True Partners
Collaborating to Create Innovative, Customized Solutions
Dear Colleagues and Friends,

For Concurrent Technologies Corporation (CTC) and its affiliates, Enterprise Ventures Corporation (EVC) and the CTC Foundation, it’s been a year of significant technical achievements, enhanced leadership, and new and renewed partnerships. This annual report highlights the progress CTC made in fiscal year 2018 (FY18) on its commitment to provide comprehensive solutions that make the world safer and more productive. We continue to solve challenging problems for our clients and provide results that are customized and impact the full lifecycle.

Nationally Recognized Technical Innovation

CTC continues to create important technical innovations in our core areas of advanced engineering and manufacturing; energy, resilience and infrastructure; information technology; and readiness and training. These accomplishments have garnered national awards, such as the Outstanding Technical Achievement award from the National Armaments Consortium and the DoD Ordnance Technology Consortium. These groups recognize CTC’s potentially game-changing approach to ammunition manufacturing. Our engineers and other technical leads have also earned several patents, trademarks, and licenses for their unique and successful work and have contributed to dozens of peer-reviewed technical papers and presentations.

Our ability to make strides in advancing technology for the aerospace industry was bolstered in FY18 when CTC and EVC earned re-certification under the AS9100D:2016 Quality Management System, which applies to the design, manufacture, production, assembly, and testing of aerospace-related products. Along with AS9100D certification, CTC maintains ISO 9001:2015 (Quality), ISO 14001:2015 (Environmental), and AS9110:2016 (Quality-Aerospace-related Products) certifications, as well as OSHA Voluntary Protection Program Star status (Health and Safety). These distinctions are a testament to CTC’s long-standing commitment to providing high-quality and regulatory-compliant solutions.

Enhanced Leadership

CTC made several noteworthy changes in our company’s leadership. We welcomed three new and impressive members to our Board of Directors: the Honorable Reginald Brothers, Ph.D.; the Honorable Heidi Shyu, Sc.D.; and Retired U.S. Army Maj. Gen. Camille M. Nichols, Sc.D.; who have served in the highest levels of government and industry. Their contributions extend the expertise and experience of our already accomplished board. We also acknowledged the resignation of board member Dr. Albert Etheridge, who provided valuable service for many years.

Edward J. Sheehan, Jr.
President & Chief Executive Officer

Howard M. Picking, III
Chairman, CTC Board of Directors

We are proud to announce that this publication, written and designed by Concurrent Technologies Corporation’s in-house team of professional writers and graphic designers, has won 20 national and international awards for publication excellence over the past 12 years. These include nine gold awards and two platinum awards from these organizations: APEX, Hermes, MarCom, Ragan Communications, and Service Industry Advertising.

12 CONSECUTIVE YEARS

CTC ANNUAL REPORT Fiscal Year 2018  www.ctc.com  1
“One of the themes that became evident throughout FY18 is partnership. It is revealed in successful relationships with existing partners and promising alliances with new ones.”

We announced the promotion of George Appley to the position of Executive Vice President and Chief Operating Officer and the election of John Klein to the Corporate Officer position of Treasurer. Simultaneously, we offered heartfelt thanks to Margaret DiVirgilio, who departed after serving 25 years with the company, most recently as Senior Vice President, Chief Financial Officer, Treasurer, as well as Board Member.

Meaningful Partnerships

One of the themes that became evident throughout FY18 is partnership. It is revealed in successful relationships with existing partners and promising alliances with new ones. For example, one of CTC’s integrated project teams consisting of SLM Solutions, MSC Software, MRL, Materials Resources, the University of Pittsburgh, and America Makes is collaborating to create the opportunity for the U.S. Navy to build critical components with 3D manufacturing.

CTC has also formed new strategic partnerships with organizations such as Scaky and Smartronic to expand our capabilities and has continued long-term relationships with clients such as the Federal Emergency Management Agency, Air Force, Navy, Marines, and other military clients.

Internally, we are increasing our efforts to capitalize on the synergy of CTC’s strong research, development, test, and evaluation (RDT&E) focus and EVC’s ability to transfer solutions to the marketplace. Through our internal relationships, the CTC enterprise provides the unique ability to provide full lifecycle solutions—from concept to production to maintenance and repair.

We offer sincere thanks to all of our partners—our clients, our fellow technology providers, our employees, our board members, and our supporters in government, industry, academia, and even our own families. Solving difficult problems requires a lot of hard work, time, and commitment. We appreciate everyone who contributes to our ability to help our clients achieve their mission and enjoy success.

Board of Directors

Seated (left to right)
Robert J. Eyer, CPA
E. Jeanne Gleason
Howard M. Picking III, Chairman
The Honorable Heidi Shyu, Sc.D.

Standing (left to right)
Margaret DiVirgilio
Dale M. Mosier
Edward J. Sheehan, Jr., Vice Chairman
The Honorable Jeffrey K. Harris
Mark E. Pasquerilla

Absent
The Honorable Reginald Brothers, Ph.D.

Welcome to Our New Board Members


These impressive new members have reached the top of their fields in science and technology organizations in both industry and government. Along with our existing board members, they are providing invaluable guidance to our company.
True Partners
Collaborating to Create Innovative, Customized Solutions

At Concurrent Technologies Corporation (CTC), we value our partnerships, recognizing that they are an essential component of our success. We execute projects for clients who entrust us to develop customized solutions. We collaborate with fellow companies who add complementary expertise. And we work alongside our own co-workers and board members, who are mutually committed to advancing technology to make the world safer and more productive.

In June 2018, CTC and Sciaky, Inc. (a subsidiary of Phillips Services Industries, Inc.), entered a strategic partnership to support a growing demand for high-quality, large-scale additively manufactured metal parts. Our relationship expands CTC’s 3D printing technologies to include Sciaky’s Electron Beam Additive Manufacturing (EBAM®), which delivers parts faster, with less material waste, reduced machining time, and shorter time-to-market.

CTC and an integrated project team (consisting of SLM Solutions N.A., MSC Software, MRL Materials Resources LLC, the University of Pittsburgh, and America Makes) are providing new technology that could help provide the U.S. Navy with the ability to build parts for critical naval applications using additive manufacturing (3D printing). Under a potential $6.4 million Office of Naval Research Quality MADE contract, CTC and its partners are working to improve Navy readiness through a variety of 3D metal manufacturing technologies.

