

CHARLOTTE

A Knowledge-Based City

CHARLOTTE LEADERS KNOW THAT INNOVATION is key to prosperity, and that research and development investment drives innovation. Even before the 1966 creation of Charlotte's University Research Park, this Southern city had already proven its commitment to building an environment that encourages ideas and advancements.

Today, Charlotte is a growing magnet for R&D and technology companies. An estimated 1,644 technology companies employ 30,414 people in the Charlotte metro area. Charlotte ranks among the nation's top 60 cyber cities.

The optoelectronics industry employs thousands in Charlotte and provides millions of dollars in investments. We're home to security equipment manufacturers and service providers, software developers, medical firms and motor sport engineering companies. Charlotte is also home to more than a dozen biotech and life sciences companies as well as an increasing number of biotechnology firms. There are incubator programs, public-private

FORTY-FOUR OF EVERY 1,000 PRIVATE SECTOR EMPLOYEES IN NORTH CAROLINA WORK IN HIGH-TECH COMPANIES.

partnerships, state-of-the-art infrastructures, access to commercial and venture capital financing, pools of highly educated and technically skilled workers and anything else a technology- or research and development-based business would seek.

The Right Mix of Elements

R&D goes hand-in-hand with manufacturing, and manufacturing is the lifeblood that keeps Mecklenburg County and the Southeast operating. North Carolina is the nation's seventh largest manufacturing state, and the Charlotte region is North Carolina's largest manufacturing region. Firms here produce \$32.1 billion in goods. In 2003, nearly 39,000 manufacturing workers in Mecklenburg County alone produced \$8.8 billion in goods.

Once a leader in textiles, Charlotte boasts today many firms that specialize in sophisticated intelligent manufacturing. Technologies based on precision metrology, optoelectronics and biomedical advances blossom alongside more traditional manufacturing.

Charlotte is also home to some of the largest corporations in North America. Seven *Fortune* 500 headquarters ranks Charlotte in seventh place nationally. Thirty-one companies with more than \$1 billion in annual sales operate in Charlotte.



©PATRICKSCHNEIDERPHOTO.COM

Access to Capital

Charlotte is home to 11 venture capital firms and five of the 10 largest banks (as measured by commercial and industrial loans). Bank of America, the largest bank in terms of deposits, is headquartered in Charlotte. And five of the nation's top 25 banks operate here.

When young Charlotte companies need capital, they often must only look down the block. Mecklenburg County venture capital firms range from small companies to large regional brokerages accustomed to million-dollar deals. North Carolina ranks tenth in the nation in number of venture capital loans made. Five of the state's ten largest venture capital firms operate in Charlotte.

Strong University Research

Knowledge drives innovation, and higher education is key to any city's future strength. The University of North Carolina Charlotte is the fourth largest and most rapidly growing university in the 16-campus UNC system.

UNC Charlotte has emerged with a national reputation for its research prowess in key technologies for partnering with businesses and for moving university research into business applications.

UNC Charlotte's College of Computing and Informatics is one of only 50 universities recognized by the National

©PATRICKSCHNEIDERPHOTO.COM



©PATRICKSCHNEIDERPHOTO.COM

NORTH CAROLINA RANKS 13TH IN HIGH-TECH EMPLOYMENT AND 19TH IN HIGH-TECH AVERAGE WAGE.

Security Agency as a Center of Academic Excellence in Information Assurance Education. It offers one of the few Ph.D. programs in information technology in the nation.

The University's Office of Technology Transfer spurs economic development by commercializing innovation and public-private partnerships. The office moves inventions to market by licensing technology and forming start-ups.

The University's Charlotte Research Institute focuses on applied research and finding ways to harness the institution's technological expertise to help private sector companies compete. This research often creates new business or augments existing businesses.

The Charlotte Research Institute boasts multiple focus areas, including the Center for Precision Metrology, the Center for Optoelectronics and Optical Communications, the eBusiness Technology Institute, the new Center for Bioinformatics and Energy Production and Infrastructure Center (EPIC).

Medical Research

Charlotte's two hospital systems are among the largest and most advanced in the Southeast. Each year, Carolinas Healthcare System and Presbyterian Healthcare hold trials and research studies that benefit individuals around the globe.

Carolinas Medical Center is home of the James G. Cannon Research Center, the hub of CMC's research efforts. The Cannon

Research Center houses 172 research and support personnel who pursue clinical and biomedical R&D in order to improve the quality and cost-effectiveness of healthcare.

Presbyterian Healthcare participates in numerous cancer, cardiovascular and orthopaedic clinical trials, as well as a variety of clinical trials offered through affiliated physician practices. Presbyterian Cancer Center participates in nearly 100 clinical trials, adult and pediatric, and enrolls six percent of all patients in trials, double the national average.

Abundance of Skilled Labor

Firms from around the world come to Charlotte to tap our skilled and productive work force. Residents here are known for their strong work ethic. One recent University of North Carolina study calculated that North Carolina is the second most productive of the nation's top 20 industrialized states.

