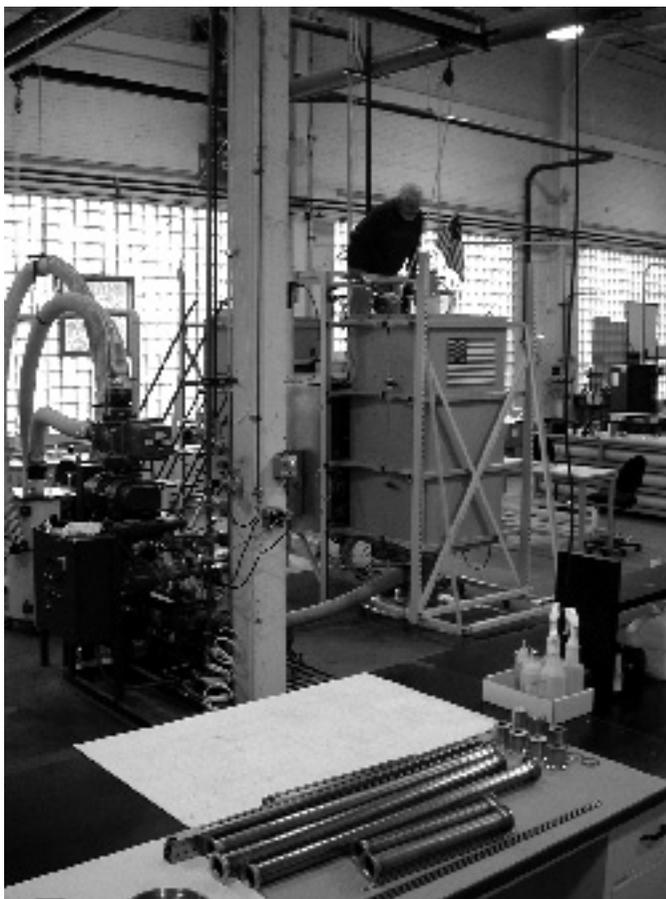


Derry Company Developing Engine of the Future

Rising from the rubble of Derry's long-empty Westinghouse Industrial Ceramic plant, is a new company, Pittsburgh Electric Engines, Inc., aiming to revolutionize both the transportation and mobile power industries.

Although most of the landmark building was reduced to rubble, and is now in a cleanup process, one of the oldest 15,000 sq. ft. sections of the former Porcelain Park structure remains. In the past two years it has been completely renovated to become the home of Pittsburgh Electric Engines, Inc. (PEEI). Today, that brick building with offices and research laboratories, houses a staff of engineers and scientists researching the development of a new power generation engine using basic fuel cell technology. As concerns for the environment and near-record oil prices loom, the need for a practical fuel cell engine utilizing hydrogen fuel offers a bright future for PEEI's developing technology.



Technician Vince Toth is monitoring the Electrochemical Vapor Deposition processor in the PEEI manufacturing facility.

Gas Turbine-Fuel Cell

Incorporated on May 27, 1997, PEEI was founded by a corps of former Westinghouse research engineers with a mission to design, manufacture and market clean engines for transportation and mobile power applications. Owen S. Taylor, who was a research engineer at Westinghouse for 25 years, is president of the company, which began operating in the old Derry ceramic plant two years ago. With an ambitious timetable, PEEI is pioneering the development of technology and manufacturing design for a gas turbine-fuel cell engine that Taylor

explains will be the most revolutionary development in power generation since the internal combustion engine. Five years ago, PEEI obtained the patent rights to "Fuel Cell Powered Propulsion Systems" from CBS/Westinghouse for their new independently-owned and operated business organized to address transportation and mobile power applications.

Since that time technological advances promise to make PEEI's Turbo Fuel Cell Engine practical and cost-competitive for heavy truck applications. Here is what their fuel cell engines will offer: • 40% fuel savings • Reduction of nitrous ox-

ides by 20 times • Very low noise • Thermal emissions cut in half • Greenhouse gas (CO₂) reduced 40%

The company's intensive research to date has enabled PEEI to design a fuel cell engine that is smaller in size and costs less than competing diesel engines. The Derry company says their fuel cell engine will produce the same output power as a conventional diesel engine within the same volume and weight constraints.

Further, the fuel cell engines under development in Derry may immediately become operational,

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PEEI

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because they are able to use the existing fuel infrastructure. That is significant in a world where petroleum production, despite soaring costs and diminishing supplies still ranks as a major industry. A most important added benefit is that PEEI fuel cell engines are able to serve as an environmentally friendly electric power source; a big plus during emergencies and in times of military operations.

Electrochemical fuel cell technology, first discovered in 1839 by Sir William Grove, is an extremely complex process and for the next century was considered an impractical laboratory anomaly. That changed with the dawn of the Space Age when fuel cell research shifted to high gear as a result of practical use for space travel.

On a more earthbound level, PEEI's mission is to design, package and manufacture fuel cell engines for truck and heavy vehicle transportation and the production of mobile electric power.