CTC and Smartronix established a strategic business partnership that combines the strengths of both companies to benefit their collective government and commercial clients. Our partnership unites Smartronix’s recognized expertise in cloud computing, cybersecurity, and mission-assured engineering with CTC’s long history of innovative technology solutions in a wide range of disciplines. The synergy benefits both companies, and more importantly, our clients, who gain from our combined resources.

E2 Technologies, LLC (E2T), a joint venture between CTC and the University of Dayton Research Institute, was awarded several initiatives under an Air Force Research Laboratory-Advanced Power Technology Office contract designed to improve the Air Force’s energy efficiency and independence. In August and September of 2017, E2T was awarded several projects ranging from 12 months to two years in duration, worth a total of approximately $3 million.

Technical Advisory Board

Members of CTC’s Technical Advisory Board, comprised of highly accomplished technical and business leaders, are actively involved in enhancing CTC’s technical expertise through their insights and recommendations. The board is chaired by Dr. Anthony Tether (left) and includes Dr. Stanley Sojka, the Honorable Jeffrey Harris, Nickolas Guertin, and Dr. Arthur Bruckheim.

CTC’s relationship with its affiliate, Enterprise Ventures Corporation (EVC), is a fundamental partnership that provides clients with full lifecycle solutions. While CTC specializes in research, development, test, and evaluation, EVC focuses on commercializing products, production services, and professional solutions that are developed by CTC and others. The synergy of our two companies effectively transfers technology to clients in government, private industry, and the public.
CTC Provides:
• Additive Manufacturing
• Custom Fabrication Solutions
• Friction Stir Welding
• Prototype Tool Development
• Secure Coatings Design
• Manufacturing Process Development and Optimization
• Mechanical Testing and Materials Characterization Services
• Fleet Readiness Services

While CTC’s expertise covers a variety of technology areas, the company’s foundation was laid with advanced metalworking and related technology. We have been optimizing the way the military and private industry approach engineering and manufacturing for more than 30 years. Our deep and broad experience includes innovative solutions created by CTC’s engineers, scientists, and other professionals to help our clients achieve their goals.

Advanced Engineering and Manufacturing

Lending Innovative Manufacturing Solutions to the Nuclear Power Industry

CTC is playing a key role in advancing the technology necessary to address technical issues unique to the next generation of commercial nuclear power plants, commonly referred to as small modular reactors and advanced reactors, as well as current reactors, most of which are operating longer than originally intended.

CTC has the expertise and the state-of-the-art laboratories and demonstration facilities capable of addressing technical issues from supply chain challenges to developing mechanized/automated manufacturing processes.

CANM Opens as an Advanced Nuclear Manufacturing and Research Center

CTC was endorsed by the United States Nuclear Industry Council to operate its concept for an advanced nuclear manufacturing and research center. The Center for Advanced Nuclear Manufacturing (CANM) officially opened in August 2017 at a ribbon cutting ceremony and open house.

Initial Contract Focuses on Key Reactor Component

In November 2017, CTC and NuScale signed CANM’s first contract. Under that order, CTC is performing prototype work for manufacturing NuScale’s helical coil steam generators, a major component in the NuScale design, now under certification review by the U.S. Nuclear Regulatory Commission.

At the CANM Ribbon Cutting/ Open House, CTC welcomed approximately 75 industry experts, manufacturers, scientists, engineers, nuclear futurists and operators, as well as regional business development leaders and elected officials.

CTC Expertise – In the News
• “Alternative Pump Coatings for Military Vehicle Wash Racks” – DoD CorrDigest, Spring 2018
• “NuScale Awards Steam Generator Prototype Contract to Center for Advanced Nuclear Manufacturing, Operated by Concurrent Technologies Corporation” – NuCLEUS Newsletter, Winter 2018
• “Educated AM (Additive Manufacturing) Customers are the Best Customers” – 3D Metal Printing Magazine, November 2017
Providing Friction Stir Welding Expertise for the Army’s Combat Vehicle Programs

CTC has a long history of optimizing manufacturing processes, including friction stir welding (FSW), which has been determined to be the best method to join the aluminum alloys on the Hull Frame Body Cab (HFBC) prototype hulls in support of the Army’s Combat Vehicle Prototyping (CVP) Program.

CTC manufactured two prototype hulls for the United States Army Tank Automotive Research Development and Engineering Center (TARDEC) that were successfully blast tested. A follow-on contract was provided by TARDEC through the Defense Automotive Technologies Consortium, of which CTC is a member, to execute performance assessments on the friction stir welds to help determine what modifications are needed to improve performance and manufacturability in support of future vehicle designs.

CTC has been supporting TARDEC with advanced joining solutions since 2001.

Automated and Mechanized Technologies Implemented in Work Cell Approach at Major Shipyard

One of CTC’s strengths is creating innovative yet implementable manufacturing advancements that are transitioned to the “real world” of industry and the Department of Defense. A recent successful technology transition project will save the Navy nearly $7 million over five years at Ingalls Shipbuilding.

The Ingalls Industrial Products Division shop fabricates hundreds of relatively small, high-volume parts per ship, mostly using manual labor at individual stations throughout the facility. Through a Navy ManTech project, CTC led a team that developed automated or mechanized technologies supporting a work cell approach that will result in improved efficiencies; higher part quality and reduced rework; decreased touch labor and improved ergonomics; and ultimately, lower shipbuilding costs.

Ingalls implemented at least two individual recommendations from this project so far—creating a manhole stud welding station and a robotic welding cell for padeyes and stair treads. All of the technology assessments were functionally tested at CTC and pilot tested at Ingalls.

One of CTC’s strengths is creating innovative yet implementable manufacturing advancements.
Energy, Resilience and Infrastructure

CTC has a long history of ammunition research, development, and testing, and is now focusing on next generation technologies.

CTC Provides:
- Environmental & Process Engineering
- Infrastructure Energy
- Operational Energy
- Water Recycling Technologies
- Safety and Environmental Health Services
- Strategic Advisory Services
- Ammunition Process Engineering

CTC develops and applies customized, practical solutions that minimize footprints, reduce vulnerabilities, and save money. Our seasoned energy and environmental experts are leading the industry on several fronts, from potentially game-changing ammunition manufacturing to novel processes for the reuse of greywater to a variety of applications of hybrid energy technology and much more.

