Metal Removal Technologies

A Business Plan

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Executive Summary

Metal Removal Technologies ("MRT") utilizes a patent-pending technology to remove heavy metals from industrial wastewater.

Opportunity

Each year, manufacturers in the United States spend approximately $1.8 billion removing heavy metals from industrial wastewater in order to meet EPA requirements. MRT uses its patent-pending technology to reduce the cost of this process by 35% without sacrificing effectiveness. MRT's critical raw material can be manufactured at less than 10% of the cost to the end user of the competing technology, ion exchange. MRT has identified copper as its entry point into the waste water treatment industry – a $225 million market.

Product Description

The product is a filtration tank containing granular activated carbon (GAC) and methylbenzotriazole (MeBT). MeBT is an organic chelating agent that forms strong bonds with heavy metals and has a high affinity for GAC. When metal-laden water is passed through the tank, the combination of GAC saturated with MeBT acts as a metal sponge and leaves industrial process water free of contaminants.

Market Description

Metal Removal Technologies is positioned within two sectors of the $55 billion Environmental Equipment industry - Water Equipment & Chemicals and Process & Prevention Technologies. These sectors represent a $26 billion annual market and have a projected 10-year growth rate of 30% and 80%, respectively. The U.S. market for removal of heavy metals from industrial wastewater is $1.8 billion and MRT will initially target the $225 million copper treatment market. Industry growth is being driven by two trends: stricter EPA regulations and manufacturers' desire to achieve zero discharge and reuse process water. Research indicates that reducing operating costs is the primary problem facing the industry today.

Business Model

MRT will acquire raw materials, assemble filter tanks and establish distribution relationships with solution providers. Revenue will be generated from selling the filtration system to solution providers (and to a lesser degree – direct) as well as recurring sales of replacement filter media to end users through established distribution channels. MRT will realize revenues per employee 50% higher than industry average by Year 5. MRT's competitive advantage is the application of its patent-pending technology to significantly reduce customers' operating costs.

Financial

Projected revenue in Year 5 of operations will be $56 million. Year 5 gross margin is approximately 60% and cash flow breakeven will occur in Year 3.

Offering

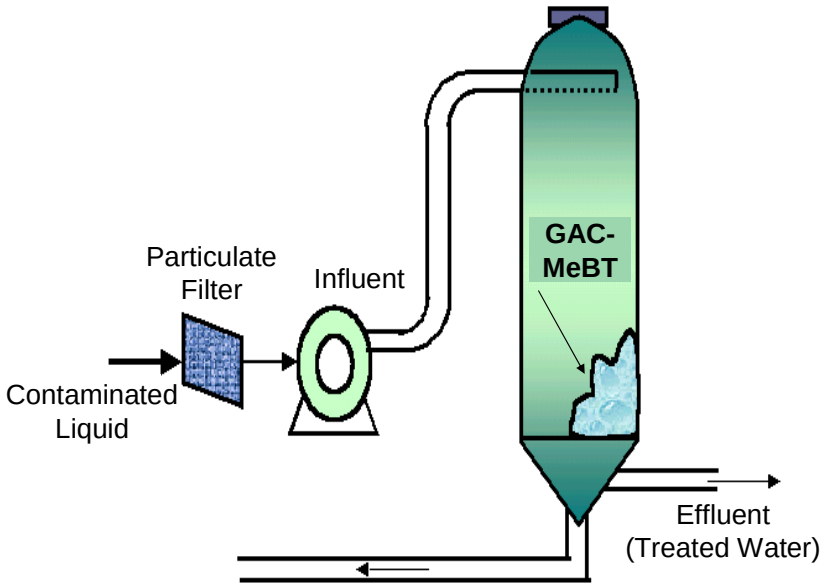
Metal Removal Technologies is seeking a $400,000 seed round and a $3.0 million Series A round of financing in exchange for 20% and 35% of the company, respectively. The exit strategy is a sale to a large solution provider or distributor such as U.S. Filter or GE Water Technologies.

Product Description

Mechanism: The product, the MRT-100, is a filtration system that removes ionized heavy metals from water. The technology underlying the system has two main parts: 1) a metal-binding liquefied compound – methylbenzotriazole (MeBT) – referred to as the ligand and, 2) the solid substrate or sorbent to which the liquid MeBT and metal ions will adhere – a special type of carbon pellet called Granular Activated Carbon (GAC).

Commonly used as airplane de-icer because of its high affinity for metal, MeBT bonds to metal ions in solution like a liquid magnet. In the MRT-100, MeBT-saturated carbon is packed into a fiberglass or steel tank. When metal-contaminated water flows through the tank, the MeBT bonds to the metal ions, binding them to the GAC (carbon pellets).

Figure 1: MRT-100 Schematic



Features:
Unlike existing technology, the process is not affected by pH (acidity level). It is however highly selective for heavy metals and transition metals. The carbon, once saturated, can be regenerated by use of a solvent to remove the metal.

Benefits:
The benefits of the MRT-100 are simplicity, efficiency, and cost-effectiveness in removal of heavy metals from water. Because the process is not affected by pH level, it requires no pH-adjusting chemical additives, reducing both chemical and labor costs and extending hardware life. MeBT is highly selective for heavy metals; therefore, it does not clog up with non-targeted materials such as

sodium, magnesium and calcium. This translates into longer usable life, less frequent filter medium regeneration or replacement, and ultimately lower cost for the user. MRT can help end users drive bottom line benefits directly from operational cost savings.

Table 1: Features and Benefits

Features	Benefits
Highly effective	Treats process water down to 1) levels mandated by EPA & municipal wastewater treatment levels, and 2) levels required for process water reuse.
Unaffected by pH level (acidity)	Lower chemical costs to end-users and improved end-user worker safety
Highly selective for heavy metals	Lower costs - Filter does not clog up with inconsequential ions→ less frequent media regeneration or replacement.
Filter sorbent is easily regenerated with common commercial solvent	The filter can be re-used 15 times before media replacement is needed – a crucial cost consideration to end-users
Simple Design & Inexpensive Raw Materials	Ease/low cost manufacturing; also low cost of replacement media for end-users
Operating simplicity	Ease of use/ low cost for end-users
Passive technology (low energy needs)	Low energy costs
Simplicity of concept	Easier to sell; also, end-users value simple processes

Proprietary Rights:
Use of ligand-saturated sorbent to remove metals from water is novel, useful and non-obvious, thereby meeting the criteria for patent protection. With the help of the University of Colorado's Tech Transfer Office and a local patent attorney, a patent application has been filed with the US Patent Office. We fully expect to receive legal protection for this proprietary process technology, a measure which will provide significant leverage to this venture and erect entry barriers against would-be competitors.

The Intellectual Property includes a broad *Method Patent* to the following major claims:
1) In acidic pH conditions, a metal-binding compound (ligand) binds to a dissolved metal, immobilizing it on a sorbent surface.
2) There are three main process scenarios:

- A metal-binding ligand is contacted with the sorbent, prior to running a metal-laden solution through it
- A metal-containing solution is mixed with the ligand, then passed by the sorbent; and
- A metal-binding ligand is contacted with a sorbent, then placed in a porous containment, which is then placed in a metal-laden solution

Our Method Patent is broad enough to spawn multiple products, but according to patent attorneys, is specific enough to be easily defended.

Stage of Development:
Stage I – Viability Tests (In progress)
- Capacity: how much metal can a filter of given size remove
- Effectiveness: for heavy metals beyond copper and lead
- Residence time: required time in solution determines effective flow rate
- Scalability

Stage II – Optimization
- Type of MeBT (ligand)
- Type of GAC (sorbent)
- GAC size/shape
- Pre-treatment needs

*Stage II will require time and money – will use Seed financing.

Stage III – Productized and Sold
- Replace GAC (carbon) with polymer matrix (beads)

* Stage III includes additional R&D – will use Series A financing.

While effective copper and lead removal alone affords the MRT-100 substantial market potential and venture viability, proven effectiveness on a broader range of metals such as nickel, cadmium and radionuclides would increase its attractiveness and market size exponentially. The process for copper and lead has been proven effective in laboratory bench-tests, but further R&D is needed for optimization and scalability to large-scale application.

