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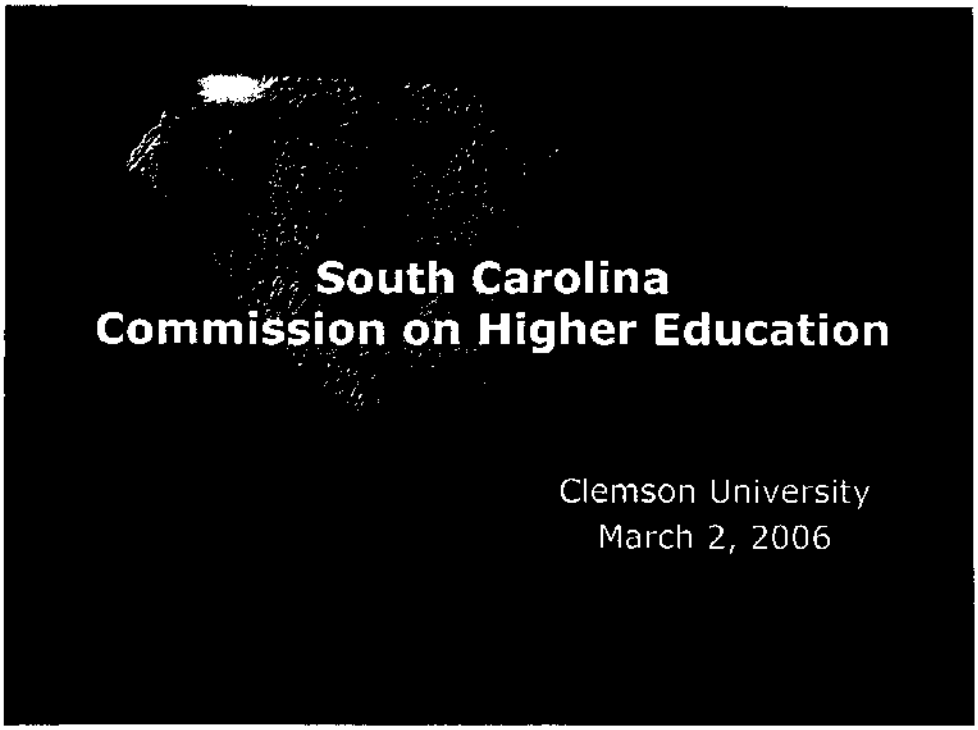
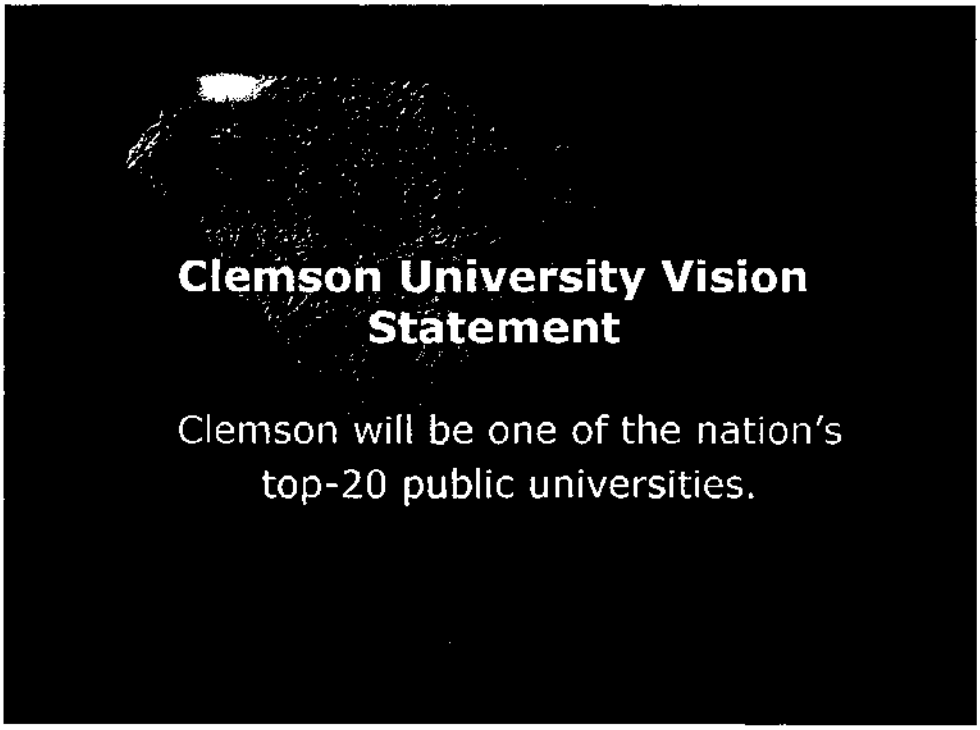


