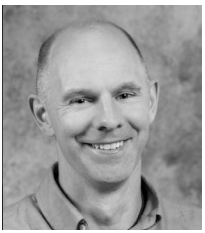

Travis Burgers

Matt Horne

Method to quantify operator stress to demonstrate the value of product automation

Matt Horne and **Travis Burgers** have developed a method to quantify operator stress to demonstrate the value of product automation. Recognizing the increasing adoption of automation in agriculture driven by labor challenges and rising costs, the nominees addressed the crucial need to demonstrate tangible benefits beyond efficiency. Their pioneering approach focused on directly measuring the physiological impact of Raven Cart Automation (RCA) on harvest operators during on-the-go unloading of wheat, corn, and soybeans. Participants engaged in both manual and RCA-assisted unloading, while commercially available wristbands were used to continuously monitor and quantify their biological stress responses. The results demonstrated a clear and measurable reduction in operator stress when using RCA compared to the manual process, providing compelling, data-driven evidence of the positive impact of automation on operator well-being. This quantifiable benefit has generated significant customer interest. Furthermore, the team meticulously documented their methodology, including sharing the data processing code, ensuring transparency and facilitating future replication within the agricultural engineering industry. As automation continues to evolve, this innovative technique establishes a valuable framework for objectively assessing and demonstrating the impact of automated solutions on operator health, paving the way for a more human-centered approach to agricultural technology development. The ability to scientifically measure these benefits will be instrumental in guiding the design and adoption of future automation technologies that prioritize both productivity and the well-being of agricultural workers. RCA received a 2024 ASABE AE50 award.