Mobile Fuel Cell

In the past three decades, the Department of Energy put \$100s of millions into the advancement of fuel cell technology and



Two PEEI technicians, Bill Evans and Jason Havash are assembling a 2nd Electrochemical Vapor Deposition system used in the Derry plant for fuel cell manufacturing.

although that work has produced new materials and engineering design guidelines, most of the government research grants were primarily aimed at stationary utility power generation, while PEEI has concentrated its efforts at designing a fuel cell engine design that will be better than diesel engines

for transportation applications.

Working closely with the Small Business Development Center at Saint Vincent College and the Westmoreland County Industrial Development staff, along with invaluable help from Congressman John Murtha and backed by funding

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Bethlen Home

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of its residents, Bethlen Home is constructing a new nursing home on Carey School Road. The 96-bed facility is scheduled for completion and occupancy in the spring of 2005. The state-of-the art facility will also have an Alzheimer's /Dementia Unit, providing for special needs.

A Capital Campaign has raised over \$1.2 million, including a pledge of \$300,000 from The Hungarian Reformed Federation of America and a grant of \$250,000 from the Richard King Mellon Foundation. For further information please call 724.238.6711.

PEEI

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from the US Army, the young Derry firm has already demonstrated the feasibility of its research. This includes proving key manufacturing processes, building and installing demonstration cells on test and creating a materials supplier network.

Currently, PEEI is in the process of designing a 25 KW (33hp) Demo unit; a project that is expected to be completed in two years. When finally operational, the initial unit will demonstrate an integrated system from start-up to shut-down.

PEEI's breakthrough is their Turbo Fuel Cell Engine that combines a fuel cell and a turbine to generate propulsion power. The new engine, which will fit the tight space limitations of today's diesel truck engines, is expected to someday be the engine of choice for the heavy highway truck market, as well as related markets such as transit buses, construction equipment and military vehicles.

Basically, the new PEEI Turbo Fuel Cell Engine is a Solid Oxide Fuel Cell (SOFC) that is combined with a turbo-alternator or turbo charger that produces electricity. Fuel cell science becomes even more attractive as the Turbo Fuel Cell Engine under development in Derry will be able to operate on liquid hydrocarbon fuels including diesel, jet, kerosene, gasoline, ethanol, methanol and natural gas. This adaptability means it will not be necessary to organize and build a transcontinental fueling network.

Designed to be competitively compact, the revolutionary engine will operate economically and efficiently with the added advantage of favorable emission levels for minimal impact on the environment in contrast to today's automotive engines, which exhaust large quantities of nitrous oxides.



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High Temperature Coatings

Typical of high tech research, PEEI engineers and technicians are in the forefront of major scientific advances in developing special extremely high temperature materials and coatings to process the fuel of choice and air through the tubular Solid Oxide Fuel Cell to produce the electrochemical reaction that provides high quality heat in addition to the efficient production of electricity. This process creates a high quality exhaust heat to further increase the efficiency of the engine by powering a turbo-alternator that

PEEI

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generates useful electric power and pressurizes the fuel cell for even more improved performance.

The ultimate goal of Pittsburgh Electric Engines, Inc. is prove their Turbo Fuel Cell Engine works and is competitive with the heavy truck engines used today. When their design and research achieves that mark, PEEI, will then work within the transportation industry to develop outside manufacturing production of their innovative engines.

The story of innovative industrial and scientific development in Derry, Pennsylvania is typical of this region's long heritage of entrepreneurship and industrial leadership, exemplified by companies such as Kennametal, Inc. Is it not ironic that the original, century-old, building of the Pittsburgh High Voltage Insulator Company has been reborn to produce what promises to become the most revolutionary development in power generation in the past 50 years?

Kennametal, Inc. Reports Record Earnings

With worldwide sales reaching the \$2 billion mark, Latrobe-based Kennametal Inc. Chief Executive Markos I. Tambakeras reported to shareholders at their annual meeting on October 26th, that revenue soared to \$2.02 per diluted share, compared to 2003 earnings of \$0.51. The corporation looks for 6 - 10% sales growth including acquisitions, 25-35% annual earnings growth, and ROI of 12%. Tambakeras sees the carbide toolmaker moving to higher levels of achievement with expansion continuing, driven by strength throughout North America and the growing markets of Asia, Latin America and Central Europe. He further added that Kennametal expects to broaden its presence in China and India, two areas experiencing rapid growth.

In August, Tambakeras announced a \$500,000 grant to Saint Vincent College to establish the Kennametal Center for Operational Excellence to be a part of the college's Alex G. McKenna School of Business, Economics and Government. The Kennametal CEO revealed the grant saying, "The key to success for a manufacturer to survive in today's global environment is through operational excellence."

On the higher education front... Seton Hill University... Planning 2nd New Dormitory and \$11 M Downtown Arts Center

Even as a new dormitory, Farrell Hall, opened this fall, Seton Hill University is moving forward with plans for another dormitory that will be ready for occupancy in Fall 2005. Plans for Seton Hill University Center for the Arts are progressing well also. The University Center for the Arts features an interconnected flexible theatre and recital hall. The Center will bring two of Seton Hill's most vibrant programs, theater and music, into the heart of Greensburg's cultural district. The architectural firm, MacLachlan, Cornelius & Filoni, is moving forward on schematic designs for the building and the University's timeline indicates construction will begin next summer.



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