EES Report

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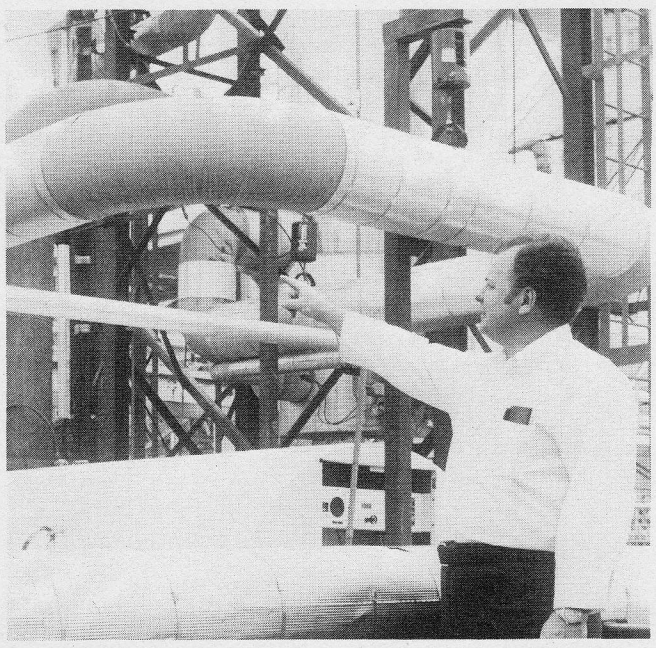

Charles Murphy of EES Solar Energy and Materials Technology Division points out features of Solar Experiment at Georgia Power Co. Plant Yates, near Newnan. Photo courtesy *Newnan Times-Herald.*

Solar Project Is Successful

Courtesy of Nancy Unkles, Newnan *Times-Herald*

A $1 million solar energy storage experiment carried out by Georgia Tech at Georgia Power Company's Plant Yates has shown successful results, according to deputy project director Charles A. Murphy of EES.

The experiment, designed to "store energy" for 48 minutes, "met and exceeded the requirements," holding the energy for nearly an hour.

The system trapped heat from steam and held it in insulated storage tanks of easily heated oil and molten salt. The stored energy was then discharged through the system that ran in reverse.

The solar experiment, conducted by researchers from EES and the Martin Marietta Corporation, was actually part of a larger project to design a successful solar electrical power generating system. The project had its beginnings in July, 1975, but ground breaking for the storage experiment got underway last July.

The Federal Energy Research and Development Administration (ERDA) funded the project which cost $1,027,000.

Nation To Benefit From Georgia Tech Industrial Co-Siting Research

Since Industry has a major impact on the nation's energy and environment, identifying unique, creative ways for industry to participate in solving problems in these areas is noteworthy.

The EES has recently been awarded $199,700 by the NSF-RANN (National Science Foundation — Research Applied to National Needs) to extend and broaden research to date in synergistic co-siting of industrial activities.

Synergistic co-siting involves two or more industrial plants' cooperating and interacting on the same location. Carefully planned groupings of industrial and/or agricultural activities in complexes will provide mutually beneficial use of energy, raw materials, land, co-products, plant wastes, and transportation facilities. According to Co-principal Investigator Dr. Jack M. Spurlock, a good possibility of such co-siting would be a synthetic chemicals company and a plant that produces fabrics or carpets. Products of waste from one plant would be utilized by the other, for example.

Research will focus on making co-siting economically attractive to industry by showing which industries could "hook-up" with each other in a specific locale. No systematic mechanism for such demonstration is presently available, and EES researchers are planning to recommend reasonable site-selection and coupling guidelines for numerous potential co-siting industries. In addition, a Computer-Program Users' Manual for those wishing to consider co-siting will be available. The Manual will allow users to estimate the bottom dollar for a co-siting venture, and it will enable users to get onto the computer for information and analysis.

National benefits from application of fully-integrated co-siting include: energy conservation, economical resource and waste recovery, improved methods and incentive for pollution control, improved use of land, electrical-power cost advantages, development of new sources of feedstocks, optimization of transportation use, and others.

"We shall be studying all benefits and attendant risks in co-siting," states Dr. H. C. Ward, project co-manager with Dr. Spurlock. Trade-off analyses, referred to as cost-benefit-risk analyses, will be researched to include consideration of such hazards as fire and explosion, economic impacts on a siting locale, etc. If the co-siting system is perfect, wastes

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Synergistic co-siting research team members (left to right) Jude Sommerfeld, Dalip Sondhi, Jack Spurlock, Anita Fey and Henderson Ward.

and net energy inputs to the system are greatly reduced, compared to conventional industrial practiees. Industry benefits, and national needs are closer to being met.

The EES Applied Sciences Laboratory research team, which includes Ms. Anita Fey, Dr. Jude Sommerfeld and Dalip Sondhi, intends to make vigorous use of the results including conferences and workshops. National (and perhaps international) co-siting of industrial activities is an important and promising approach for the solution of major problems in energy and environment. It seems to be perfectly suited to Georgia's dedication to conservation in the energy field as well as to the nation's needs and goals.

