




CRANE
CURRENCY[®]

OPPORTUNITY MARKETING PIECE

**GLOBAL DIRECTOR OF
RESEARCH & DEVELOPMENT**

LOCATION | **Nashua, NH**

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FOR MORE INFORMATION, CONTACT:
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850.564.2853 | eric@ropella.com



Crane Currency has been operating in the Nashua facility since 2012. This 140,000-square-foot facility employs approximately 150 people.

CRANECURRENCY.COM

ABOUT **CRANE CURRENCY**

Crane Currency, a Crane Co. company, is one of the longest-standing companies within the banknote industry. They have been making cotton substrate, developing security features and printing banknotes for more than 200 years.

Crane was founded in 1801 by Zenas Crane in Dalton, Massachusetts, USA. His legacy has been a succession of seven generations of family owners and managers with a mission to develop highly durable and secure substrate for US currency. First produced by Crane in 1879, it sets the standards for today's range of banknote substrates.

In 2018, Crane Currency was acquired by Crane Co. a NYSE traded global company. Today, Crane Currency is part of the Payment & Merchandising Technologies group, a world leader in retail and point of sale currency acceptance and validation.

Crane's International Operations encompass two locations in Europe. International banknote substrate production resides in Tumba, Sweden approximately 20 kms from Stockholm. The Tumba mill provides substrate to both government- and commercially-owned banknote printing works worldwide.

In December 2017, Crane established a state of the art printing works in Malta. The first commercial banknote printing works to be built in nearly four decades, Crane's Malta site illustrates Crane's growing industry leadership and includes a customer experience center and houses the industry's most advanced equipment.

QUICK FACTS



1801
FOUNDED



SAM KEAYES
PRESIDENT



DALTON, MA
HEADQUARTERS



1,200+
EMPLOYEES



FIVE
LOCATIONS

BANKNOTE INDUSTRY

Cash is incredibly resilient. As the payment form by which all others are compared, cash remains king. The worldwide issuance of banknotes continues to grow at a robust rate across nearly all economies. In most cases, the growth in banknote production continues to significantly outpace that of economic and population growth. As modern reprographic technologies continue to yield cheaper and better quality scan and print capabilities, central banks depend on companies like Crane Currency to ensure the security of their currency.

MICRO-OPTICS

Crane Currency is a pioneer in micro-optic security features for banknotes. Across a variety of feature forms, Crane Currency secures over one hundred and forty banknote denominations across fifty countries with its micro-optic banknote security technology MOTION micro-optics.

BREEZE™

BREEZE is a new micro-optic security product from Crane Currency for protecting low denomination, high-demand banknotes. BREEZE security threads are specifically engineered for maximum durability, security and cost-effectiveness. Based on Crane's proven micro-optics, BREEZE provides central banks with a new option for protecting high velocity, transactional banknotes with fast, unambiguous verification at a low cost.

MOTION®

Introduced in 2005, MOTION® was an entirely new form of public security for banknotes. Its authentication and security attributes have since been universally recognized as among the most secure in the world and protects the highest denominations of banknotes in such countries as the US, England, S. Korea, Saudi Arabia and Sweden among others.





RAPID HD®

In the domain of public security technology, contrast and movement are critical in providing easy and intuitive authentication. Easy to see movement is the public’s most important visual cue for verifying authenticity quickly and decisively. RAPID HD security threads exhibit high contrast movement effects with images and colors that can exactly meet the theme of the banknote.

MOTION SURFACE®

MOTION SURFACE was brought to life after a decade-long journey of technology evolution, innovation and creativity. MOTION SURFACE is capable of displaying advanced 3-dimensional effects.

MOTION SURFACE is thinner than its predecessors and has made it possible to apply it to the surface of the banknote paper during printing. In addition to three-dimensional effects, visual effects of floating images or those that appear deeply seated inside the banknote are possible.

