



CIVS Newsletter

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"Where Ideas Become Reality"

Issue 36



CENTER FOR INNOVATION THROUGH
VISUALIZATION & SIMULATION

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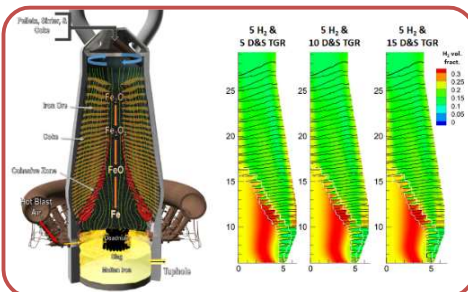
DOE Undersecretary and Congressman Visit to CIVS

On February 16th, in celebration of several recent multimillion dollar research grants for steel industry decarbonization from the DOE, Dr. Geri Richmond, DOE Under Secretary for Science and Innovation, and Rep. Frank Mrvan visited CIVS. [Read more...](#) "I have read about the things CIVS, and this institution are doing, and now I am even more impressed...[They] are really prototyping and leading in this area..." said Dr. Geri Richmond. "As an institution, one of the things that makes us so successful is how we are integrated into the industry around us." PNW Chancellor Chris Holford. "When we bring resources back to NW Indiana and PNW they are well-spent."

"We have the industry, workforce and education to bring everyone together in order to make a greater product and show the world we can do it." Rep. Frank Mrvan. [See more quotes...](#)



8th Best Paper Award for CIVS Research of Blast Furnace Models



CIVS blast furnace research received AIST Best Paper Award in addition to seven other best papers from AIST and AISI in the past. The newly awarded paper, "Investigating the Use of Shaft-Level Tuyere Injection With Computational Fluid Dynamics," was presented at AISTech 2023 and selected by the AIST Ironmaking Technology Committee for the 2024 Josef S. Kapitan Ironmaking Best Paper Award. [Read more...](#)

CVIS Director Presents Smart and Green Steel Manufacturing to Purdue Trustees

On April 5th, in her presentation to the Purdue Board of Trustees, Dr. Zhou described the use of integrated virtual process simulators to enable the development and demonstration of decarbonization technologies. She also described nine recent large DOE grants for pioneering collaborative efforts on industrial decarbonization, digitalization and workforce development to achieve smarter and greener steel manufacturing. [Read more...](#)



Prof. Zhou Lectures on Digitalization and Decarbonization

On March 13th, in an AIST training workshop on Energy Reduction and Fundamental, Dr. Zhou was invited to give a lecture on Energy Saving and CO₂ Reduction using Simulation and Visualization.” [Read more...](#) On January 8th to 12th, Dr. Zhou gave a one-week workshop on Digital Twin in Manufacturing at New Age Makers Institute of Technology (NAMTECH) sponsored by ArcelorMittal and NIPPON Steel India. [Read more...](#)

Dr. Armin Silaen Presents Steel Industry Overview at C-STEEL

On February 13th, CIVS Associate Director Armin Silaen presented at C-STEEL’s meeting. C-STEEL, funded by DOE, partners with ORNL Case Western Reserve University, Northern Illinois Univ., UIC, and PNW. [Read more ...](#)



CVIS-Purdue Continue Developing IVBF Casting Rate Sensor

On November 28th, Associate Director Tyamo Okosun and Senior Research Engineer Kyle Toth, along with Purdue West Lafayette Professor Jun Chen and Post-Doctoral Researcher Weixiao Shang, made a site visit to U. S. Steel Gary Works #14 Blast Furnace, hosted by Kosta Leontaras, Process Engineer and Jason Entwistle, Head of Blast Furnace Technology. They completed a recording session to test calibrated measurement techniques for predicting casting flow rate using the IVBF casting rate sensor. [Read more...](#)



DOE Funded Projects Presented by CIVS and Gerdau at AIST Chapter Dinners

On January 9th, Tyamo Okosun, Associate Director for Research, and Nicholas Walla, Senior Research Engineer, along with Kevin Kondrat, Improvement Facilitator at Gerdau Monroe, jointly presented the keynote presentation at the AIST Midwest Chapter Dinner in Merriville, highlighting two recently awarded DOE-funded projects: IVBF and Hydrogen

Utilization in the Reheat Furnace (H2RF).” [Read more...](#) On February 13th, Kevin Kondrat and Nick Walla also presented the new DOE project H2RF at the AIST Detroit Chapter monthly dinner meeting in Detroit, MI. [Read more...](#)



CIVS Presents Keynote at Eastern States Winter Conference

On February 1st, at the 2024 Eastern States Winter Conference, CIVS Senior Research Scientist John (Jack) Moreland gave a keynote on Steel Industry Safety Training Simulators. CIVS Associate Director for Research Tyamo Okosun also presented “Hydrogen Utilization in Ironmaking: Exploring Methods and Limitations” at the AIST Ironmaking and Cokemaking Technology Committee meeting before the conference. [Read more ...](#)