Next-generation Ammunition Technology

For more than 25 years, CTC has developed industry-leading environmental and process engineering solutions, especially in the area of ammunition. Our “design-to-production” approach examines the entire process/system lifecycle, from environmental concerns to producibility, and covers activities from research and development to prototyping to testing up through technology transition and implementation.

Our current focus is an alternative metallic case design for next-generation small caliber ammunition. CTC has developed and produced prototype ammunition components that are undergoing evaluation testing. CTC’s case design provides significant improvements over conventional ammunition in areas such as manufacturing processes and costs, performance, and weight. (See page 21 in the Awards and Recognition section for details on a national award earned for our ammunition work.)

Improving Energy Efficiency of Air Force Lighting Equipment

CTC is using advanced technologies to design a more energy-efficient light cart for the U.S. Air Force. The optimized equipment, created under a competitively bid Air Force Research Laboratory (AFRL) Advanced Power Technology Office (APTO) contract, will reduce reliance and consumption of petroleum fuels, while enhancing the U.S. Air Force mission.

- “Dover AFB partners with AFRL to innovate in fuel efficiency” – 514th Air Mobility Wing Website – 13 February 2018
- “National Environmental Policy Act assessments for large-scale renewable energy projects on Army land: Best practices and lessons learned” – Environmental Practice Journal, 21 September 2017

A hybrid flightline generator has many advantages over the legacy diesel-powered generator, including both fuel efficiency and personnel safety. (U.S. Air Force photo)
The Air Force uses deployable light carts to provide ground-level flightline illumination, task lighting for aircraft maintenance and troubleshooting, and lighting to secure the perimeters of deployed/contingency locations. CTC is designing, testing, and demonstrating a cart that will improve energy efficiency, which will reduce maintenance and sustainment costs.

AFRL APTO is a long-time CTC client. For this project, CTC is using a traditional system engineering approach designed for a swift transition into the Air Force inventory. This technology can also be leveraged for similar systems across the Department of Defense.

Applying Hybrid Technology to Key Air Force Systems

CTC is one of three awardees of another AFRL APTO contract, this one providing for seven years of work worth up to $49 million. This Indefinite Delivery, Indefinite Quantity (IDIQ) contract advances/leverages alternative energy and energy-efficient and environmentally safe technologies.

CTC is working on its first competitively bid task order under this contract, an effort that will hybridize the "Halvorsen 25K Loader," which the Air Force uses to load and unload cargo from transport aircraft. This project will enable the Air Force to retrofit the diesel-powered loaders with a hydraulic electric hybrid system.

CTC will design, develop, and demonstrate a hybrid Halvorsen loader, using engineers and ground support subject matter experts with relevant, successful experience with the Air Force. The hybrid system will be tested and demonstrated at CTC’s Johnstown, Pennsylvania, facility. Staff will analyze energy efficiency, agility, noise, reliability, and maintainability, then furnish a comprehensive technical data package, enabling the hybrid design to be replicated and maintained.

The new system will improve agility, fuel efficiency, safety, reliability, maintainability, and noise and chemical emissions.

In addition to CTC, the University of Dayton Research Institute and Southwest Research Institute will perform work on the IDIQ contract through January 2025.

Innovative Water Recycling Systems to Conserve a Vital Resource

CTC and EVC are at the forefront of water recycling and purification technologies that economically preserve our precious usable water supply. While CTC conducts research on innovative ways to recycle water, EVC designs custom systems for purifying and recycling greywater on a commercial scale. (See page 33 of the EVC section of this Annual Report.)

Under a current contract for AFRL APTO, CTC is developing an Expeditionary Black Water Processing System that will reduce environmental impacts of wastewater on host nations and enhance the security of deployed personnel.

This system will complement and work holistically with the Expeditionary Wastewater Reuse System (EWRS) that CTC developed several years ago to recycle greywater at Basic Expeditionary Airfield Resource (BEAR) sites. When deployed, the EWRS will create an unexpected good news, bad news scenario. Because the new greywater system will reclaim all but 10 percent of greywater at BEAR sites, the blackwater (sewage) at BEAR sites will no longer be liquid enough, making disposal problematic. Our Air Force client returned to CTC engineers to develop a blackwater system that will complement the greywater system.

CTC is building on its work to develop greywater recycling technology at expeditionary sites like the forward operating base shown above. This new effort focuses on processing blackwater at these locations. (U.S. Air Force photo)

Research and Development for new Army Client

CTC is providing research and development on two subcontracts to Northeastern University, which is supporting the Army Research Laboratory. The projects will benefit the next generation of Army tactical shelters and air and ground vehicles across the Department of Defense.

CTC’s work involves innovations in energy efficiency, ballistic engineering, and advanced de-contaminable and low observable coatings, as well as cold spray additive manufacturing processes. The research focuses on engineered materials, materials by design, modeling of additive manufacturing techniques, and materials and strategic materials.

The tactical shelter project is being executed for a new CTC client, the U.S. Army Natick Soldier Research, Development and Engineering Center.

Unique Solution to Large-scale Energy Storage Challenge Awarded Patent

Modernization of the electric grid and the increased interest in renewable energy continue to drive the need for large-scale energy storage. Flow batteries are used to level load the output of electric power plants: charging during low demand and providing increased capacity during peak demand. Total power capacity is easily expanded by adding more flow battery stacks, and total energy storage can be increased by enlarging the volume of the electrolyte storage tanks.

CTC addressed several Department of Energy-identified challenges to implementing the flow battery technology. Engineers designed the now patented tongue-and-groove configuration that creates a seal, eliminating leakage, and ultimately reducing parts and labor needed to assemble the battery. This technology can be used by utilities or others who want to provide grid-level energy storage.

CTC engineers designed a patented solution to grid-level energy storage challenges. Pictured are Mike Tims, Bryan Tipton, Ed Sheehan, Jr., and Dan Markiewicz.

A hybrid version of this cargo loader will provide cost reduction, reliability improvements, and enhancements to U.S. Air Force missions. (U.S. Air Force photo)
CTC Provides:
• Cloud Architecture Development and Security
• Cybersecurity Solutions for Manufacturing, Industrial Controls Systems and the Supply Chain
• Cross Domain Solutions
• Machine Learning and Artificial Intelligence
• Agile Software Development and DevOps
• Big Data Management and Analysis
• Augmented, Virtual, and Mixed Reality

It’s hard to imagine how far computer technologies will take us, considering how far we’ve come in the relatively short time they have been in existence. New worlds are opening up in virtual reality, and unfathomable amounts of data are manipulated and stored all across the globe. For decades, CTC has been at the forefront of optimizing information technology’s potential and continues to drive innovation in this realm.

