DeSimone Consulting Engineering team wins 2023 Blind Prediction Competition

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Manhattan, NY DeSimone Consulting Engineering team led by associate Dr. Jeffrey Dragovich, PhD, PE, SE, F.ACI, director of the company's Applied Technology and Research group, has won the Belgium-based UCLouvain 2023 Blind Prediction Competition.

The team received recognition for their winning entry at the 18th World Conference on Earthquake Engineering this month in Milan, Italy, where 4,000 members of the world's international scientific and engineering communities gathered to share research, technology, and risk mitigation commitments. The DeSimone-led team presented their modeling and analysis approach during the session, "Reinforced Concrete (RC) Structural Walls: Advances and Future Challenges for Design, Modelling, Testing, and Construction."

"As we strive towards progressively more reliable analytical methods to predict earthquake response of structures, our work shows clear progress is being made," said Dr. Dragovich. "In exploring new materials and methods that can improve wall performance and advance the state-of-practice, competitions such as this help us better understand and simulate the behavior of concrete walls using large-scale testing."

The UCLouvain 2023 Blind Prediction Competition was open to three categories of participants: practicing engineers, researchers, and students. The results of the blind prediction competition will promote good seismic design practices for RC walls. The shake table tests and participant predictions can help improve the assessment of RC wall buildings and provide directions for future building code revisions. More broadly, this competition helps promote a more robust building stock and strengthen community resilience internationally.

Dr. Dragovich led a team that included Dr. Beyazit Aydin, Dr. Bulent N. Alemdar, and Seth Guthrie from software development company Bentley Systems Inc.; Prof. Kristijan Kolozvari from California State University at Fullerton; Prof. Andrés Lepage from The University of Kansas, and; Dr. Saman Abdullah from University of Sulaimani, Kurdistan Region, Iraq. The engineers used two different software programs to predict how a 40-ton reinforced concrete (RC) U-shaped wall would respond in a simulated earthquake. The tests were conducted at LNEC using a dynamic shake table, also known as an earthquake simulator.

"We are thrilled to see our team's work in the field of seismic engineering and software development gain international recognition," said Stephen DeSimone, resident and CEO of DeSimone Consulting

Engineering. "Over the past decade, significant advancements have been made in modeling approaches that predict how concrete walls will respond under different conditions. The work of our applied technology and research group is ensuring that DeSimone continues to stand at the forefront of designing structures that can better withstand extreme wind forces and earthquakes."

Team DeSimone used the ADINA and OpenSees nonlinear finite element analysis programs for their analytical predictions. While both models were effective at predicting the response, the ADINA model prepared by their team partners at Bentley Systems was the winning entry in the competition