The inventor is continuing tests on a shoe-string budget, but the process would benefit greatly from modest financing. A $400,000 investment in the venture would provide the inventor with sufficient funds to build conclusive results regarding the parameters outlined in stages I and II above.

Marketing Plan

Target Market Strategy

End-User Target Market: Industrial manufacturers with copper-contaminated water.
To establish a commercial foothold, we have chosen as our target end-user the industrial manufacturing market, specifically the metal plating and circuit-board manufacturing market. This end-user target market was chosen for the prevalence of copper in its wastewater stream.

Our Customers: Solutions Providers (sales channels) and replacement media distributors.
Due to the characteristics of the market (mature, diverse, lengthy sales cycles), an indirect sales strategy is necessary for most of our sales. Selling will occur through the existing channels, specifically water treatment solutions providers including US Filter, Trionetics, Kinetico and REMCO, who will in turn sell our product as part of an overall solution to the end-customer.

Product Sales and Distribution Strategy

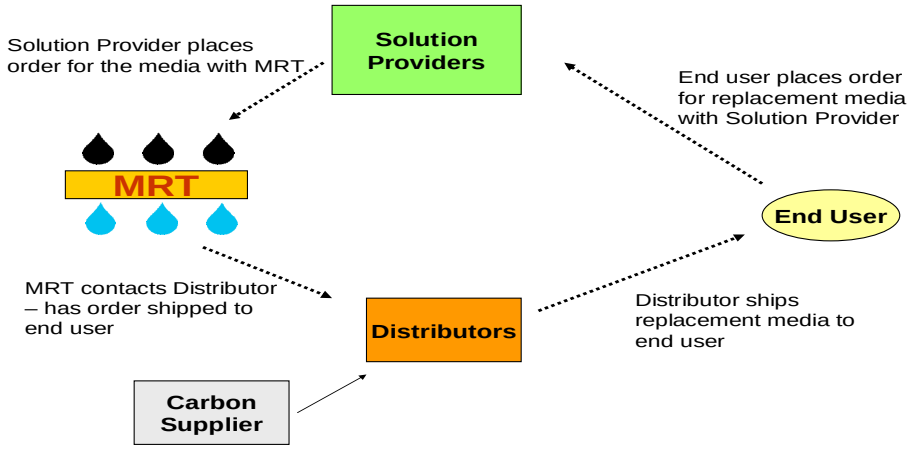
Initial MRT-100 Capital Equipment Sale

- New System: End-user buys new water treatment system, which includes MRT-100 component. Sale is handled by intermediary solutions provider.
- Modular Exchange: End-user replaces their existing Ion-Exchange filter component by swapping it out for the modular-design MRT-100. Sale can be handled through intermediary solutions providers or directly from MRT.

Replacement Media (Recurring Sales)

- Replacement Media: MeBT-saturated carbon will be sold through existing distributors, such as Calgon Carbon and some solutions providers. Due to the proprietary nature of the technology, MRT is able to enter this revenue stream without disrupting the current supply chain. Value is added by increasing replacement media service options for the end user. See figure below.

Figure 2: Replacement Media Model



MRT's product sales strategy is analogous to the "printer / printer cartridge" business model. Once a system is installed, the end user will need to purchase replacement media on a yearly basis.

Our product will be differentiated from existing technologies on the basis of its underlying technology, and its benefits to both our customers (solutions providers) and to end-users. Solutions providers' incentives to incorporate our product into their line of offerings are a) higher margins as a result of lower costs to them (lower than their current resin-based ion-exchange tanks), and b) ability to gain market share on the basis of simplicity, effectiveness, and price. End users will benefit from reduced switching costs. The MRT-100 will be engineered to take the place of existing ion-exchange tanks with minimal cost, difficulty or system downtime.

Positioning

The MRT-100 will be positioned primarily on the basis of its three main benefits – effectiveness, price, and simplicity. Product attributes such as pH independence and metal selectivity will also play an important role in positioning.

Table 2: Competitive Product Benefits

	MRT-100	**Ion Exchange**	**Chemical Precipitation**	**Electrowinning**	**Reverse Osmosis**
Effectiveness (defined as capability to treat down to low ppm levels)	Very Effective – <1.0ppm	Very Effective – <1.0ppm	Not effective –	Not effective -	Very Effective – <1.0ppm
Simplicity	Simple – non-complex, passive process	Complex – requires highly engineered resins	Moderate – requires copious amounts of pH adjusting chemicals	Moderate – electricity intensive process	Moderate
Price	Low – inexpensive raw materials; no pH adjust.	High – requires costly resins and pH adjusting chemicals	Moderate – cost of pH adjusting chemicals and manpower adds up	High – cost of high electricity needs	High – Used mostly for ultra pure front end needs

Effectiveness refers to a system's ability to treat water down to very low concentration levels of metal, i.e., less than 1 part per million (ppm). Resin ion exchange is the technology benchmark. While the MRT-100 is highly effective, its filter media (like that of ion exchange resin) at some point becomes saturated with metal and must be regenerated or replaced. For this reason, the MRT-100 is not ideally suited to for use with large quantities of high concentration wastewater. The following points highlight competing technologies:

- Reverse osmosis filtration (RO): an effective process used in ultra-filtration of already clean water to remove all ions, i.e., a final polishing step.
- Chemical-physical precipitation: used to precipitate larger quantities of metals out of higher volumes of solution.

- Electrowinning: Same use as chemical-physical precipitation but less effective and more energy-intensive.

Price: Because industrial wastewater treatment is a pure cost center, price is critical. An average-size MRT-100 filter tank system will be wholesale to solutions providers at $60,000 and retail at $90,000 to end-users, affording a 35% average cost savings over comparable capacity resin-based ion exchange systems. Solution providers can therefore be more price competitive while increasing margins due to lower product costs. Lifetime operating costs are also expected to be cheaper as a result of inexpensive replacement media and MRT-100's selectivity for the target metals.

Simplicity: The MRT-100 is simpler than ion exchange, RO, precipitation or electrowinning. It is a completely passive process requiring no additional chemicals to adjust pH, no electricity, and no forced pressure. Simplicity means minimized risk of malfunction and downtime, as well as lower costs for electricity, training, chemicals and labor.

For product attribute maps, please refer to **Appendix 1**.

Advertising/Promotion: Solution providers will be reached through direct sales. This will involve contacting prospective partners and/or channel customers by phone followed by face-to-face meetings at the service provider's office. End-users will be reached through advertisements in trade journals, published white papers, industry trade shows and the Internet, as well as the solution providers' channel marketing efforts.

Industry & Marketplace Analysis

Need for Technology

Unlike hazardous organic constituents, metals cannot be degraded or readily detoxified. The presence of metals among wastes pose long-term environmental and health hazards. It is common for ground water and industrial effluent to be contaminated with metals. The current technology, ion exchange, is expensive and without competition. End users seek a cost effective technology to remove heavy metals from water and an increased choice in technology.

Industry Analysis

The water/wastewater industry is a focus of management across the globe due to its regulated and cost center nature. The MRT-100 is located within the Global Industry's Environmental Equipment sector (**Appendix 2**). The industry and marketplace can be seen in the following table:

Table 3: Environmental Market Statistics

Environmental Market Table

$ in bn

	Market Size			
US Industry	2000	2002	Projected 2010	10 Year Growth Rate
Environmental Services	$ 98	$ 99	$ 104	6.1%
Environmental Equipment	54	55	57	5.6%
Environmental Resources	52	55	67	28.8%
Total	$ 204	$ 209	$ 228	11.8%
Global Industry	$ 480	$ 487	$ 517	0.75%

	Market Size			
US Marketplace			Projected	10 Year
Environmental Equipment	2000	2002	2010	Growth Rate
Water Equipment & Chemicals	$ 21	$ 23	$ 28	31.0%
Process & Prevention Tech	2	3	4	83.0%
All Other Segments	30	29	25	-18.4%
Total	$ 54	$ 55	$ 57	5.6%

Source: Environmental Business International (EBI)

EBI's forecasts are built on the prediction that new markets are expected to develop for manufacturing companies to outsource wastewater operations to investor-owned companies that build, own or operate wastewater treatment solutions.