South Carolina Commission on Higher Education

Clemson University
March 2, 2006



Clemson University Vision Statement

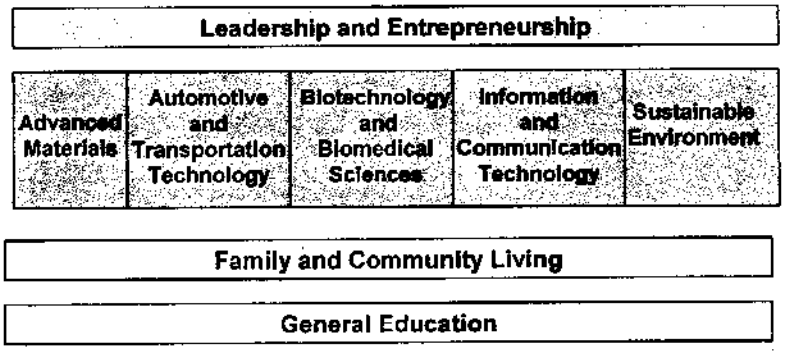
Clemson will be one of the nation's top-20 public universities.

Clemson's Roadmap for the Future

Selection criteria for emphasis areas

- Existing faculty research strengths and basic infrastructure
- Correlation with existing or emerging cluster industries in South Carolina
- Significant potential for external funding

Clemson University Emphasis Areas



Research Strengths

Advanced Materials

- NSF/ERC – Center for Advanced Engineering Fibers and Films
- Nanotechnology
- Optical Materials/Photonics
- Thermoelectric Materials
- Advanced Materials Research Laboratory

Research Strengths

Automotive and Transportation Technology

- Established research/education program in automotive/motorsports engineering
- Strong ties to US/European/Japanese automotive industries
- International Center for Automotive Research

Research Strengths

Biotechnology and Biomedical Sciences

- Clemson University Genomics Institute
- Bioengineering
  - Biomaterials
  - Tissue Engineering
- Collaboration with
  - MUSC/USC
  - Greenville Hospital System
  - Greenwood Genetic Center
- Biosystems Research Complex

Research Strengths

Information and Communication Technology

- Wireless Communication
- Applied Electromagnetics
- Computer Systems Architecture
- High Performance Computing
- Information Technology and Organization