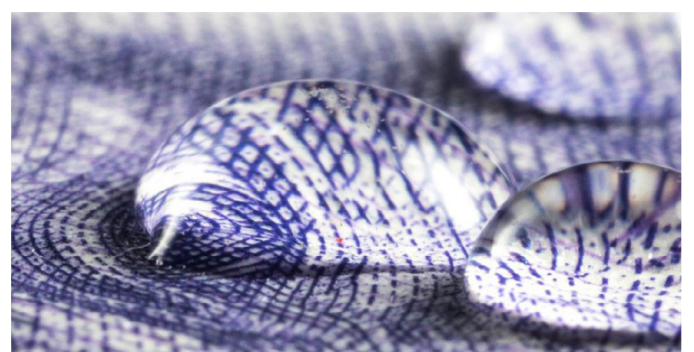
MACHINE DETECTION OF CRANE’S MICRO-OPTIC FEATURES: DETECT

The addition of Detect to Crane’s micro-optic security threads represents a new class of banknote security feature that delivers compelling solutions for central banks. Micro-optic security threads with Detect simultaneously provide the public with the highest level of overt, customizable security, and the banknote equipment manufacturers (BEMs) with cost-effective and secure machine authentication.



MOTION SURFACE®

Listen to the story of this innovative security feature from Crane Currency and see it in action.



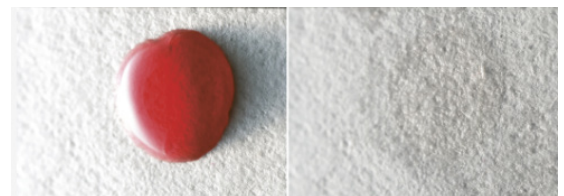
ENDURANCE PAPER

ENDURANCE, Crane Currency’s durable banknote paper, helps ensure that circulating banknotes retain the highly prized characteristics of new banknotes longer than those printed on conventional banknote paper. This results not only in a longer circulation life and lower issuing costs, but also in improvements to the banknote’s overall quality, functionality and security.

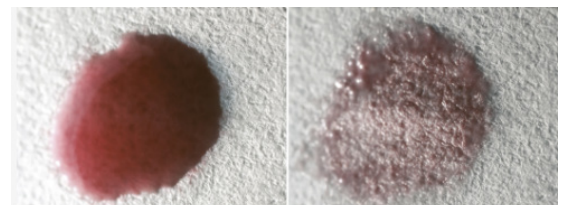
They base their production of ENDURANCE banknotes and paper on centuries of paper making knowledge. With a deep understanding of raw material selection and processing, Crane Currency builds a strong foundation of cotton fibers infused with AST, a chemical impregnation that provides additional physical strength and soil and moisture resistance

ENDURANCE FACTS

- ENDURANCE durable paper and banknotes are a scientifically based solution and the result of years of research.
- The demonstrable improvements in performance are based on years of papermaking know-how and proprietary chemistries.
- ENDURANCE high durability paper saw its first use in 2006 by the Central Bank of Egypt Printing Works.
- Crane Currency’s Circulation Simulator has tested over 150 banknotes, from across the globe and from every major brand of durable banknote solutions
- Banknotes printed on ENDURANCE high durability paper are among the most durable banknotes tested by Crane Currency.



ENDURANCE BANKNOTE PAPER
Before and after liquid and removal. No stains.



ORDINARY BANKNOTE PAPER
Before and after liquid and removal. Severe absorption into the paper resulting in permanent stains.

CRANE CURRENCY DESIGN SERVICES

Crane Currency's Design Services team has been intimately engaged with and contributing to the evolution of modern banknote design. They have a knowledge base of experts who have been active for decades – and they continually recruit new talent across a range of design skills. Crane Currency's experience and openness to new influences enable them to create banknotes that match the modern, diverse needs of a global client base.