Domestically, the industrial wastewater treatment industry is at a mature stage. Future growth of the industry will come as companies are forced to meet stricter regulations set by the EPA. For example, according to Brad Littlepage at the Leadville Water Treatment District, acceptable levels for Manganese will be lowered by a factor of five with in the next year. Additionally, firms are tending towards more closed loop processes [full recycling of water in industrial use]. Anant Upadhyaya, technical director of Waterlink in Ohio, said in a 2003 Pollution Engineering interview, "the concept of zero discharge has become a principle focus of industrial wastewater treatment." This implies that companies are no longer seeking to reduce metals to acceptable concentrations

before releasing them (dilution is no longer the solution to pollution) but that companies will now be increasing the transport of contaminants off-site. The MRT-100 fits into this future process.

Marketplace Analysis

The MRT-100's marketplace is within the Water Equipment and Chemicals and Process and Prevention Technologies sectors as defined by the EBI. EPA data shows that metal processing and manufacturing facilities in the US total approximately 63,000 (see **Appendix 3**). Nearly 9,000 facilities in the US release the metals portfolio this technology is targeting. These facilities represent an annual market of approximately $1.8 billion.

Table 4: Wastewater Treatment Market

Annual Market for Wastewater Treatment - Heavy Metals

$ in millions

	Market Size		
		Projected	10 Year
Customer/Buyer - Copper Market	2002	2010	Growth Rate
Solution Providers	$ 150	$ 195	30.0%
Distributors	75	135	80.0%
Total	$ 225	$ 330	46.7%
Total market for MRT-100 ($ in bn) (copper + all other heavy metals MRT-100 addresses)	$ 1.8	$ 2.7	46.7%

Source: Environmental Protection Agency

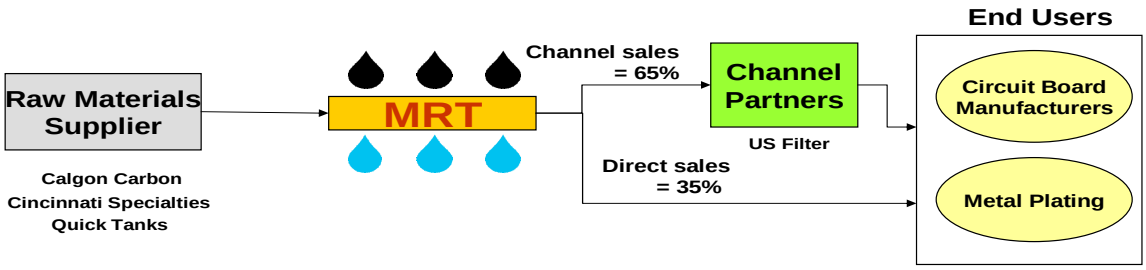
Market Structure

The market for metal-laden water treatment consists of three primary categories: pre-treatment, remediation and recovery. The MRT-100 is initially going after the pre-treatment market. Dischargers of wastewater are required to use treatment techniques and management practices to reduce or eliminate the discharge of harmful pollutants to the sewer system. The act of treating wastewater prior to discharge to the sewers is referred to as pre-treatment.

Remediation refers to clean up of sites contaminated due to previous releases, underground seepage and generally falls under Superfund direction. The third category, recovery, largely occurs in the mining industry in the treatment of tailings and process water.

The market for waste water treatment is highly fragmented with many local manufacturers attempting to sell undifferentiated product into the end user. There are a few national players in the current ion exchange solution market. Market structure includes suppliers, solution providers, distributors and end users. Equipment is provided by solution providers and replacement media typically is provided by distributors.

Figure 3: MRT Market Structure



Buyer/Customer Analysis

US Filter ($4bn in revenues), a subsidiary of Vivendi Water, is the largest player in the wastewater treatment arena in which the MRT-100 will position itself. Ionics, GE Water Technologies (formerly Osmonics) and Calgon Carbon all manufacture water treatment equipment and have influence in the marketplace ($930 MM in combined revenues). The other large suppliers of wastewater treatment solutions include Kinetico Corp., Trionetics, and REMCO Engineering. Smaller companies in this industry have been unsuccessful in building customer confidence, especially in the areas of customer service and technical service. Most end users only consider systems designed and built by one of the larger competitors.

MRT customers are the solution providers and the distributors of replacement media. Ion exchange technologies have been around for 20 years with only incremental improvements in materials and innovation has not advanced cost effectiveness. As EPA regulation becomes stricter and operational costs become more important, end users demand more cost effective solutions at their facilities. The MRT-100 has emerged to help satisfy the end user's desire for reduced operational costs, while offering comparable or better performance characteristics. According to Stelios Androulidakis, Chief Environmental Engineer at SAE Circuits in Boulder, Colorado, "We have just invested in ion-exchange technologies, as well as ligands technology. From our perspective, the technology is superior in the marketplace today, but the engineered end product did not meet our expectations. Due to our extremely complex waste stream, both companies that we associated with were unable meet our demands adequately."

Competitive Analysis

A large but slow moving market and a high number of solution providers make for intense competition. Any attempt to enter this market with a proprietary and disruptive technology will likely provoke swift and intense reaction from the dominant players. These players have the financial resources and market influence to block a go-it-alone start-up introducing a competing technology.

There are many companies that compete indirectly with MRT to satisfy similar needs. The following companies have been identified: Met-Pro Corporation, Enviro Voraxial Technology, PentaPure Inc. and Pall Corporation. Competition also includes the solution providers as they are be either our competition or our customer. Large solution providers (compete on quality and tech support) are US Filter, Trionetics, Kinetico and REMCO Engineering. Smaller solution providers (compete on price and service) are Yardney Filter, Metre-General, Pure-Water Solutions and Optimum Water Technologies. MRT's sustainable competitive advantage is the application of our patent-pending technology to significantly reduce the operating costs of customers. For a complete competitive analysis matrix, see **Appendix 4**.

End user loyalty to the solution provider is low in the wastewater treatment arena. Service, technology and cost are the differentiating features. Switching costs are low and do not stop end users from evaluating new technologies. According to Stelios Androulidakis, Chief Environmental Engineer of SAE Circuits, "A better technology or product will be considered on an equal footing as an established supplier."

Operations Plan

Strategy

The key to MRT's operations strategy will be the commitment to the following:

- Establishing and maintaining superior supplier relationships
- Consistently sourcing the highest quality raw materials
- Manufacturing the MRT-100 with a commitment to cost, quality and timeliness
- A dedicated sales staff and long term relationships with customers
- Managing post-sale logistics, technical support and customer satisfaction

Scope of Operations

MRT will add value to our customers by sourcing and assembling high-quality carbon vessels utilizing MRT's patent-pending technology. As the MRT-100 moves through the supply chain, MRT will compete on the basis of cost, quality and timeliness. The raw materials necessary to manufacture the MRT-100 are significantly less expensive than those used to produce competing products. In addition, MRT will achieve additional cost savings by purchasing raw materials in bulk. MRT will then manufacture the highest quality carbon vessels in the marketplace, made possible by the combination of a simplified manufacturing process and the company's highly-skilled technicians. Finally, finished goods inventory can be stored on site allowing MRT to be extremely responsive to market demands. When an end user is ready to order replacement media, they will notify their solution provider who will in turn order replacement media from MRT.

Raw Materials Sourcing

MRT will source the highest quality raw materials from its suppliers:

- Granular Activated Carbon will be sourced from Calgon Carbon (NYSE: CCC), the world's largest manufacturer and supplier of activated carbon. GAC will be purchased from Calgon in 20,000 lb. lots at a cost of $0.40 per pound.
- Methylbenzotriazole will be sourced from Cincinnati Specialties, a leading supplier of chemicals in the United States. Discussions are currently underway with Cincinnati Specialties for a purchase agreement. MRT will purchase MeBT in 6,000 lb. lots at a cost of $3.45 per pound.
- Empty tanks for the GAC and MeBT will be sourced from Quick Tanks, Inc. Tanks of approximately 600 cubic feet, tubing, meters and analytics will be purchased at a cost of $25,000 each.

