

Mid-Atlantic Technology,  
Research & Innovation Center

**MATRIC**



2008 ANNUAL REPORT 2008

## Mission

To create high-quality, life-changing science and technology and develop spin-off businesses that will bring technology advances to the market.

## Vision

To become a leading non-profit research center with a major local, national and international economic impact from created technologies.

## Values

We cherish fast-paced market-oriented innovation and life-changing research and development to deliver the best, most cost-effective value proposition for our global customers.

We are the best-in-class innovators because we value intense customer focus, multidisciplinary teamwork, creativity and technology excellence, disciplined decision making, and a passion for making a difference.

People are our most treasured asset. We treat everyone with respect, dignity and fairness, and we offer opportunities for personal growth. We are an empowered organization, but are also highly accountable for all of our actions. Our work culture values internal and external collaboration, open information sharing, continuous learning, fiscal responsibility, transparency in our decisions, and we leverage speed, simplicity, and focus as a part of our competitive advantage.

We conduct all our business with the highest standards of ethics, integrity and personal accountability. We earn the trust of our employees and customers by consistently delivering on our commitments. We are committed to operating safely, improving the health of our employees, and protecting the environment.

We value diversity of thought, experiences, disciplines, and cultures. We leverage our organizational diversity to achieve business success.

MATRIC is a fun and exciting place to work, and our employees feel emotionally fulfilled and financially rewarded for their contributions. We also make a very positive contribution to economic development in the State and our Nation, and to the welfare of the communities in which we reside and operate.

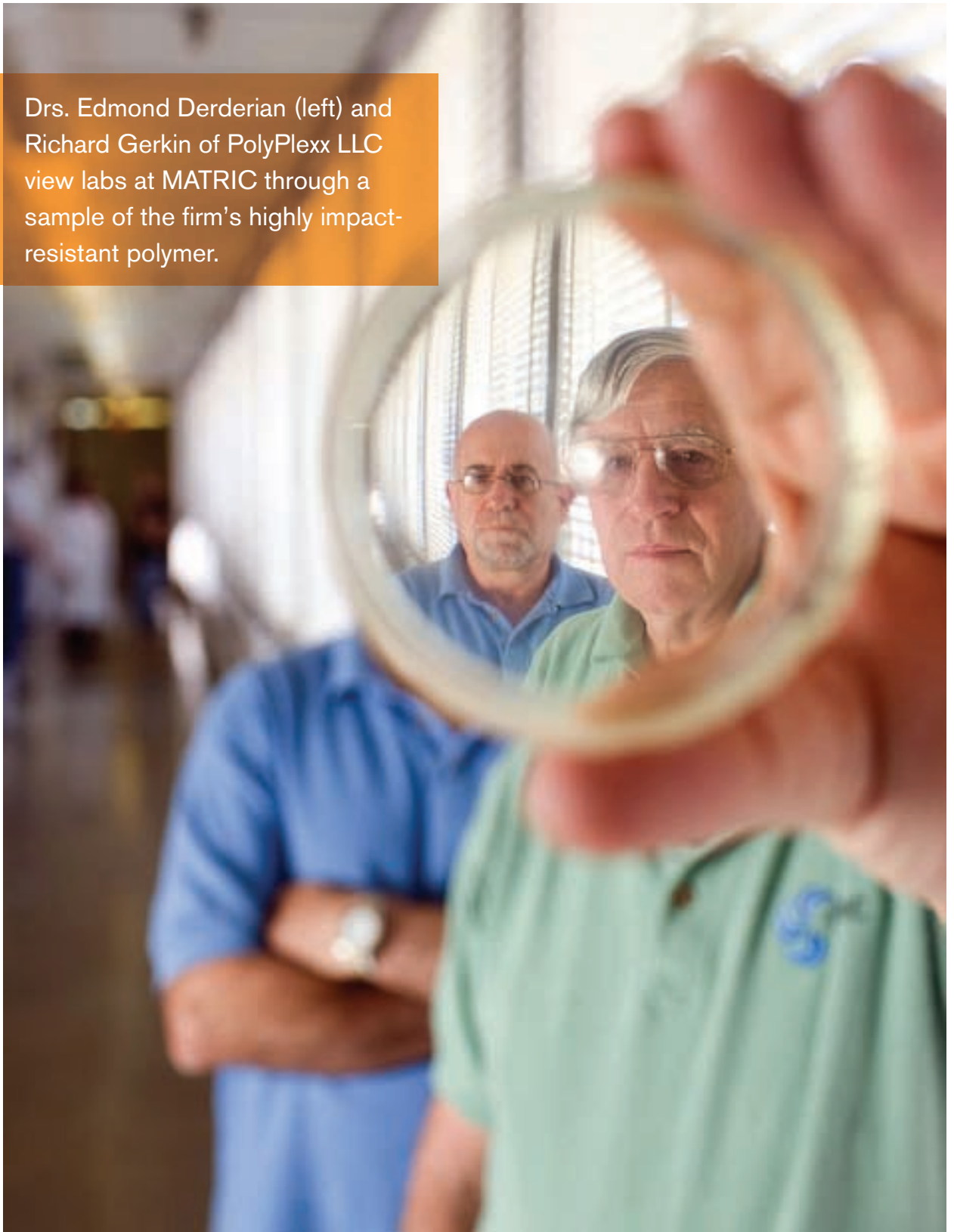
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Drs. Edmond Derderian (left) and Richard Gerkin of PolyPlexx LLC view labs at MATRIC through a sample of the firm's highly impact-resistant polymer.