CRANE CURRENCY FLEXIBILITY

Crane Currency Design Services is an active listener to its central bank customers. The goal is always to produce banknotes that articulate the customer's specific, prioritized needs. Design Services' involvement can range from supporting clients through relatively small projects, perhaps upgrading the security of a single banknote, or it can encompass the responsibility for designing an entire new series. Their work is based on a holistic and long-term partnership defined by a close working relationship that is transparent and pragmatic, and is supported by decades of experience. Together, their clients and they manage a dynamic process of timing, critical specification requirements and budgets, including total life time costs of the design. The close working relationships they strive for help ensure they remain always aware of what the end-result must be. As banknote features and the designs that utilize them become more complex, it is critical that they are converted into banknotes that are cost-effective to produce.

Many different steps have to be combined in order to make a banknote – from design concept, origination an integration of security features to papermaking and printing in different techniques. In the final step of the process, the new design is transferred to the printing plate, i.e. the digital proofs and pre-press work. The design is not yet fully accepted until it is proof-printed. Crane Currency's fully integrated printing works is at the disposal of Design Services and its customers. The various offset, intaglio and other printings are tested to ensure the highest quality, while the banknote's machine readability is also tested and verified in cooperation with the commercial banknote readers made by Crane Payment Innovations and other manufacturers. Their work is an iterative process that tunes the final design to the requirements of the printing works and field performance. The new banknote or series is complete when the full technical requirements of the new banknote are codified in its specifications manual.



"We appreciate that design plays a role in the entire process, from researching your security needs and creating designs, to producing the paper and the printing."

KARIN MÖRCK-HAMILTON
Head of Design

CRANE CURRENCY

CULTURE

When you work in a fast-moving, open and transparent operating environment that focuses on excellence, it brings out your best and the best in those around you. That's why so many achievement-oriented professionals have made Crane their employer of choice.

Working in Research and Development at Crane, you will have the opportunity to help them bring innovation to banknote security. You'll enjoy collaborating with the finest professionals in the industry while developing your skills in an advanced setting.

Their R&D team pioneered the use of micro-optics technology, using proprietary software and advanced algorithms to create illusions that today can be found on banknotes all over the world. Their innovations include the award-winning MOTION®, the first micro-optic based material used in banknotes, and RAPID®, their latest security feature offering distinctive optical effects in a durable security thread.

Crane realizes the value that their people bring to their company and provides market-leading benefits and competitive compensation packages. Here are some additional highlights regarding their rewards and working environment.

A FOCUS ON PEOPLE

Their benefits packages are designed for each local market in which they operate, and often include extras such as mass transit options. They also realize the

importance of wellness and support healthy living activities across their organization, including awareness programs, screenings and more.

SAFETY AND SECURITY

It is their highest obligation to protect the safety and health of their employees. They're proud of their industry-leading safety practices. Their commitment to preventing injury and ill health, and to the principles of continuous improvement, extends across their organization, with the understanding that they are never finished improving in these areas.

PROGRAMS FOR CAREER GROWTH

They have high expectations for your growth and offer job-specific, in-person and online learning, as well as reimbursement for higher education and professional seminars and certifications. During your annual performance review, you will work with your manager to create a plan that may include specific experiences, mentoring, coaching and training.

LEADERSHIP DEVELOPMENT

They devote a significant amount of time to formal conversations about developmental needs and opportunities for growth. They offer multiple programs through their Global Training and Development Function for current and aspiring leaders. As a result, many of their leaders have been promoted from within.



"Banknote security is a very demanding field, and Crane develops the most interesting technology in the industry. We really have the opportunity to spearhead new ideas and own the process. When ideas come to fruition, it's extremely satisfying. It is clear that Crane is growing and disrupting the market, and the ride has just begun."

SAMUEL, CURRENCY GROUP R&D DIRECTOR

"I take great pride in our products. It's very exciting to work with countries all over the world and to see our products in everyday life. We are consistently recognized for our hard work and encouraged to think outside the box. There are always new challenges and exciting projects, making it easy to advance your career. To be a part of a company that's so ground-breaking is very gratifying. You won't be disappointed if you work for Crane."

