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Immersive Engineering and Multimodal Process Visualization



As numerical methods, digital prototypes and immersive engineering definitely gain more and more acceptance within the civil engineering community, there is a remarkable variety of additional applications coming along with this tendency. The Fire & Smoke feature within STAR-CCM+ is already intensively used to investigate fire scenarios in road and rail tunnels, underground stations as well as public buildings to develop safety and rescue plans in the case of emergency. Public authorities more frequently accept and even ask for respective studies to safeguard administrative decisions. Additionally individual thermal comfort as well as environmental impact and sustainability emerge from nice to have features to more serious fundamentals within the development processes of civil engineering projects. Especially because of the prototypes in this field of engineering science are already the finished products, the advantages of using digital prototypes are well spotted. From the economical point of view efficiency and sustainability are as well drivers towards the digital approach. Dealing with geometrically extensive structures as well as complex digital and physical modelling on the technical side and customers otherwise, that are not that deep into numerical modelling and interpreting the simulation results, it becomes increasingly evident, to compress the extensive amount of information into partitions, that are easy to digest and well understood by choosing a plain attractive way of presentation. Some exclusive projects are being presented to show the overall benefit of this strategy and how an immersive engineering approach coupled with 3D virtual reality as a multimodal process visualization is extremely capable to do so.

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