Personnel

Metal Removal Technologies will employ 6-8 full-time employees during its start-up phase, consisting of operations and research and development personnel. As the company expands the scope of its operations to include solutions for additional heavy metals, the number of employees will grow substantially.

Key operations personnel will include a Vice-President of Operations who will be responsible for the receipt of raw materials, quality assurance and manufacturing of the MRT-100, as well as overseeing a team of assemblers. Mark Hernandez, the Vice-President of R&D, will oversee product development and manage a team of engineers and technicians. A Vice-President of Sales

will craft initial channel agreements, set marketing direction and develop a team of technical sales personnel.

Facilities

After six months of operations, Metal Removal Technologies will lease a 3000 square foot industrial flex building featuring an interior build-out at 50% bulk warehouse/ R&D space and 50% office space. As of November, 2003, blended lease rates in the established Commerce City industrial market were approximately $7.75 per square foot.

The office portion of the building will house the company's sales, marketing and administrative personnel and will have one conference room. The remainder of the building will be used for manufacturing of the MRT-100 as well as storage space for both raw materials and finished goods. One requirement in evaluating potential facilities is an HVAC system and the necessary use permits for future R&D efforts.

Manufacturing and Equipment

Metal Removal Technology's Operations Plan benefits from the simplicity of the manufacturing process. MRT will receive GAC saturated with MeBT directly from Calgon Carbon, the company's carbon supplier. MRT will then funnel the saturated GAC into empty tanks, add a system of valves and meters and seal off the vessel. This manufacturing process requires very little investment in heavy equipment and machinery, with the exception of a system for filling the empty tanks with the compound and packaging equipment to prepare finished goods for delivery to customers via truck. In order to support office and administrative functions, the company will purchase standard office equipment and furniture.

Product Sales

Sales staff will be trained to develop an in-depth knowledge of the product, the wastewater treatment industry and MRT's customers. The sales strategy is to make direct calls and personal visits to potential customers. MRT does not anticipate significant marketing expenditures; however, sales and marketing personnel will participate in industry trade shows and have a presence in popular trade journals. The company will also have a website that will present detailed content about the company and its products.

Customer Support

After six months of operations, MRT will employ two full-time customer and technical support specialists to ensure that customers are able to receive timely and accurate information and product support. Interviews with end users in the marketplace indicate that customer service can be a problem with today's service providers. MRT believes that a focus on customer service and support will result in an additional source of competitive advantage for the company.

Critical Success Factors

The primary critical success factors are to establish relationships with suppliers as well as the first relationship with a wastewater treatment solutions provider. Negotiations are currently underway with both sides of the supply chain. Development of a working prototype, making key hiring decisions and securing financing are additional critical success factors.

Development Plan

There will be 8 development phases as shown in the GANTT chart shown in **Appendix 5**.

Phase I: Patent Protection and Incorporation – Estimated Completion: Q2-2005.
MRT has created a Delaware C-Corp to facilitate the development of the technology's commercial viability. A patent is pending, with full patent protection expected to be issued by end of Q2-2005.

Phase II: Product Development – Estimated Duration: 12 months from seed funding.
Dr. Hernandez will lead a team of four post-doctoral students to find the best combination of factors (**Appendix 6).** This process is underway but is resource constrained. Financing requirements will allow the research team to obtain supplies and buy out Dr. Hernandez's teaching obligation with the University of Colorado for the required time period. In parallel, SAE Circuits in Boulder, CO, has agreed to conduct a six month industrial scale study, under protocols developed by Dr. Hernandez. See **Appendix 7** for their written agreement in principle. The Risk and Product Description sections describe parameters of product development efforts.

Phase III: Fund Raising – Estimated Duration: 7-12 months
The immediate funding need for Phase II is $400,000. Grants will be sought to minimize the equity capital needed and resulting ownership dilution. SBIR grants are administered by several organizations including the NSF. **Appendix 8** illustrates increases in NSF grants and identifies two engineering grants for which MRT is eligible. Dr. Hernandez has an excellent track record in grant writing and has been invited to judge and teach grant applicants. Dr. Hernandez has started the application process for MRT.

In addition to these grants, we will seek an initial round of $3.0 million in Month 7.

Phase IV: Channel Development – Estimated Duration: 7 months.
The VP of Sales will secure agreements with solutions providers such as US Filter. This partnership will allow media revenue growth beyond the value enabled by early sales of our systems. Sales cycles for our systems will take approximately approximately six months according to industry business development expert and President of Trionetics, Phil Maitino. Replacement media revenue will be attained by leveraging existing distribution infrastructures without disintermediation of the solutions provider, as described in the Operations Plan. Alternative targets in other industries may be uncovered through white papers written by post-doctoral students and/or the R&D team MRT will employ after launch.

Phase V: Facility Selection and Improvement – Estimated Duration: 4 months.
Following site selection, leasehold improvements will be needed for items such as ventilation of chemical holding & handling areas, data & voice lines, lab set up and construction of media holding tanks.

Phase VI: Establish Supply Chain – Estimated Duration: 4 months.
Conversations with carbon, chemical and tank suppliers (Calgon Carbon, Cincinnati Specialties and Quick Tanks, respectively) indicate that they could begin delivery within one month of our initial order.

Phase VII: Staffing – Estimated Duration: 6 months.
Staffing may take up to six months due to the technical sales skills we seek. Critical hires include a VP of Operations and a VP of Sales, as described in the Operations section. We assume a 90-day lead time for critical hires.

Phase VIII: First revenue
Assuming the sales hire is made in month 7, one month of product training and channel partner integration and a 6 month cycle for the first sale, first non-prototype system revenue is projected to occur in Month 13. The first media revenues will come at the time of first system sale. MRT projects 6 prototype sales in the latter half of Year 1.

Risk Analysis

Technology

The obvious risk is for someone to design around our patent or make dramatic improvements in ion exchange technologies. Dr. Hernandez has seen only incremental improvements in ion exchange in the past twenty years.

MRT's early R&D efforts will seek solutions to the following hurdles:

1. *Regeneration:* Ability to strip trapped metals from the filter. Media must be regenerated or replaced after one cycle. One cycle replacement would be cost prohibitive due to disposal costs and additional replacement media costs. MRT-100 is expected to operate similar to ion exchange in regeneration ability through backwashing with acid compound.
2. *Footprint*: Space is taken up by the tanks. Flow rates may require multiple large tanks. This is a problem in current solutions that MRT may not improve.
3. *Scalability:* Ratios of raw materials to metal absorbed can change at scale and obsolete cost models. SAE circuits will be conducting scaled experiments in parallel to MRT's in house product development efforts to confirm scalability of the technology.
4. *Selectivity:* R&D efforts will seek to learn the full range of applications for MeBT-GAC. Research has shown effectiveness for copper and theory indicates promise for Chromium, Nickel, Tin, Gold, Mercury, Cadmium and others.

Patent Protection

Although full patent protection has not yet been granted, an 80 page, 28 claim patent filing was completed in July of 2003. The full patent is expected to be granted in 2005.

Entry Barriers and Competitive Response

US Filter dominates this sector and can therefore be a great channel partner; they can just as easily impede MRT's growth if MRT threatens current business. Failure to strike a deal in this channel can dramatically reduce our rate of market entry and growth. According to industry standards, customer acquisition costs can be as much as ten times as high outside the channel as within it. MRT's market entry and pricing strategies produce a 35% cost savings for the end user, and markedly increased margin opportunities for the solutions provider. We will partner with the channel rather than compete, and pricing on direct sales to end user will match channel offerings. Media replacement sales will also drive volume to existing distributor relationships.