## Letter from the President

Dear Friend,

As I reflect on the accomplishments of the past year I am awed by the many breakthroughs our staff have accomplished. Solving the problems of our clients and creating new and useful technologies continues to be our number one priority.

This would not be possible without the accumulated wisdom, experience and dedication of the scientists, researchers and engineers who have chosen to make MATRIC their avocation. Once each month we convene staff to analyze problems we have encountered and to present ideas for new avenues of research. I am continually amazed at the creativity and imagination of the folks I get to work with every day.

Carl Sagan once said: “Imagination will often carry us to worlds that never were. But without it we go nowhere.” As I present the 2008 Annual Report, I am convinced that the depth of our expertise and the breadth of our imagination will carry us far indeed.

In a global economy, MATRIC believes that solving problems around the world is both a business imperative and a social responsibility. The mission to change lives with technology is not limited to West Virginia or the United States, but challenges our scientists and engineers to provide clean drinking water to Africa, biofuels to Europe, or pollution control systems to China because our attention is on the needs of people—not countries or corporations.

MATRIC was fortunate to end the year with over 100 full and part-time scientists, engineers, administrators and support personnel. Some of our more significant accomplishments during 2008 include:

- Successful start-up of a full service engineering firm—Mid-Atlantic Technical Engineering, LLC
- Successful testing of new desalination and selenium removal technologies
- Successful expansion of MATRIC’s customer base to additional international clients
- Successful start-up of two new technology companies—Liberty Hydrologic Systems and Hydrus Membranes

Please join me not only in reviewing these accomplishments, but in looking to MATRIC’s future.

Sincerely,



Keith A. Pauley



# FOCUS AREAS

Chemical and Environmental Technologies

Advanced Engineering Systems

Health and Life Sciences



## Introduction

In 1920, the Carbide and Carbon Chemical Company, a subsidiary of Union Carbide Corporation (UCC), opened the first petrochemical plant in the United States just north of Charleston, West Virginia. The company located its facility in this area in order to use the valley's ethane-rich natural gas as its primary feedstock. In 1925, it moved its operations to South Charleston, and in 1928, to UCC's present site on Blaine Island. Also in 1920, the Belle Alkali Company purchased the partially completed mustard gas plant in Belle. Nearby in Belle, the E.I. Dupont de Nemours Company erected the first commercial ammonia plant in 1925.

Union Carbide's South Charleston Technical Center's first research laboratory was officially dedicated in 1949. Prior to that time, research and development for petrochemicals and plastics were performed at the Blaine Island Site. In 1959, with the addition of two large development laboratories and an engineering building, the facility became a full-scale Technical Center. Thus was born the modern chemical industry in the cradle of the Kanawha Valley, in which eventually 286 of the top 500 commodity chemicals were first invented and manufactured.

Currently, the Mid-Atlantic Technology Research and Innovation Center (MATRIC) is working to birth new industries for the 21st century based on the foundation laid by this same chemical industry and some of its most talented scientists and engineers. Our life-changing research, contributions to economic development, as well as our local, regional, national and international portfolio of clients, projects and presence empowers the entire MATRIC enterprise to continue to grow into an identifiable center of excellence for research and innovation.

MATRIC and its partners are helping the Kanawha Valley turn the page to an exciting new chapter of innovation and prosperity in a book that was written by some of the largest and most innovative companies of the 20th century.

