

Magnetic Assemblies



Introduction



There seems to be no end to the pressures and hurdles today's management teams must overcome. Compressed schedules. Pricing pressures. Shareholder demands. Staff right-sizing. Tight budgets. You name it.

So where do you turn? How do you find the resources you need when the challenge is in your lap and the pressure is on?

We have an answer for you. We call it "Partnering For Quality." You may know the idea by another name, such as "strategic alliance" or "shared goals." But no matter what you call them, these outsource relationships are a way to get things done.

That's where we come in. We're skilled professionals with a passion for quality and a reputation for getting it right the first time. And we're here to help you manage change in your company.

Loosely speaking, we work under the heading "Contract Manufacturer." But that term doesn't begin to describe the range or depth of our services. In fact, it doesn't even come close. And "Magnetic" is only a part of our repertoire, not the whole of our business.

Magnetic Technologies is a critical component supplier and facilitator. We solve what can't be solved, and build what can't be built. If you need thinking, we provide it. If you seek an alternate path, we'll find it. If you want design help, we bring it. And if you want a finished part or product, we produce it.

Our menu is a la carte. As the customer, you can choose the skills that best suit your needs from a spectrum of high technology services. Consultation. Design. Engineering. Manufacturing. Remanufacturing. And everything in between.

Now, how can we help you?

Whatever Works for You Works for Us.

At Magnetic Technologies, our capabilities are what you need them to be. No more, no less.

We have high volume production when you need it. Lower volume when you don't. We build complex electromechanical assemblies when the job dictates. Or relatively simple mechanical assemblies when it doesn't.

We can hit the ultra-close tolerances of high precision work when you want it. Or deliver conventional made-to-print work when your needs are more modest.

We can give you specific help on a project. Or manage your project completely, with project leadership and technical staff.

And you can have our design and engineering support when you need it. Consultation. Design documentation. Technical assessment. Research and development. Modeling. You name it.

It's a whole array of superb technical services to help you get the job done—at any stage, from concept to finish.

A Quick History

Almost from our start in 1969, our specialty has been precision assembly of technical products. Typically, products that required a sophisticated magnetic component. Hence, our name.

But as the company grew and evolved, we added the technical skills and technologies required to move us ahead. (Two of the most demanding, our Magnetic Brush and Reaction



**MORE THAN A SOURCE,
AN ALLY.**

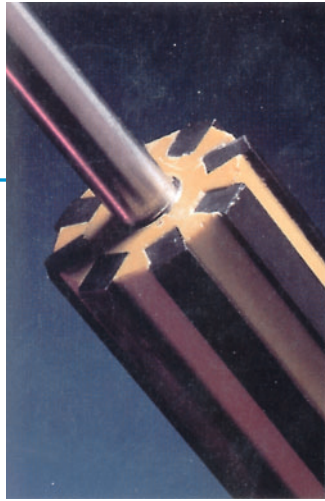
Injection Molding expertise, are highlighted on these pages.)

Today, our magnetic capabilities are even more highly developed, which helps to explain our leadership in the design and manufacture of precision magnetic assemblies and micro components for the copier, word

processing and printer industries. And of course, our technical and service offerings are considerably broader.

Our customers include leading names in high technology companies, many of them in the category of sophisticated office products. Almost without exception, we are regarded as benchmark suppliers, and have enjoyed long-standing associations with them.

In 1997, Magnetic Technologies Corporation was purchased and made part of Arnold, the Magnetic Materials Group of SPS Technologies. The same commitment to excellence in quality, technical proficiency and customer service exists today enhanced by greater resources available to serve your needs. As part of Arnold, Magnetic Technologies has direct access to the technology and materials of one of the largest magnetic materials producers in the world.



Engineering

Magnetic Brush Technology.

Here at Magnetic Technologies, we played a critical role in the evolution of magnetic brush technology. We did groundbreaking work in the mid-70s, and today, we do what companies many times our size cannot do. We offer comprehensive services in design, manufacturing, testing and characterization of magnetic brush components.

Our custom software examines customer requirements, then sorts through numerous design variables to accelerate the design process. We can then manufacture magnetic devices as prototypes or in production quantities. Characterization and testing is performed by automated equipment, with field measurements taken in three orthogonal directions. And Statpak®, our proprietary statistical analysis program, is used to generate summary data from scans.

Reaction Injection Molding.