A Trusted Leader in Cybersecurity
Our nationally recognized experts are at the forefront of cybersecurity. We help government and private organizations by educating them on general threats as well as those specific to their systems, assessing their risk, developing a customized plan, and implementing cyber-related solutions that protect facilities, organizations, and individuals from attacks.

Identifying and Eliminating Cyberattack Vulnerabilities at Military Facilities
When we think about cyberattacks, we usually imagine activities directed at computers, tablets, and smart phones. In actually, anything computerized—including military installation facilities systems—could be a target. Considering this potential, the U.S. Marine Corps Installation Command awarded a contract to CTC to provide functional and technical programmatic support for securing the Marine Corps’ Facility Related Control Systems (FRCS).

Under the contract, CTC and its subcontractor partner, Risk Mitigation Consulting, Inc. (RMC), are providing a broad scope of support to include: business process reengineering; data analysis and policy support; metrics and reporting development; type authorization assessments; communication and outreach; inventorying and accounting; and community of practice support. The CTC team offers highly specialized technical, analytical, and investigative resources and expertise in FRCS and comprehensive

CTC Expertise – In the News
• "Everything, Everywhere, All the Time – Now What?" – Trajectory, the official magazine of the United States Geospatial Intelligence Foundation, 1 February 2018
• "Nuclear operators urged to tackle growing threat from cyberattack emails" – Nuclear Energy Insider, 13 December 2017
• "Should I Pay or Should I Go (rebuild): Ransomware Survival for SMBs" – CyberSN Webinar, 28 September 2017

CTC is a leader in developing software and systems, cloud solutions, cybersecurity expertise, big data management and analysis, visualization and mixed reality applications, and more.
assessments. They have been protecting assets, facilities, and infrastructure across the Department of Defense for decades.

CTC Supports DFARS and NIST 800-171 Compliance Requirements

While just about every organization should include cybersecurity in their business plans, companies that work with the government face unique challenges and responsibilities. The threat to sensitive government data has never been more urgent. Contracts that contain clauses requiring Safeguarding Covered Defense Information and Cyber Incident Reporting require the government contractor to strengthen and document internal controls over their IT infrastructure.

CTC can reduce the stress and time to become compliant in several ways, including helping businesses develop a strategy; discovering Controlled Unclassified Information; providing assessments and audits; designing and implementing security controls; and developing employee awareness training products, a System Security Plan, and plans of actions and milestones. (See page 34 of the EVC section about an innovative software solution for transferring files securely between networks.)

Enhancing “Reality” through Technology

Remember when reality was just that—reality? Our world now includes technologies that create a new “virtual” reality or mix three-dimensional objects with augmented and mixed reality technologies. These newer approaches can solve problems or enhance performance in a myriad of applications. In our Visualization and Mixed Reality Laboratory, CTC conducts research, development, test, and evaluation using the latest devices and software, such as HTC Vive, Oculus Rift, and Microsoft HoloLens.

Bringing Museum Displays to (Virtual) Life

Augmented reality—enhancing the physical world with digital technology—can bring static museum displays to life. At the John P. Murtha Center for Public Service and National Competitiveness on the University of Pittsburgh at Johnstown campus, CTC created an animated digital likeness of the late Congressman John P. Murtha, which is superimposed behind his actual desk on display. Visitors view and hear an image of Mr. Murtha using a Microsoft HoloLens device.

CTC uses laser scanning technology to create realistic historical characters that visitors can experience in interactive applications.
Readiness and Training

CTC Provides:
• Readiness & Continuity of Operations Technology-Based Solutions
• Identity, Credential and Access Management (ICAM) Engineering
• Custom Educational and Training Solutions

Preparing for disasters and maintaining continuity of operations when they strike are critically important. CTC provides deep expertise and valuable technologies that support our nation’s efforts to be ready for and to act effectively during emergencies that disrupt normal activities.

Supporting FEMA’s Reporting of Readiness and Continuity of Operations

CTC is providing support to the Federal Emergency Management Agency’s (FEMA’s) Readiness Reporting System (RRS), a web-based tool for collecting, analyzing, and reporting readiness data that helps key leaders make decisions that impact national security. Under this competitively bid $4.7 million FEMA contract, CTC is assisting the agency in prioritizing requirements; advising FEMA staff in technical areas; and managing RRS configuration changes, software upgrades, and security design specifications. CTC has a long-term relationship with FEMA’s National Continuity Programs (NCP), which awarded this work. CTC is honored to continue to support NCP’s mission to ensure the country’s essential functions continue to operate throughout any disruption of normal activities.

Tracking and Deploying Disaster Responders Electronically

Organizing personnel in a large-scale event or emergency is a major challenge. It’s important to know which federal and associated employees are present, what their roles are, and where they need to be.

CTC developed a mobile, electronic system to efficiently and effectively identify and validate this information. The Federal (and Mutual Aid) Emergency response Official Accountability Tracking System (F/ERO ATS) has become a baseline of the FEMA enterprise system.

In FY18, CTC continued to support and advance its accountability tracking system for FEMA’s Office of the Chief Information Officer, Cyber Security Division, Identity, Credential, and Access Management team. ATS was first used on a large scale during the 2017 Presidential Inauguration, where it provided a validation capability to DC Homeland Security and Emergency Management Agency personnel, enabling unescorted facility access. ATS was also used for the FEMA response to hurricanes in Texas, Florida, and Alabama, as well as in the U.S. Virgin Islands and Puerto Rico, where it tracked FEMA employees going on and off commercial and Navy ships deployed for disaster relief.

CTC provides production, sustainment, and integration support for ATS, as well as support for FEMA disaster deployment and credential issuing and logistics.

While the original ATS software tracked personnel based on their credentials, the system now tracks personnel as well as equipment assigned to them, and helps direct them where they need to be. This technology can be used anywhere that accountability tracking is needed.