However, the growth of MATRIC is uniquely enabled by the facilities available at the Dow Technology Park. In 2003, Dow Chemical opened the newly renamed Dow Technology Park facilities in South Charleston, West Virginia to other companies. When MATRIC moved to the Park in 2004, it had only 8 employees. MATRIC was originally housed in Building 701 before finally relocating to the Park's Buildings 740 and 2000, where it currently employs over 100 full and part

time staff. Without the modern chemistry laboratories and pilot plants in the Park, MATRIC literally would have no ability to conduct its research and innovation business.

Customers from all over the world recognize the unique capabilities that MATRIC can offer here at the Park. Twenty-five percent of MATRIC's revenue is currently from international clients, but MATRIC has plans to dramatically increase our overseas work in the future. With budding partnerships with the Italian manufacturer's association, ethanol manufacturers in Brazil, natural gas producers in Russia, and civil water authorities in China, MATRIC has the potential to bring significant business opportunities from international clients to our scientists and engineers at the Dow Technology Park.

The Park at the very least belongs on the list of National Treasures and has great historical significance for the State of West Virginia. Few folks can appreciate the value of the Park's laboratories and pilot plant facilities. No other place in the world provides such a concentration of facilities designed specifically for the kind of research that results in usable new products.

A new chapter in the history of West Virginia's chemical industry began when Union Carbide Corporation became a wholly-owned subsidiary of The Dow Chemical Company in 2001. At that time, more than 2500 researchers, scientists, engineers and support personnel were employed at the Tech Park. In two years, that number had fallen to below 1000 employees. By the end of 2010, Dow will no longer have a presence at the Tech Park.

As Dow Chemical's presence continues to erode at the Park, many laboratories are being dismantled and buildings demolished. Hundreds of millions of dollars would be required to replace the existing facilities. A plan is being developed by local economic development groups and the State of West Virginia to repurpose the existing facilities for the use of MATRIC as well as other research organizations, such as our state universities, start-up companies and federal agencies.

It is imperative that the community find a way to preserve the existing facilities as a foundation upon which to rebuild the scientific and intellectual community that contributed to the economic vitality of the region over the past several decades. A vibrant multi-tenant technology park can again be one of the greatest economic assets of our state and region.

## Chemical and Environmental Technologies

For clients who need a faster route to a market-ready process or product in the chemical or green technology industries, MATRIC provides the full range of commercialization capability. We offer proven experience in process development and scale-up, highly qualified experts and facilities, with a customer-centric approach and a clear market focus.

Scientists and engineers in the Chemical and Environmental Technologies business area possess a broad range of technical capabilities in industrial R&D, ranging from fundamental research to highly applied development in both the process and product arenas. Many of their scientific contributions have changed the basis of competition in the chemical, petrochemical, and related industries.

These capabilities are applied to important needs, such as biomass conversion, alternative raw materials, coal gasification, more efficient chemical processes, reduced environmental impact, and new products with improved properties. C&ET's capabilities are uniquely leveraged by assembling a highly successful multidisciplinary team approach using advanced technologies and a systems approach to process synthesis.

Core competencies are summarized as follows:

**Radical Process Innovation.** Development of advanced separations technologies, radical process innovation, simulation, and synthesis to reduce capital and operating costs in the chemical and polymer industries

**Catalysis.** Discovery, development, scale-up, and commercial production of “best-in-class” heterogeneous and homogeneous catalysts for batch and continuous processes

**Scale-Up and Technology Verification.** Process and product pilot plant, demonstration unit scale-up, and technological verification to achieve reduced cycle times and commercial risk mitigation

**Solids Processing.** MATRIC offers a full range of laboratory services for solids processing, including various types of crystallization, solid/liquid separation, including centrifugation and filtration, and vacuum and convection drying. Services include the capability for conducting laboratory and/or pilot scale precipitation, crystallization, and product recovery studies suitable for scale-up to commercial operation.

**Techno-Economic Assessments and Emerging Technology Evaluations.** Identification and techno-economic assessments of emerging process and product technologies

**New Product Development.** MATRIC personnel have considerable experience in the design, formulation, and introduction of new commercial products.

**Environmental Expertise and Services.** MATRIC has broad expertise in environmental technologies, including environmental characterization experience and techniques, water treatment technologies, and processes for reducing the environmental impact of natural gas and coal production.