HEATHER, LAB SUPERVISOR





SAM KEAYES

President



Sam joined Crane Currency in January 2019 as the Vice President and General Manager of the International Currency business. He came to Crane Currency from Thales, a multi-national engineering and integrated solutions provider serving aerospace, ground transportation, defense and security markets. Sam has held senior operational and commercial leadership roles in the UK and Australia, including Vice President, Strategy and Government Relations; Vice President, Security and Consulting; and Vice President, Secure Communications and Information Systems/Ground Transportation Systems. Earlier in his career, Sam worked for the British Government where he held a variety of senior roles in security, defense and international relations. Sam achieved his Masters Degree in Business Administration (MBA) from Cranfield University and also holds a Masters Degree in Social and Political Sciences from Cambridge University.



ERIC ZIEGLER

Vice President Global Markets, Product Growth, & U.S. Government



Eric is the vice president of Global Markets, Product Growth, & U.S. Government within Crane's Currency division. He drives the overall portfolio of anti-counterfeiting security features. Responsibilities include global product strategy, product management, research & development, and M&A activities for banknotes, substrates, and technology. In addition, Eric is responsible for the U.S currency business, the largest single customer in Crane Currency.

Eric joined Crane Currency in 2012 leading the then newly created Security Technologies group and integrating four disparate technology and operations teams into a new single operating business unit. This organization focused on creating innovative anti-counterfeiting security features resulting in an 80% increase in adoption of security features in new banknotes.

Prior to Crane, Eric's 24 years of experience at PerkinElmer, Inc. consisted of a wide array of responsibilities and growth. He most recently was the Vice President of Product Planning & R&D for their Analytical Sciences and Laboratory Services Division. Eric had oversight of PerkinElmer's \$500M instrumentation portfolio, accountable for worldwide business financials, product strategy and roadmap, R&D and new product commercialization.

Education: Master of Science in management of technology from Rensselaer Polytechnic Institute and a Bachelor of Science in electrical engineering from the University of Rochester. Harvard Business School's Advanced Management Program.



MALVIKA JHANGIANI



Vice President Human Resources

Malvika has over 20 years of rich, diverse global HR experiences across multinational companies, start-ups, private equity and HR consulting. Prior to joining Crane Currency, Malvika had been operating as the Chief HR Officer for a private equity backed technology company. In this role, Malvika led all aspects of people strategy for the company to meet their accelerated growth plans. Prior to that, Malvika served in a variety of HR roles of progressive responsibility for 13 years at Monsanto / Bayer, a global leader in biotechnology, helping to embed a culture of innovation across the company. Earlier on in her career, Malvika worked as Head of Talent Management and HR Business partner at Cadbury, the confectionary company, and as an HR consultant in a range of different countries with Andersen and Ernst & Young. Malvika achieved her Masters in Personnel Management from the Tata Institute of Social Sciences in Mumbai, India.

POSITION OVERVIEW

DIRECTOR OF GLOBAL R&D

CRANE CURRENCY

Crane Currency is a stand-alone business within the Payment & Merchandising Technologies segment of Crane Co. and has won international acclaim for innovation and product development. They are a pioneer in advanced micro-optics technology for securing banknotes, offering features that do not exist elsewhere. A strong, stable organization with a firm commitment to collaboration and growth, they invite you to join them for a fulfilling career opportunity as Director of Global Research & Development.

LEADERSHIP IS CURRENCY AT CRANE

This challenging role is key in leading the development for new products, product enhancements and product redesign to be utilized in banknote, banknote paper, and anti-counterfeit security features.

Crane Currency is seeking a proven leader who is familiar with evaluating the potential and practicality of products in development and relies on extensive experience and judgment to plan and accomplish goals. The right candidate should be comfortable leading others and exercising independent judgment to perform the responsibilities of the position.