Management

Team - Only two members of the team have been identified: CEO and VP of R&D. Neither has experience in this industry. It is therefore critical that MRT hire from the ranks of industry for key positions such as VP of Sales, VP of Operations and later a CFO.

Execution – Fundraising in the start-up phase could prove to be a major distraction for executive management. In order to limit this risk management will seek to raise sufficient capital for at least 2 years in a single offering.

Management Team

Management Team

The management team currently consists of Dr. Mark Hernandez and Mr. Rick Brennan, CEO and VP of R&D respectively. Dr. Hernandez is the inventor of the technology; Mr. Brennan has extensive experience in the commercial development of technology in start ups, mature firms and military applications. The proposed organizational chart and executive biographies are available in **Appendices 9 and 10**, respectively.

In addition to Mr. Brennan and Dr. Hernandez, key hires include a CFO, VP of Operations and VP of Sales & Marketing. No leading candidates have yet been identified, however, their roles and desired background are known:

Table 5: Roles and Desired Background of Critical Hires

Position	Role	Desired Background
VP of Sales and Marketing	- Develop channel relationships - Build technical sales team - Guide marketing strategy	- Leadership position in leading solutions provider - Knowledge of buyers in the industry
VP of Operations	- Build technical support team - Negotiate supplier contracts and logistics	- Has led growth of technical support organization - Able to control operational expenses in a multi-phase production environment
Chief Financial Officer	- Traditional roles	- Has guided growth firms through additional fund raising and / or sale - Industry experience desirable but not mandatory

Board of Directors / Board of Advisors

A Board of Directors will be assembled as part of the Series A financing. A Board of Advisors will be assembled after the closure of seed round financing and should include industry executives.

Future Employees

It is likely that if funding is achieved, members of the Leeds School of Business at the University of Colorado will join MRT in its launch as Director level employees.

Organizational Structure

MRT was formed in 2003 as a Delaware based C-Corporation. The University of Colorado owns the technology upon which MRT is based. MRT is the sole licensee, operating under an exclusive agreement with the University's Technology Transfer Office.

Currently, 100% of equity is owned by Rick Brennan and Dr. Mark Hernandez. In addition to the equity stake being offered for seed (if grants are unavailable) and Series A rounds of funding, MRT anticipates reserving up to 20% of equity for incentives and options for key employees.

Financial Plan

Revenue Sources: (MRT Revenue will come from 3 sources)

Source 1: MRT-100 filtration system to the copper market.
MRT will wholesale the MRT-100 for $60,000 and retail the product for $90,000. This pricing provides partners with a 35% margin. The MRT-100 when sold includes 3 stainless steel or fiberglass tanks with all of the connecting tubes, valves, meters and analytics. MRT expects to achieve a 33% share of the copper market by year 5 due to a channel agreement with a major industry player such as US Filter for an installed base of approximately 500.

A. **New system market:** Ten percent of the copper market purchases a completely new wastewater treatment system each year. These customers are expected to purchase the MRT-100 as part of a new water treatment system through a solution provider. The first prototype users will come on line in the fourth quarter of the first year.
B. **Modular exchange market:** Some potential customers will take advantage of the cost savings by replacing their existing metal removal technology with the MRT-100. Since channel partners control approximately 65% of the market, it is expected that MRT will make approximately 35% of its Modular Exchange sales directly and 65% through channel partners such as US Filter and Trionetics.

Source 2: MRT filtration media (GAC/MeBT) will be sold through channels and distributors to end users for $43/cu.ft. versus $66/cu.ft.- 35% savings over the comparable ion exchange media. One load of filtration media is expected to last for one year. By year 5 recurring filter media sales will account for over 50% of MRT's gross margin and increasing.

Source 3: In year 3 the MRT-200 will be introduced. This product will target end-users that have a more diverse metals profile in their wastewater streams. This market represents 7500 companies in the U.S. MRT expects to penetrate this market at a rate of 1% in the first year up to 5% in the fifth year. MRT will have a cumulative 9% share of this market by year 5 for a total installed base of approximately 675.

Profitability:
Gross margins = approximately 57%. As more users come online there will be more revenue from the higher margin replacement media. This steadily increases gross margins from 45% in year 1 to 57% in year 5. (See **Appendices 11 and 12**)

- MRT-100 system: 30% gross margin in Year 1 based on $25,000 for the hardware to create the system and ~$3,000 for labor; Mid 40%s by Year 5.
- GAC / MeBT: 85% gross margin in year 1 with margin compression to 78% in Year 5.

Operational expenses:

- **Research and Development:** Comparable companies showed that R&D could be as low as 0% and as high as 16% of sales. However most of the established companies showed budgets for R&D that were around 5%. MRT will invest more than average in R&D in order to advance second generation filtration technology targeting other metals. In year 5 MRT expects R&D to be 10% of sales

- **Sales and Marketing -** MRT will have a higher budget for this item than comparables since it is paramount to penetrate the market quickly. Significant resources will be deployed to develop channel and distribution relationships. In year 5 Sales and marketing will be 24% of sales
- **General and Administrative:** These expenses will remain modest and are expected to settle at 5% of sales in year 5.

See **Appendix 13** for 5 Year Financial Forecasts.

Table 6: Summary Financials:

$ in millions

	Year 1	Year 2	Year 3	Year 4	Year 5
Income Statement					
Revenue	$0.5	$4.0	$15.8	$35.2	$55.8
COGS	0.3	2.1	6.7	14.6	23.8
Gross Profit	0.2	1.9	9.0	20.6	32.0
Operating Expenses	0.5	3.0	7.9	14.4	21.7
Operating Income	(0.3)	(1.1)	1.1	6.2	10.3
Taxes	0.0	0.0	0.0	2.1	3.6
Net Income	($0.3)	($1.1)	$1.1	$4.1	$6.7
Balance Sheet					
Cash	$2.9	$1.2	$1.6	$5.1	$10.7
Assets	3.3	2.5	5.0	11.5	20.6
Liabilities	0.2	0.5	1.9	4.2	6.7
Equity	$3.1	$2.0	$3.1	$7.2	$13.9
Growth (year over year)					
Revenue		709%	298%	123%	58%
Net Income			NA	278%	62%
Ratios					
Current Ratio (x)	17.8	3.5	1.8	2.1	2.4
Revenue per employee	$0.058	$0.090	$0.188	$0.286	$0.322
Profitability					
Gross Margin	45%	48%	57%	59%	57%
Operating Expenses / Revenue	85%	77%	51%	41%	39%
Net Margin	-62%	-28%	7%	12%	12%
Returns					
Return on Assets	-9%	-44%	22%	36%	33%
Return on Equity	-10%	-55%	35%	57%	48%
Employees	9	44	84	123	173

Offering

Funding Requirements

MRT requires a $400,000 seed investment that will satisfy six months of operations for the company. Uses of funds will include salaries for six people, capital expenditures for lab supplies and equipment and operating expenses such as legal and travel. During this time, prototype analysis and production will take place.

In month 7, a second round of financing of $3.0 million is required in order to develop the sales channels, continued research and development, infrastructure development and new product introductions.

Breakeven will occur in Year 3 when revenues achieve approximately $16 million.

Investment Valuation

MRT is valued at $134 million based on a Price to Revenues multiple of 2.4x and Year 5 Revenues of $56 million. Utilizing a Price to Earnings multiple of 20x and Net Income of $6.7 million yields a valuation of $134 million.

Offering

MRT intends on securing $400,000 for 20% of the company at startup and $3.0 million for 35% of the company after six months of operations.

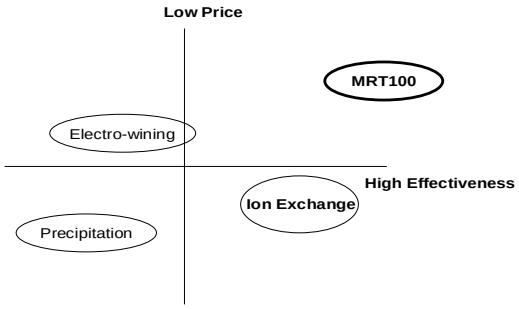
Exit Strategy

After five years of operations, MRT expects to be acquired by a significant industry player such as US Filter ($4B in revenues), Calgon Carbon ($258M in revenues), Pall Corporation ($1.6bn in revenues), Ionics ($335M in revenues) or GE Water Technologies due to MRT's market penetration and patented technology.