Charlotte ranks third in its ability to draw college-educated, single people between age 25 and 39, according to the 2007 U.S. Census.

UNC Charlotte ranks tops in technology transfer

- First in patents issued
- Second in inventions disclosed
- Second in patents filed
- Third in start-ups formed
- Fourth in licenses issued

Note: Per \$10 million of Research Expenditure
Source: 2007 Association of University Technology
Managers national survey

The city ranks seventh nationally in the percent of the population with a high school degree (89.1 percent), and ranks 11th nationally for the number of residents with four-year degrees (38.9 percent).

Within our region, 34 public and private institutions offer baccalaureate degrees, and 13 schools offer graduate degrees. Charlotte is home to Central Piedmont Community College, the state's largest community college, as well as UNC Charlotte.

Clusters of Innovation

Clusters of like-minded companies spark ideas, drive development and fuel economic growth. Charlotte is home to 1,644 technology companies and many others who built or relocated R&D facilities in Mecklenburg County. They include General Dynamics Armament and Technical Products, BASF Corp., National Gypsum, Michelin Aircraft Tire, Electric Power

Research Institute, WEDECO, Goodrich Corp. and Britax Child Safety Seats.

Small businesses and large corporations are equally welcomed in Charlotte. The number of small businesses operating in Charlotte jumped 15 percent, to 34,813 businesses, between 1995 and 2001, according to the Small Business Administration. These entrepreneurs and startups have equal access to opportunities in Charlotte, including the guidance of BIG, the Business Innovation & Growth Council, which helps startups, well ... grow big.

Another helpful organization for technology and R&D firms is the Microelectronics Center of North Carolina. North Carolina's state legislature launched MCNC in 1980 to lure and launch high-technology research and jobs. Now an independent, non-profit organization, MCNC drives technology advancement

AN **ABUNDANCE OF SKILLED LABOR IS A MAJOR ASSET TO LOCAL RESEARCH AND DEVELOPMENT COMPANIES.**

Advancing technologies in Mecklenburg County

The Charlotte metro area is home to thousands of technology companies, including:

Tessera Digital Optics — Tessera is a leader in micro-optics and integrated micro-optical sub-assembly design and manufacturing services. The company was conceived by UNC Charlotte researchers and now operates independently on its own campus in University Research Park.

EPRI — The Electric Power Research Institute is headquartered in Charlotte and provides system-wide science and technology solutions for the Global Electricity Enterprise and Society. They provide short and long term R&D programs to all segments of electricity enterprises.

SYNOPTICS — Charlotte-based SYNOPTICS, an affiliate of Northrop Grumman Space Technology, is an industry leader in the manufacture of solid-state laser materials and components. Its Charlotte operations manufacture synthetic crystals for use in solid-state lasers and optical assemblies.

BASF Polymers — Charlotte is home to the Performance Chemicals for Leather business unit of BASF, the world's leading chemical company. Products from this unit include chemicals for all wet end and finishing processes in the leather and fur industries.

Goodrich Corporation — This aerospace giant is a leading global supplier of systems and services to the aerospace and defense industry. Goodrich's offerings include systems and services for aircraft and engine manufacturers, airlines and defense forces around the globe. Goodrich's corporate headquarters are in Charlotte.

John Deere — John Deere's SouthEast Engineering Center, in Charlotte, is a research and development facility for the company's worldwide commercial and consumer equipment division.





©PATRICKSCHNEIDERPHOTO.COM

UNC CHARLOTTE LEADS THE NATION IN THE NUMBER OF PATENTS AWARDED PER \$10 MILLION IN R&D FUNDING. UNC CHARLOTTE HELPED LAUNCH APPROXIMATELY TWO DOZEN NEW START-UPS USING UNIVERSITY INTELLECTUAL PROPERTY.

throughout the state by supporting R&D, venture funding and advanced computing and networking.

Reliable Power

R&D and technology businesses need never-fail, uninterrupted reliable power. Many of Charlotte's business parks offer dual substation power feeds and underground, encased power conduits. The large number of mission-critical operations here are testimony to the City's especially robust power and fiber infrastructure. Charlotte's Duke

Energy designs, installs and maintains energy solutions to ensure the power stays on during momentary or prolonged utility power outages and to protect sensitive equipment from damaging power surges. Additionally, Charlotte-based Piedmont Natural Gas offers a plentiful supply of natural gas.

Superior Quality of Life

With all the amenities Charlotte has to offer, technology and R&D firms have little reason to look anywhere else. Charlotte has grown into a culturally diverse, cosmopolitan city flush with educated and well-traveled individuals who came here for a better way of life.

People like living in Charlotte, and companies located here successfully recruit highly talented individuals from all regions across the U.S. and from around the world. It's a great place to push technology and R&D to new levels. Come see for yourself what Charlotte has to offer.