Our RIM achievements grew out of our work with copier roller components. And here, too, we've succeeded in a technology that baffles companies much larger than ours. We made considerable financial investments in RIM technology because it enhanced our capabilities and helped us better meet the needs of our customers. It's that simple.

On-Board Engineering Support.

Magnetic Technologies gives you an added benefit not many contract manufacturers can provide: staff engineering support for your project. We have more than a dozen CAD workstations, so all our engineers have CAD capability at their fingertips. This allows us to design, build and redesign—and better meet the time-to-market needs of our customers.

The fact is, even the best-drawn, best-laid plans can go awry. And when they do our on-board engineering can solve the problem without delay and without serious damage to your timeline.

What Sets Magnetic Technologies Apart.

It's not just our technological capability or our blue chip client list that separates Magnetic Technologies from typical contract manufacturing operations. It's much more.

It's our operating methods, for one. We work under a Program Manager concept, and unlike many of our competitors, we maintain very close contact with our customers. We dig deeper to understand their needs and requirements. Ultimately, this depth of involvement allows us to better apply our resources to achieve true customer satisfaction.

It's our ability to maintain confidentiality and earn customer trust. We built our business on ethics that we refuse to compromise. And in today's climate, where promises and pledges don't always mean what you think they mean, our customers know they can count on our word.

And finally, it's our willingness to do what needs to be done. We regularly exceed the involvement limits of typical contract assembly. With materials and inventory management. And much more. And to add more value, we've built long-term relationships with suppliers from around the world to assure an uninterrupted flow of materials. We've even invested in shared-effort ventures to match the investments of our customers.

You get the point. Which is that we'll do what it takes to make our strategic alliances work.

International Experience.

Magnetic Technologies has over two decades of success in international projects and assignments. We maintain excellent shared-effort relationships with both customers and vendors in Europe, as well as the Pacific Rim.

Quality

Better Methods Bring Better Results.

These days, everybody talks about Total Quality. But how many companies really put its philosophies and principles to work?

At Magnetic Technologies, we adhered to TQ beliefs and practices long before they had the recognition and corporate cachet they have today. But in 1988, we formalized our beliefs in a strategy that took four years to create. Today, TQ drives everything we do. Everything.

We are steadfastly focused on our customers.

We're continuously benchmarking, analyzing our methods and methods of our competitors in our search for better processes.

We're vigorous in our practice of cycle time management.

We use sophisticated quality analysis techniques to verify quality before it goes out our doors. In fact, many of our customers consider us a model supplier, and accept our work without incoming quality inspections.

We work to achieve productivity gains and shorten time-to-market. We eliminate non-value-added work where we can and gain-share the savings with our customers.

We're learning better ways to learn. And working on the practice of work, an ongoing effort that helps us achieve productivity gains year after year.

Finally, we deliver it all at fit-for-use pricing. And true to the spirit of shared effort, we work with every customer on costs, pricing and profits.

That's us. That's Magnetic Technologies. And now you know what we're all about. Shared effort. A broad range of high quality services. Uncompromising ethics. Total Quality. Fit-for-use pricing.

If you like what you see, if you have a specific need or concern, we'd be happy to explore the possibilities with you.

**Because we're more than a source.
We're an ally.**



Design and Development

Overview

Magnetic Technologies offers a wide array of design and development services to help customers overcome the obstacles and challenges of subassembly and product development.