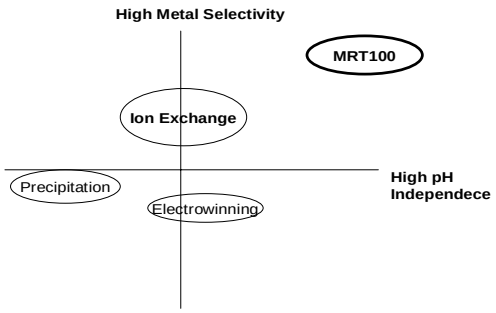
Table of Appendices

Appendix 1: Product Attribute Maps

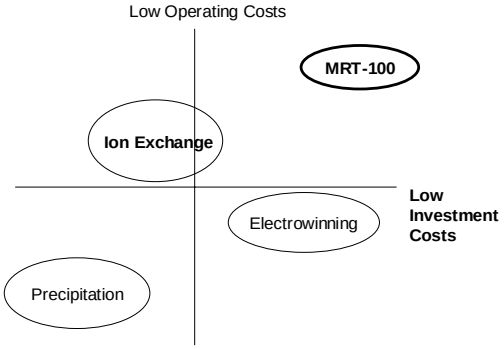
Map #1: Price vs. Effectiveness (defined as ability to treat down to low concentration levels of metal**)**



Map #2: Metal Selectivity and pH Independence (both positive attributes)



Map #3: Operating vs. Investment Costs



Appendix 2: Industry Segments and Descriptions

Source: Environmental Business International Inc. (San Diego, Calif. USA)

Segment	Description	Examples of Clients
Environmental Services		
Environmental Testing & Analytical Services	Provide testing of "environmental samples" (soil, water, air and some biological tissues)	Regulated industries, Government, Environmental consultants Hazardous waste and remediation contractors
Wastewater Treatment Works	Collection and treatment of residential, commercial and industrial wastewaters. Facilities are commonly know as POTWs or publicly owned treatment works.	Municipalities, Commercial Establishments & All industries
Solid Waste Management	Collection, processing and disposal of solid waste	Municipalities & All industries
Hazardous Waste Management	Manage on-going hazardous waste streams, medical waste, nuclear waste handling	Chemical companies, Petroleum companies, Government agencies
Remediation/Industrial Services	Physical cleanup of contaminated sites, buildings and cleaning up of soil, groundwater or operating facilities	Government agencies, Property owners, Industry
Environmental Consulting & Engineering (C&E)	Engineering, consulting, design, assessment, permitting, project management, O&M, monitoring, etc.	Industry, Government Municipalities, Waste Mgmt. companies, POTWs
Environmental Equipment		
Water Equipment & Chemicals	Provide equipment, supplies and maintenance in the delivery and treatment of water and wastewater.	Municipalities & All industries
Instruments & Information Systems	Produce instrumentation for the analysis of environmental samples. Includes info systems and software.	Analytical services, Government, regulated companies
Air Pollution Control Equipment	Produce equipment and tech. to control air pollution. Includes vehicle controls.	Utilities, Waste-to-energy Industries, Auto industry
Waste Management Equipment	Equipment for handling, storing or transporting solid, liquid or haz. waste. Includes recycling and remediation equipment.	Municipalities, Generating industries, Solid waste companies
Process & Prevention Technology	Equipment and technology for in-process (rather than end-of-pipe) pollution prevention and waste treatment and recovery	All industries
Environmental Resources		
Water Utilities	Selling water to end users	Consumers, Municipalities & All industries
Resource Recovery	Selling materials recovered and converted from industrial by-products or post-consumer waste	Municipalities, Generating industries, Solid waste companies
Environmental Energy Sources	Selling power and systems in solar, wind, geothermal, small scale hydro, energy efficiency and DSM	Utilities, All industries and consumers

Appendix 3: Wastewater Discharging Sites by Sector – *(MP&M = metals processing and manufacturing)*

MP&M WasteWater-Discharging Sites by Sector

Sector	Estimated Number of Sites That Discharge Process Waste Water (i)
Aerospace	312
Aircraft	1,356
Bus and Truck	1,861
Electronic Equipment	2,289
Hardware	6,275
Household Equipment	2,003
Instruments	3,208
Iron and Steel	153
Job Shop (ii)	33,683
Miscellaneous Metal Products	3,030
Mobile Industrial Equipment	879
Motor Vehicles	1,506
Municipality (iii)	4,342
Office Machine	249
Ordnance	403
Precious Metals and Jewelry	307
Printed Circuit Boards	617
Railroad	97
Ships and Boats	273
Stationary Industrial Equipment	6,217

(i) Because some sites perform operations in more than one sector, the sum of sites by sector exceeds the total number of sites that discharge water (62, 749)
(ii) The Job Shop Sector includes any MP&M facility that owns <50% of the products they work on (annual area basis). This includes metal finishing job shops, but also may include other job shops such as painting or assembly job shops.
(iii) Technical surveys for these sites did not include sector information therefore they were listed separately for this table.

Appendix 4: Competitive Analysis Matrix

Dimension	Trionetics	US Filter	Yardney	MRT-100
Prod / Svc Offering	Narrow range	Full spectrum	Narrow	Single technology
Price range	Average	High, but with added services	Mid to Low	Low
Target market	Circuit board manufacturers; metal plating shops	Industrial and Commercial	Industrial and Commercial	Solution Providers: Trionetics / USFilter Distributors of replacement media
Quality	High; Custom Built	Broad range of offerings, financing, expertise	Extended life of GAC (lasts 25% longer)	Simple, effective, cost efficient
Unique Feature	Unknown	Market share and partnerships	Manufactures own hardware	New technology, clean & light weight end product
Distribution channels	Direct to end user	Direct, channels and consulting	Direct to end user	Channel agreements and direct sales
Marketing Advantage	Mgmt and Name are known	Well known industry giant	Works on referrals – not repeat business	Channel Agreements and Pricing
Revenue Model	No off site reconditioning	Sell product but also heavy in consulting and services	Product focused – doesn't sell the lifecycle services	Sell hardware and sell media through life cycle of hardware
Strengths / Weaknesses	Concentrates in 2-3 technologies including ion exchange	Size, difficult to work with (rep), 1000's of customers, dominant company	Limited technologies, fast & flexible, 100's of customers but slow growth	Process not pH dependant, cost savings offered to customers; only two metals proved
Location	Midwest based	World wide	Western US	Colorado HQ, Sales depends on channel partner
Operations	Buy vessels, manufacture end product	Buy vessels, manufacture end product	Make own vessels	Buy raw materials, Assemble in house
Strategic Alliances	None known	Vivendi subsidiary; UK firm (Elga) makes 85% of their filters	None known	Targeted: Calgon Carbon, US Filter, GE Water Technologies

Appendix 5: Development Plan

Phase	Activity	% Complete	Start	Duration	Timing (months)
					1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Ia	Patent Protection	90%	(8)	Q2-05	Pending
Ib	Incorporation	100%	(10)	2002	Complete
II	Optimization	15%	1	12	
III	Fund Raising	0%	1	7	
IV	Channel Development				
IV-a	*Channel Agreement*	0%	1	*7*	
IV-b	*Sales Cycle*	0%	7	*6*	**6 mo. cycle, on-going**
V	Facility Selection	0%	7	4	
VI	Estab. Supply Chain	0%	7	4	
VII	Staffing	0%	7	6	
VIII	First Revenue	0%	11	n/a	

Appendix 6: Optimization Plan

Variables to be optimized in product development:

- Time in solution (residence time)
- MeBT saturation level
- Cation concentration limits
- GAC size
- Metal selectivity
- GAC porosity
- GAC acidity tolerance

Appendix 7: Customer Agreement from SAE Circuits Colorado, Inc.

