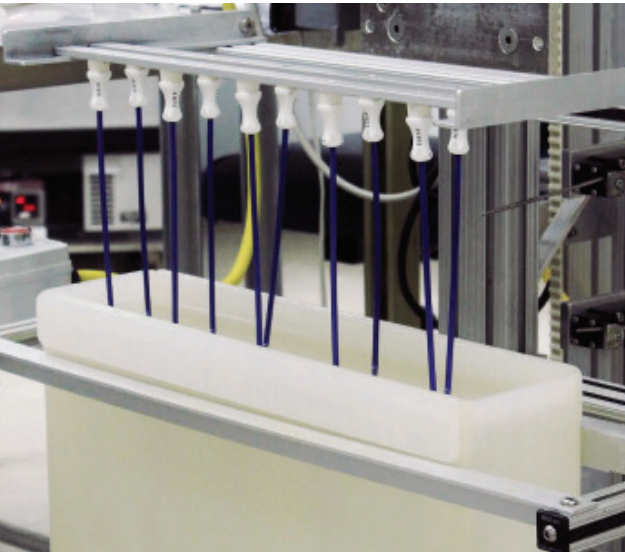
HYDROMER SAFER ALTERNATIVES DEVELOPMENT



Hydromer® is an approved vendor for various healthcare, pharmaceutical, cosmetic and animal health companies.

We offer complete services that help our customers with product development. Our FDA registered, ISO certified facility excels at:

- *Analysis*
- *Testing*
- *Polymer synthesis*
- *Microbiology*
- *Polymer production*
- *Web coating/Film coating*
- *Prototype machine design*
- *Machine construction*
- *Production startup*
- *Film coating and drug delivery*
- *Tube coating (internal/external)*



Contract Coating & Formulator Services

Hydromer's production facility can produce prototypes and finished devices containing our lubricious, hydrophilic, low particulate coatings in numbers appropriate for clinical tests or market introduction. We can:

- Coat virtually any substrate or device.
- Incorporate a client's molecular entity or pharmaceutical components into formulas.
- Perform precise target coating on internal, external, and lumens surfaces.
- Implement a variety of coating application methods.
- Support all SOP and QA procedures and validation protocol.
- Provide finished formulations.

Contract R&D Services

As a polymer developer and innovation driven organization, Hydromer performs research and development for companies large and small. We've developed, prototyped, and manufactured our own products, which gives us unique insight into what our clients face in the proof-of-concept process and in bringing those concepts to fruition. Our R&D capabilities are augmented by a number of disciplines throughout our company including coating services, contract coating, manufacturing, equipment building and design.

Our on-site analytical and synthesis laboratory is equipped to assist our clients in product development, analysis, feasibility testing, and validation.

Specialized Analytical Testing

Hydromer has a team made up of highly qualified Ph.D. chemists, biochemists, polymer chemists and microbiologists who perform product testing in our analytical, synthesis, microbiology, and life science laboratories. Lab personnel perform tests to ascertain the biological behavior of materials for safety and performance, and are devoted to custom product development and applications.



Technology Transfer

Hydromer® helps companies leverage their resources so that they may bring products to market in ways that are smarter and faster. Our knowledge of industrial and medical device coating technologies places us in a unique position to develop formulas and processes to fill niche requirements during the product development lifecycle. Once perfected, our technologies can be moved to a client's facility through the methodical process known as "technology transfer".

We ensure that the technology and coatings we develop are accessible to a wide range of users in your organization by:

- Developing prototypes.
- Offering custom manufacturing and coating machine design, building, and modification.
- Making (on-demand) technical support available.
- Installing custom equipment on site.
- Establishing production start-up protocol.

Hydromer's technology transfer methods can help companies take products from proof-of-concept to market cheaper, faster, and easier than developing processes from scratch. Consider us your personal research and development arm and a key player in your organization's goal to improve lives and drive growth.

Custom Machine Design and Manufacture

We have been custom designing, building, and validating coating equipment for 40 years. Our designs are specific to the coating process and the unique product requirements of our clients. As an FDA registered medical device coatings company with ISO-13485:2016 certification, our in-house machine design and construction team can scale capabilities for specific product needs in most industries, from operator-assisted fixtures to highly advanced automated equipment. Our experience includes building machines that perform:

- *Dip coating with in-line thermal curing.*
- *Vertical and horizontal guidewire coating to 450 cm.*
- *Target coating of complicated, molded medical devices.*

- *Automated target spray coating.*
- *Multilayer applications of drug impregnated coatings.*
- *Coverage of complicated micro-catheters with microballoons.*
- *Metallic cardiovascular and esophageal stents.*
- *Silicone and latex balloon catheters.*
- *High output IOL device delivery coating.*
- *Assisting international installations.*

Hydromer has an on-site machine shop for constructing most production equipment. We have the ability to modify or upgrade your existing equipment (if feasible), and can assist with international installations. We also offer continuous customer and technical support.



Our Quality Translates into Long, Productive Client Relationships

Client relationships at Hydromer® are built on a passion for research and development coupled with scientific curiosity. Quality is in our DNA. Our experience building devices and equipment, and dedication to strict adherence of FDA and international quality standards, is embedded in our culture. And that is why we carefully engineer and are always on the right side of quality. Our dedication to quality shows, as our clients **continually share their accolades about us.**

Customer Service

Hydromer is a compact organization with a culture of determination and resourcefulness. From our CEO, to our Ph.D. chemists, to our highly-trained personnel, **we stand behind our products and solutions** with outstanding customer service. We're nimble, and respond quickly, especially when there is a need to dissect problems and bypass stumbling blocks.



A Public, Family-Run Company

Founded in 1981 by Manfred F. Dyck, Hydromer is now run by his children - CEO Peter M. von Dyck, COO Martin von Dyck and Sales Manager, Silke von Dyck. We are a proud public company instilled with strong family values that has fostered a community you can depend on and trust. The formula to our success is our passionate, hardworking people. Because of them, Hydromer has grown into the trusted, leading global surface modification and coatings solutions provider we are today. Let us help you achieve success.



(Pictured L-R: Martin von Dyck, Silke von Dyck, Manfred F. Dyck, Peter M. von Dyck)

Always on
the **right** side
of **quality**

Hydromer's Vision

Our vision is to continually expand on Hydromer's more than 40-year legacy of successful polymer and surface modification innovation.

New generations of medical micro-catheters are now much smaller in diameter, comprised of new and more exotic materials and designed to reach significantly deeper into the body to deliver powerful and less invasive treatments.

Hydromer propels these goals.

With industrial products becoming smaller, smarter and embedded with critical sensors and driven by the Internet of Things, they require protective condensation and frost controls to ensure critically clear optics and uninterrupted performance for both people and machines. **Hydromer propels these goals.**

Antibacterial cleaners, sanitizers and preservatives in the personal care, household and cosmetics markets are searching for safer, more sustainable and green alternatives to provide consumers with eco-friendly and botanical based alternatives. **Hydromer propels these goals.**



Mission Statement

Hydromer's mission is to empower our customers' products to be ahead of their time and ahead of their competition through deep collaboration, the expertise of our employees and focusing on innovative and sustainable solutions.



LET OUR LEGENDARY TECHNOLOGIES EMPOWER YOURS™



Hydromer

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4715 Corporate Dr. NW
Suite 200
Concord, NC 28027 USA
hydromer.com • (800) 287-5208
info@hydromer.com