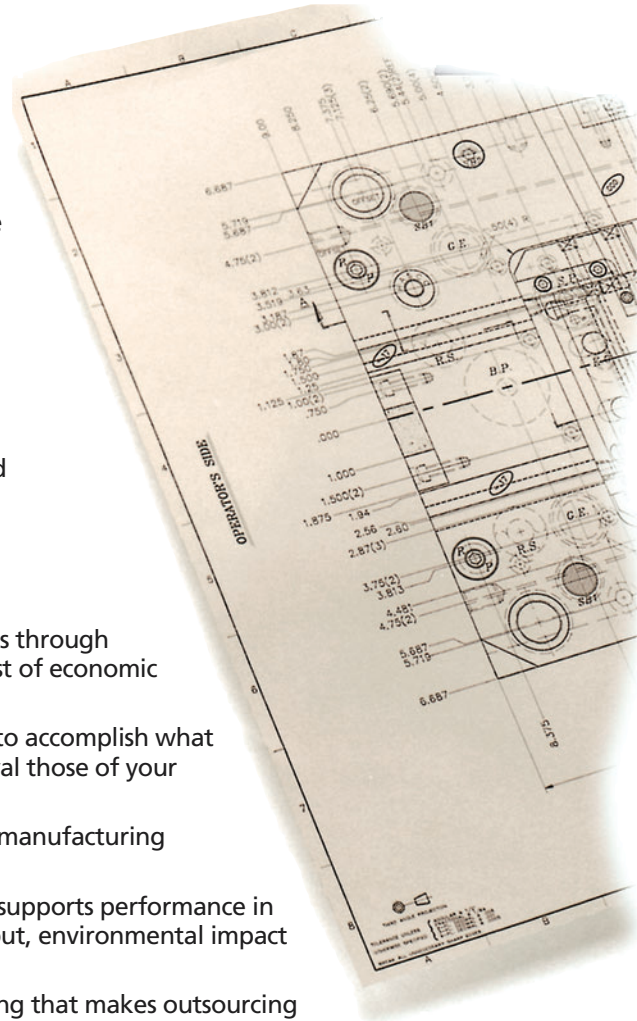
A highly skilled engineering staff uses sophisticated tools and methods to take your project to specified levels of completion at the fastest possible response time, and at fit-for-use pricing levels. (In fact, few if any competing companies can mobilize its technological resources as quickly or as comprehensively as Magnetic Technologies.)

We work across the gamut of developmental processes: research, development, design, materials, remanufacturing considerations and planning—all performed and measured against our TQ standards.

Customer Benefits

Outsourcing design and development activities through Magnetic Technologies brings customers a host of economic and performance advantages:

- An extraordinarily capable and flexible staff to accomplish what in-house units cannot, at talent levels that rival those of your own design and engineering staffs.
- A streamlining of product development and manufacturing processes, leading to shorter time-to-market.
- Beginning-to-end excellence in concept that supports performance in adjacent areas, including assembly, throughput, environmental impact and remanufacturing.
- Fit-for-use pricing and subsequent gain-sharing that makes outsourcing cost-effective and economically attractive.



Environmental Considerations

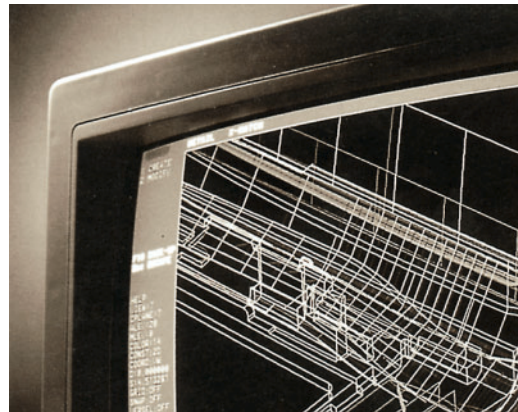
The philosophy of Magnetic Technologies in all design and development activities focuses on conservation of resources, reduction of pollutants and unqualified compliance with environmental regulations. Remanufacturing is a means of achieving "zero discharge manufacturing," or ZDM™. Our strategic ally in environmental issues is H&A of New York.

Design and Development Services

- Custom Magnet Fabrication
- Product Assessment
- Instrumentation & Controls
- Environmental Analysis
- Quality Assurance
- Staging Fixtures
- Engineering "Breadboards"
- Preproduction Engineering Evaluation
- Cleaning Systems
- CAD/CAM
- Possible Products for Remanufacturing Identification
- Engineering Prototypes
- Magnetic Evaluation
- Capital Equipment Justification
- Facilities Layouts
- System Evaluation
- Production Fixtures & Systems
- Parts Replacement Lists
- Bills of Material Development
- Remanufacturing Processes Development & Planning
- Reverse Engineering

Design-Specific Services

- Design for Assembly
- Process Design & Development
- Electromechanical Design
- Plastic Tool Design
- Design for Remanufacturing
- Gauge Design
- Magnetic Design
- Remanufacturing System Design
- Mechanical Design
- Software Design & Development



Project Level Support

At Magnetic Technologies, we tailor our efforts to match the level of support and help you need.

Perhaps you need our assistance in just part of your project. Or maybe you need Magnetic Technologies to manage the complete job, assembling a dedicated task force of multi-skilled professionals to meet your project's specific requirements.

