

American Engineers, Inc.: Enjoying 2016 National Engineers Week

American Engineers is a structural engineering firm established in 1999. We provide structural engineering design and pipe stress analysis services, while putting our clients first. We work with contractors, construction firms, developers, chemical and steel mill plants. We are a highly experienced and perform thorough work.

We specialize in structural and foundation design projects. We provide a pipe stress analysis for chemical, petrochemical, power plants and natural gas industries, to meet ASME & API code requirements. We are involved in designing the concrete pits and structural steel supports. We are also involved in design of heavy crane support building's expansion for steel mills. We completed structural inspections and reports of a nationally well-known, top-ranked restaurant chain.

American Engineers have also worked with local, out-of-state construction companies for custom design expansion and foundation design for buildings. The other area of expertise includes structural roof and foundation design and upgrades for retail stores and local steel mills.

Our principal engineer, who is a registered professional engineer in Ohio,

Pennsylvania, Kentucky, Indiana, Florida, West Virginia and New York, can serve all structural needs in these states, provides design, inspection services and prepare reports. Our goal is providing assistance to local chemical plants, steel mill and industrial facilities.

American Engineers specializes in structural design, analysis, foundation designs, shoring for buried structure installations, reworks for local steel mills' structures (including foundations), using structural analysis computer programs and maintaining various trainings, to serve clients effectively, accurately and economically.

American Engineers specializes in providing "pipe stress analysis" and safety valve reaction forces, checks equipment nozzle loads and compares with API 610 code per Code b31.3, support design, spring hangers and water hammer forces in piping using "PIPEPLUS PROGRAM" by Algor Inc.

In this ever-changing world, we are proud to celebrate 2016 National Engineers Week.

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WVU researchers team with NETL, Schneider Electric in winning top technology award

Researchers from West Virginia University, the National Energy Technology Laboratory and Schneider Electric have won an R&D 100 Award – a national award known as the "Oscar of innovation" – for the development of a virtual reality-based software that provides the energy industry with an unprecedented high-tech look inside the operation of power plants.

The R&D 100 awards, given annually by "R&D Magazine," celebrate the top technology products of the year. For the first time in 2015, the 100 winners were chosen from across five categories: Analytical Test, IT/Electrical, Mechanical Devices/Materials, Process/Prototyping and Software/Services. The WVU-NETL-Schneider Electric entry was chosen in the Software/Service category.

The team from Schneider Electric created EYESIM, a three-dimensional, immersive, virtual reality software technology that gives engineers and operators of energy plants a clearer vision of conditions inside plant equipment while in operation so that greater, more-informed efficiency and safety decisions can be made faster and more effectively, saving time and money.

Chemical engineering faculty members Richard Turton, WVU Bolton Professor, and Debangsu Bhattacharyya teamed with Stephen Zitney and other researchers from NETL in testing and applying EYESIM in the development of a three-dimensional virtual model of an integrated gasification combined cycle power plant with carbon dioxide capture.

The EYESIM-based IGCC simulation is part of the Advanced Virtual Energy Simulation Training and Research – or AVESSTAR – Center, which is housed at the National Resource Center for Coal and Energy at WVU. The simulator is designed to teach power plant personnel how to operate an integrated gasification combined cycle, or IGCC, power plant complete with carbon capture capability. Turton, Bhattacharyya and Zitney provided technical guidance



Bhattacharyya Turton

to Schneider Electric, which markets the software.

According to Turton, "Much of the design documentation and its application to IGCC plants was developed by NETL and WVU. We also reviewed the engineering files and the plant models developed in the 3D virtual simulator."

"EYESIM delivers easy-to-use, immersive and highly interactive virtual plant environments," Zitney said. "It is an innovation that can help the fossil and renewable energy industries improve the safe, efficient, and reliable operation of highly integrated plants that cost tens of millions of dollars annually to operate and maintain."

Users of the new product include plant control room, field and maintenance operators, as well as engineers and managers from electric utilities, fossil energy producers, renewable energy companies, engineering and construction firms and equipment vendors. While initially developed for use with IGCC plants, Turton noted that the software is applicable to any type of chemical or power plant.

EYESIM joins a long list of impressive technologies that have received R&D 100 Awards and gone on to become household names. Past products bearing this distinction include the flashcube (1965), the automated teller machine (1973), the halogen lamp (1974), the fax machine (1975), the liquid crystal display (1980), the Kodak Photo CD (1991), the Nicoderm anti-smoking patch (1992), Taxol anticancer drug (1993), lab on a chip (1996) and HDTV (1998).

(Source: www.WVUToday.edu)



Rick Hays/Marshall University

The Arthur Weisberg Family Applied Engineering Complex on the campus of Marshall University in Huntington.

MU now offers bachelor's degree in mechanical engineering

That and other programs to also be available at South Charleston campus

By Ben Calwell
METRO STAFF

Last fall, Marshall University in Huntington introduced mechanical engineering as part of its Weisburg Division of Engineering of the College of Information Technology and Engineering.

Asad Salem, Ph.D., professor and chairman of the Weisburg Division, said offering mechanical engineering training will help West Virginia meet the economic and technological needs of the 21st century.

