



CIVS Kicks off \$7 Million Research Project with U.S. DOE for Blast Furnace Research

A virtual kick-off meeting was held on Thursday, September 9 to start the DOE \$7 million project to develop a next-generation Integrated Virtual Blast Furnace. 37 attendees joined the meeting from Cleveland-Cliffs, Linde, Oak Ridge National Laboratory, Purdue University Northwest, Purdue University West Lafayette, and the U.S. Department of Energy’s Advanced Manufacturing Office, and U. S. Steel. All partners will have significant roles in the development of the IVBF. The project aims to develop a tool for steel companies to improve blast furnace energy efficiency and reduce carbon footprint by integrating simulation, valuation, HPC, machine learning, and sensors. [More...](#)



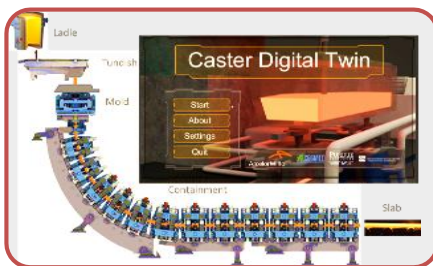
CIVS Caster Digital Twin Solution Received AIST Grant

Congratulations to Kyle Toth, Research Engineer at CIVS, who won the AIST Foundation’s 2021-2022 Digital Transformation Technologies Grant on the project titled “Enhanced Digital Twin Solution for Continuous Casting” together with Co-PIs Dr. Chenn Zhou, CIVS Director, and Dr. Armin Silaen, CIVS Research Associate Professor. [More...](#)



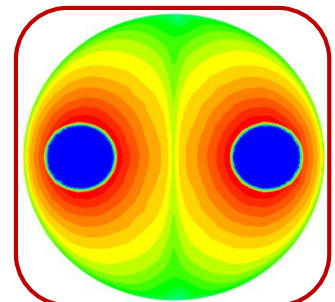
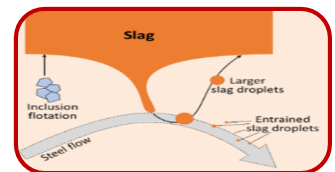
2200 169th Street
Hammond, IN 46323

219.989.2765
civs@pnw.edu
www.pnw.edu/civs



CIVS Kicks Off National Science Foundation GOALI Project

CIVS hosted a virtual kick-off meeting on Sep.16, 2021, to officially start the NSF GOALI Collaborative project: Understanding Formation and Removal Mechanisms of Micron-sized Non-metallic Inclusions in Steel Refining by Computational and Experimental Studies. The project partners include PNW, Carnegie Mellon University, SSAB, and NUCOR. Both computational and experimental studies will be conducted for fundamental knowledge and practical applications. [More...](#)



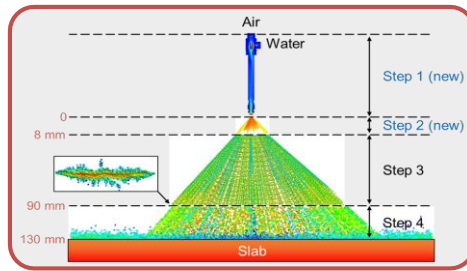
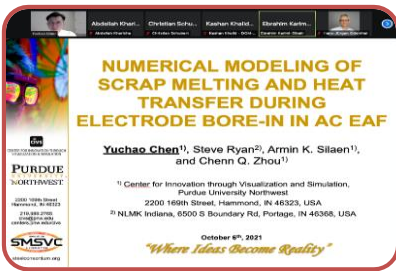
Die Casting Simulator Presents at NADCA and AMC Tech

CIVS presented the latest developments on the virtual reality die casting simulator at both the 2021 NADCA Congress and Tabletop event held at the Indianapolis Convention Center from October 4th to 6th [More...](#), and at the AMC Technology Review on November 3rd. Senior Research Scientist John Moreland also hosted a booth with VR headsets for live demonstration. [More...](#)

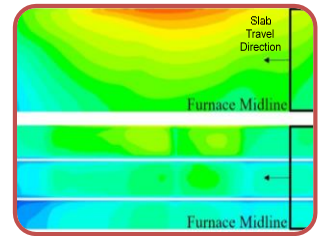
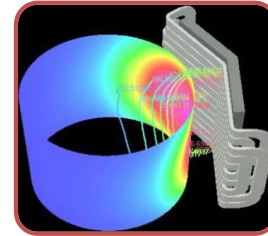


Three Papers Present at SteelSim 2021

CIVS Research Associate Professor, Dr. Tyamo (Ty) Okosun; Ph.D. student, Yuchao Chen; and Graduate Research Assistant, Vitalis Anisiuba presented at the virtual SteelSim 2021 on October 7th, 2021. with three papers: 1) Development of a Prediction Simulator Software for Blast Furnace Operation; 2) Numerical modeling of scrap melting and heat transfer during electrode bore-in in AC EAF (invited keynote); 3) Numerical Investigation of Air-mist Spray in the Secondary Cooling during Continuous Casting of Steel. [More...](#)



CIVS Presents at 2021 IMECE



Professor Armin Silaen and Ph.D. student Xipeng Guo presented two papers titled “Effects of Combined Electromagnetic and Bottom-Plug Stirring in a Steel Refining Ladle” and “Application of Oxygen-Enriched Combustion in an Industrial Reheating Furnaces using CFD” at the IMECE hosted by the American Society of Mechanical Engineers on Nov. 1st-2nd, 2021. [More...](#)

Material Advantage Students Network at AIST Dinner

On October 12th, 2021, 19 CIVS students and faculty from PNW CIVS & Mechanical and Civil Engineering Department attended the Midwest AIST chapter dinner held at the Avalon Manor in Merrillville, Indiana with over 600 attendees from numerous local and regional steel producers and suppliers. [More...](#)