If you have human resource constraints and compressed schedules, you'll find our services expedient, cost-effective and complete.

Contract Manufacturing

Overview

The contract manufacturing capability of Magnetic Technologies knows virtually no bounds. Our experience in this broad manufacturing category ranges from relatively simple mechanical assemblies to complex electromechanical parts and components requiring extremely high precision.

Contract manufacturing is the centerpiece of our business. Historically, our work has been concentrated in sub-components for sophisticated office products, such as printers and copiers, for some of America's leading manufacturers. But the design, engineering and manufacturing skills we've assembled lend themselves to a variety of other manufacturing challenges.

Like all Magnetic Technologies services, contract manufacturing is characterized by problem-solving ingenuity, comprehensive support and excellent working partnerships grounded in TQM principles and practices.

Customer Benefits

Across the entire spectrum of contract manufacturing operations, Magnetic Technologies offers its customers a number of impressive advantages:

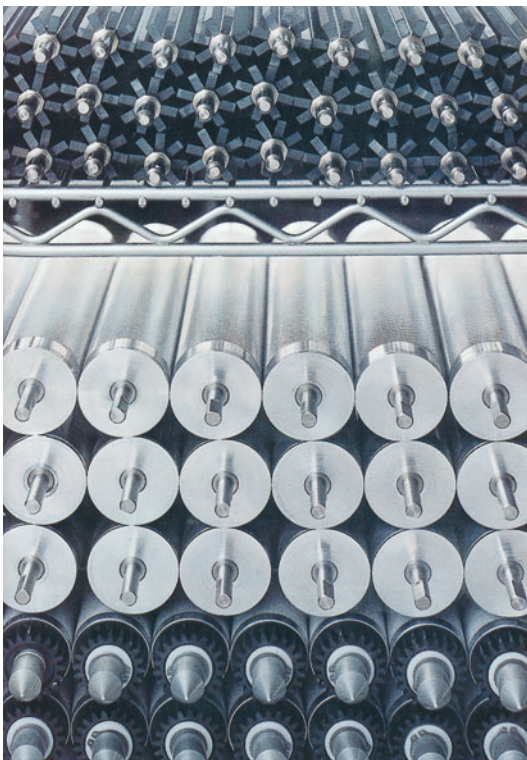
- Absolute adaptability to the needs of the customer through design, development, engineering, production and remanufacturing.
- An extraordinary range of available services to help you through critical projects, staff right-sizing, compressed schedules and other challenges.
- Fit-for-use pricing, and long term gain-sharing.
- On-board engineering support with abundant CAD/CAM workstations for on-site modifications and adjustments.
- Aggressive problemsolving resulting in shorter times-to-market.
- Exceptional performance in difficult specialties such as magnetic brush technology and reaction injection molding.



Contract Manufacturing (Cont.)

Environmental Considerations

Every Magnetic Technologies service, including our contract manufacturing operations, is built on an environmental philosophy that stresses conservation of resources, reduction of pollutants and an absolute compliance with environmental regulations. Remanufacturing is a means of achieving "zero discharge manufacturing," or ZDM™. Our strategic ally in environmental issues is H&A of New York.



Contract Manufacturing Services

- Sophisticated Global Procurement Strategic
- Production Control
- Custom Magnet Fabrication
- Custom High Energy Magnet Fabrication
- Environmental Analysis
- Process Design & Development
- World Class Quality Assurance
- Staging Fixtures
- Preproduction Engineering Evaluation
- CAD/CAM
- Capital Equipment Justification
- Facilities Layouts
- Production Fixtures & Systems
- Mechanical Design
- Labor Standards Development
- High Volume Production
- Low Volume Production
- Secondary Subassembly
- Warehousing
- Parts Replacement Lists
- Bills of Materials Development
- Worldwide Sourcing
- Manufacturing Control Systems
- Spare Parts Logistics

Magnetic Technologies has provided its customers with total project management from inception through production, including project planning, prototype building and testing.

Whether you require piece parts or complete precision assemblies, you will find a consistent level of quality and cost effectiveness.

Remanufacturing Consulting

Overview

The Remanufacturing Consulting Group (RCG) of Magnetic Technologies provides an array of services to handle virtually all remanufacturing challenges.