CTC Expertise – In the News

• “Personnel Peril” – Security Management, a publication of ASIS International, April 2018
• “VPP Journey: Marine Corps Air Facility Quantico” – Voluntary Protection Programs Participants’ Association magazine, Winter 2018
• “Severe Weather Preparedness for the Workplace” – MSC Industrial Supply Co. web article
Awards and Recognition
Achieving more together

Whether it’s a significant technical achievement or a notable corporate success, we know that our biggest accomplishments are the result of teamwork. Working with our colleagues in government, industry, and within our own organization, we have attained national recognition in several areas.

Innovative Ammunition Manufacturing

CTC has been recognized for its innovative approach to manufacturing ammunition that improves logistics and the end products. The National Armaments Consortium (NAC) and the DoD Ordnance Technology Consortium (DOTC) recognized CTC for Outstanding Technical Achievement at its April 2018 General Membership Meeting in Arlington, Virginia.

CTC is developing and testing prototype ammunition cases that simplify the manufacturing process, reduce the total cost of ownership and manufacturing footprint, increase performance, and decrease weight. Our technical staff’s innovation and our project manager’s diligence in developing a solution for our U.S. Army client are leading to exciting advancements that can benefit both the DoD and commercial industry.

Noteworthy Coating Solution for Military Vehicles


Mason and Michael McInerney of the U.S. Army Engineer Research & Development Center (ERDC) Construction Engineering Research Laboratory (CERL) collaborated on the presentation. They explained work that CTC conducted for ERDC-CERL to find new coating materials to reduce corrosion on steel pumps in the Central Vehicle Wash Facilities at military installations.

CTC won a NAC/DOTC award for its technical achievements with ammunition manufacturing. Pictured at the award ceremony are Charles Zasada, NAC Executive Director, from CTC - Ed Sheehan, Jr., Todd Skowron, Lori Denault, Gino Spinos, and Shawn Rhodes; and Donald Geiss, DOTC Program Director.

CTC and a team member were recognized for a coating solution that will improve military readiness by increasing the service life of key wash facility components.
OSHA Voluntary Protection Programs Star Designation

CTC’s Johnstown, Pennsylvania, facilities have once again achieved the highest Occupational Safety and Health Administration (OSHA) Voluntary Protection Programs designation—Star site. With this recertification, CTC has maintained Star status uninterrupted since 2008. The certification recognizes employers and workers for workplace safety and health excellence.

Facilities earning VPP Star status have achieved injury and illness rates below the national average for their respective industries and have demonstrated to OSHA that their safety and health management systems are exemplary. In addition, Star participants commit to a process of continuous safety improvements that will lead to an even safer work environment. Out of the eight million eligible work sites across the country, only about 2,100 are designated as Star sites.

National Safety Council Awards

For the third consecutive year, CTC has earned two National Safety Council (NSC) awards for achieving significant safety milestones. The NSC presented CTC with the Million Work Hours Award for working more than one million hours without a lost-time incident and the Perfect Record Award for working more than 807,000 hours without a lost-time accident.

2020 Women on Boards

The national “2020 Women on Boards” campaign has recognized CTC as a 2017 Winning Company. The 2020 Women on Boards organization is a nonprofit 10-year campaign focused on increasing the number of women who serve on corporate boards to at least 20 percent by the year 2020. Joining two long-standing members, Margaret DiVirgilio and E. Jeanne Gleason, the CTC Board of Directors added two more impressive women to its ranks in 2018—the Honorable Heidi Shyu, Sc.D., and Retired U.S. Army Maj. Gen. Camille M. Nichols, Sc.D.

Best for Vets/Patriot Award

CTC is particularly proud of the ongoing recognition for its commitment to military employees—both active and retired. CTC is one of 100 companies around the country to be named a 2018 “Best for Vets” employer by Military Times. CTC actively recruits and supports those who have served in the military, not only because they deserve our commitment to consider them for meaningful employment, but because our company is made stronger by their unique leadership skills and technical expertise.

Also in 2018, CTC President and CEO Edward J. Sheehan, Jr., received the Patriot Award from the Employer Support of the Guard and Reserve (ESGR). CTC employee Kevin Hillegas nominated Sheehan for the award, which reflects the support provided by a supervisor to employees serving in the National Guard or Reserve. Hillegas is an electrical engineer at CTC and serves several roles in the Army National Guard. Previous CTC supervisors to receive the Patriot Award include Gregory Skowron, Cristina Tomlinson, and Gino Spinos.

Quality Certifications

CTC and EVC are certified under the AS9100D:2016 Quality Management System, which applies to the design, manufacture, production, assembly, and test of aerospace-related products. Along with the AS9100D certification, CTC maintains these quality, environmental, and health/safety certifications:

- ISO 9001:2015 (Quality)
- ISO 14001:2015 (Environmental)
- AS9100:2016 (Quality – Aerospace-related Products)
- OSHA VPP Star (Health and Safety)

We are honored to be recognized not only for our technical achievements but also for our efforts to keep our organization safe and inclusive.

Honor Roll

Join us in honoring our colleagues who were on active or reserve military duty during fiscal year 2018.

Oliver Bugarin
Gregory Case
Jack Coke
Peter Hanson
Kevin Hillegas
Robert Johnson
Sidney Johnston
Richard McMullen
Michelle Patterson
Todd Riviezzo
Dustin Rummel
Dakota Samuels
Amanda Schoepflin
Derric Wiltshire

ESGR Mountain Area Chair Marty Kuhar presented Ed Sheehan, Jr., with a certificate and lapel pin commemorating his Patriot Award.

Quality Certifications

CTC and EVC are certified under the AS9100D:2016 Quality Management System, which applies to the design, manufacture, production, assembly, and test of aerospace-related products. Along with the AS9100D certification, CTC maintains these quality, environmental, and health/safety certifications:

- ISO 9001:2015 (Quality)
- ISO 14001:2015 (Environmental)
- AS9100:2016 (Quality – Aerospace-related Products)
- OSHA VPP Star (Health and Safety)

We are honored to be recognized not only for our technical achievements but also for our efforts to keep our organization safe and inclusive.
The Tower of Voices project at the Flight 93 National Memorial is a monumental 93-foot tall musical instrument that will hold 40 wind chimes representing the 40 passengers and crew members aboard United Flight 93, which crashed on September 11, 2001, in a field about 20 miles from CTC’s Johnstown offices.

Community Partnerships

While our focus is on providing innovative, customized technical solutions, the heart of an organization is also shaped by what happens outside normal day-to-day activities. Our commitment to go above and beyond applies not only to our clients, but to our friends and neighbors in the community—and in the office.