**Safety Engineering Services.** MATRIC offers a full suite of safety services, including reviews, analyses, incident investigation, program and plan development, modeling, audits, and training. These capabilities will help an organization reduce the risks



associated with a variety of industrial and laboratory operations.

#### **Process and Plant Improvement.**

Plant operations improvement and process support, including increased yield, capacity, asset utilization, product quality, reliability, inherent safety and reduced energy usage, and lower environmental impact.

C&ET has utilized many of these areas of expertise to support the following projects in 2008:

MATRIC has relationships with organizations, such as Best Energies and DNP, that are involved in improved biotechnology for fermentation ethanol, processes for utilizing lignocellulosic materials for ethanol production and conversion of plant oils to biodiesel. Expertise provided by MATRIC is focusing on enhancing the efficiency of these processes to promote commercialization and more profitable operation. MATRIC is also exploring new products and formulations based on the products of these technologies.

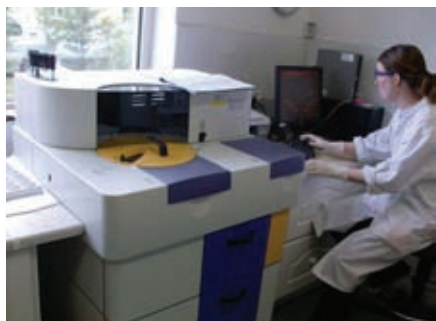
MATRIC and its partner, NG-Innovations, Inc., are providing a transportable well-head treatment technology to our natural gas producer clients in the Appalachian Basin, including CNX. NGI provides skid mounted desalination equipment than can remove salts from produced water at 95%+ efficiency, significantly reducing operator costs for salt water disposal.

MATRIC is working with several major coal producers, including Patriot Coal and J.R. Simplot, to develop and deploy passive water treatment systems that are

designed to remove dissolved-phase metal contaminants from surface waters at mine sites in West Virginia. The MATRIC systems are tailored to remove certain contaminants (i.e., selenium) using tested chemical separations processes specific to the water chemistry conditions at each site. MATRIC chemists are working with our clients to meet stringent water quality standards that will be protective of human health and the environment while reducing the cost of the required treatment process.

Through a Department of Energy subcontract, MATRIC personnel have developed and implemented an innovative approach to environmental characterization of complex NPL sites that has been refined through application at the Oak Ridge Reservation in East Tennessee. The Dynamic Characterization Strategy is designed to facilitate complete definition of the nature and extent of both chemical and radiological contamination at complex sites like the former Manhattan K-25 Site on the Oak Ridge Reservation. The DCS approach has gained strong support from the DOE and the regulatory community for its application at the Oak Ridge Sites.

Oil refineries and chemical plants now convert petroleum and natural gas to transportation fuels and chemical products. In the future, integrated biorefineries will produce fuels, chemical intermediates, plastics, and animal feed, based on biomass starting materials. MATRIC scientists are developing process technology that will allow a biorefinery to more efficiently convert sugars to chemical building blocks now obtained from petroleum. These chemical products will command higher prices than the materials usually obtained from sugars.



# Advanced Engineering Systems

The Advanced Engineering Systems (AES) business area is focused on developing and improving software solutions for the most complex systems in the world. We have individuals that are experts in the areas of:

**Program management** (PMI certified) for large Federal NASA and DoD contracts

**Software engineering** utilizing advanced development approaches to support collaborative work environments utilizing open standards and agile processes

**Image processing** including visualization and 3D graphics, 3D Computer Vision/ Target Recognition, geospatial information systems (GIS), and virtual reality

**Modeling and simulation** in computational chemistry and material sciences, scientific computing, grid computing, applied mathematics and statistics, and cheminformatics

**Data processing** including database design, data fusion, data mining, pattern recognition and neural networks

AES has utilized many of these areas of expertise to support the following customers in 2008:

MATRIC continued support, as part of the L3/Titan Corporation's team, of a five-year, \$200 million NASA contract to support Independent Verification and Validation (IV&V) activities for NASA software systems. This program is focused on improving the dependability and safety of mission-critical software.