With more than 15 years of experience and involvement in remanufacturing, RCG offers a team of skilled technical specialists to guide and assist companies through the issues and complexities of remanufacturing operations, identifying and implementing strategies to reduce costs, improve product performance, enhance quality and increase throughput—all with minimal environmental risk.

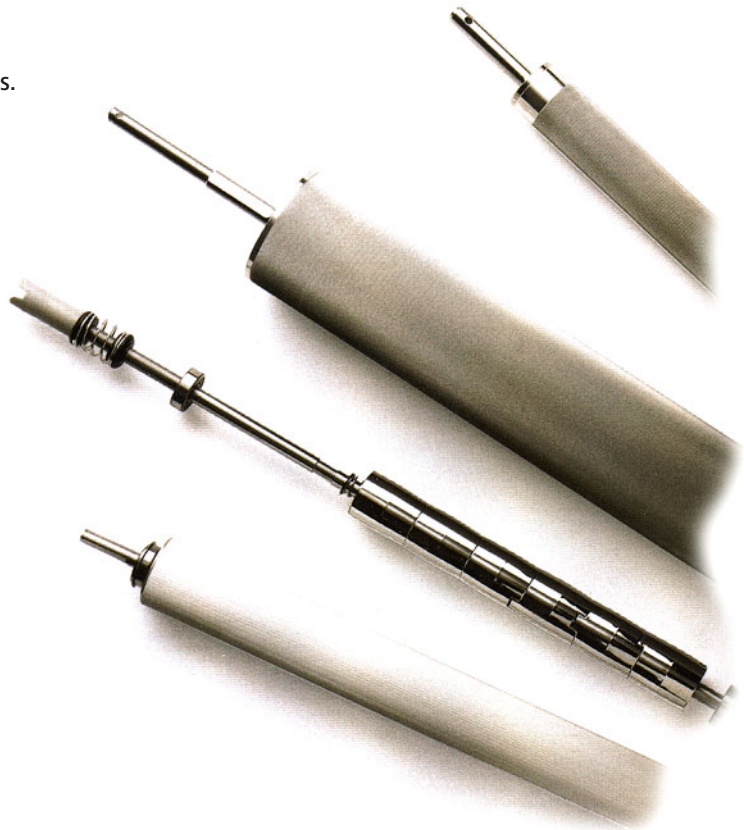
Customer Benefits

Remanufacturing offers the customer a number of compelling benefits. Among them:

- A savings of 40-60% of original manufactured cost.
- Energy savings of 50% over original energy requirements.
- Extended effective life of product.
- Dramatic savings in raw materials costs.
- Positive environmental impact.
- Economic stimulation through new job creation.
- Generation of aftermarket revenues.

Environmental Considerations

Remanufacturing provides a unique opportunity to merge manufacturing goals with sound environmental practices. Our philosophy focuses on conservation of resources, reduction of pollutants and compliance with environmental regulations. Remanufacturing is a means of achieving “zero discharge manufacturing,” or ZDM.[™] H&A of New York is our strategic ally, assisting with management of environmental issues in the remanufacturing workplace.

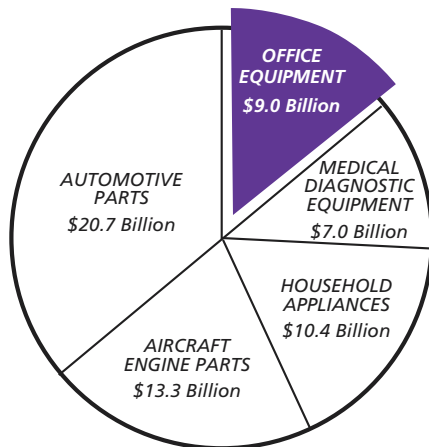


Remanufacturing Consulting (Cont.)

Remanufacturing Consulting Services

Requirement Determination
Product Assessment
Environmental Requirements
Parts Replacement List Development
Establishment of Tooling Requirements
Process Sheets Generation
Production Facilities Layout
Environmental Analysis
Manufacturing Control Systems
Procurement
Production Control
Warehousing
Quality Assurance
Materials Handling & Shipping
Development of Environmentally Sound Cleaning Systems

U.S. Market Remanufactured Parts



Total U.S. Market \$60.4 Billion

Specific RCG Services

There are no practical limits to the help RCG can provide its customers.