CTC President and CEO Joins Friends of Flight 93 Board

In January 2018, CTC President and CEO Edward J. Sheehan, Jr., joined the Friends of Flight 93 National Memorial Board of Directors. The nonprofit organization provides volunteers for the many park projects and events and successfully competes for grants for operations, marketing, and educational programs. The Friends group also raised funds for the unique Tower of Voices project.

CTC Employees Provide Leadership at National Safety Organization

CTC is well represented in the American Society of Safety Engineers (ASSE). Lori Schroth, Ph.D., CTC Senior Safety & Environmental Professional, serves as CTC’s representative to the Standard Development Committee for Standard Z490–Safety, Health and Environmental Planning. Brandon Hody, CTC Safety & Occupational Health Professional, serves as Schroth’s alternate. In these roles, Schroth and Hody serve as subject matter experts, assisting with review and approval of additions, revisions, and deletions of these standards, which are aimed at enhancing the effectiveness of safety, health, and environmental training for the workplace.

In addition, Hody won the 2017 election to become Assistant Administrator at the ASSE’s Public Sector Practice Specialty (PSPS), and Schroth moved from Assistant Administrator to Administrator. Hody and Schroth will lead the PSPS through the next two years and plan to work closely with the ASSE’s military branch to foster information sharing, networking, and communication among professionals working for governmental agencies and facilities. This provides them with opportunities to drive safety and health initiatives in the public sector and the military. Two other CTC employees will serve as Technical Question Coordinators on the PSPS Volunteer Advisory Committee: Chris Chaffin, CTC Principal Safety & Occupational Health Professional, and Becky (Sifinski) Bernat, CTC Safety & Occupational Health Professional.

CTC employees hold several leadership positions in the American Society of Safety Engineers. Clockwise from upper left: Lori Schroth, Ph.D.; Brandon Hody; Chris Chaffin; and Becky (Sifinski) Bernat.

CTC’s commitment to its partners extends beyond its professional relationships and into the communities where we work. We are dedicated to making contributions inside and outside of our business.
Holiday Giving

Employees have a long tradition of giving generously to their neighbors in need. This past holiday season, CTC and EVC employee groups decorated their work areas in a friendly competition to collect food and money for the St. Vincent de Paul Food Pantry in Johnstown. They donated 1,200 food items—double the previous year’s total—plus $400 in cash. Employees also participated in the Salvation Army Treasures for Children and Senior Citizens, the Learning Lamp’s “The Giving Tree,” the Salvation Army Kettle Collection and other local charities.

Light the Night Walk

Each year, CTC and EVC are active participants in the Greater Alleghenies Chapter Leukemia and Lymphoma Society Light the Night Walk. In addition to walkers and organizers, many employees give generously to the effort. In 2017, the CTC/EVC team raised the second highest donation total for the chapter—$1,725, which surpassed the team goal of $1,000.

Helping Keep the Environment Safe

To help our employees and neighbors keep our environment clean and safe, each spring CTC offers its facilities in Johnstown, Pennsylvania, for the Cambria County Common Household Chemical Collection. Once a year, the Pennsylvania Resources Council organizes collection sites around the state, where residents can safely dispose of unwanted chemicals, removing potentially dangerous substances from their homes and reducing pollutants and health threats to the community at large.

Guiding Local Students to Succeed in the Workplace

Each year, CTC participates in the Challenge Program Inc.’s activities that connect high school students and nearby businesses, with the goal of developing a skilled and motivated future workforce. CTC’s Challenge Program partner is Westmont Hilltop High School, where company representatives meet with students a few times a year, stressing the relevance of the five annual award categories: attendance, STEM (science, technology, engineering, and math), academic improvement, academic excellence, and community service.

Parents and Kids Enjoy a “Day at the Office”

Both CTC and EVC enthusiastically welcome their children in the national Take Our Daughters and Sons to Work Day each April. The event allows students to shadow their parents at work, helping the young people to see the value of their education and envision what their occupational future might look like. The company also invites the students and parents to come together for lunch in one of the conference rooms.

In addition to tours and shadowing, some students helped create piñatas for an upcoming EVC event celebrating their parents’ work accomplishments.
CTC Foundation

CTC Foundation’s mission is two-fold: to educate about emerging ideas and technologies and to serve as the philanthropic affiliate of Concurrent Technologies Corporation (CTC).

Since it was formed in 1998, the CTC Foundation has launched diverse education, energy, and environment programs and has gifted nearly $5 million to nonprofit organizations in communities where CTC and affiliate employees work and live.

In one initiative, CTC Foundation facilitated the PBS broadcast of “On The Edge,” a documentary about epilepsy. Educating the public about this condition is vital to helping epilepsy patients, their families, and caregivers navigate the complexities of this disorder. To date, “On The Edge” has attracted over seven million viewers. Scores of private individuals, small businesses, and diverse corporations have donated to the CTC Foundation to continue this ongoing initiative and a related book project, “Voices from the Heart.”

Another undertaking includes a 13-member Science Committee that is evaluating the manner by which the U.S. Environmental Protection Agency (EPA) undertakes the risk assessment of human exposure to chemicals. Historically, safe standards have been established by using a mathematical model whereby the thresholds were set artificially low—near zero (any exposure to anything is life threatening). If EPA health standards were set using modern, widespread toxicological measurements and were scientifically derived, the cost of compliance would be lower for industry and government agencies, with no additional risk to the public’s safety.

The Science Committee’s work is being funded by various foundations and the private sector. Our overarching plan is to ensure that future environmental regulations are based on science and that the public’s health and well-being are safeguarded. Considerable cost savings in remedial projects are an expected result.

These two projects, among others, further “innovation, science, and technology,” which are central to the CTC Foundation’s mission.

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Conway A. Jones, Jr., Chairman
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Howard McClintic
Executive Director

Celebrating Successful Teamwork

CTC values all of its employees’ hard work and dedication to our clients. In fact, the company has designed a formal policy that supports activities that recognize team accomplishments and celebrates the partnerships we have with our clients and each other.

A group of employees who contribute to CTC’s Corporate Communications enjoyed lunch together at a local restaurant, celebrating exceptional teamwork and the completion of several large projects. Pictured are (L to R): Mary Bevan, Carl Weakland, Michael Hu, Amy Stawars, Dianne Frye DeLisa, Sharon Paterson, and Molly McQuillan.