MATRIC continued support, in partnership with GeoControl Systems, a five-year contract valued at \$1.75 million to operate the NASA IV&V Tools Lab. This

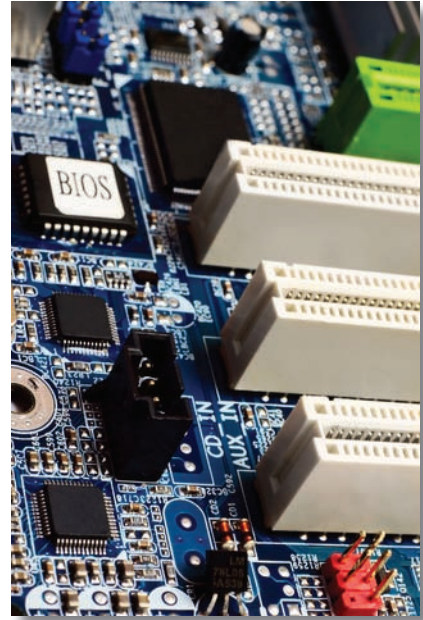
program helps to develop and improve cutting-edge tools, methods, and practices. Tools Lab Manager Pavan Rajagopal states: "MATRIC has been an integral part in GCS being able to meet our NASA customer's tool development needs."

MATRIC provided support to NASA's Autonomous Landing and Hazard Avoidance Technology (ALHAT) project, in partnership with Certus Scientific, to begin development of a Hazard Digital Elevation Map using Flash Lidar imaging data.

AES looks forward to continuing to support our past customers and utilizing our significant expertise to expand into new areas. Some new programs starting in 2009:

MATRIC will be providing management and technical support for the West Virginia Health Information Network (WVHIN) which was established to design, implementation and maintain a fully interoperable statewide network to facilitate public and private use of health care information.

MATRIC will begin establishing the Project National Shield Integration Center (PNSIC), a U.S. Army initiative, to provide a single source of state-of-the-art intelligence integration by providing data coordination and analysis capabilities for U.S. disaster "early warning" and recovery needs.



## Health and Life Sciences



The HALS division within MATRIC is building its foundation on the principles of providing innovative, rigorous, ethical, and reliable biomedical-based research in a cost-competitive, flexible manner, whether that customer is the federal government or an independent research institute.

HALS provides support for the development of new MATRIC-driven projects and technologies as well as a resource for investigators seeking to supplement their capabilities and skill sets through both collaboration and/or contract-based work.

The HALS business area is centered around investigating infectious disease, autoimmune disease and cancer-based research and houses expertise in the following technology areas:

- Molecular Biology
- Cellular Biology
- Gene and Protein Expression Determination and Analysis
- Genetic Engineering
- Microbiological Methodology
- Immunological Methodology
- Cancer Cell Biology
- Pharmaceutical Industry Support

### Development of new MATRIC-driven projects and technologies:

In 2008, HALS was awarded three competitive West Virginia SBIR Phase

0/Phase Go awards which have helped to cover the associated time required to submit Small Business Innovation Research (SBIR) proposals to the National Institutes of Health (NIH). These awards additionally provided financial resources required to receive professional grantsmanship training at both the regional and national levels. All three of these endeavors are centered around practical medicine and biotechnology, that being the development of products that take discoveries from the laboratory bench to the patient's bedside in order to improve human health. These three research endeavors are:

- Investigation of the mechanism of tannin-mediated inhibition of methicillin-resistant *Staphylococcus aureus* (MRSA/"superbug")
- Development of a rapid and accurate tuberculosis (TB) clinical diagnostic
- Development of technology to non-invasively differentiate and monitor white blood cells

### Resource for investigators seeking to supplement their capabilities and skill sets through both collaboration and contract-based work:

- The HALS division is currently working with the Charleston Area Medical Center (CAMC) to formulate a partnership where MATRIC will perform laboratory work associated with clinical trials taking place at the institute.

# The MATRIC Enterprise

The marketplace has embraced the diverse technical offerings of MATRIC and has allowed new companies to be formed within the MATRIC enterprise. Each company in the MATRIC enterprise builds on the capabilities of the others and focuses on the rapid development of intellectual property from concept to laboratory to engineering to commercial manufacture.

- **Mid-Atlantic Technology Research and Innovation Center (MATRIC)**—non-profit research corporation which conducts research, development and innovation for developing new processes or products, resolving technical issues or optimizing existing technologies, primarily for government clients, such as the Department of Energy, NASA, National Institutes of Health and the Department of Defense.
- **Mid-Atlantic Commercial Research (MCR)**—for-profit subsidiary which provides technical consulting services to commercial clients
- **Mid-Atlantic Holdings (MAH)**—for-profit holding company which commercializes all intellectual properties created by MATRIC. Income earned from license agreements, royalties and equity in start-up companies is used by MATRIC to conduct internally funded research projects with potential for marketability.