November 12, 2003

Rick Brennan
President and CEO, MetalJamb, LLC
5260 Cypress Drive
Boulder, CO 80303

Stelios Androulidakis
SAE Circuits Colorado, Inc.
4820 N. 63rd Street Suite 100
Boulder, Colorado 80301

Mr. Androulidakis,

Thank you for the tour of your facility and the time you've spent both with our new company and with the MBA students from the University of Colorado at Boulder who are assisting us in the development of strategic plans for the business. The purpose of this letter is to open dialogue on a proposal for joint efforts between you and MetalJamb, LLC for design and development of a pilot system to remove heavy metals (primarily copper) from select streams within the circuit board manufacturing process using MetalJamb LLC's proprietary and patent-pending process.

The pilot system is intended to test diverted samples of the actual solutions used in your manufacturing process, and not integrated into your production systems in any way.

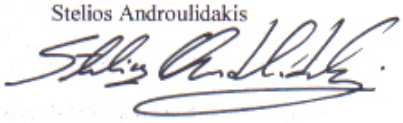
MetalJamb, LLC will provide the services of Dr. Mark Hernandez at the University of Colorado at Boulder, his laboratory and his staff for design, design calculations, measurement and analysis as necessary for the success of the project.

MetalJamb, LLC proposes to put this pilot study into place at your convenience, as soon as reasonably possible.

For protection of the intellectual property provided by MetalJamb and developed for this pilot system, we will ask you to sign a Non Disclosure Agreement.

Rick Brennan

Stelios Androulidakis



Appendix 8: SBIR Grants

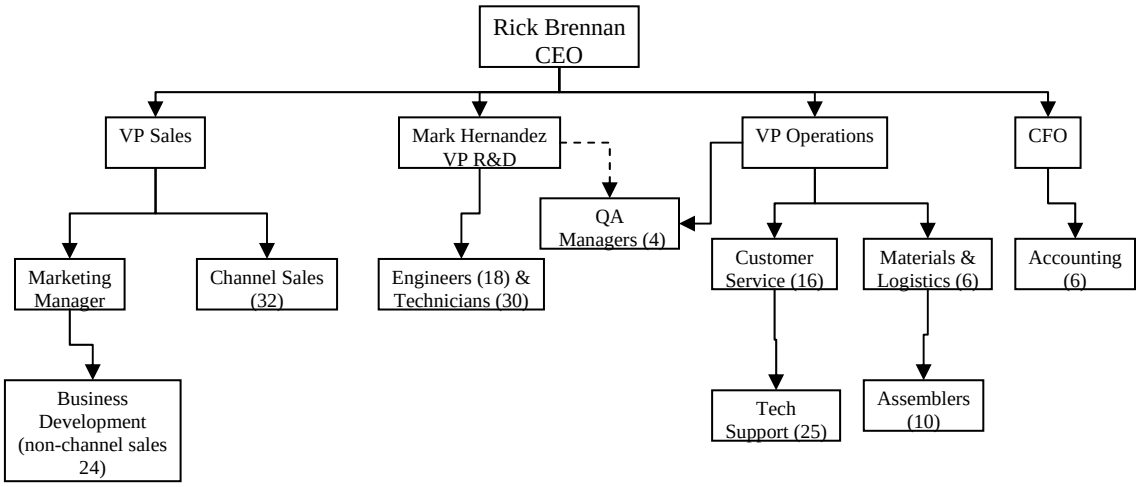
NSF Funding Trends and MRT Eligibility
ENG = Engineering, CTS =Chemical and Transport Systems

Org (Drill to Next Level)	FY	Number of Proposals	Number of Awards	Funding Rate	Average Decision Time (months)	Mean Award Duration (years)	Median Annual Size
NSF	2003	40,095	10,868	27%	5.31	2.55	$99,333
	2002	35,155	10,406	30%	5.65	2.65	$80,000
ENG	2003	9,076	1,945	21%	4.86	1.95	$100,487
	2002	6,891	1,736	25%	5.21	2.15	$98,425
CTS	2003	945	246	26%	5.34	2.38	$91,368
	2002	688	245	36%	5.25	2.40	$79,200
PROCESS & REACTION ENGINEERING	2003	117	26	22%	4.72	2.84	$92,172
	2002	72	30	42%	4.26	2.56	$78,479

Grants for which MRT is eligible:

- SBIR-STTR Phase I - $32.5MM / year awarded across 300 applicants
- Interfacial, Transport and Separation Processes
- More detail at: http://www.nsf.gov/home/programs/eng.cfm

Appendix 9: Organizational Chart



Numbers in parenthesis represent Year 5 Staffing Levels

Appendix 10: Executive Biographies

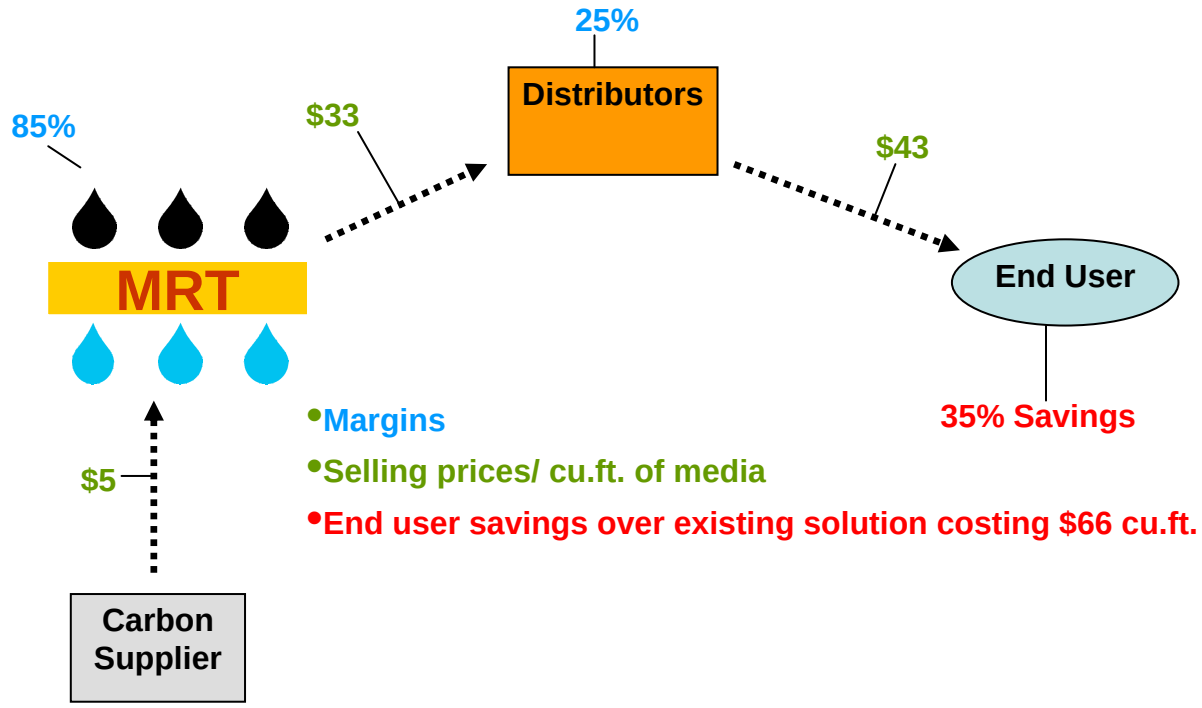
Rick Brennan, CEO

Rick has a long history of turning new technology ideas into products and services for large corporations, government labs and startup companies. He has served in senior management positions at National Semiconductor, Sun Microsystems, General Electric and the United States Navy, as well as locally at Requisite Technology, and Catarra, Inc, both venture-backed software startups in the Denver-Boulder corridor. Currently, Rick is involved in several projects from an internet auction services business to a new startup in the environmental field based on technology spun out of the University of Colorado at Boulder. In his spare time he's a senior officer in the US Naval Reserve and runs a consulting group that advises the Pentagon on next generation cockpit computing, communications and display technology for high performance combat jet aircraft.