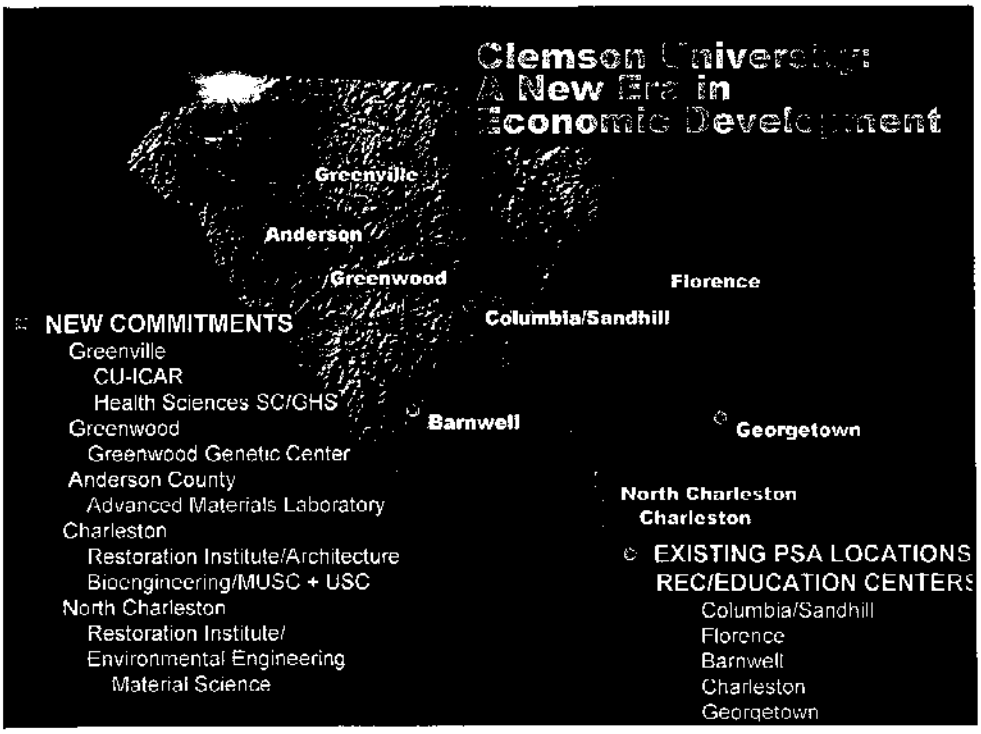
Research Strengths

Sustainable Environment

- Nationally Ranked Graduate Programs
  - Architecture (13th)
  - Environmental Engineering (11th)
- Strong ties to Savannah River National Laboratory
- Restoration of natural and built environments
- Clemson University Restoration Institute (Charleston Architecture Center)

"Clusters" and Economic Development: *Lessons Learned*

- Target areas where there is existing capability at research university(s) and a key user(s) in the region
- Recruit "superstar" researchers, build graduate programs
- Construct research parks and incubators
- Recruit young firms and R&D-intensive activities (international firms), network into the university activities
- Cultivate entrepreneurial resources (experienced entrepreneurs, law firms, seed capital sources . . .)
- Maintain high quality of life (low taxes, school quality, health care, arts/outdoor)



Location	Emphasis Area	Endowed Chairs	Research Infrastructure	Collaborators/Partners
Greenville				
CU-ICAR	Auto & Transportation Technology	4	$42.3M	SC Hydrogen and Fuel Cell Alliance (CU, USC, SC State, SRNL), BMW, Michelin, Timken, SUN
GHS	Biomedical Sciences	1	$7.0M	HSSC (CU, MUSC, USC, Greenville Hospital System, Palmetto Health, Spartanburg Regional)
Anderson				
Clemson Research Park (Innovation Center)	Advanced Materials	2	$6.7M	Hitachi, Furman, Greenville, Spartanburg, Tri-County Technical Colleges, UNC-C, Western Carolina, SCRA, Anderson Development Partnership

Location	Emphasis Area	Endowed Chairs	Research Infrastructure	Collaborators/Partners
Greenwood				
Genetic Center	Biomedical Sciences	0 (1)	$5.0M	Greenwood Genetic Center
Charleston				
MUSC	Biomedical Sciences	1	$2.0M	MUSC, USC
Restoration Economy	Sustainable Environment	2	$10.3M	Lasch Laboratory, Friends of the Hunley, North Charleston, Hunley Commission

The CU-ICAR Vision

To be the premier automotive and motorsports research and educational facility in the world.

The Mission

- **To establish world-class facilities for automotive/motorsports research.**
- **To provide internationally recognized graduate automotive engineering programs.**
- **To be the university/industry interface for the associated engineering, management, marketing and communication disciplines.**

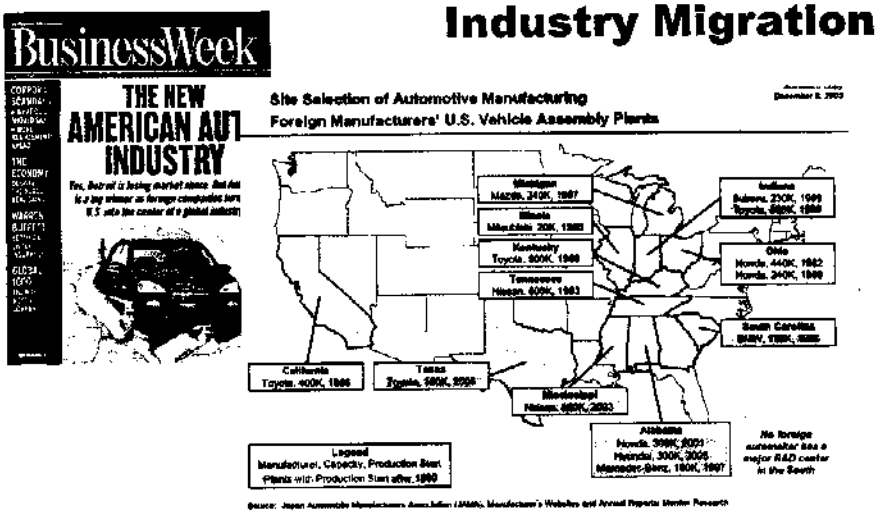
CUICAR

Why South Carolina?