- **Mid-Atlantic Technical Engineering (MATE)**—for-profit professional engineering firm with multi-disciplined engineering and project management for projects in the energy, chemicals, water, food and aerospace sectors.
- **Mid-Atlantic Technology Consulting (MATC)**—for-profit employee-owned consulting firm which provides Ph.D.-level services in technical and market assessments, documentation and training, operational reviews, and safety analyses.



These integrated capabilities allow the MATRIC enterprise to invent technology in our laboratories and seamlessly take the concept through design, procurement, construction and start-up operations. This model provides exceptional value to our customers, who commonly experience significant loss of value as technology is transitioned from one company to the next during the development life-cycle. Customers, such as BEST Biodiesel and Patriot Coal, have validated the worth of the full breadth of the MATRIC enterprise.



## MATE's International Design Center Partnership

In November 2008, MATE and Butler International formed a strategic alliance and launched the International Design Center (IDC) in Building 2000 at the Dow Technology Park. The IDC has developed an engineering design organization consisting of engineering, design drafting and support staff focused on total life-cycle engineering services for energy, chemical, water, food and aerospace production customers.

MATE's role in the IDC is to provide professional engineering expertise in process, mechanical, chemical, civil, electrical and automation and control systems engineering as well as technical project management.

Butler provides piping, electrical, and civil design and drafting to the IDC alliance.

The strength of MATE's experienced engineers and Butler International's global technical services delivery should allow the IDC to rapidly grow into an internationally significant professional engineering organization, housed in the Dow Technology Park.



## MATRIC's Commercialization Efforts

MAH has worked to bring MATRIC's innovations from the laboratory to the commercial marketplace through both licenses and start-up companies. This critical part of MATRIC's efforts creates blue-collar manufacturing jobs from the white lab coat workers in the research facilities, much like Union Carbide, DuPont, Bayer and Dow Chemical has done in the past. Ultimately, these start-up companies will be able to employ more West Virginians than our core research effort.

MAH uses the NABC method of outlining customer-based commercialization viability from INNOVATION by Curtis R. Carlson & William W. Wilmot of SRI International.

- **Need** - "What is the important customer and market need?" The primary focus of assessing the viability of start-up business is the solution to a customer problem or concern. Can the new business solve an important customer need which will provide a tangible reason for the customer to purchase the product or service?
- **Approach** - "What is the unique approach for addressing this need?" The approach to solving the customer need should be unique in the marketplace through technology, delivery or value.
- **Benefit per cost** - "What are the specific benefits per costs that result from this approach?" The quantification of the benefit to the customer evolves as we understand the details of the marketplace. However, we always dollarize these benefits early and refine the benefit per cost ratio as we gather more data.
- **Competition** - "How are these benefits per costs superior to the competitions and other alternatives?" Competition in the marketplace can be both a barrier and an asset. We must know how to add more value to the customer than competing businesses

by detailing the benefit to cost ratio of the solution provided by others. Furthermore, competitors validate the market by assuring the new start-up business that customers exist and are willing to pay for similar products and services which solve their need.



An advantage for potential partners is MAH's thorough understanding of the funding required to start and to grow a business. Most commercialization opportunities presented to MAH are considered seed-stage or early-stage deals—those at the concept stage without development or testing of a prototype. They are opportunities with some risk. They may have technical merit and market possibility but lack a management team or revenue. In almost every instance, MAH sees opportunities that require financial funding for advancement. MAH is unique in that it has experience with venture capital companies, understands the interests and considerations of angel and early-stage investors, and brings a mature understanding of capital formation as well as proven strategies and critical relationships to help launch a new business. By augmenting scientific and technical talent, enhancing the depth of the management team, and sharing strategies for early-stage capital formation, MAH is a valuable partner on the path to successful commercialization.

Currently, MAH has started nine companies, including:

### PolyPlexx, LLC

- **Product:** High performance polyurethane polymers
- **Market:** Optical lens market as a first

application with other applications to be developed in the future

- **Business Model:** Licensing technology into fields of use for fees and/or royalties
- **Largest Customers/Potential Customers:** DOD and other related defense contractors; optical lens manufacturers worldwide.