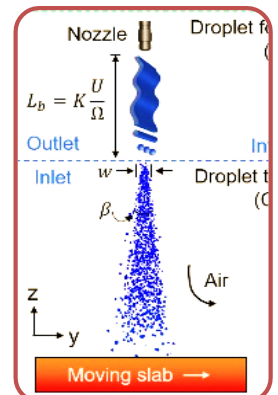
Invited Talk: DOE ARPA-E Workshop

Drs. Chenn Zhou and Tyamo Okosun gave an invited talk about CIVS and the SMSVC at a DOE Advanced Research Projects Agency-Energy (ARPA-E) virtual workshop On Zero-Emission Iron- And Steelmaking on August 31. Their presentation title was “Enabling Digital Technologies for Iron and Steelmaking Processes”. [More...](#)



Presentation: Spray Cooling at 10th ECC

On Oct. 21st, CIVS researcher, Dr. Haibo Ma presented a paper “Investigation of Spray Cooling Uniformity and Intensity during Continuous Casting of Steel” at the 10th European Conference on Continuous Casting, providing insights into the optimization of secondary cooling practices. [More...](#)



CIVS Presents in PNW Engineering Freshman Orientation

On October 19th, Dr. Chenn Zhou and CIVS Research Associate Professor Dr. Tyamo Okosun, along with CIVS graduate research assistants Emily Higley, John Rosser, and Saswot Thapa, presented to PNW freshman engineering students about CIVS and ongoing research projects in their weekly seminar class. [More...](#)



CIVS Students Receive PNW Graduate Research Grant Award



Congratulations to Saswot Thapa and Emily Higley, CIVS graduate students who were selected as recipients of the 2021 Graduate Research Grant Award at PNW! [More...](#)

Wiz Kids Camp Experiences Simulation and VR at CIVS



Nineteen middle and high school students from Illinois and Northwest Indiana visited CIVS as part of the 2021 Wiz Kids Camp Escape on July 20th. The teens learned the technologies that CIVS uses and experienced a series of immersive interactive activities. [More...](#)

Seminar: Jay Gore and Matthew Liddick

Jay Gore, Reilly University Chair Professor of Mechanical Engineering at Purdue University, presented “Exergy Considerations in Steel Manufacturing” at the CIVS



Friday Seminar on September 10th, 2021. [More...](#)

Matthew Liddick, a Smart Manufacturing Automation Engineering from Charter Steel, also gave a talk on AGVs and their impact over the last 20 years on October 18th, 2021.



More than 35 attendees from PNW joined each of the seminars. [More...](#)

CIVS Showcases at Welcome Rally



CIVS Staff and students showcased the projects in the PNW Welcome Rally on August 26, 2021. A table was setup located outside the SULB building on campus to demonstrate various project examples. [More...](#)



Student Success Story: Sam Nielson

In Aug. 2021, CIVS RA Samuel Nielson, received a PNW MSME Degree. His thesis titled “Numerical Investigation of Nontraditional Gaseous Fuel Injection into an Ironmaking Blast Furnace (BF)” investigated novel ideas to reduce greenhouse gas emissions from the BF. Sam said, “My work at CIVS provided me with more hands-on experience in industry-relevant projects than coursework alone. Being able to collaborate with engineers in the field and work on research to understand and provide solutions for real problems provided insight into how engineering works in the real world.” [More...](#)

SMSVC Hosts Successful Annual Review Meeting



The SMSVC successfully held its first hybrid annual meeting on Nov. 9th & 10th, 2021. Over 100 attendees from 15 companies and CIVS connected virtually or in person over the two-day

meeting. The Board and the attendees stated that, as usual, CIVS provided outstanding quality of work and presentation technical content as well as showcased an exceptional level of student knowledge and understanding. They were particularly impressed by the maturity and practical use of models in each project. [More...](#)



SMSVC NOTES

Semi-Annual Meeting
April 20 - 21, 2022

SMSVC Accepting New Members

SMSVC is accepting new members. If interested in becoming a member, please contact steelcons@pnw.edu

For more information on the Consortium, visit steelconsortium.org.

NLMK USA Board Members Visit CIVS

NLMK held its board meeting at CIVS on September 23, 2021. Before their official meeting, nine board members spent two hours visiting CIVS labs. Dr. Chenn Zhou warmly welcomed them and gave an overview of CIVS and the SMSVC. [More...](#)



CIVS Celebrates the Success of NSF Summer RET Program



CIVS successfully concluded the first time 6-week National Science Foundation (NSF) Research Experience for Teachers (RET) summer program with 11 Northwest Indiana and Illinois High School and Community College Teachers in STEM on July. 23rd, 2021. The teachers were excited about how much they learned in 6-weeks and their achievements during the program. They look forward to incorporating their summer research into their classrooms. [More...](#)

New Project for Hazard Awareness with SDI

CIVS is developing a series of interactive hazard awareness safety simulators with long-time collaborator Steel Dynamics, Inc. (SDI). The project is using specialized 360-degree cameras to capture virtual reality video. [More...](#) In Sep 2021, CIVS staff and students had multiple visits SDI Butler facility to capture 360-degree videos. [More...](#)



Facts and Impact (Since 2009)

- \$40+ million savings for companies
- \$35,200,000+ in external grants and contracts
- 170+ external organizations collaborated with CIVS
- 410+ projects
- 620+ national and local news
- 1,740+ students employed and mentored
- 11,370+ students used CIVS for virtual labs
- 150+ Purdue Northwest faculty and staff collaborators
- 284 student awards and grants (globally, since 2011)
- 36,000+ local and global visitors