- Southeast is now the largest US regional automotive cluster
- Dominated by international manufacturing facilities – OEM, Tier I, II & III
- Over 200 automotive companies in South Carolina
- 2/3 of major US racing teams located between Charlotte and Atlanta

CUICAR

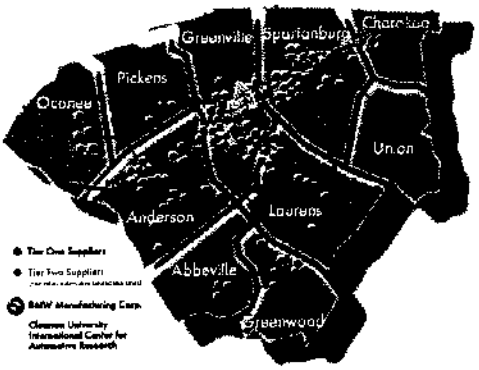
Industry Migration



"Southeast is now the U.S. center of a global industry with no supporting R&D facility at a time when more R&D being pushed down to suppliers…"

SC Economic Impact

- Largest economic impact industry in SC - BMW and suppliers' investment over $4 billion and over 9,000 related employment
- Over 200 Automotive Companies in SC
- 115 First or Second Tier Automotive Suppliers in the State



South Carolina Competitiveness Initiative

Phase I Final Presentation
(December 8, 2003)

Automotive Cluster

Vision Element: A center of R&D in the Southeast

Action Agenda:
- **Continue to support Auto Research Park (CU-ICAR)**
- **Develop cluster specific institutions for collaboration**
- **Support engineering training**

Dr. Michael E. Porter
Professor of Economics
Harvard University

How?

A Public/Private Partnership

CLEMSON UNIVERSITY

- Driven by its vision to be among the nation's top 20 public universities

SOUTH CAROLINA DEPARTMENT OF COMMERCE/LOCAL AND REGIONAL ECONOMIC DEVELOPMENT PARTNERS

- Economic development through building knowledge-based cluster industries

PRIVATE SECTOR

- Companies with a strategic interest in automotive/motorsports research, development, education or advanced manufacturing

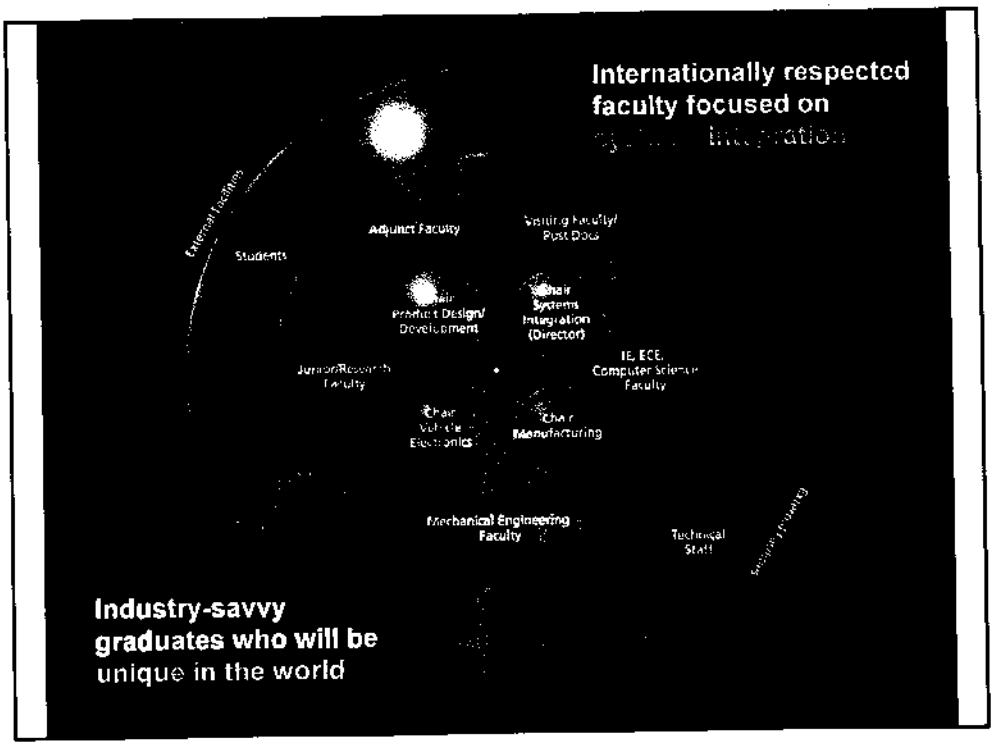
Investment Summary

Land:	$ 7.0 M $ 14.0 M
Infrastructure:	$ 45.6 M
Buildings:	$ 83.5 M
Faculty:	$ 36.0 M
Equipment/Other:	$ 27.7 M
TOTAL:	$213.8 M