**Mountaineer Biofuels, LLC**

- **Product/Service:** Manufacture of ASTM-certified biodiesel from a variety of low-cost feedstocks

**Moonshine Fuel Ethanol, LLC**

- **Product/Service:** Manufacture of ethanol from cellulosic wood chips

**NG Innovations, LLC**

- **Product/Service:** Portable water purification systems to treat water associated with natural gas production and exploration.
- **Market:** Natural gas producers who have face economic issues managing water.
- **Business Model:** Systems are deployed for usage fees assessed per gallon of water treated. Service packages will be sold where applicable.
- **Largest Customers/Potential Customers:** Lead customer: CNX Gas. Potential customers

include: GeoMet, RTI, Hall Drilling

**Liberty Hydrologic Systems/ Membre Technologies**

- **Product/Service:** Develops, markets and maintains treatment systems which remove pollutants from water including selenium, metals and other elements.
- **Market:** Initially focused on removing selenium from water related to mining applications, full market research continues.
- **Business Model:** Selling treatment systems, related



media, R&D /engineering services and long-term service contracts.

- **Largest Customers/Potential Customers:** Lead customer: Patriot Coal. Potential customers include: JR Simplot, Monsanto and Consol Energy.

**Hydrus Membranes**

- **Product/Service:** Reverse osmosis membranes manufactured through the acquisition of an available membrane manufacturing plant in Wuxi City, China.
- **Market:** Replacement membranes for existing RO projects and membranes for new projects.
- **Business Model:** Selling membranes into niche markets with low infrastructure and labor costs.
- **Largest Customers/Potential Customers:** Lead Customers: Liberty Hydrologic LLC and NGI. Potential customers include: Other water purification companies.

**Certus Scientific, LLC** - a woman-owned, small business to serve various government research and technical services requirements.

- **Product/Services:** Chemical and environmental technologies, advanced engineering and health and life sciences.
- **Market:** Largely government agencies and prime contractors seeking services and the advantages of working with a small disadvantaged woman owned business (and 8(a) in the future).
- **Business Model:** Selling R&D services for hourly fees or fixed price.
- **Largest Customers/Potential Customers:** NASA - ALHAT, Oceaneering, Inc. Potential customers include NIH, RSI and UT-Battelle.

**CNT Development**

- **Product/Services:** Carbon nanotube technologies

**2008 MATRIC Annual Meeting**  
Clay Center  
Charleston, West Virginia



## MATRIC to add 150 jobs, create Homeland Security data center

By Charleston Gazette staff writer  
Sarah K. Winn

Senator  
Jay Rockefeller



Representative  
Shelley Moore Capito



CHARLESTON, W.Va. - The Mid-Atlantic Technology, Research and Innovation Center in South Charleston will add 150 new high-tech jobs in the next 18 months and is receiving \$2 million in federal funds to start a Homeland Security data integration center, the center announced on Wednesday.

“While a lot of people are afraid for their jobs, we are creating jobs,” MATRIC chief executive officer Keith Pauley said prior to the group’s annual celebration on Wednesday.

MATRIC will partner with Butler International Inc. to form the International Design Center, which will create 150 new engineering and research and development jobs. Butler is a tech outsourcing company headquartered in Florida.

Sen. Jay Rockefeller, who attended Wednesday’s event, was particularly pleased about the addition of new jobs.

“The best way to improve our economy here at home is to provide job security, promote stability and drive economic development. This announcement is a perfect example of something that’s being done right in these trying times,” Rockefeller, D-W.Va., said in a news release.

The jobs, he said, would have an average annual salary of \$100,000. “And, all of this comes at a time with a lot of economic uncertainty.”

Also on Wednesday, Rep. Shelley Moore Capito, R-W.Va, announced \$2 million in federal funding to start the Project National Shield Integration Center, which will work to coordinate Homeland Security data.

“It’s an investment in our future. It plants a tree that will grow a forest,” she said.

The \$2 million was included in the U.S. Department of Defense appropriation approved by Congress.

Rockefeller, Capito and state Commerce Secretary Kelley Goes appeared at the annual celebration Wednesday. They committed to support MATRIC’s work to keep high-technology jobs in the Kanawha Valley.

“If we are investing in people with intellectual curiosity, this just a win-win-win situation,” Goes said. “We look for great things in the future.”

MATRIC started in 2004 and has 19 laboratories and 19,000 square feet of laboratory and office space in Dow Tech Park.

The center employs 83 scientists and engineers, including 31 Ph.D.-level researchers. In total, the center has completed \$22.5 million in research since it began.

The center comprises five companies focusing on chemical and environmental technologies, health and life sciences and advanced engineering systems. Also, the center has facilitated the start-up of six manufacturing and service businesses.