EAF Research Team Gains Valuable AIST Training



On February 5-9th, CIVS researchers attended AIST’s Modern Electric Furnace Steelmaking: A Practical Training. [Read more...](#)

Steel Experts Invited to CIVS Student Seminars

On January 5th, Steve Ryan, Manager of Process Technology at NLMK-Indiana, presented “EAF Practice and Evolution – Where We Are, How We Got Here, and Where We Are Going.” [Read more...](#) On March 1st, Joe Morey, Senior Technical Consultant at Morey Industrial Consulting, presented “A Possible Future for Blast Furnace Ironmaking” [Read more...](#)



NLMK USA Visits CIVS to Develop Custom-Designed Smart Ladle



On February 9th, CIVS hosted the visit of members of NLMK USA’s automation team to learn the methods used to develop and deploy the SMSVC Smart Ladle. [Read more...](#)

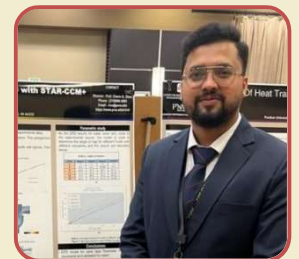
PNW Women in STEM Held at CIVS Immersive Theater

On March 20th, in celebration of Women’s History Month, PNW CES and the COT hosted a panel discussion on Women in STEM at CIVS. [Read more...](#)



Student Success Story: Syed Imran

Syed Imran, a newly graduated CIVS research assistant, joined SMSVC member company Linde Engineering North America as a Mechanical Engineer after successfully defending his thesis and being an integral part of many impactful CIVS research outcomes. His collaboration with industry leaders allowed him the insight to pursue his career goals competitively. He is looking forward to working on various projects. [Read more...](#)



“Working at CIVS gave me a strong foundation in research methodology. It’s where I developed strong skills in design & analysis using CFD and EAF. This experience was pivotal, offering an exceptional platform to prepare for my engineering career.”

Gerdau-PNW CIVS Digitalization and Decarbonization Partnership Presented

On November 16th, CIVS Director Chenn Zhou and Associate Director for Operations Armin Silean were invited to present the Gerdau-PNW CIVS Partnership at the Gerdau’s virtual seminar on “the 4.0 Best Projects GAB/GSB/GLN/GSN”. The presentation highlighted the recent \$10 million grant, supported by DOE, which will use a Gerdau’s facility to develop and demonstrate an Industrial Hydrogen-fired Steel Reheating Furnace (H2RF). [Read more...](#)

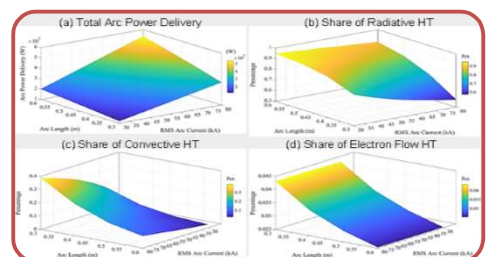
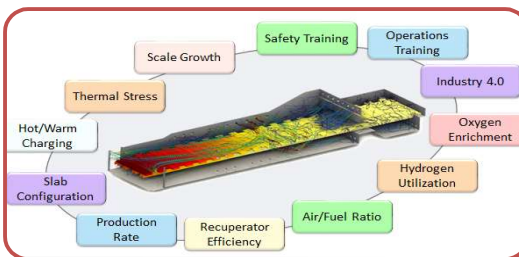
CIVS Hosts ArcelorMittal Global R&D Visitors

On March 4th, ArcelorMittal reps Mark Atkinson (Head of Project Management Global R&D), Nicolas Bontems (Head of R&D Center, France) and Charles Martins (Head of R&D Center, Spain) visited CIVS for potential collaborations and overview of past projects. [Read more...](#)



CFD Research Presented at ArcelorMittal Global R&D CFD Days

On March 20th, at the 8th bi-annual ArcelorMittal Global R&D CFD & Thermo-Mechanics Days, CIVS Director Chenn Zhou was invited to give an update on the state-of-the-art research in modeling, simulation and visualization. CIVS research students Shiyu Wang and Abhishek Kolakotla also presented virtually their research in the modeling of electric arc furnace and hydrogen combustion in a reheating furnace were invited to present virtually CIVS’. Audiences were from Canada, France, Mexico, Spain, and U.S. [Read more...](#)



Facts and Impacts

- \$40+ million savings for companies
- \$37,400,000+ in external grants and contracts
- 180+ external organizations collaborated with CIVS
- 420+ projects
- 690+ national and local news
- 2,070+ students employed and mentored
- 11,600+ students used CIVS for virtual labs
- 200+ Purdue faculty and staff collaborators
- 310+ student awards and grants (globally since 2011)
- 42,000+ local, national, and international visitors