Mark Hernandez, Vice-President of Research & Development

Dr. Mark Hernandez is a professor at the University of Colorado at Boulder. Prior to his doctoral studies, Mark worked as a Wastewater Engineer in Oakland, California for eight years. After obtaining his Ph.D. from the University of California at Berkley in 1994, Mark remained in Berkley as a postdoctoral researcher. He joined CU in 1996 as an Assistant Professor in the Department of Civil, Environmental and Architectural Engineering. Research interests include applied environmental microbiology, wastewater purification and water remediation. Mark has had a distinguished research career earning recognition from the Association of Environmental Engineering and Science Professors, University of Colorado, the Charles and Anne Lindbergh Foundation, National Science Foundation, and the American Society of Civil Engineers among others. He is a member of the Water Environmental Foundation, International Water Quality Association, American Chemical Society, and the American Society of Microbiology. Currently Mark is directing graduate student researchers quantifying the capabilities of the proposed technology.

Appendix 11: Computation of Replacement Media Gross Margin



$ / load	$ / cu.ft.	Notes
$44,316	$66.67	Current average annual end user cost
35%		MRT cost savings for end user
$28,806	$43.33	MRT suggested retail to end user
25%		Margin to Distributor
$21,604	$32.50	MRT wholesale price to Distributor
85%		Gross Margin % for MRT
$3,287	$4.94	MRT's cost
	7%	MRT cost as % of current cost to end user

Appendix 12: Product Line Revenue and Gross Profit Analysis

	Year 1	Year 2	Year 3	Year 4	Year 5
Rev breakdown					
System sales	74%	72%	71%	68%	63%
Media Sales	26%	28%	29%	32%	37%

GP breakdown					
System sales	50%	51%	58%	55%	50%
Media Sales	50%	49%	42%	45%	50%

Appendix 13: 5 Year Forecasted Financial Statements

Metal Removal Technologies

Income Statement
Years 1 to 5
($)

	Year 1	Year 2	Year 3	Year 4	Year 5
NET REVENUES	$489,625	$3,959,312	$15,765,850	$35,198,728	$55,785,177
COST OF REVENUE	269,935	2,065,868	6,725,638	14,561,895	23,763,082
% of Revenues	55.1%	52.2%	42.7%	41.4%	42.6%
GROSS PROFIT	219,689	1,893,444	9,040,212	20,636,833	32,022,095
% of Revenues	44.9%	47.8%	57.3%	58.6%	57.4%
OPERATING EXPENSES					
Sales & Marketing	256,996	1,604,420	4,497,293	8,819,785	13,633,650
Research & Development	103,585	728,372	2,206,634	3,809,389	5,546,026
General and Administration	55,018	735,226	1,297,863	1,941,278	2,841,487
Total Operating Expenses	415,598	3,068,019	8,001,790	14,570,453	22,021,163
% of Revenues	85%	77%	51%	41%	39%
EARNINGS FROM OPERATIONS	(195,909)	(1,174,575)	1,038,422	6,066,381	10,000,932
EXTRAORDINARY INCOME / (EXPENSE)	(175,000)	0	0	0	0
EARNINGS BEFORE INTEREST & TAXES	(370,909)	(1,174,575)	1,038,422	6,066,381	10,000,932
INTEREST INCOME / (EXPENSE)	66,985	82,252	55,303	135,023	317,075
NET EARNINGS BEFORE TAXES	(303,924)	(1,092,323)	1,093,725	6,201,404	10,318,007
TAXES	0	0	0	(2,064,609)	(3,611,303)
NET EARNINGS	($303,924)	($1,092,323)	$1,093,725	$4,136,795	$6,706,705
% of Revenues	-62.1%	-27.6%	6.9%	11.8%	12.0%

Metal Removal Technologies

Balance Sheet
Years 1 to 5
($)

	Begin	Year 1	Year 2	Year 3	Year 4	Year 5
ASSETS						
CURRENT ASSETS						
Cash	$400,000	$2,949,235	$1,163,372	$1,601,754	$5,149,419	$10,704,329
Accounts Receivable		96,946	261,315	1,040,546	2,323,116	3,681,822
Inventories		88,132	213,803	662,166	1,055,962	1,673,555
Other Current Assets		8,813	23,756	94,595	211,192	334,711
Total Current Assets	400,000	3,143,127	1,662,245	3,399,061	8,739,689	16,394,417
PROPERTY & EQUIPMENT	0	129,214	816,626	1,590,319	2,718,432	4,240,783
TOTAL ASSETS	400,000	3,272,341	2,478,871	4,989,380	11,458,121	20,635,200
LIABILITIES & SHAREHOLDERS' EQUITY						
CURRENT LIABILITIES						
Short Term Debt	0	0	0	0	0	0
Accounts Payable & Accrued Expen		132,199	356,338	1,418,927	3,167,886	5,020,666
Other Current Liab		44,066	118,779	472,976	1,055,962	1,673,555
Current portion of long term debt	0	0	0	0	0	0
Total Current Liabilities	0	176,265	475,117	1,891,902	4,223,847	6,694,221
LONG TERM DEBT (less current portion)	0	0	0	0	0	0
STOCKHOLDERS' EQUITY						
CommonStock	400,000	400,000	400,000	400,000	400,000	400,000
Preferred Stock	0	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Retained Earnings		(303,924)	(1,396,247)	(302,522)	3,834,274	10,540,978
Total Equity	400,000	3,096,076	2,003,753	3,097,478	7,234,274	13,940,978
TOTAL LIABILITIES & EQUITY	$400,000	$3,272,341	$2,478,871	$4,989,380	$11,458,121	$20,635,200

Metal Removal Technologies

Cash Flow Statememt
Years 1 to 5
($)

		Year 1	Year 2	Year 3	Year 4	Year 5
OPERATING ACTIVITIES						
Net Earnings		**($303,924)**	**($1,092,323)**	**$1,093,725**	**$4,136,795**	**$6,706,705**
Depreciation		20,786	164,349	347,655	613,240	965,790
Working Capital Changes						
(Increase)/Decrease Accounts Receivable		(96,946)	(164,369)	(779,232)	(1,282,570)	(1,358,706)
(Increase)/Decrease Inventories		(88,132)	(125,670)	(448,363)	(393,796)	(617,593)
(Increase)/Decrease Other Current Assets		(8,813)	(14,943)	(70,839)	(116,597)	(123,519)
Increase/(Decrease) Accts Pay & Accrd Expenses		132,199	224,139	1,062,588	1,748,959	1,852,780
Increase/(Decrease) Other Current Liab		44,066	74,713	354,196	582,986	617,593
Net Cash Provided/(Used) by Operating Activities		(300,765)	(934,104)	1,559,731	5,289,018	8,043,051
INVESTING ACTIVITIES						
Property & Equipment		(150,000)	(851,760)	(1,121,349)	(1,741,353)	(2,488,141)
Other						
Net Cash Used in Investing Activities		(150,000)	(851,760)	(1,121,349)	(1,741,353)	(2,488,141)
FINANCING ACTIVITIES						
Increase/(Decrease) Short Term Debt		0	0	0	0	0
Increase/(Decrease) Curr. Portion LTD		0	0	0	0	0
Increase/(Decrease) Long Term Debt		0	0	0	0	0
Increase/(Decrease) Common Stock		0	0	0	0	0
Increase/(Decrease) Preferred Stock		3,000,000	0	0	0	0
Dividends Declared		0	0	0	0	0
Net Cash Provided / (Used) by Financing		3,000,000	0	0	0	0
INCREASE/(DECREASE) IN CASH		**$2,549,235**	**($1,785,864)**	**$438,382**	**$3,547,665**	**$5,554,910**
CASH AT BEGINNING OF YEAR		**$400,000**	**$2,949,235**	**$1,163,372**	**$1,601,754**	**$5,149,419**
CASH AT END OF YEAR	**$400,000**	**$2,949,235**	**$1,163,372**	**$1,601,754**	**$5,149,419**	**$10,704,329**