In late 2007, MATRIC committed to hiring displaced Dow workers after the company announced it would cut

150 research and development jobs from its Union Carbide Corp. division at the South Charleston Technology Park by the end of the 2009.

The cuts were part of a massive Dow downsizing since 2000 and will leave just 550 Dow employees in the state.

Pauley sees continued growth at MATRIC, with a goal of creating 20 companies in the next five years.

Since 2004, MATRIC has doubled its employees every year. Pauley hopes that trend improves, with a goal of 500 employees in research and development and engineering positions.

“It’s a real stable and growing presence within MATRIC,” he said

*MATRIC held its annual meeting reception at The Clay Center for the Arts and Sciences from 5:30 to 8:30 p.m., Wednesday, October 15, 2008. Over two hundred invited guests including Senator Jay Rockefeller, Representative Shelley Moore Capito, and State Commerce Secretary Kelley Goes were on hand to celebrate recent research and development success at MATRIC and to learn about opportunities for regional economic growth through technology creation and commercialization. Our staff and many of our clients were on hand to highlight some of our project work.*

## MATRIC's Star Employees

The MATRIC 2008 STAR EMPLOYEE for Chemical and Environmental Technologies is Don Bunning. Don has been a key contributor in the development and commercialization of biodiesel technology, which was started up in the BEST Energies plant in Wisconsin. Don spent many long hours at the plant during the startup and initial operating period. He has also been a leader in the development of upgrades to the initial design and in testing new concepts in the pilot plant. In addition, Don provides a valuable service as a mentor to new MATRIC employees. For his outstanding contributions and his dedication to excellence we honor Don Bunning as a Star Employee.



Don Bunning



Adam Lucas

The MATRIC 2008 STAR EMPLOYEE for the Advanced Engineering Systems Business Area is Adam Lucas. Our tireless system administrator goes above and beyond in carrying out his responsibilities in MATRIC's fast growing environment. Adam has instituted a new corporate domain, an internal email system and a client back-up capability. He has accomplished this by putting-in many after-hour sessions to reduce the impact on his fellow MATRIC team members. Adam not only provides the support for MATRIC's internal corporate infrastructure, but has proven to be an invaluable resource to our research projects as well. For all of his hard-work, we honor Adam Lucas as a STAR Employee.

The second MATRIC 2008 STAR EMPLOYEE for the Chemical and Environmental Technologies Business Area is Mark Nunley. Mark has led our process engineering team in design of a second biodiesel plant for our partner BEST Energies. Mark has also led the effort to develop an esterification technology, allowing the use of less expensive raw materials. Mark's hard work, many long hours, diligent effort, and project management skills have led to improvements in our design, keeping the MATRIC technology a world leader. For all of his hard work, we honor Mark Nunley as a Star Employee.



Mark Nunley

# Financial Summary

**MID-ATLANTIC TECHNOLOGY, RESEARCH & INNOVATION CENTER, INC.  
AND SUBSIDIARIES**  
**AUDITED CONSOLIDATED STATEMENTS OF FINANCIAL POSITION**  
**DECEMBER 31, 2008 AND 2007**

	2008	2007
<b>Assets</b>		
<b>Current assets</b>		
Cash and cash equivalents	\$ 500,110	\$ 230,957
Accounts receivable	993,496	1,869,761
Prepaid expenses	<u>66,457</u>	<u>34,600</u>
<b>Non-current assets</b>		
Accounts receivable	4,955,330	5,869,504
Property, plant and equipment	<u>87,440</u>	
Less: accumulated depreciation	<u>-2,915</u>	
<b>Total Assets</b>	<b><u>\$ 6,599,918</u></b>	<b><u>\$ 8,004,822</u></b>
<b>Liabilities and Net Assets</b>		
<b>Current liabilities</b>		
Accounts payable	\$ 832,341	359,831
Other current liabilities	522,500	422,500
Current capital lease obligation	<u>17,488</u>	
<b>Non-current liabilities</b>		
Deferred revenue	4,955,330	5,869,504
Capital lease obligation	<u>67,037</u>	
<b>Minority interests</b>	<u>3,011</u>	
<b>Unrestricted net assets</b>	<u>202,211</u>	<u>1,352,987</u>
<b>Total liabilities and net assets</b>	<b><u>\$ 6,599,918</u></b>	<b><u>\$ 8,004,822</u></b>



800.611.2296

P.O. Box 8396  
South Charleston, WV 25303

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