Bringing a Backyard Game to Work

Whether it was for a little exercise, socialization, or just to get away from their desks for a while, a number of employees joined the inaugural Corn Hole tournament over the winter. For 12 weeks, teams of two players competed once a week at lunch time in the Shipping and Receiving Area in Johnstown’s Environmental Technology Facility. Jeff Pitera, Facility Operations Coordinator, and Phil Grata, Supply Clerk, launched and organized the tournament, handling everything from scheduling to dues collection—even hosting an end-of-the-season party for players.

Employees enjoyed a change of pace at lunchtime this winter, joining CTC’s first-ever co-ed Corn Hole tournament.

Celebrating Successful Teamwork

MATT NOVATNY, Database Administrator, and Mary Kaseler, Human Resources Analyst, were the first to win in the new CTC Corn Hole tournament.

Charitable Giving

Charity/Community
$93,000

Arts
$25,000

Education
$14,000
EVC’s role is described explicitly in CTC’s Strategic Plan, stating that EVC expands CTC’s reach by establishing a complete organization that can pursue and win along the entire lifecycle of new opportunities from RDT&E to production. EVC provides the capability to implement, build, and produce advanced technology.

EVC has built a strong team that has demonstrated success. During the past five years, EVC has averaged more than 10 percent annual growth rate in funded awards and delivered profits averaging just under a million dollars per year.

FY18 was a year of transition and challenges. EVC realized its only drop in annual revenues in six years. This was driven by the completion of EVC’s first major production run of CSTRS equipment for the U.S. Navy. The EVC team responded to meet its challenges in various ways. Indirect expenses were reduced by $1 million from the original budget. Meanwhile, qualified pipeline doubled, proposed backlog grew from $40 million to more than $100 million, and software sales increased five times over the previous year’s total. Production capability was established to produce a new coating product, and a new line of products was transitioned to EVC to recycle greywater. Commercial sales are being pursued in each of the product lines. All of these efforts to build new streams of revenue for EVC helped bridge the gap in FY18 and are anticipated to increase for the future.

EVC will continue to pursue new business in the federal market space, which remains unsettled but has positive possibilities. Strategically, however, EVC is working to diversify its base to include commercial markets. The initial commercial markets being addressed are in cybersecurity protection, specifically within the financial institution markets. Water recycling products will be introduced to commercial markets in FY19. Meanwhile, EVC’s Professional Services Business Unit will remain aggressive and competitive while strategically moving toward services that directly support EVC products, increasing the size of EVC offerings in its product markets.

EVC is excited and optimistic that it will continue to meet its mission—profitably. In FY19-20, EVC will mature its technology transition and commercialization processes, establish three product lines that build on FY18 commercialization activities, and continue to expand its existing business on an aggressive growth path. In FY19, EVC expects to increase its revenue and awards over FY18 levels by almost 40 percent. This aggressive goal has been enabled by the hard work of EVC staff over the past year to build its pipelines, establish new products, and diversify its base of business beyond the federal market space.

On behalf of the EVC leadership and Board of Directors, we want to thank our employees, customers, and partners for their significant contributions to EVC’s success. The EVC team is dedicated to building on its positive, healthy culture, and is focused on EVC’s growth and success in FY19-20 and beyond.
Enterprise Ventures Corporation
A For-profit Affiliate of CTC

Enterprise Ventures Corporation (EVC), a wholly owned for-profit affiliate of CTC, transfers advanced technologies to the industrial base and delivers high-quality, efficiently priced products and services to its clients. EVC leverages technologies designed and created by CTC and others to create products for the marketplace. Together, CTC and EVC provide full lifecycle services to clients, from innovative concepts through production and implementation.

Creatively Recycling Water on Small and Large Scales
EVC offers several innovative technologies that recycle and purify water—a vital, life-sustaining resource that is increasingly in short supply throughout the world. These water recycling systems can be used in a variety of applications for the government, military, large-scale laundry operations, mining, hospitality, higher education, oil and gas, manufacturing, temporary installations, and disaster relief.

Laundry Water Recycling System (LWRS)
EVC’s LWRS is designed for large commercial, governmental, or institutional users. It makes a significant impact on water usage by efficiently processing and recycling 70–90 percent of laundry greywater. This system was originally developed to solve a real-world problem for the Department of Defense—namely, reducing water resupply and wastewater treatment needs for forward operating bases.

This system can be combined with proprietary ozone technology to offer a scalable Green Laundry System that saves water, energy needed for heating water, and time, while also greatly reducing chemicals and needed maintenance.

Small Unit Water Purification (SUWP) System
The SUWP system yields non-potable and/or potable water from remote freshwater, brackish, and saline water resources, providing up to 100 gallons per hour of ultra-filtered water and up to 10 gallons per hour of drinking water. This feature allows for an energy efficient, modular solution to meet the specific water need and utilize the available energy sources. For drinking water, reverse osmosis processes fresh or brackish water and can be configured for saltwater desalination.

Water Evaluation Test (WET) System
In partnership with CTC, EVC offers the complete ability to fully design, develop, test, prototype, and build customized solutions in support of our clients’ core mission objectives. Our WET system...
enables EVC to optimize new state-of-the-art water technologies and perform worst-case longevity testing for our clients’ unique needs. EVC’s ability to optimize systems before they’re delivered saves our clients time and money while ensuring desired performance goals are achieved.

Fighting Cyber Threats with Powerful Cyber Systems

The global cost of cybercrime will reach $2 trillion by 2019. For individual organizations in the U.S., the average cost per breach is about $7 million. And the figures continue to rise.

EVC offers a unique tool to fight cyber threats while assuring the exchange of clean, content-appropriate files across networks. Using research and development begun at CTC, EVC sells Advanced Guard for Information Security (AGIS), which securely inspects, sanitizes, and transfers common-use files safely between networks. The system helps prevent the loss of sensitive data (accidentally or purposefully) being transmitted in a file from a network, while protecting that same network from malicious and nefarious agents that may be embedded in an incoming file.

AGIS 2.0 works on many file types, including those in the Microsoft Office™ suite, SML, TXT, PDF, and various image formats up to 16 GB in size. AGIS 2.0 inspects and removes content based on an organizational filter policy, while preserving the original file format.