Here are just a few of our services:

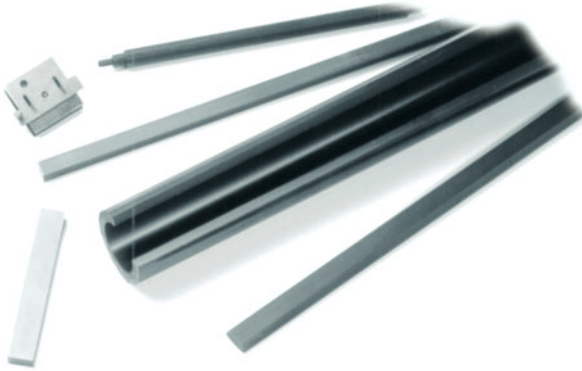
- Audit established remanufacturing capabilities.
- Identify products and parts that can be remanufactured cost-effectively.
- Develop and plan remanufacturing processes.
- Supply specialized equipment and services.
- Deliver on-time to customer requirements.

Magnetic Technologies offers its customers total capabilities in remanufacturing OEM business products. Our experience and broad background extends beyond refurbishing of parts, assemblies and subsystems to include:

- Retrieval and distribution
- Inventory management
- Reverse engineering
- Engineering evaluation by an experienced technical staff
- Management of environmental regulatory requirements

And that's just a partial list. We invite you to tour our remanufacturing operation to see for yourself what we can do.

Magnetic Design



Overview

While our name no longer describes the full range of our services, it does represent our special capabilities in magnetics: our skills in the design of sophisticated magnetic components and precision magnetic assemblies for the copier and printer industries.

In fact, Magnetic Technologies helped with the development of magnetic brush technology at a time when the concept was new and highly experimental. Today, our credentials in magnetic design, manufacturing, testing and characterization are unmatched, a fact proven by our successes with Fortune 500 customers.

We welcome new problems and fresh challenges in magnetic design.

Customer Benefits

In our magnetic design services, we offer the customer an attractive set of operational advantages. Most notably:

- Unrivaled technical credentials in magnetic design.
- Extensive experience in magnetic brush technology: design, manufacture, testing and characterization of magnetic brush components.
- Rapid problem solving and development to shorten customer time-to-market.

Environmental Considerations

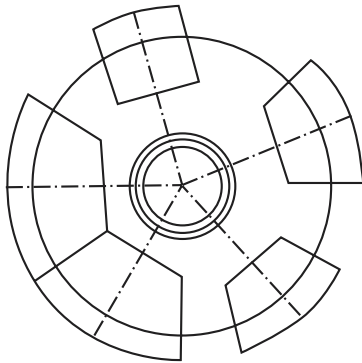
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Magnetic Design (Cont.)

Magnetic Development Services

- Product Assessment
- Magnetic Evaluation
- Magnetic Design
- Process Design & Development
- Design for Assembly
- Electromechanical Design
- Engineering "Breadboards"
- CAD/CAM
- Engineering Prototypes
- Gauge Design
- Preproduction Engineering Evaluation
- High & Low Volume Production
- Reverse Engineering
- Specialized Computer Programs
- Instrumentation & Controls
- World Class Quality Assurance
- Sophisticated Global Procurement Strategies

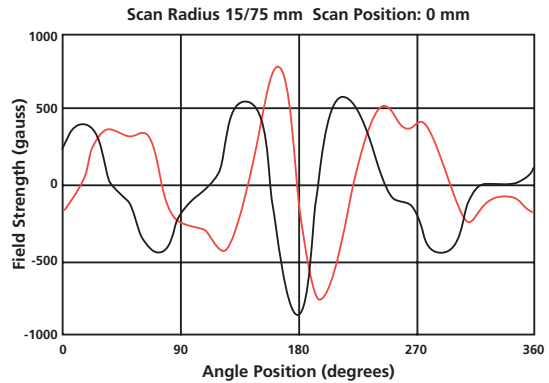
Typical RIM Magnetic Roll Configuration



Magnetic Technologies assists its customers in developing magnetic specifications at the component level as well as the final assembly level.

More often than not, specification of magnets at the component level does not yield application requirements at the assembly level. Magnetic Technologies optimizes magnetic requirements and final circuit design through computer modeling. We then build samples and verify design intent through sophisticated scanning techniques we've developed. This process qualifies applications and establishes a base design for production specification.

Typical RIM Magnetic Roll Analytical Plot





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