"Graduates of this program will contribute to West Virginia's economic development, advance its competitive edge globally and contribute to improvement in the quality of life," Salem said in an email.

Salem said the American Society of Mechanical Engineers defines mechanical engineering as "the branch of engineering that serves society through the analysis, design, and manufacture of systems, at all size scales that convert a source of energy to useful mechanical work."

Career prospects for mechanical engineers are excellent, Salem said.

"Advances in the technolog-

ical sector have increased the opportunities for mechanical engineers as new manufacturing technologies, materials and products are developed and brought to market."

Additionally, employment for mechanical engineers will increase as the demand for improved machinery and machine tools grows and as industrial machinery and processes become increasingly complex.

"Opportunities for mechanical engineers in defense-related companies will also grow as aircraft and other weapons systems are upgraded with new materials, control systems and manufacturing technologies. Thus, career prospects for new graduates in mechanical engineering are excellent."

Salem cited figures from the U.S. Department of Labor: The total number of mechanical engineers employed in the United States in 2004 was about 250,000 (16 percent of the total number of engineers), second only to civil engineers (16.4 percent).

Between 2012 and 2022, "the U.S. Bureau of Labor projected a 5 to 8 percent increase in the national demand for mechanical engineering and related fields -- manufacturing and materials."

"The demand for engineers with expertise in the design and development of mechanical systems for occupational safety and biomedical

applications is projected to increase 13 percent nationally over the same period," Salem said.

Additionally, he said, the demand for engineers with expertise in the design of mechanical systems associated with alternative fuels and renewable energy is projected to increase 12 percent nationally in the next 10 years.

"The energy strategy for West Virginia indicates that alternative fuel production is a high-priority industry area for the state. Similar to most engineering fields, job vacancies are being filled by foreign engineers who are generally trained in a traditional way."

Salem said more new engineering programs will debut at Marshall University this fall, including the Electrical and Computer Program (BSEE).

"It allows students to select one of two areas of emphasis: electrical engineering or computer engineering. Graduates of this program will contribute to West Virginia's economic development, advance its competitive edge globally and contribute to improvement in quality of life," Salem said.

Salem described electrical engineering:

"It is a field of engineering that generally deals with the study and application of electricity, electronics and electromagnetism. The fields

of electrical and computer engineering cover a wide range of subfields."

Those include electronics, power engineering, telecommunications, control systems, radio-frequency engineering, signal processing, instrumentation, microelectronics, digital systems (including hardware), software, compilers and operating systems, coding, cryptography, network, mobile and distributed computing system and cyber physical systems and security.

"As such, the BSEE program at Marshall University will prepare graduates with a BSEE with two areas of emphasis: general electrical engineering and computer engineering. It will, also, emphasize service, systems-based knowledge and sustainability with an eye toward the interface of traditional electrical and computer engineering with new and emerging fields," Salem said.

These engineering programs will also be offered at MU's South Charleston campus, Salem said.

"Many students in the Charleston area may find the drive to Marshall's Huntington campus for classes difficult, whether it be for financial or time reasons. By offering these programs at the South Charleston campus, students can still live and work in the area and attend the engineering programs that Marshall has to offer."

'Peel-and-stick' wireless sensors

WVU researchers developing tech for energy system components

MORGANTOWN — Mechanical and aerospace engineering faculty members Edward Sabolsky and Kostantinos Sierros and Daryl Reynolds with the Lane Department of Computer Science and Electrical Engineering at West Virginia University have received nearly \$400,000 from the Department of Energy's National Energy Technology Laboratory's University Coal Research Program to develop a wireless, high-temperature sensor system for monitoring the energy system components between 500 and 1,700 degrees Celsius to aid in process control.

The system will be composed of conductive ceramic materials. The benefit of the material, according to Sabolsky, who leads the project team, is its ability to withstanding the harsh environments of fossil



Reynolds Sabolsky Sierros

energy-based technologies.

The technology could be used to monitor the processing conditions and health of the refractory in applications such as coal gasifiers, gas turbines, steel and glass melters, coal boilers and solid-oxide fuel cell stacks. Researchers will investigate advanced manufacturing methods for sensor element fabrication.

"We plan to develop a peel-and-stick transfer process,

which has not been done previously in this manner, to easily attach the entire sensor circuit to various energy-system components, such as solid-oxide fuel

cells, chemical reactors and furnaces," Sabolsky said.

Sabolsky has spent a large portion of his career researching advanced ceramic processing and materials for energy-related applications. He leads the Multifunctional and Energy Ceramics Group at WVU as well as the Statter College's interdisciplinary

graduate programs in materials science and engineering.

Sierros' current research is focused on the design, development and characterization of optoelectronic devices for sustainable applications. Applications include energy harvesting, biodegradable electronics and contact-based sensors.

A member of WVU's Wireless Communications Research Laboratory, Reynolds has done extensive work in the area of wireless communications. He conducts research in the areas of communication and information theory and statistical signal processing.

Research collaborators include Nexceris, LLC and GE Global Research.

(Source: www.wvu.edu)



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