Tech Program Aids Business Development In Georgia

More than 2,000 jobs were created or retained during a 12-month period in Georgia through a business and job development program, according to a report released by Robert T. Hall, Assistant Secretary for Economic Development.

The report, "A Program of Management and Technical Assistance in Designated EDA Counties in Georgia," was prepared by the EES Economic Development Laboratory.

The program was conducted with financial assistance from the Economic Development Administration, U.S. Department of Commerce.

The report, for the year ending June 30, 1976, said that 1,131 jobs were created and another 1,156 jobs saved in counties designated for EDA assistance because of high unemployment. New jobs were created through expansions at 19 businesses and in the establishment of 20 new ventures, according to the report. It said 26 firms received assistance that led to job retention.

The Industrial Development Division professional staff provides management and technical assistance to help businesses solve problems blocking growth and works with groups and organizations interested in establishing new, job-generating businesses.

Scientists Assist Georgia Motel and Restaurant Owners

U.S. Highway 301 has been one of the major north-south tourist and business routes running 168 miles through eastern Georgia. Because of recent economic conditions and the opening of major sections of I-95 between Santee, South Carolina and Jacksonville, Florida, motel and restaurant owners on Highway 301 have been experiencing considerable reductions in their business operations, and, in many cases, failures have occurred.

The total investment in the motels and restaurants along Highway 301 represents millions of dollars that stand to be lost, hundreds of jobs are in jeopardy and lost tax revenues to local governments are inevitable if effective assistance is not provided that will develop alternatives for the businesses.

According to William C. Howard of the Industrial Development Division, who is directing the assistance project, studies have projected serious losses of traffic along Highway 301 as various sections of I-95 are opened. A survey has shown that at least 75% of the respondents now having business difficulties had no ideas as to where and how to start on possible business conversions (changing motels to office space, medical clinics, apartments, etc.) The recent electrical rate increases have also added to difficulties, and overall problems are now more acute than ever. Eyesores are beginning to occur in the communities where facilities have closed, and a serious decline in local employment and tax bases has followed.

The Georgia Tech project is providing direct technical assistance to the motel and restaurant owners, through the Georgia U.S. 301 Regional Economic Development Action Program, located in the Highway 301 corridor.

There are eight counties involved, having 46 motel/restaurant owners that have requested this assistance and will receive priority aid.

William Howard explains that the technical assistance includes determination in each locality of the needs for alternate uses for motel buildings such as apartments, office space, etc.

For the counties of Bulloch, Evans, Tattnall, Long and Wayne, the needs related to the build-up of the Fort Stewart-Hunter AAF complex are being evaluated. Also, advice is provided to the individual motel owners of the practical alternatives for converting to another type of business and advice to the business owners on the extent of building modifications required by conversion to another type business. Efforts are being made to determine expected return on investment and pay-back on such conversions for interested motel owners, and there will be assistance to business owners in finding necessary financing for suggested conversions.

The project is being sponsored by the Altamaha Georgia Southern, Central Savannah River, Southeast Georgia, and Coastal Area Planning and Development Commissions. The Program is funded by the Economic Development Administration, U.S. Department of Commerce.

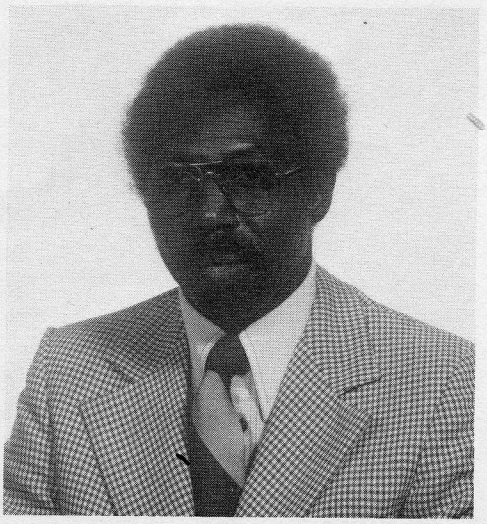
Tech Helps Minority Businesses

To improve opportunities for socially or economically disadvantaged persons is the subject of a grant recently awarded to the Technology and Development Laboratory (TDL) by the Regional Office of Minority Business Enterprise, a department of the U.S. Department of Commerce.

Under the direction of Edwin A. Bethea, of the TDL staff, work will be performed in the States of Georgia, Florida, N. Carolina, S. Carolina, Tennessee, Kentucky, Alabama and Mississippi over a period of about one year.

The goals of this experimental and demonstration project are to gather and analyze forecasted data that impact upon the socially and economically disadvantaged business person's opportunity for owning and operating successful business and also to provide the Office of Minority Business Enterprise and its funded programs with information about the industrial and commercial fields of business which appear most profitable and important to the national economy. Additionally, T&D Laboratory will design a system which allows OMBE, regularly, to retrieve and disseminate forecasted information which relates to business opportunities in the southeast that is advantageous to minority business persons.