RESPONSIBILITIES INCLUDE

- Oversee the development of new products and lead a team of functional and site managers spanning three US and one international site.
- Responsible for developing products utilizing cross-functional teams made up of marketing, R&D, operations, sales, and finance.
- Utilize a phase gated development framework to meet overall product quality, manufacturability, cost, and time-to-market goals.
- Oversee project metrics, expenses, and performance measures. Track progress to plan and accurately communicate project status to leadership.
- Strengthen an organizational bench of chemists, chemical engineers, process engineers, systems engineers, materials scientists, and optics individuals through organizational development, mentoring, and training programs.
- Track record of driving high performance product and teams globally.
- Ability to work effectively on multiple activities and projects.
- Strategic vision and strong analytical skills.
- Process orientation; demonstrated ability to develop repeatable processes or improve existing processes in and out of product development.
- Strong leadership and team-building skills. Open and collaborative style; must be comfortable working in an environment where ideas are shared and challenged.
- Demonstrated ability to influence and lead others without formal authority while maintaining effective work relationships.
- Excellent oral and written communication skills.
- Energy and enthusiasm; willing to be held accountable and willing to hold others accountable.
- PMP or equivalent certification, six sigma green or black belt a plus.

QUALIFICATIONS

- Master’s degree in Chemistry, Chemical Engineering, or a related field.
- 15+ years’ experience in an engineering or manufacturing environment.
- Experience in coating, printing, web handling and continuous flow processes strongly desired.

Applicants must be United States citizens. The person selected for this position will need to demonstrate suitability for employment in a position of Public Trust consistent with US Government contract requirements.



ABOUT **NASHUA AND SURROUNDING AREAS**

NASHUA, NH

Nashua is home to over 85,000 residents making it the second largest city in New Hampshire. This vibrant community is situated along the Merrimack and Nashua Rivers and is just 45 minutes away from Boston, 25 minutes from Manchester and 60 minutes from the New Hampshire Seacoast. Whether you're a local, a new resident or just passing through, Nashua is sure to offer something for everyone to enjoy.

Nashua is the result of a well-planned, nicely compact, early 19th century New England manufacturing village, once surrounded by 30 square miles of woodland, meadows, and farmland until recent decades. Today, Nashua offers a combination of grand historic buildings, a downtown district, traditional pedestrian-oriented urban neighborhoods, and more rural and contemporary suburban neighborhoods.

Fostering a welcoming environment for all individuals, regardless of race, ethnicity or place of origin, enhances Nashua's cultural fabric, economic growth, global

competitiveness and overall prosperity for current and future generations; Nashua has long been recognized as a hospitable and welcoming place where individuals, families and institutions thrive and the contributions of all are celebrated and valued.

Nashua is committed to continue building a welcoming and neighborly atmosphere in our community, where all people including immigrant newcomers are welcome, accepted and integrated; and to encourage all residents of Nashua to do their part in reaching out and welcoming all who live, work and visit Nashua.

Nashua encourages its business leaders, civic groups, other government agencies and community institutions and residents to join in a community-wide effort to expand prosperity and inclusion for all residents by implementing policies and practices that promote understanding and an appreciation of diversity.



MANCHESTER, NH

A century ago, Manchester was home to the largest textile manufacturer in the world. Nearly half of the community worked in the Millyard, making everything from gingham dresses to the first pair of Levi's jeans.

Since then, Manchester has transitioned from an era of textiles to one of technology and higher education. They have continually found new opportunities to push us to do better for ourselves and future generations.

In the last few years, the City of Manchester has made significant investments in the community that have provided large economic booms for the city. From adding more destinations to and from the Manchester-Boston Regional Airport to worldwide acts performing at the SNHU Arena, Palace Theatre and Rex Theatre, Manchester is on the rise.

Located in the heart of New England, Manchester, New Hampshire, is a spectacular combination of a vibrant urban center and the famed natural beauty and abundant recreational opportunities that abound throughout the Granite State. This city's location is prime—Boston, the Atlantic Coast, and New Hampshire's scenic White Mountain and Lakes Region are all within an hour's reach, and thanks to our exceptional highway access and the first-class Manchester-Boston Regional Airport, Manchester is accessible from just about anywhere.

