



NSF ATE Supports Wind Turbine Technician Training

CIVS and its collaborators have been awarded an \$869,180 grant by the National Science Foundation (NSF) Advanced Technological Education (ATE) program for the project, **"Troubleshooting and Safety Simulator for Wind Turbine Technician Education."**

This project will develop and implement a web-based 3D wind turbine simulator, as well as education modules, to help transform teaching practices in wind energy programs at community colleges across the country.

"The simulators will provide community college students with an enhanced learning experience using engaging, dynamic content and realistic simulations that will prepare them to enter the wind energy workforce." said project principal investigator and CIVS Director Dr. Chenn Zhou.

PNW Chancellor Thomas L. Keon applauded the importance of this project. "This is a great collaboration of CIVS, community college educators, wind energy industry, education researchers and evaluators," said Keon. "We recognize the importance of interactive 3D training to improve the quality of tomorrow's technical workforce. The simulator and education modules developed through this project will improve the skills of our wind technicians so that we can help meet the U.S. Department of Energy's vision of having 35% of the country's energy to come from wind by the year 2050."

The project will be led by an interdisciplinary team. Co-Investigators on the project are Emily Hixon of Purdue Northwest, Tom Sutton of Kalamazoo Valley Community College, Steve Vietor of Riverland Community College and John Roudebush of Ivy Tech Community College. Educators and technical experts from Highland Community College, EDF Renewable Energy, the Automotive Manufacturing Technical Education Collaborative, the Center for Aviation and Automotive Technological Education Using Virtual E-School will also participate. [Read more....](#)



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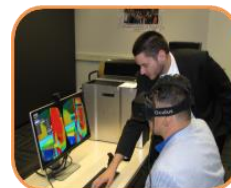
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U. S. Steel Executives Visit CIVS for Consortium Updates

On July 15, 2016 U. S. Steel executives Jim Bruno, Senior Vice President – Automotive Solutions (Troy, Michigan); Jim Gray, General Manager, Great Lakes Works (Ecorse, Michigan); Mark Tabler, General Manager, Gary Works (Gary, Indiana); Kevin Zeik, Senior Research Fellow, R&D, and Joe Vehec, Research Consultant, (Munhall, Pennsylvania) visited CIVS to get updates on the progress for the seven consortium projects as well as future collaboration.

The group also learned more about CIVS capabilities and impacts. Chancellor Thomas L. Keon and Vice Chancellor Ralph Mueller greeted the guests and expressed the importance of the collaboration between PNW and U. S. Steel.



Steel Manufacturing Consortium Annual Meeting a Success

On June 6, 2016, the Steel Manufacturing Simulation and Visualization Consortium (SMSVC) held its Semi-Annual project and board meeting at CIVS. There were over 30 attendees from the nine consortium members, representing steel producers and suppliers from the U.S and Canada.

Chancellor Thomas L. Keon welcomed the group and was followed by comments by Dr. Jean-Louis Staudenmann from NIST who congratulated the outstanding performance of the consortium. Industry representatives and graduate students reported on seven technical projects that were selected in January by the consortium members. These seven projects are: workplace & process safety, energy efficiency, operational efficiency, reliability and maintenance, workforce development, environmental impacts, raw materials utilization and smart manufacturing. Presentations were given by graduate students and industry representatives of project technical committees. The project progress and presentations were highly praised by the consortium board members and attendees.



Cliffs Natural Resources Joins Steel Consortium

Cliffs Natural Resources became the most recent charter member of the SMSVC consortium. Cliffs is the largest supplier of iron ore pellets to the North American steel industry. For over 165 years they have been a proven technical leader, delivering tailor-made solutions to their customers' unique steelmaking needs. Cliffs joined the SMSVC to support their innovative problem solving approach, using simulation and visualization technologies that will enhance the competitiveness of the North American steel industry. Company representatives are excited about their new membership and look forward to their continued support of the steel industry through SMSVC projects. Terry G. Fedor, Executive Vice President of United States Iron Ore Operations for Cliffs said, "Cliffs' technical knowledge and expertise has helped the company to foster strong relationships with steel producers through the years. Being a member of the consortium is another step as we continue to meet the evolving needs of both our blast furnace customers and also for the growing electric arc furnace market."

Regional Clean Energy Innovation Forum Highlights Advanced Manufacturing

A Regional Clean Energy Innovation Forum hosted at Purdue University in association with Argonne National Labs, on June 8-10 brought together leaders from federal, state and local governments, industry, national labs, academia, and non-governmental organizations to discuss paths forward to accelerate clean energy innovation in the region. Dr. Chenn Q. Zhou Director of CIVS and SMSVC, was a panelist for the Critical Materials/Advanced Manufacturing session. [Read more....](#)



Dr. Howard Cohen Pioneers Interactive Video Gaming to Teach Philosophy



Philosophy Professor and Chancellor Emeritus Dr. Howard Cohen has been working with CIVS since 2013 to develop interactive video games to engage students in learning philosophy in a familiar format. For Introduction to Philosophy, he has developed, Socrates vs. The Laws and Descartes' Meditations. For Introduction to Ethics, Distributive Justice: Education and Utilitarianism was developed. In the course of playing the games, students gain understanding of key philosophical ideas. In Distributive Justice, students use avatars in a simulation of John Rawls concept of "the original position", to adopt a principle of justice and then apply it to determine which 20% of them will have access to a college education. In Descartes Meditation Game, students work through a maze, following the main argument of the Meditations, while avoiding empiricism and scholasticism. Students report that learning in this format makes philosophy more understandable and enjoyable.