Frequently, minority businesses are handicapped by the lack of adequately forecasted long-range information about the continued profitable existence of their business venture. Their businesses are often conducted in reaction to current economic changes in the state's or region's economy and not planned or projected in concert with the changes that may occur. They also are more likely to select business ventures that are profitable during the immediate present and less likely to enter business with long-range profitability.



Edwin A. Bethea, project director.

The study will focus upon the needs of the minority business community in order for minority business persons to utilize forecasted data as a management tool, and in order that OMBE-funded, management and technical assistance organizations and other OMBE programs may assist minorities and minority-owned businesses more effectively to expand into larger and more industrialized ventures.

The project will include three broad general tasks: the analysis of existing forecasted data as it relates to the strengths, weaknesses, growth and expansion of minority-owned businesses; the assembling of a regional directory; and the development of a method of disseminating and retrieving forecasted data on an ongoing basis to interested persons and/or organizations. The work is being sponsored by the Atlanta Regional Office of Minority Business Enterprise whose director is Charles F. McMillian.

EES To Study Energy Conservation In the Poultry Processing Industry

Governor George Busbee recently announced the approval of a grant from the Energy Research and Development Administration (ERDA) to study energy conservation in the poultry processing industry.

Under the proposal, researchers from EES will study the feasibility of decreasing energy consumption in poultry processing plants, using a Gold Kist, Inc., plant located in Ellijay, Georgia, as a test facility.

The Governor stated that, "Georgia is the No. 1 producer of poultry products in the nation and as such is the logical choice for a study of the industry."

"Georgia's average daily production of chicken alone is over five million pounds. We produce over 20 per cent of all the chicken consumed in the United States and lead the nation in income derived from poultry and poultry products. Poultry is the No. 1 agribusiness in Georgia and brings in approximately $2 million a day at the farm level. It is imperative, therefore, that we examine the poultry processing industry and seek new ways to conserve energy in this vital and productive industry," Busbee said.

Gold Kist, Inc., has agreed to pay half the cost of energy conserving equipment and installation up to a limit of $50,000. ERDA will pay the cost of the study performed by Georgia Tech scientists and the other half of the capital cost at the Ellijay facility.

It has been estimated by James F. Lowry, the program manager at Tech, that the first phase of the engineering work will cost approximately $75,000. The second phase has an estimated price tag of $200,000 of which $150,000 will come from ERDA.

This is the latest in a series of projects conducted by Georgia Tech for the industry. With the interest and support of the Georgia Legislature, the Tech engineers have been able to make steady progress in research on behalf of the poultry processors.

The initial phase of the program will entail researchers taking measurements and making engineering evaluations based on previous work conducted under contract with the State Department of Agriculture. Modifications to the Ellijay plant will then be designed based on that data.

The second phase of the project will consist of the installation of the designed modifications into the plant. The facility will then be operated with these modifications in place, and data will be collected and interpreted. Once the study is completed, the results will be published and other poultry processing plants will be able to utilize the knowledge gained in this project to produce similar energy savings in their own facilities.

Ross Hammond heads international programs.

Office of International Programs

The new EES Office of International Programs, headed by Ross W. Hammond, is responsible for the coordination of and communicating about all international education, research, and development activities of the Engineering Experiment Station. In addition, the staff of the Office of International Programs conducts a variety of projects and programs both directly and in cooperation with counterpart institutions in Brazil, Chile, Ecuador, Ghana, Guatemala, Indonesia, Kenya, Korea, Nigeria, the Philippines, and Venezuela. The primary focus of these international activities is on the stimulation of small-scale industries in developing countries throughout the world, with special emphasis on rural and urban development, appropriate technology, alternate energy sources, technology transfer, and training.

Energy Conservation and Management For Georgia Schools

EES researchers have recently done a study and report on energy conservation and management of the Thomas County School District. Their findings could save thousands of dollars for Georgia taxpayers.

The energy problem for school districts throughout the nation has been particularly acute because they consume relatively large quantities in both the operation of the school facilities and the school transportation systems. The spiralling climb in energy prices has not been sufficiently offset by increases in school tax revenues.

Obviously, it has become desirable to improve the systems' energy use efficiency. The need to make more efficient use of energy resources highlights the necessity of knowing how energy is currently being utilized operationally throughout the system and knowing the quantity and type of energy being consumed at each facility.

To meet these needs, EES, in cooperation with the Southwest Georgia Planning and Development Commission, conducted an audit of energy consumption by location for the school years from 1972-1973 through 1975-1976.

Tech researcher Grant Curtis is directing the study and states that the various buildings are checked to see if they operate efficiently, i.e., if the heating, ventilating systems and air conditioning were on day and night and how subsystems such as cooking and refrigeration units affected costs.

Working with Curtis, R. B. Kutas noted that special purpose rooms such as gymnasiums are large consumers of energy with their requirements for heat and light. However, conservation procedures are possible that could result in 30% savings in costs for schools. This would amount to as much as $20.00 per student and thousands of dollars in reduced operating costs for each school.

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