This city has fast become a first-rate entertainment hub in the Northeast, playing host to the hottest con-

certs, top acts, and biggest events. They've got anything from theatrical performances to highly-charged sporting events. The Palace Theatre and recently renovated Rex Theatre sit just blocks away from the SNHU Arena, while the riverfront professional baseball stadium overlooks a bustling and vibrant downtown. When one lives in Manchester they will certainly work hard, but undoubtedly have a lot of fun as well.

Manchester has a wide range of shopping and dining options available throughout the community. In recent years, Manchester has emerged as the premier dining and tax-free shopping destination north of Boston.

Manchester also has beautiful parks throughout the city, and Lake Massabesic, which is set in the heart of the city, offers boating, gorgeous picnicking locations, and hiking and biking trails. Visit Arms Park for a view of the breathtaking Merrimack River. In the winter, McIntyre Ski Area offers skiers and snowboarders snow-lined trails, while ice skating rinks are located on both the east and west side of the city. The Derryfield Country Club offers 18 holes of golf on expansive greens right in Manchester.

Manchester's location allows for easy access to ski resorts, NASCAR races, beaches, state parks, camping, mountains and dozens of other attractions.

NASHUA, NH AND SURROUNDING AREA LINKS

AREA LINKS

City of Nashua
nashuanh.gov

City of Manchester
manchesternh.gov

Visit New Hampshire
visitnh.gov

SHOPPING

Downtown Nashua
downtownnashua.org

Pheasant Lane Mall
simon.com/mall/pheasant-lane-mall

Merrimack Premium Outlets
premiumoutlets.com/outlet/merrimack

SPORTS

Nashua Silver Knights
nashuasilverknights.com/home

Gate City Striders
gatecity.org

New Hampshire Outdoors
nhoutdoors.com

Nashua Country Club
nashuacountryclub.com

Pat's Peak Ski Area
patspeak.com

ARTS & ENTERTAINMENT

City Arts Nashua
cityartsnashua.org

Boston Billiard Club & Casino
bostonbilliardclubcasino.com

Nashua Theatre Guild
nashuatheatreguild.org

Nashua Public Library
nashualibrary.org

EDUCATION

Nashua School District
nashua.edu

The Academy for Science and Design
asdnh.org

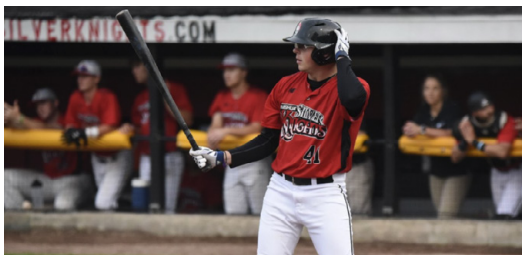
Rivier University
rivier.edu

Granite State College
granite.edu

Nashua Community College
nashuacc.edu

Southern New Hampshire University
snhu.edu

University of New Hampshire
unh.edu





ABOUT **ALPHARETTA, GA**

Alpharetta, the location of Crane’s Research and Development facility, is a northern suburb of Atlanta and one of the most affluent communities in the state. More than 3,600 businesses are located in the city and Forbes magazine recently ranked Alpharetta #1 on the list of America’s 25 Best Places to Move.

- Crane’s Alpharetta facility develops cutting-edge and next-generation technology for optical and non-optical microstructures mainly used in the banknote security feature industry.
- Richly diverse, Alpharetta features award-winning parks, excellent schools, numerous festivals and events and a dynamic dining scene.
- More than 62,000 people call Alpharetta home and enjoy a blend of hometown charm and big-city sophistication.



- Alpharetta is located just minutes from the North Georgia mountains and is easily accessible to Atlanta and its many amenities.
- Big Creek Greenway in Alpharetta is an eight-mile-long and 12-foot-wide paved path for biking, walking, and inline skating along a creek featuring birds, a variety of wildlife and beautiful flowers and greenery.
- Alpharetta’s North Point Mall features a variety of stores, a carousel and the only American Girl Boutique and Bistro in Georgia.