The CU-ICAR Graduate Program Concept

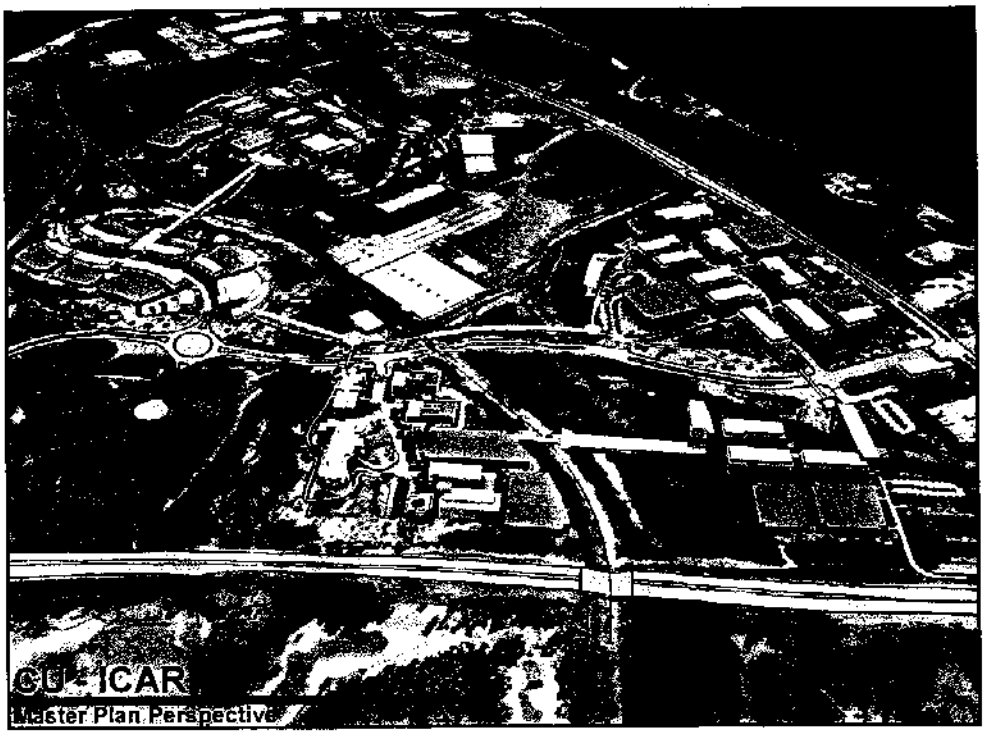
Graduate Program in Automotive Engineering (M.S. and Ph.D)

- **Emphasis in product realization and system integration**
  - **Underlying principles using the automobile as a platform**
  - **Graduates marketable in all manufacturing environments**



Potential Research Facilities

- Information Technology Research Center (ITRC)
- High performance computing – modeling and simulation
- Full-scale wind tunnel
- Fuel economy and alternative fuels
- Safety/crashworthiness
- Chassis testing
- Tire and wheel testing
- Acoustic and environmental testing