CIVS Welcomes New Research Engineer

Mike Hoerter joined CIVS as a new Research Engineer on July 18. He received his B.S. and M.S. degrees in the department of Computer Graphics Technology at Purdue University West Lafayette. His background covers 3D visualization, animation, game design, and graphic design. Previously, he worked at the Purdue Envision Center as a Lead Graphics Developer. Mike is a great addition to our excellent CIVS team. He is looking forward to working with our external collaborators as well as our students, faculty, and staff.



Research Earns International Award

AIST awarded CIVS and its collaborator the 2016 Josef S. Kapitan Award-Ironmaking for the paper “Investigation of Co-Injection of Natural Gas and Pulverized Coal in a Blast Furnace.” [Read more....](#)



CIVS Outreach for STEM Education

Outreach events recently held at CIVS for middle and high school students and teachers:

- Summer Engineering Camp hosted by College of Engineering and Sciences for middle and high school students on June 6-10 & 13-17.
- GenCyber Summer Camp hosted by Department of Computer Information Technology and Graphics on June 20-24 and June 27-July 1.
- Summer Teacher’s Camp sponsored by ASM Materials Education Foundation on June 20-24.
- Engineering Technology Summer Camp on July 5 for high school students focusing on civil engineering.
- Research Experiences for Undergraduates, June 15.



Purdue Northwest Joins Smart Manufacturing Institute

Purdue Northwest’s CIVS research center was invited to join the Smart Manufacturing Innovation Institute (SMII), recently announced by President Obama. The Purdue Northwest CIVS research center joins nearly 200 partners representing academia, industry and non-profits across more than 30 states. The institute’s task is to further the area of advanced manufacturing technology and to develop a supporting workforce and an education pipeline. “Through such facilities as our Center for Innovation through Visualization and Simulation, our Commercialization and Manufacturing Excellence Center and others, Purdue University Northwest is poised to play a huge role enhancing advanced manufacturing and economic development across our region and nation,” Purdue Northwest Chancellor Thomas L. Keon said.

The SMII, led by the Smart Manufacturing Leadership Coalition in partnership with the U.S. Department of Energy, is tasked to research and develop new information technologies for use in advanced manufacturing. The Energy Department’s \$70 million investment will be matched by manufacturers and coalition members for a total investment of more than \$140 million. [Read more....](#)

Student Success Story: Tenghao Wang



Tenghao (Ryan) Wang began working at CIVS in fall of 2011 through a senior design project focusing on virtual learning. He continued on as a graduate student receiving his MS in Electrical Engineering in 2014. Tenghao developed many projects including: Virtual FGD Training System for power generation, Virtual Blast Furnace Training Simulator for the steel industry, Reality University and Virtual Microbiology to name just a few. Tenghao earned two student research awards (1st place for Virtual Blast Furnace, 3rd place for FGD Training System.). After graduating he earned another MS in Entertainment Technology at Carnegie Mellon and recently accepted a position in the gaming industry as Technical Artist at Activision Blizzard – High Moon Studios. Tenghao said of his time at CIVS “I learned modeling, texturing, rigging, and unity programming which helped build a solid foundation for my career path to become a technical artist. Working on virtual reality projects at CIVS helped me in my studies and work!”

Examples of CIVS Projects

| PROJECT | SPONSOR / COLLABORATOR |
|--|--|
| Troubleshooting & Safety Simulator for Wind Turbine Technicians | NSF |
| Steel Manufacturing Simulation and Visualization Consortium | Cliffs Natural Resources |
| Design of a Ball Bearing Replacement Simulator for Wind Turbine | EDF |
| Design of Fall Protection Simulator for Industrial Safety | AIST |
| Walking Beam Reheat Furnace Optimization | ArcelorMittal |
| An Integrated High Performance Computing Modeling, Simulation and Visualization Capability for Steel Manufacturing | DOE & Lawrence Livermore National Labs |

Steel Consortium Updates

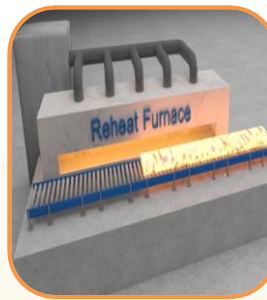
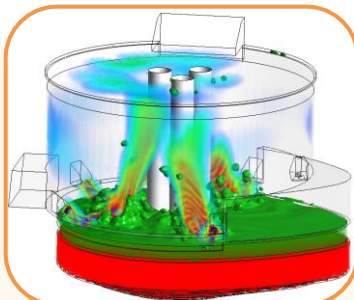
Annual Meeting Scheduled for November 16-17, 2016 – Save-the-Date for the SMSVC Annual Meeting on November 16-17, 2016. For more information contact Doreen Gaboyan at gaboyand@pnw.edu.

Consortium Accepting New Members – The SMSVC is currently accepting new members. If your company is interested in becoming a consortium member please contact Doreen Gaboyan at gaboyand@pnw.edu for more information. For additional information on the consortium visit the website steelconsortium.org.

New Email and Website Domains – Purdue University Calumet officially changed its name to Purdue University Northwest. Our e-mail and web domains have been changed from purduecal.edu to pnw.edu. Our new consortium e-mail is steelconsortium@pnw.edu.

Consortium Project Topics

- Safety Training
- Blast Furnace
- Electric Arc Furnace
- Primary Cooling for Casting
- Secondary Cooling for Casting
- Ladle
- Reheating Furnace



Facts and Impact (Since 2009)

- \$38++ million savings for companies
- \$13+ million in external grants and contracts
- 94+ external organizations collaborated with CIVS
- 190 projects
- 330 technical publications
- 230 national and local news
- 1,000+ students employed and mentored
- 4,400+ students used CIVS for virtual labs
- 88 Purdue Northwest faculty and staff collaborators
- 53 student awards locally and globally (since 2011)
- 22,000+ local and global visitors

Office of Institutional Advancement – Giving to CIVS



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