AGIS 2.0 is a robust system—it supports up to 20,000 users on a single system—yet operates with current web technology, requiring only a client machine browser. It is installed in the server room and requires no more than 2U of rack space or can be run in a virtual machine environment.

Conveniently Located, Secure Facility

Our secure facility is conveniently located next to Redstone Arsenal in Huntsville, Alabama. There we deliver custom solutions that will accommodate low-volume projects involving small batches, as well as full-scale production. Unlike most coatings manufacturers, our space effectively accommodates small quantities for clients without large-scale needs.

EVC is fielding advanced topcoat (paint) materials specifically developed to incorporate enhanced signature management capabilities, while still providing the performance required of conventional Chemical Agent Resistant Coatings (CARC) currently used across the DoD.

Our wide range of solutions include low-cost coatings products, customizable coatings formulation, prototyping/flight manufacturing capabilities, full-rate production services, and warfighter camo, concealment, and deception technologies.

One of EVC’s solutions, a coating that reduces infrared detectability of assets, provides our warfighters the tactical advantages of infrared signature management with the benefit of no additional space, weight, or power requirements for the weapon system.

EVC also provides a wide range of customizable, environmentally friendly solutions, such as a film-based application with the ability to field modifications to vehicle signatures and a simpler repair process.

Providing Trusted, Low-cost Survivability Technologies

EVC has the expertise and facilities to offer clients customizable, state-of-the-art signature management solutions—from the initial coatings formulation to specialized applications and process integration.

EVC’s coatings team is a trusted partner in the signature management community. Pictured are (L to R): Rich Newman, Mike Machnica, Jordan Towe, and Desiree Towe. Brian Albright is on top of the vehicle.

Production Solutions

EVC’s Production Services team provides a full range of activities with a focus on transferring advanced technologies and cost-effective products to the industrial base.

We offer full-scale manufacturing, assembly, and testing of highly specialized and complex systems, as well as smaller fabricated parts and tools, with specialization in prototyping and low-rate initial production.

Our full lifecycle services range from pre-production manufacturing engineering to production services to sustainment activities, including repair, sparing, and training.

Technology Commercialization

EVC fills a unique market niche required by both federal clients and many commercial firms. Many RDT&E firms do not produce what they develop for a variety of reasons. Further, large OEMs are often not interested in the retooling required to build smaller quantities. This forces the government to reach out to find credible suppliers for a diverse array of products.

EVC has found success in this area by partnering early in the development process with the organizations innovating the technologies. EVC’s experience and reputation for quality has enabled us to develop strong relationships in this arena, through both CTC and others, where a number of products have been taken from idea to end user. Examples are the Carriage, Stream, Tow and Recovery System (CSTRS), a launch and handling system supporting mine countermeasures missions for the U.S. Navy. CTC designed, developed, tested, and produced a working prototype, and EVC took over as the OEM. Other examples include two highly specialized tools, the Pipe Purge Tool and Alternate Brazing Tool, which CTC designed and developed, and EVC manufactured in low volume to reduce costs for the high-value, limited demands in the shipbuilding industry.

We have experience with government and commercial customers and work in 20,000+ square feet of manufacturing, assembly, test support, and secure inventory floor space, with up to 200,000 square feet of manufacturing space available to us.
Marine Corps Air Facility Quantico earned the Occupational Safety & Health Administration Voluntary Protection Programs (VPP) Star in July 2017. The Department of Defense (DoD) Safety Management Center of Excellence (SMCX), operated by CTC, made significant contributions to the pursuit of this world-class safety management system recognition. Through the SMCX, CTC supports the Office of the Under Secretary of Defense Personnel and Readiness, Personnel Readiness and Safety, with a goal to help as many DoD sites as possible achieve Safety Management System recognition.

Several members from throughout Air Force Materiel Command (HQ AFMC/A4, Air Force Life Cycle Management Center, Air Force Research Lab, and CTC) were at Edwards AFB to test out a new hybrid flightline generator, which CTC helped to make more energy efficient. They teamed up with members of the 412th Logistics Test Squadron to test their Hybrid Flightline Generator Technology Pathfinder on an F-16 fighter, KC-135 tanker, and C-17 cargo plane. (U.S. Air Force photo by Christopher Okula)

The EVC and CTC employees who worked on the Carriage, Stream, Tow, and Recovery System (CSTRS) gathered as the final system was delivered to Naval Surface Warfare Center, Panama City, in October 2017. CSTRS provides airborne mine countermeasure capability from an H-60 helicopter, enabling Littoral Combat Ships to rapidly respond to mine threats.

Each year, CTC and EVC participate in Showcase for Commerce, a nationally renowned defense contracting trade show and exhibition, to connect with current and future collaborators.

Team members, including Air Force representatives, gathered at CTC to review a project whose goal was to convert a critical piece of military ground support equipment, the Halvorson 25K Loader, from diesel to hybrid power. (U.S. Air Force Research Laboratory photo by Donna Lindner)

The Halvorson 25K Loader is a rapidly deployable, high-reach mechanized aircraft loader that can transport and lift up to 25,000 pounds of cargo and load it onto military aircraft. Tech. Sgt. Ryan Young, Halvorson mechanic, answers questions from CTC engineers Kyle Reasbeck (left) and Bryan Tipton (right). (U.S. Air Force Research Laboratory photo by Donna Lindner)

Justin Smoak, Samson Rope application engineering manager, right, shows Roberto Guerrero, deputy assistant secretary of the Air Force for operational energy, left, and Ed Clark, AFR, aircraft programs support contractor with CTC, the weaving of the synthetic winch cable, Sept. 6, 2017, at Dover Air Force Base, Del. The proposed 280-foot synthetic winch cable is 83 percent lighter than the current 80-pound steel wire cable. (U.S. Air Force photo by Roland Balik)
Concurrent Technologies Corporation (CTC) is an independent, nonprofit, applied scientific research and development professional services organization. Together with our affiliates, Enterprise Ventures Corporation and CTC Foundation, we leverage research, development, test and evaluation work to provide transformative, full lifecycle solutions. To best serve our clients’ needs, we offer the complete ability to fully design, develop, test, prototype and build. We support our clients’ core mission objectives with customized solutions and strive to exceed expectations.

CTC’s and EVC’s quality management systems are certified to the ISO 9001:2015 (Quality) and 14001:2015 (Environmental) standards, and to AS9100D:2016 (Quality-Aerospace-Related Products).

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