CUICAR

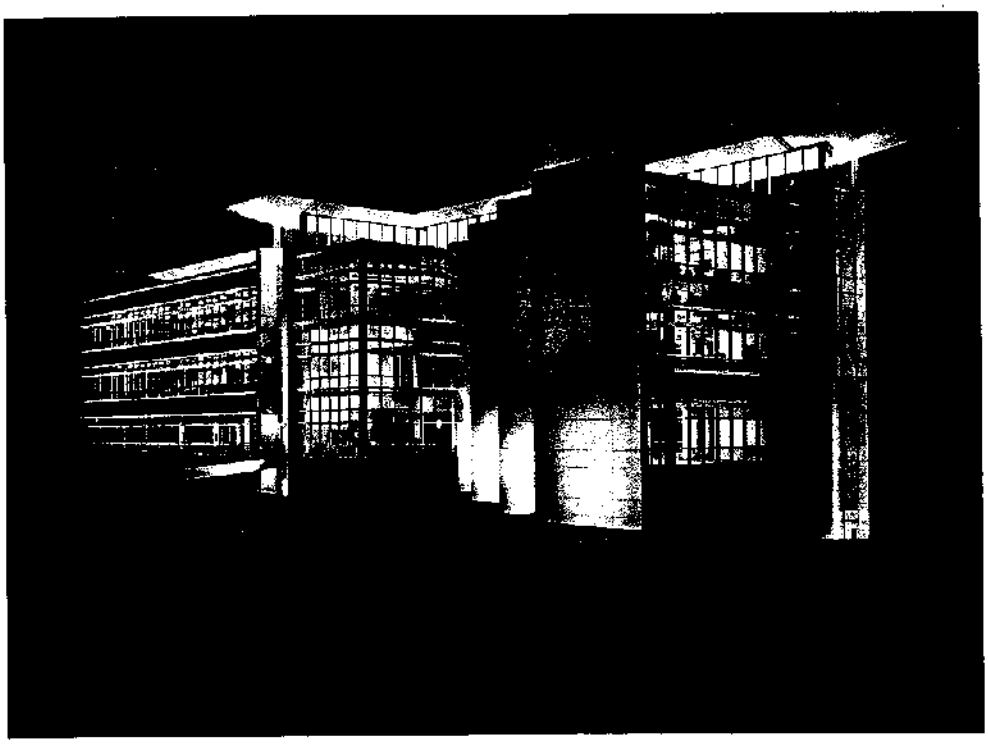
Information Technology Research Center

ITRC Building: 85,000 sqft

Initial Focus:

- **Automotive business IT and logistics**
- **Supply chain management and logistics**
- **Vehicle diagnostics**

Announced Partners: BMW, IBM and Microsoft



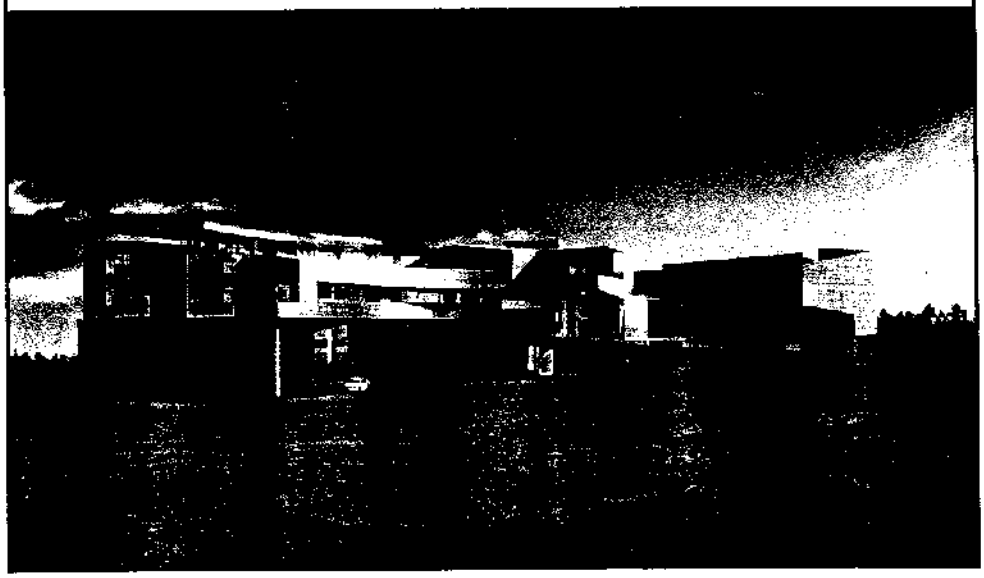
The Carroll A. Campbell Jr. Graduate Engineering Center

A 80,000 sqft facility dedicated to:

- **Systems Integration Research Activities**
- **Graduate Program in Automotive Engineering**
  - **Linked to education and research activities in the College of Engineering and Science, as well as other Clemson University Units**

Carroll A. Campbell Jr.

Graduate Engineering Center



Announced Professional Jobs

BMW/ITRC:	300
Timken R&D Center:	150
CGEC/CU-CCMS:	50

Estimated Average Annual Salary: $70,000

"Driving the Future"

Clemson University's International Center for Automotive Research is:

- **A powerful statement to the global automobile and motorsports industries about competing in the future.**
- **A key initiative to move Clemson University to one of the top public universities in the country.**
- **A pivotal role in driving the economy of South Carolina with a regional industry cluster model.**